

Leaders' Adaptation to Adversity in a Volatile, Uncertain,
Complex, and Ambiguous Business Environment

A Critical Realist View

by

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Table of Content

Acknowledgement	2
List of Tables	7
List of Figures	8
Abstract	9
Author's Declaration	10
Chapter 1: Introduction	11
1.1 Research Background	11
1.2 The Focus of the Study	14
1.3 The Research Issue	17
1.3.1 The current state of research	17
1.3.2 Research problem	20
1.3.3 Research questions	23
1.3.4 Research objectives	23
1.3.5 Research structure and process	24
Chapter 2: Literature Review	25
2.1 Introduction	25
2.2 The Nature of Adversity	26
2.2.1 Adversity – experience or event	27
2.2.2 Leaders' sense-making of adversity	36
2.2.3 A taxonomy of adversity	37
2.2.4 Adversity in light of the stress-strain-resource model	39
2.2.5 Section summary of the nature of adversity	41
2.3 Adaptation and Adaptive Performance	43
2.3.1 Adaptation	44
2.3.2 Adaptive performance	46
2.3.3 Psychological influencing factors of adaptive performance	56
2.4 Adaptive Leadership in VUCA Conditions	61
2.4.1 The loci of leadership	63
2.4.2 The mechanisms of leadership	64
2.4.3 Leaders' adaptive strategies to adversity	66
2.4.4 Alternative strategies of leaders' response to adversity	79
2.5 Synthesis of the Literature Review	91

Chapter 3: Conceptual Framework	93
3.1 Conceptual Framework for Qualitative Research	93
3.1.1 Influencing factors	93
3.1.2 Qualitative conceptual framework	97
3.2 Conceptual Framework for Quantitative Research	98
3.2.1 Hypotheses	100
3.2.2 Quantitative conceptual framework	106
3.3 Summary of the Conceptual Framework	107
Chapter 4: Methodology	109
4.1 The Critical Realist Approach	109
4.1.1 The role of a critical realist researcher	114
4.1.2 The critical realist understanding of causality	116
4.1.3 Retrodution – the critical realist inference	118
4.1.4 Validity of retroductive inferences	119
4.2 The Mixed-Methods Approach	121
4.3 Mixed Methods Approach of Critical Realism	124
4.4 Research Design	125
4.5 Qualitative Investigation - the Interview Study Approach	127
4.5.1 Fundaments of qualitative research approach	127
4.5.2 Data gathering - semi-structured interview	130
4.5.3 Sampling	133
4.5.4 Data analysis – retrodution	134
4.5.5 Quality criteria - validity, reliability	135
4.6 Quantitative Investigation – the Research Survey Approach	138
4.6.1 Fundaments of quantitative research	138
4.6.2 The survey development	140
4.6.3 Population under study	141
4.6.4 Sampling strategy	142
4.6.5 Sample size – comparative studies	142
4.6.6 Reduction of method bias and same source bias	143
4.6.7 Measurement of constructs	144
4.6.8 Pre-testing	154
4.6.9 Data gathering - self-administered online survey	154
4.6.10 Data analysis - retrodution with structural equation modelling	157
4.6.11 Expert review	158
4.7 Methodology Summary	160

Chapter 5: Data Analysis	161
5.1 Qualitative Data Analysis	161
5.1.1 Sampling - the selected interviews	161
5.1.2 Stage 1 description of the event under study	162
5.1.3 Stage 2 analytical resolution and retrodution	168
5.1.4 Stage 3 synthesising	192
5.2 Quantitative Investigation – Data Analysis	195
5.2.2 Stage 1 data structure and measurement development	195
5.2.3 Stage 2 Analytical resolution and retrodution	203
5.2.4 Stage 3 synthesising	223
Chapter 6: Data Triangulation and Data Interpretation	229
6.1 What is the Nature of Adversity?	229
6.2 How can Leaders adapt to Adversity?	232
6.2.1 Impact of adversity	233
6.2.2 Psychological capital	234
6.2.3 Authentic leadership	235
6.3 What are the Factors influencing Leaders’ Task Adaptive Performance to Adversity?	238
6.3.1 Sense-making of adversity	238
6.3.2 Self-reflection	239
6.3.3 Conscientiousness	239
6.4 Interpretation of the Process of Leaders’ Adaptation to Adversity	241
6.4.1 A leaders' positive adaptation to adversity	242
6.4.2 A leaders' negative adaptation to adversity	244
6.5 Discussion of the Convergence of the Qualitative and Quantitative Model	246
Chapter 7: Contribution to Theory and Managerial Implications	249
7.1 Contribution to the Theory of the Nature of Adversity	249
7.2 Contribution to Theory of How Leaders Can Adapt to Adversity	251
7.3 Contribution to Theory of the Influencing Factors of Leaders’ Task Adaptive Performance	252
7.4 Managerial Implications about the Nature of Adversity	254
7.5 Managerial Implications of Leaders’ Adaptation to Adversity	255
7.6 Managerial Implications of the Influencing Factors of Task Adaptive Performance	256

Chapter 8: Research Limitations, Implications for Future Research and Reflection	258
8.1 Research Limitations	258
8.2 Implications for Future Research	260
8.4 Critical Reflection on the Study Journey	261
References	264
Appendix	302

List of Tables

Table 1: Critical realist interpretation of conventional validity concepts for quantitative and qualitative research _____	119
Table 2: Interview guideline for the face-to-face interview _____	131
Table 3: Overview of the group comparison _____	155
Table 4: Result of the Levene test and the t-test for all constructs _____	156
Table 5: Overview of the structure of the six interviews _____	162
Table 6: Overview of the codings of all interviews _____	180
Table 7: Overview of the categorised codes _____	183
Table 8: Socio-demographic and role-specific characteristics of the study sample	196
Table 9: Overview of descriptive statistic _____	200
Table 10: Correlation matrix of included variables _____	204
Table 11: Overview of the SEM test output, fit indices, and desired level of fit (swain corrected) _____	205
Table 12: Overview of the direct effects of the hypotheses _____	208
Table 13: Experts votings regarding the hypotheses of this study _____	218
Table 14: Elements of the process of leaders' adaptation to adversity _____	236
Table 15: Levels of the influencing factors of leaders' positive and negative adaptation to adversity _____	242

List of Figures

Figure 1: Stress-strain-resource model _____	40
Figure 2: Model of adversity _____	43
Figure 3: Maximal adaptation model _____	45
Figure 4: Process model of adaptive performance _____	53
Figure 5: Model of adaptation to adversity _____	55
Figure 6: General model of complexity leadership _____	68
Figure 7: Extended model of complexity leadership _____	71
Figure 8: Relevant aspects of the extended model of complexity leadership for this study _____	78
Figure 9: Selected factors influencing task adaptive performance _____	92
Figure 10: Conceptual framework for the qualitative analysis of the process of adaptation to adversity _____	97
Figure 11: Hypothesised conceptual framework for the quantitative analysis of the process of adaptation to adversity _____	107
Figure 12: The layered ontology of critical realism _____	110
Figure 13: View on causation by critical realism _____	117
Figure 14: The convergence model _____	126
Figure 15: Model of general quantitative approach _____	139
Figure 16: Overview of the process of adaptation to adversity in interview 1 _____	169
Figure 17: Overview of the process of adaptation to adversity in interview 2 _____	171
Figure 18: Overview of the process of adaptation to adversity in interview 3 _____	173
Figure 19: Overview of the process of adaptation to adversity in interview 4 _____	175
Figure 20: Overview of the process of adaptation to adversity in interview 5 _____	177
Figure 21: Overview of the process of adaptation to adversity in interview 6 _____	179
Figure 22: Identified stress-strain relation _____	193
Figure 23: Identified process of adaptation _____	193
Figure 24: Identified influence of self-doubt on adaptation and its interdependence _____	194
Figure 25: The proposed structural equation model _____	206
Figure 26: Process of adversity (burnout) occurring within the given context _____	231
Figure 27: Process of leaders' adaptation to adversity _____	241

Abstract

Recent studies have shown that a significant number of leaders are not able to successfully adapt to adversity within today's increasingly volatile, uncertain, complex, and ambiguous business environment. Adversity is one of the most challenging leadership issues to date, but fragmented research results prevent researchers and practitioners from forming a comprehensive view of the factors that influence leaders' adaptation to it.

This study addresses three questions in respect of the above research gap, namely: What is the nature of adversity? How can leaders adapt to adversity? What are the main factors influencing leaders' task adaptive performance?

The study shows that burnout is increasingly recognised as adversity in leadership triggered by volatile, uncertain, complex, and ambiguous conditions. Leaders affected by a high level of the impact of adversity (magnitude, probability and relevance) and a low level of sense-making of adversity have increased burnout risks. Another contribution of this study is that leaders knowing this explanation are better prepared to prevent, anticipate or deal with adversity in order to avoid negative effects, and to see the positive side of adversity as a chance for learning and personal growth. There is also evidence that a higher level of burnout can decrease the leaders' psychological capital.

The main theoretical contribution of this study is that the mechanisms of psychological capital and authentic leadership can improve leaders' task adaptive performance. These mechanisms are affected by the condition of burnout. Whereby a high level of the mechanism of the impact of adversity can directly decrease task adaptive performance.

Further conditions which affects these mechanisms are sense-making of adversity, self-reflection and conscientiousness. The limitations of these findings are also discussed and the possible directions for future research are outlined.

Author's Declaration

I declare that the work in this thesis was carried out in accordance with the regulations of the University of Gloucestershire and is original except where indicated by specific reference in the text. No part of the thesis has been submitted as part of any other award. The thesis has not yet been presented to any other education insitution in the United Kingdom or overseas.

Any views expressed in the thesis are those of the author and in no way represent those of the University.

Joerg Krauter, May 15th, 2018

Chapter 1: Introduction

The business world acknowledges that its environment is becoming more volatile, uncertain, complex, and ambiguous (VUCA). These VUCA conditions can cause leaders to feel threatened by adversity and show low adaptive performance.

Nevertheless, extant academic literature regarding leaders' adaptation to adversity does not offer any coherent explanation. This study seeks to extend the understanding of the factors affecting leaders' adaptation to adversity by carrying out research using a critical realist approach.

The initial chapter outlines the rationale for the study, starting with a background section that introduces the research context and a section that introduces the focus of this study. This is followed by a discussion of the research issues, the current gaps in understanding, the relevant research questions and the objectives and the structure of the study.

1.1 Research Background

Organisations and their leaders face adversity due to a number of factors, including economic crises, globally-networked competition, technology shift, digitalization, industry 4.0 and shareholder-driven expectations (Friedman, 2016; Haddon, Loughlin, & McNally, 2015; Heifetz, Grashow, & Linsky, 2009a; Knights & McCabe, 2015; Petry, 2018; Pillai & Dubrin, 2013; Uhl-Bien & Arena, 2017). The exponential development of new technologies and the growth of digital economy has caused increasing acceleration of change which requires leaders to learn new competencies and to show the dynamic capability to adapt to new leadership challenges (Petry, 2018). Leaders have to struggle with various options and they are often overstrained by digitalization. Leaders of technology companies in particular are at an increasing risk of failure because their prime focus is on driving innovative approaches to meet customer demands and they forget to focus on their followers (Sinar et al., 2018). "As a result, technology organizations face unique leadership challenges, including lower engagement and retention, fueled by an accelerating competition" Sinar et al. (2018, p. 18). Technology companies fail due to unclear career management, lack of planning for development and too much focus on "do it yourself". Furthermore, development is

left out of discussion and they do not invest enough money and time on leadership development (Sinar et al., 2018).

Also Friedman (2016) argues that organizations face times of accelerations derived from exponential development of technology, globalization and other factors such as climate change, migration, and population growth. Based on these assumptions, organizations and their leaders fail to adapt when they do not focus on shaping the culture around values and mission, leveraging technology and aligning a flexible organizational structure to be able to respond to a wide range of adversities e.g. German culture attributed with pessimism and fear of modernity might deny reforms and prevent innovations (Armbrüster, 2017; Bohnenkamp, Stein, Hermann, & Löwer, 2016). They also neglect to establish a learning culture or emphasize leader development (Forsythe, Kuhla, & Rice, 2018). Research into Indian businesses show that they fail due to greed to make fast money, overestimated goals to grow fast, diversifying their business by not searching for their core competence, one size fits all mentality, and growing skill gaps and learning disabilities (Abidi & Joshi, 2015).

There are other acronyms besides the VUCA conditions that describe the technological traps organizations and leaders can fall into. SMAC (social, mobile analytics and cloud) describes the impact of digitalization and technology on leadership and leaders (Gandhi, 2017). SMAC describes the convergence of four technologies and is the basis for each organization to transform their current business to a digital one (Gandhi, 2017). The application of analytic data with structured and unstructured data derived from wearable technology, mobile devices, sensors, and social media can overwhelm leaders, because they might be less well-trained to apply such technologies (Gandhi, 2017). Furthermore, there are increasing ethical questions regarding data protection and the use of artificial intelligence (Misselhorn, 2018; Rzepka & Araki, 2018).

Therefore, adversity is a effect of the VUCA World of the 21st Century (Elkington, 2018, p. 1). According to Lawrence (2014, p. 3), the term “VUCA” has been used by leaders to explain the experienced “...chaotic, turbulent, and rapidly-changing business environment that has become the new normal.”

One of the most striking problems affecting leaders dealing with the VUCA conditions seems to be that old behavioural patterns of linear top-down leadership and decision-making, which are still predominant in many companies, no longer reflect the conditions of a VUCA world (Friedman, 2005; Johansen, Johansen, & Ryan, 2011). These conditions often cause crises, setbacks, struggles, and obstacles which affect leaders to experience adversity as a threat rather than an opportunity (DuBrin, 2013; Jackson, Firtko, & Edenborough, 2007; Schein, 2010; Snyder, 2013). This can prevent them from adapting to adversity and consequently, they are unable to maintain a stable and balanced work life (Bonanno, 2004; Jackson et al., 2007; Luthar, Cicchetti, & Becker, 2000; Rutter, 1985, 1999).

Alternatively, it can result in leaders having to deal with obstacles that they view as a form of "... pain, difficulty, and struggle" (Howard & Irving, 2012, p. 435) and increasing distress (Zaccaro, Rittman, & Marks, 2002). They are unable to act effectively (Bandura, 1977, 1994), feel helpless (Seligman, 2015), or they may experience negative emotions (Tugade & Fredrickson, 2004). These negative impacts on the leaders' mental state can result in a situation in which, according to Johansen and Johansen (2011, p. 1), "...many of their responses are not constructive...". Consequently, some leaders over-simplify the situation and make decisions too soon, others make no decisions at all, and some seem to be overwhelmed by a feeling of helplessness and react with cynicism or anger. In a worst-case scenario, experienced adversity might create a situation in which a leader behaves intentionally in a destructive or toxic manner, creating a negative impact on the organisation as a whole (Bourdoux & Delabelle, 2013; Padilla, Hogan, & Kaiser, 2007). Overall, adversity can have negative effects on the adaptive performance of a leader whereby she/he is unable to cope with stress and uncertainty, unable to deal well with complexity or to learn new skills and behavioural patterns (Kröger & Staufienbiel, 2012; Pulakos, Arad, Donovan, & Plamondon, 2000).

McKee, Boyatzis, and Johnston (2008) disagree with this and argue that "very few" leaders set out with the intention of harming those below them in rank. However, Michel and Lyon (2015, p. 15) state: "The question is then why do so many good and well-trained leaders fall short of their potential or lack integrity and compromise their values?". They conclude that when leaders are faced with adversity, they have feelings

of uncertainty, pressure rises, and as a result, they have a tendency to make decisions too quickly and jump to the wrong conclusions in their eagerness to exit the negative situation (Michel & Lyon, 2015).

Another reason why leaders fail can be a specific kind of overconfidence affected by exaggerated self-efficacy (Ho, Huang, Lin, & Yen, 2016; Loeb, 2016; Moores & Chang, 2009). This over-optimism can lead to unrealistic expectations which create a spiralling effect of increasing bad feelings and less adaptability (Shepperd, Pogge, & Howell, 2016). Although these issues have been documented in business practice and organisations, they have received limited scholarly attention to date as they are often perceived as difficult, impossible to capture, or of an individual-specific nature.

After discussing the research background the next sections describe the specific background of this study.

1.2 The Focus of the Study

The following section specifies the focus of this study associated with the selected organizations in the field, identifies the respondents and describes the essential conceptual key constructs.

The selected organizations presented in this field include medium-sized business-oriented German companies, known as “Mittelstand” as well as large international cooperations based in Germany with a traditional hierarchical and more structured culture (Hofstede, 1994; Uhl-Bien & Marion, 2009). German culture has been attributed with pessimism and fear of modernity with a tendency to resist reform and innovations (Armbrüster, 2017). This can be risky, because VUCA market conditions require companies to have a flexible and agile culture (Bohnenkamp, Stein, Hermann, & Löwer, 2016). In the current climate, German companies are faced with a dilemmas as when the German economy is flourishing leaders may assume there is no need to change their structures (Bohnenkamp, Stein, Hermann, & Löwer, 2016). A recent study surveying 14,000 specialists and executives from German companies revealed that a lot of good ideas “die a slow death” although there is a need for fast implementation. The respondents noted that quick reactions for change are often not possible. 60 percent assessed that changing the corporate structure would enable more innovation

and allow the company to be more competitive in an increasingly flat business world (Bohnenkamp, Stein, Hermann, & Löwer, 2016).

Respondents of this study were German speaking and actively working as leaders within different hierarchical levels of companies in Germany (Eastwood, Jalaludin, & Kemp, 2014; Mitchell, 1994). These leaders represent a wide range of different experiences dealing with adversity in variety of organisations, industries and market environments and diverse hierarchical levels and demographical dimensions (Corbin & Strauss, 2007; Strauss & Corbin, 1994). According to the statistics of the “DIW Führungskräfte-Monitor” (DIW – German Institute of Economic Research), the population of German leaders in 2013 was around 4 million in business oriented companies in Germany and 29 percent (1.160,000) were female (Holst, Busch-Heizmann, & Wieber, 2001).

Hence, current studies show that more than 50 percent of German leaders (around 2 million) suffer from stress. 23 percent of female leaders (around 266,800) are affected by burnout which is twice as high as male leaders at 12 percent (around 336,000) (Baumman, 2015; Sander & Hartmann, 2009). In summary, 15.07 percent of the whole population (602,800 male and female leaders) seem to be affected by burnout and stress (Zimmer, Hentrich, Bockhoff, Wissing, & Petermann, 2015).

Another source of respondents were leadership experts, selected on the basis of their body of work in the field of leadership as university professors and researchers or on their experience in the role as a senior leader or leadership consultant (Bellamy, Bledsoe, & Traube, 2006; Gläser & Laudel, 2009; Muskat, Blackman, & Muskat, 2013). All experts are educated to doctoral level.

The following section explains the essential conceptual key constructs. Individuals with a role consisting of tasks of leadership and related aims based on their own and others' expectations can be termed 'leaders' (Biddle, 1986; Stryker & Burke, 2000; Turner, 1978). There is an intentional social interaction between a person taking the leader role and others taking the role of followers, with the purpose of reaching a common goal (Bass & Bass, 2009; Northouse, 2015). Hence, social interactions require social

structures such as organisations and other conditions e.g. appropriate working conditions in which they can occur (Bhaskar, 2014; Bhaskar & Danermark, 2006).

Taking the role of leader can become dangerous if the leader's role and their identity merge and no differentiation between them is possible (Turner, 1978). Role expectations that are not met or exaggeration of self-efficacy can lead to a high level of adversity. This is due to the interplay between a low level of self-esteem and high pressure regarding the leaders' self-concept and the social role of being a leader (Hattie, 2014; Herman & Zaccaro, 2014; Hoyt, Price, & Poatsy, 2013; Klenke, 2007; Rizzo, House, & Lirtzman, 1970).

The leader role can contextualise human identity, mind and behaviour (Bass & Stogdill, 1990; Steiger, 2013; Tourish, 2014), especially in the context of adversity where others expect leaders to solve their problems for them (Hannah, Uhl-Bien, Avolio, & Cavarretta, 2009). Hereby, the leaders' understanding of human agency has been taken into consideration as "human intentional causality" (Hartwig (2015, p. 18) consisting of properties such as planning strategies and actions, goal orientation and future anticipation (Bandura, 2006). Leading in VUCA conditions is a "complex dance" (Horney, Pasmore, & O'Shea, 2010) within a "flat" and increasingly unstable and rapidly changing business world (Lawrence, 2014). This requires self-leadership as a process of self-influence through which a leader can achieve self-motivation and self-direction (Neck & Houghton, 2006) and also adaptive leadership as the task to lead others through "change that enables the capacity to thrive" (Heifetz, Grashow, & Linsky, 2009, p. 2).

To successfully adapt, leaders dealing with adversity in VUCA conditions need resources. These include personal characteristics (general resistance), specific conditions (marriage, tenure, seniority) and objects (physical nature) or energy (time, money, knowledge) that allow individuals to adapt to adversity and to manage stress (Hobfoll, 1989). Halbesleben, Neveu, Paustian-Underdahl, and Westman (2014, p. 5) describe resources "as anything perceived by the individual to help attain his or her goals".

In extreme contexts, psychological resources (positive emotions, self-efficacy, resilience), social resources (social networks, solidarity), and organisational resources (technologies, available processes, equipment) can attenuate extremity, and time as a resource (compression, duration, frequency) and complexity as conditional resource (unexpected collapse of highly dynamically intertwined variables) can intensify extremity (Hannah et al., 2009, pp. 909-911). Depending on the level of the available resources (organisational support, work structure, team support) or personal capacities (traits, competencies, emotions, attitude of the leader), the strain experienced by the leader could be positive (eustress, stimulation, motivation) or negative (distress, fatigue, monotony, saturation) with particular results such as job satisfaction or burnout (Rudow, 2005, 2014).

These results can affect the leaders' ability to adapt to adversity. Thereby adaptation can be described as a process of a leaders' cognitive, affective, motivational, and behavioural adjustments determined by the demands of a new or changing environment (Baard, Rensch, & Kozlowski, 2013; Chan, 2000; Sweet, Witt, & Shoss, 2015). In the context of leadership, adaptation is more than coping with adversity because it is an experimental process of innovation and cultural change under conditions that produces errors, conflictual events, and confusion about where to go next (Heifetz, 2003; Part, 2011).

This thesis will explain the structure, conditions and mechanisms under which adversity and leaders' adaptation to it occurs, and identify its influencing factors.

1.3 The Research Issue

The following sections explore the current state of research associated with the research problem, identify the current research gaps, formulate the research questions for this study and present the research structure and process.

1.3.1 The current state of research

Several models have been developed to provide leaders with ideas for how to adapt to adversity. One group of researchers has focussed on skill-oriented models to identify the type of skills that are necessary for leaders to adapt to adversity. For example, Johansen creates the "VUCA Prime" Model consisting of a skillset, which includes

“Vision”, “Understanding”, “Clarity”, and “Agility” to make sense of a VUCA business environment (Johansen & Voto, 2013; Lawrence, 2014). Within the concept of VUCA Prime (George, 2017; Johansen & Voto, 2013; Kinsinger, 2015), adaptability and resilience have been recognized as necessary abilities of leaders dealing with adversity in a VUCA world (Marston & Marston, 2018).

Heskett (2009) argues that to successfully adapt in this irrational world it is necessary to become a self-managed leader, clarifying the individual role and learning to recognize personal biases to regain some rationality for better decision making. Leaders should be role models and have belief in their own abilities, a positive attitude, the ability to regulate their emotions and to see failure and adversity as opportunities (Kets de Vries, 2017). They should also embrace VUCA and see adversity as a chance for progression and innovation (Marston & Marston, 2018).

Others suggest that leaders should be calculated risk takers, looking beyond horizons and be an inspiration to their followers (Elkington, 2018; Wilson & Rice, 2004). Furthermore, they should improve their self-management (Nandram & Bindlish, 2017), and be open-minded, visionary, anticipate potential threats and opportunities and have well-trained communication skills (Mannherz, 2017). Adversity requires leaders to have extraordinary courage, showing resilience, and skill with tough-mindedness Koehn (2017). However, leaders should also be open and transparent about what is going on and personally bonded with others (Grant & Sandberg, 2017). To defeat adversity in a VUCA world, leaders should develop the ability to evaluate a situation, develop a motivated action plan that addresses the right issues and be willing to commit to their goals (Holiday, 2014).

Investigating one aspect of “adaptive leadership,” Heifetz, Grashow, and Linsky (2009b) focus on disrupting old patterns of leadership to enable adaptation to adversity. This involves introducing different skills so that leaders can leave the comfort zone of leading by authority and move towards leading by essential skills, such as critical reflection, “orchestrating the dynamics of a problem, ... empowering others and staying personally centered and focused” (Heifetz & Linsky, 2002, pp. 121-125).

Hence, resilience has been identified as the crucial skill for future leaders and there is a need for leaders with character who can manage complex situations and lead with

good intentions (Kets de Vries, 2017). The model of resilience forms the basis of the model of “adversity quotient”, which aims to enable a leader facing adversity to identify her/his own mindset (Stoltz, 1997). She/he can then identify personal strengths and developmental weaknesses. Margolis and Stoltz (2010, p. 1) expand this model into the model of “a resilience regimen - a series of pointed questions designed to help managers replace negative responses with creative, resourceful ones and to move forward despite real or perceived obstacles.” A large body of research investigates resilience as a key solution to adversity (Bonanno, 2004; Everly, Smith, & Lobo, 2013; Fredrickson, Tugade, Waugh, & Larkin, 2003; Rutter, 1985). Most notably, Tugade and Fredrickson (2004, p. 1) point out that psychological resilience refers to “... effective coping and adaptation although faced with loss, hardship, or adversity.”

Other researchers have examined the environmental and organisational aspects of adversity with the aim to clarify how it can affect leaders’ adaptation to it. Weick, Sutcliffe, and Obstfeld (2008, p. 31) investigate high reliability organisations (HROs) and create the model of “high reliability” to cope with adversity characterised by “...a preoccupation with failure, reluctance to simplify interpretations, sensitivity to operations, commitment to resilience, and underspecified structuring”. This model includes the so-called “process of collective mindfulness”, e.g., it is as much about the “quality of attention as it is about the conversation of attention” and it is as much about “what people do with what they notice as it is about the activity of noticing itself.” It also involves “interpretive work directed at weak signals”, the “differentiation of received wisdom” and the “enlarged set of possibilities that suggest unexpected deviation that needs to be corrected and new sources of ignorance that become new imperatives for noticing” (Weick et al., 2008, p. 37).

Reason (2000) uses the context of high reliability organisations to investigate human factors, e.g., aberrant mental processes such as forgetfulness, inattention, poor motivation, carelessness, or negligence, with the aim of understanding adverse events and their impact on human error and violation. He also concludes that the aim of the HROs is to make the organisation robust when faced with adverse events even though HROs are not immune to them (Reason, 2000). Hence, adversity may occur but the more robust the organisation is, the higher the likelihood that leaders will adapt to adversity (Reason, 2000).

Focusing on crisis DuBrin (2013) investigates the human perspectives of a leader, different leadership styles, as well as contextual aspects to identify the successful characteristics and behavioural patterns of leaders who can cope with it. He suggests six traits: experience, preparation, responsibility, confidence, focus, and adaptability, which seem to be popular in academic research to explain how leaders can cope with crisis (DuBrin, 2013).

More recent research has focussed on organisations and their leadership as complex adaptive systems regarding extreme and crisis events forced by VUCA conditions (Hannah, Uhl-Bien, Avolio, & Cavarretta, 2009). Complexity leadership theory also seeks to explain the structures, dynamics, mechanisms, and effects of interactions on the part of agents or organisations in their particular conditions with the goal of finding patterns in successful adaptation or failure (Hazy & Backström, 2014; Lichtenstein et al., 2006; Uhl-Bien, Marion, & McKelvey, 2007). These authors recommend three different, but related, leadership functions for leaders to adapt to adversity - administrative, enabling, and adaptive. However, a number of questions still remain unanswered.

1.3.2 Research problem

It has been argued that specific aspects of the business environment, conditions, mechanisms, skills, and other human factors, e.g., personalities, are relevant in understanding leaders' adaptation to adversity. Nevertheless, because of its complexity and interdependences, the investigation of single aspects may not be the most appropriate way to gain a comprehensive understanding of the phenomenon of adversity and to explain leaders' adaptation to it.

At first glance, skill-oriented models can be used to identify successful behavioural patterns for the development of coping and adaptation strategies and training programmes (Barton, 2013; Johansen & Johansen, 2011; Johansen et al., 2011). Evaluation of the context and its conditions can provide a better understanding of the influence of such factors on leaders' behaviour with the aim of developing analytical tools and improving their awareness (Stoltz, 1997; Weick et al., 2008). The models of adaptive leadership (Heifetz et al., 2009b) and complexity leadership (Lichtenstein et

al., 2006; Uhl-Bien et al., 2007) are both based on the assumption that the leadership environment is one of VUCA and that VUCA conditions can lead to adversity. In sum, these approaches focus on adaptation as an appropriate strategy in dealing with adversity.

The problem is that neither the skill-oriented nor the context-orientated models offer a comprehensive explanation of why, how and under what conditions and mechanisms adversity and leaders' adaptation to it occurs. The adaptive leadership model also lacks an explanation of the phenomenon of adversity. Complexity leadership research is rare in terms of leadership in a business context and is usually discussed in a more theoretical way. Two exceptions are the investigation of extreme contexts (Hannah et al., 2009) and the examination of bureaucratic organisations (Uhl-Bien et al., 2007).

Hannah et al. (2009) give an overview of the different kinds of extreme contexts, their characteristics, and adaptive leadership responses. However, there are only limited discussions regarding the specific mechanisms that influence leaders' adaptive responses to extreme events and there are gaps in the explanation of the emergence of adversity. Uhl-Bien and Marion (2009) discuss the characteristics of and requirements for complex leadership in hierarchical organisations in a VUCA context, but do not focus on adversity as a specific phenomenon.

The main problem is that despite a large number of leadership development programmes and training in the past, recent studies (2010 - 2018) have shown that a significant number of leaders are unable to adapt to adversity (Berman, 2010; Langley, 2013; Sinar et al., 2018; Sinar, Ray, Neal, 2014; Zimber et al., 2018). To solve this, leaders need to be provided with knowledge and tools about how they can successfully adapt to adversity. All efforts are aimed at supporting leaders to deal successfully with a growing number of adverse events affected by VUCA conditions.

So far there has been no identification of the nature of adversity, how leaders adapt to it, or the factors that influence this adaptation. There are fragmented research results, which prevent researchers and practitioners from forming a more comprehensive view of the factors that influence leaders' adaptation to adversity. There are three gaps in

particular that warrant further research. A brief description of each gap and its justification is presented in the next section.

1.3.2.1 Gap 1 – lack of understanding of the nature of adversity in the context of leadership in VUCA conditions

A better understanding of the phenomenon of adversity and knowledge of the specific conditions that can affect adversity could improve leaders' awareness and enabling them to recognise the conditions before adversity happens.

If adversity does occur, leaders could use their knowledge to develop appropriate adaptation strategies. For example, the financial crisis of 2008-2009 "rendered many business models obsolete, as organisations throughout the world were plunged into turbulent environments" (Lawrence, 2014, p. 3). Leaders who had not recognised what happened sometimes found themselves, "... struggling with how best to lead in a VUCA world" (Horney, Pasmore, & O'Shea, 2010, p. 33). A better understanding of adversity could support what Bernstein (2014, p. 8) identified: "Preparing for disruptive changes and staying on the cutting edge requires leaders to navigate effectively through VUCA dangers, turning them into opportunities." Knowledge of the conditions, e.g., VUCA environment, which trigger the phenomenon of adversity, is the first step for leaders' adaption to adversity.

1.3.2.2 Gap 2 – lack of knowledge about leaders' adaptation to adversity

Adaptation has been mentioned by various researchers as a significant strategy for leaders to deal with adversity in VUCA conditions (Hannah et al., 2009; Heifetz et al., 2009b; Lichtenstein et al., 2006; Tugade & Fredrickson, 2004; Uhl-Bien et al., 2007). The different ways leaders adapt to adversity and the mechanisms that are activated to produce the adaptive behaviour need to be understood. Enhanced understanding of these mechanisms can provide an opportunity to improve leadership-development programmes, training, and coaching with the aim of providing leaders with effective adaptation strategies; developing useful behavioural patterns and preparing their cognitive ability (mind) to deal with such events. Improving mental skills and the ability to control emotions can also support leaders dealing with adversity and to avoid biases.

1.3.2.3 Gap 3 – lack of research on the influencing factors of leaders' task adaptive performance to adversity

Finally, this gap in research can be filled by identifying the influencing factors of task adaptive performance to adversity and examining their relation. Additionally, the influencing factors of task adaptive performance is a suitable theoretical foundation for investigating how leaders' task adaptive performance to adversity is generated and for identifying under which conditions and mechanisms it happens.

These research gaps can be systematized and addressed by the following research questions.

1.3.3 Research questions

RQ1: What is the nature of adversity in the context of leadership in VUCA conditions?

RQ2: How can leaders adapt to adversity?

RQ3: What are the influencing factors of leaders' task adaptive performance to adversity?

Based on the research background, current situation, identified problems and derived research questions, the next section outlines the research objectives, research process, and structure of this study.

1.3.4 Research objectives

The research objectives (RO) derived from the research questions are as follows:

RO1: To clarify what the nature of adversity is in the context of leadership in VUCA conditions.

RO2: To identify the ways in which leaders can adapt to adversity.

RO3: To identify the factors that influence leaders' task adaptive performance to adversity.

These three research objectives are achieved by adopting a research process that applies a critical realist research approach.

1.3.5 Research structure and process

This study consists of eight chapters. The first chapter provides an overview of the research topic, research background, and the research gaps. It also identifies the key research objectives, the study structure, and the research process. In the second chapter the literature review discusses existing research that deals with the phenomenon of the leaders' adaptation to adversity in a volatile, uncertain, complex and ambiguous business environment. Chapter three outlines the conceptual framework and aims to explain key factors, models and the presumed relationship between them regarding leaders' adaptation to adversity. It provides a quantitative oriented conceptual framework for hypothesis testing and a qualitative oriented conceptual framework to gain a better understanding of the phenomena of leaders' adaptation to adversity. Chapter four presents the methodology and demonstrates the link between the research objectives, the conceptual framework and the appropriate research methodology. It includes a description of the chosen mixed-methods research approach with regard to the critical-realists' philosophical foundation, and an explanation of the comprehensive research design, and of the applied methodology and methods. The applied mixed methods research design of triangulation can be characterized as a convergent design, whereby the quantitative and qualitative data gathering occurs in parallel. Data is analysed separately and then merged in order to provide a comprehensive picture of the phenomenon under study.

Chapter five presents the results of the data analysis and the sixth chapter includes the data triangulation between quantitative and qualitative data and its final interpretation. The seventh chapter provides the contribution to theory and the managerial implications derived from this study. Chapter eight acknowledges the research limitations, suggests future research considerations, reflects on the researcher's research journey and provides the final conclusions of the study.

Chapter 2: Literature Review

The aim of this narrative literature review is to give an overview and discussion of the existing body of research regarding the nature of adversity, strategies that leaders could use to manage adversity, and the factors that influence leaders' task adaptive performance to adversity without conforming to a specific search formula (Thomas, 2013, p. 34). According to Grant and Booth (2009, p. 97), a narrative review describes the "...published materials which provide an examination of recent or current literature" and covers "a wide range of subject matter at various levels of completeness and comprehensiveness based on analyses of literature that may include research findings." One advantage of this approach is that it "seeks to identify what has been accomplished previously, allowing for consolidation, for building on previous work, for summation, for avoiding duplication and for identifying omissions or gaps" (Grant & Booth, 2009, p. 97).

2.1 Introduction

The phenomenon of leaders' adaptation to adversity can be characterised by various factors. One is the selected context of adversity in a volatile, uncertain, complex, and ambiguous business environment. Another is the person that takes on the role of leader and has to deal with these adverse conditions. The final factor is the process of how the leader successfully adapts to these adverse events. The following literature review firstly defines the nature of adversity by its current understanding within the research community, the conditions creating adversity and its negative and positive impacts. Secondly, it investigates the leaders' adaptation and adaptive performance. The discussion of what adaptation means and how its performance can be described is followed by an examination of the process of adaptation and its influencing factors. Finally, it investigates the possible adaptive strategies to adversity available to leaders, and summarises the results within a framework of influencing factors affecting leaders' task adaptive performance.

2.2 The Nature of Adversity

In general, adversity refers to difficult, unpleasant, unfortunate situations derived by problematic conditions, e.g., misfortune, tragedy, calamity, and distress (Cambridge-Business-English-Dictionary, 2016; Merriam-Webster-Dictionary, 2016; Oxford-Dictionaries, 2016). Similarly, Jackson et al. (2007, p. 3) point out that adversity is “the state of hardship or suffering associated with misfortune, trauma, distress, difficulty, or a tragic event.”. Adversity has also been characterised as being unexpected, uncertain, ambiguous and disruptive actions that break the routines of leaders (Stoner & Gilligan, 2002). This can result in a storm of negative emotions, such as confusion, shock, anger, frustration, fear, and disillusionment (Stoner & Gilligan, 2002). Emotional exhaustion can become one of the most striking issue affecting leaders dealing with adversity (Zimber, 2015, 2018; Zimber, Hentrich, Bockhoff, Wissing, & Petermann, 2015; Zimber, Hentrich, & Meyer-Lindenberg, 2018). And it seems to be that old behavioural patterns of linear top-down leadership, which are still predominant in many companies, no longer reflect the conditions of the increasing adversity (Friedman, 2005; Johansen et al., 2011) and it can influence leaders to experience adversity as a threat rather than an opportunity (DuBrin, 2013; Jackson et al., 2007; Schein, 2010; Snyder, 2013).

In line with these findings, other researchers focus on the psychological aspects of adversity and define it as an experience of the overwhelmed adaptive resources of leaders with the effect of adaptive failure (Neiworth, 2015; Yates & Masten, 2004). In accordance with the experience based understanding of adversity, Cameron and Spreitzer (2011) point out that any event that someone perceives as disruptive to her/his work environment is adverse, depending on its magnitude, impact, and duration. They argue that adversity is “a subjective experience; an event itself only becomes a stressor if it is perceived as such” (Cameron & Spreitzer, 2011, p. 897). Following the majority of the existing studies, Luthar et al. (2000) outline that adversity consists of negative life events related to difficult adjustment, but Fletcher and Sarkar (2013) suggest that positive life events, e.g., job promotion, can also force partial adversity, such as fears. In summary, at this point of discussion it might be argued that adversity is a phenomenon of usually negative human experiences triggered by

external or intrapersonal conditions. Nevertheless, this assumption can lead to discrepancy about the conceptual view of adversity and whether or not it should be understood as an experience or as an event. The next section focusses on this issue.

2.2.1 Adversity – experience or event

Cameron and Spreitzer (2011, p. 897) state that adversity is “a subjective experience” and “an event itself only becomes a stressor if it is perceived as such”. This statement reflects the core issue of the conceptual view of the nature of adversity. Is adversity an experience or an event? Experiences have been described as being a basis of knowledge based on observing or participating in events (Russon, 2010; Sundbo & Sørensen, 2013). Experience is thereby mainly interpretative and dependent on a person’s expectations, desires, education and so reflecting the person herself/himself (Sundbo & Sørensen, 2013). Whereby events are specific happenings resulting from the activation of mechanisms influenced by structures and conditions embedded in a particular setting (Bhaskar, 2007; Wynn & Williams, 2012). To start the discussion, it is useful to investigate exactly what leaders experience when adversity occurs.

2.2.1.1 Adversity – negative and positive experiences

Evidence shows that adversity can lead to negative as well as positive experiences for leaders (Heifetz et al., 2009a; Kouzes & Posner, 2014; Stoner & Gilligan, 2002; Tugade & Fredrickson, 2004). Adverse conditions, e.g., workplace stress, can affect psychological adversity as a “...form of pain, difficulty, and struggle” (Howard & Irving, 2012, pp. 433-435; Snyder, 2013). Suffering is also an experience of psychological adversity and describes an emotional process to move back and forth between the emotionless state of *enduring* and the state of distress with the released *emotions* (Morse, 2001, p. 1). Negative emotions, such as confusion, shock, anger, frustration, fear, and disillusionment (Fredrickson, 2013; Stoner & Gilligan, 2002, p. 19) can affect leaders’ feeling of hardship with the impact of the loss “...of credibility, control, self-efficacy, or identity” (Gonzalez, 2010; Moxley & Pulley, 2003, p. 185), or post-traumatic stress disorder and anti-social personality disorders (Dohrenwend, 2000). Emotional exhaustion forced by adversity, such as anxiety, fear, anger, guilt, and frustration, seems to be a particularly disruptive feature of pain that can lead to suffering (Linton & Shaw, 2011, p. 704). Dilemma situations which are a difficult choice between at least two undesirable alternatives (Cardno, 2001, 2007) can lead to experience of inner

tensions because leaders feel overtaxed by the demands of their leader roles in the company hierarchy (Lee, 2011). Tudor and Clark (2006) examined four different dilemmas in the field of leadership: 1. dilemma of trust and control, 2. ethical dilemmas, 3. dilemma of destiny and development, and 4. dilemma of cooperation. Similarly, Neuberger (2002) suggests 13 different leadership dilemmas affected by role-taking and role-making, and hypothesises that the contradiction of dilemmas is typical in leadership systems and that leaders have to manage them.

Burnout is a major negative effect of adversity in the field of leadership. Current research shows an increasing level of burnout experiences of leaders, in Germany in particular (Hannemann, 2015; Stegmann & Schröder, 2018; Zimber, 2015, 2018; Zimber, Hentrich, & Meyer-Lindenberg, 2018). Burnout, such as emotional exhaustion, is negatively related to task performance and the feeling of disengagement is negatively related to the adaptivity to change (Demerouti, Bakker, & Leiter, 2014). Burnout experiences consists of the decreased perception of one's accomplishments, emotional exhaustion, and depersonalisation (Burisch, 2006; Maslach & Jackson, 1981a; McDonald, 2010; Sherring & Knight, 2009), with the effect of possible negative health outcomes (McDonald, 2010). Burnout could also increase by taking one's own strengths to an extreme (Kaplan & Kaiser, 2010), to get in a struggle over passionate visions with the effect of losing control of the situation and of one's own emotions (Snyder, 2013), and by the failure of emotional labour strategies (Barkouli, 2015).

Despite the evidence of the negative impact of adversity, it can be argued that facing adversity is not always a negative experience for the person. Based on the result of examining leaders' bounce-back from adversity, Stoner and Gilligan (2002, p. 18) find that there is correlation between leaders' experience of success and adversity. They propose it is necessary to explore the meaning of success in order to understand adversity. The more difficult and intense the adversity is, the more the meaning and value of success as a form of "meaningful ends" (Stoner & Gilligan, 2002, p. 18). Fear in particular can be identified as accompanying adversity, and both seem to be related to the leaders' personal experience of success (sense of personal significance) and their sense of control (self-doubt) (Stoner & Gilligan, 2002, p. 19). Kouzes and Posner (2014) recognise the chance to change adversity into opportunity, while Pellegrini (2009) argues for building strength through adversity, and Brownstein (2009, p. 159)

notes that leaders who sometimes fight against adverse conditions and fail in controlling them, miss "...opportunities to use adversity for the benefit of their organisations." In addition, Wilson and Rice (2004) propose the need for leaders who experience anxiety, fear, and loss of confidence affected by adversity to be motivated and encouraged to seize the opportunity to learn from it. Other researchers propose adversity as a "great teacher" where the leader must be prepared to face painful situations (Snyder, 2013, p. 9) as well as needing the emotional capacity to tolerate "uncertainty, frustration, and pain." (Heifetz & Laurie, 2001, p. 40). Similar to these findings, Elkington (2013) argues that those leaders who successfully overcome adversity sometimes move through a painful experience and Diehl (2014) summarises her findings of women in leadership positions where adversity might present the opportunity for personal growth with the related effect of pain and loss. To summarise, Cameron and Spreitzer (2011) show evidence that experiencing adversity can be helpful for promoting individual growth by offering a platform for learning and may increase the ability of a leader to deal with future adversity successfully. However, today at least 20% of leaders seem to be unprepared to deal with VUCA and adversity (Berman, 2010; Johansen & Johansen, 2011; Langley, 2013; Sinar, 2014). Sinar (2014) reports that "...25% of organisations report their leaders are not VUCA-capable..." and Langley (2013) states that a significant amount of the leaders felt overwhelmed by the requirement to navigate in the VUCA world and over 50% of them are not confident in the ability of their organisations to manage the VUCA challenge.

It has been shown that the experience of adversity depends on various trigger events such as workplace stress, dilemma situations or taking one's own strengths to an extreme. The next section focusses on these.

2.2.1.2 Events and conditions creating adversity

The events and conditions that trigger adversity can be divided into VUCA conditions, workplace, human fallibility, destructive and toxic leadership behaviour (Dohrenwend, 2010; Everly et al., 2013) as well as the self-concept of a leader and the leader role.

2.2.1.2.1 VUCA conditions

The VUCA acronym was introduced by the U.S. Army War College and refers to a volatile, uncertain, complex, and ambiguous world which moves business from a world

of problems to a world of dilemmas (Johnson, Lowther, Conway, Currie, & Landry, 2012; Nogami, Colestock, & Phoenix, 1989; Raghuramapatruni & Kosuri, 2017; Weick et al., 2008). Within the business context, the VUCA environment can be understood as all the external social, cultural, and physical and psychological conditions in which leaders are embedded (Pender, Murdaugh, & Parsons, 2002). German culture in particular might affect adversity, because it has been attributed with pessimism and fear of modernity with the possible outcome of denying reforms and preventing innovations (Armbrüster, 2017). Moreover, German leaders noted that within the more structured and hierarchical German culture fast reactions to change are less possible (Bohnenkamp et al., 2016). VUCA conditions are characterized by a dynamic change, unpredictable states, conditions of complex and interrelated elements, scepticism about personal experience of reality, and the potential of misunderstanding and no precise cause-and-effect chains (Barberis, 2013; Bernstein, 2014; Horney et al., 2010; Johansen & Johansen, 2011; Levine & Symre, 2012; Petrie, 2011; Taleb, 2010; Van Loon, 2017). The VUCA conditions includes both objective aspects of reality such as rapid digitalization, globalization, and financial crisis and the subjective attributions experienced by leaders, such as feelings of struggle, fear and extreme stress (Mack, Khare, Krämer, & Burgartz, 2015; Marston & Marston, 2018).

Leaders use the term “VUCA” to explain the perceived “...chaotic, turbulent, and rapidly-changing business environment that has become the new normal.” Lawrence (2014, p. 3). In VUCA conditions, old behavioural patterns of linear top-down leadership and decision-making, which are still predominant in many companies, no longer reflect the leadership requirements of successful adaptation to adversity (Friedman, 2005; Johansen et al., 2011). The experience of personal crises, setbacks, and mental breakdowns by leaders could be the effect of such adverse conditions (DuBrin, 2013; Hannah et al., 2009; Schein, 2010; Snyder, 2013). Crisis such as the loss of important objectives is unexpected and potentially dangerous and there is often a lack of time and skills to respond appropriately (DuBrin, 2013; Hannah et al., 2009; James & Wooten, 2005; Osborn, Hunt, & Jauch, 2002). Other sources of external events can be natural disasters (tornados, earthquakes), terrorism, or pandemic diseases that can inevitably cause adversity (Li & Tallman, 2006; Sheppard, Sarros, & Santora, 2013).

Team leaders dealing explicitly with extreme contexts, such as military combat teams, SWAT teams, hospital emergency personnel, homeland security personnel, or disaster response teams (Hannah et al., 2009), and also high reliability organisations, such as normal police and fire and rescue operations, aircraft flight desk operations, and operating highly hazardous technologies, e.g., electricity company operating or nuclear power stations (Hannah et al., 2009; Weick, 1993, 2010), frequently have to deal with adverse events, sometimes with dramatic consequences (Yates & Masten, 2004). Leaders facing extreme events can perceive overwhelming extremity, lack of self-efficacy, and emotions, such as fear, which might increase loss of mindfulness, missing sense-making, failed trainings, failure of safeguards, or physical and mental breakdowns, such as burnout (Hannah et al., 2009). VUCA conditions can also affect the leaders' workplace as discussed in the following section.

2.2.1.2.2 Workplace

Stress induced by the workplace is inherent today and stress-related disorders affected by workplace conditions are a growing concern (Everly et al., 2013). Hence, during the VUCA conditions of the "global recession", work-related stress "scored by 40%" (Robertson, Cooper, Sarkar, & Curran, 2015, p. 534). The leaders' stress level in the workplace can be affected by the quantitative workload and by conflicts associated with leaders' roles, because negative strain reactions might not be buffered by job security, social support, or a decision space for leaders (Zimber, Hentrich, Bockhoff, Wissing, & Petermann, 2015). Specifically, leaders suffer from a feeling of "lost energy" and insomnia, both are early warning signs of impending burnout (Zimber et al., 2015). In earlier research, Sedlacek (2011) found similar results with increasing mental stress for leaders triggered by strong success and time pressure, expectations of constant availability at the workplace, and a lack of compensatory free time to recover. There seems to be an increasing psychological strain perceived by leaders with the result that in 2011, 48% of German leaders showed a middle level of exhaustion, around 25% seemed to be candidates for burnout syndrome, and 24% seemed to be highly exhausted Cisik (2012). Another source of leaders' strain can be that they have to deal with mediating conflicting goals at the workplace, lack of balance between social closeness and necessary social distance, an increasingly uncertain basis for decisions, and the negative effects of external and internal expectations to fulfil leadership ideals, e.g., to be a charismatic leader (Dieckhoff & Hoffmann, 2008). Negative results based

on workplace adversity can be decreasing motivation, burnout, illness, irrational decision-making, or social isolation (Dieckhoff & Hoffmann, 2008). The workplace seems to be also a relevant factor in leaders' strain with the effect of increasing human fallibility as discussed in the following section (Jackson & Daly, 2011; Jackson, Firtko, & Edenborough, 2007; McDonald, Jackson, Vickers, & Wilkes, 2016).

2.2.1.2.3 Human fallibility factors

Human fallibility can be another source of adversity causing human error (Reason, 1995, 2000). It can be created by a lack of attention, weak morals, and blaming other people for their forgetfulness (the personal kind). Several critics assert the need for different ways to investigate human error, moving from the old view (person-centred) of seeing "human error is the cause of many accidents..." towards a new view (system-centred) that "human error is a symptom of trouble deeper inside the system". One trouble can be the need of leaders to create safety because it is not inherent in the organisations (Dekker, 2001, p. 248). Despite the fact that humans are involved in accidents, they are not the sole and final cause of them (Holden, 2009). Nevertheless, the leaders' destructive behaviour derived from various conditions can also increase adversity, as outlined in the next section.

2.2.1.2.4 Destructive and toxic behaviour of leaders

The destructive and toxic behaviour of leaders can also lead to adversity (Kaiser, LeBreton, & Hogan, 2015; Padilla et al., 2007). Destructive leaders can be characterised by narcissism, negative understanding of charisma, personalised needs for power, and sometimes an ideology of hate (Padilla et al., 2007, p. 182). Such leaders can violate the interest of the company by sabotaging the organisation's resources, aims and rules and undermining motivation, job satisfaction and the well-being of followers (Einarsen, Aasland, & Skogstad, 2007, p. 207). For example, Einarsen et al. (2007, pp. 212-213) demonstrate that destructive leaders behave in three typical styles: tyrannical (undermining the motivation, well-being, or job satisfaction of subordinates), derailed (bullying, humiliation, manipulation, harassment, absenteeism, shirking, fraud, theft), or disloyal (violating the legitimate interest of the organisation, undermining task, and goal attainment). Destructive leadership could harm the follower, the organisation, and the relationship between the leaders and followers with the result of stabilising or increasing adversity, e.g., burnout (Dinh et al.,

2014; Webster, Brough, Daly, & Myors, 2011). Destructive behaviour seems to have a variety of causes, such as personal disorders, psychological well-being, negative emotions (anxiety, fear, anger), workplace dissatisfaction, and the VUCA conditions (Bourdoux & Delabelle, 2013; Byrne et al., 2014; DeCaro, Thomas, Albert, & Beilock, 2011; Luthans, Norman, & Hughes, 2006; Mathieu, Neumann, Hare, & Babiak, 2014). Hence, it is not only destructive leaders that can behave in a toxic way. Other leader personalities can show also destructive behavioural patterns under specific adverse conditions. For example, resources depleted by workplace stress, e.g., burnout, can lead to less constructive behaviour from leaders and can increase the possibility of destructive behaviour (Einarsen et al., 2007; Krasikova, Green, & LeBreton, 2013). Similarly research has shown that burnout can lead to increased tendencies of self-destruction among military personnel (Taghva, Imani, Kazemi, & Shiralinia, 2015).

In conclusion, person-independent factors, such as VUCA conditions and workplace, and person-dependent factors, such as human fallibility and the destructive behaviour of leaders, can be identified as conditions that lead to adversity. This perspective can be extended by the investigation of the leaders' self-concept and the leader role as factors affecting adversity. The following section discusses these points.

2.2.1.2.5 The self-concept of a leader and the leader role

Leaders are individuals taking a role consisting of leadership tasks and related goals based on their own and others' expectations (Biddle, 1986; Stryker & Burke, 2000; Turner, 1978). Leaders' adversity is determined by the new normal of chaotic, turbulent, and rapidly-changing business conditions (Lawrence, 2014) and human fallibility (Reason, 2000). However, there seems to be other sources affecting the phenomenon of adversity.

The leaders' self-concept and the social role of being a leader can affect adversity (Hattie, 2014; Herman & Zaccaro, 2014; Hoyt, Price, & Poatsy, 2013; Rizzo, House, & Lirtzman, 1970). For example, leaders can fail due to overconfidence affected by exaggerated self-efficacy (Ho et al., 2016; Loeb, 2016; Moores & Chang, 2009) or leaders can show over-optimism determined by unrealistic expectations (Shepperd et al., 2016). Similarly, a high level of resilience might lead to the false hope syndrome of unrealistic expectations of self-change (Polivy & Herman, 2000) or overused strengths (Kaiser & Overfield, 2011). It can be argued that the exaggeration of generally positive

self-facets of a leader is a potential risk for leaders and can lead to adversity. A wide range of leadership literature regarding positive psychology offers opportunities for personal success and gives hope to overcome adversity. The positive self-concept of the leaders can be exaggerated by simplifying routines e.g. cognition biases, tunnel view, or biased human judgement leading to failure regarding what really happens (Franke, 2011; Kahneman, 2011; Taleb, 2010).

How can this phenomenon be explained? Epstein (1973, p. 1) states that “the self has been defined in terms of the "I" or the "me" or both, or as the individual's reaction to himself”. The self-concept transforms experiences into predictable behavioural patterns and facilitates all necessities to fulfill expectations while preventing disapproval (Epstein, 1973). If the inner organisation of the self-concept has been threatened, leaders experiences anxiety and they try to defend themselves against this (Epstein, 1973). If the defense action is not successful, the level of self-esteem can decrease and lead to total disorganisation (Epstein, 1973). Also, the social role of being a leader can trigger adversity by the leader’s own and others’ role expectations (Hoyt et al., 2013) causing inner tensions (Cardno, 2001, 2007), leaders’ ethical failures (Hoyt et al., 2013) or role conflicts (Rizzo et al., 1970). Leaders can feel overtaxed by the demands and expectations of their leadership role (Lee, 2011; Neuberger, 2002) and feelings of unmet expectations can affect higher risk of burnout (Everall & Paulson, 2004; Lait & Wallace, 2002; Maslach, Schaufeli, & Leiter, 2001). According to role theory, a role is the shared social norm and expectation that prescribes a particular behaviour and attitude associated with a position in a social system (Biddle, 1986; Winkler, 2010). The social role of being the leader of a team or within a leader-follower relation organizes the leadership activities and clarifies the expected social interactions (Turner, 2001). Nevertheless, the leader’s role is permanently reconstructed as leaders act in various adverse contexts. This can increase the role ambiguity and cause role conflicts (Turner, 2001). Thereby, the leader acts within continuous tension to reach the given aims and to correspond to her/his own and others’ expectations, limited by her/his own resources (Turner, 2001).

The current discussion has not yet identified the possible interdependence between the self-concept and the social role of being a leader. Klenke (2007, p. 3) develops an identity system-oriented model of authentic leadership based on self-identity,

leader-identity and spiritual identity in answer to an increasing “era of corporate malfeasance and scandals” with a low level of trust in senior leaders. In this model, self-identity corresponds with self-concept and leader-identity is related to the leader role (Klenke, 2007). The construct of spiritual identity is related to aspects of self-transcendence as a product of self-reflection and introspection (Klenke, 2007). This model describes the interdependence between self-concept and the leader role within the context of adversity. It can be argued that unmet role expectations or exaggeration of self-efficacy can lead to a high level of adversity through the interplay between a low level of self-esteem and high pressure regarding the leader role. Epstein (1973), assumes that the self-concept transforms experiences into predictable behavioural patterns. It can be stated that the self-concept is not only an experience itself but is an independent entity. Similarly, it can be argued that the leader role as a social phenomenon can be seen as independent from the experiences of the leaders because it is constituted by social interaction with others. The leader role has various attributes such as expectations from others which are not only constructed by the leader herself/himself. Therefore, the leaders’ self-concept and the leader role might be characterized as events that can be experienced by the leader.

2.2.1.3 Summary of adversity - experience or event

In summary, Cameron and Spreitzer (2011, p. 897) argumentation that adversity is “a subjective experience” is supported by the findings. However, the judgement of the experience can be either negative or positive. The second statement of Cameron and Spreitzer (2011, p. 897) that “an event itself only becomes a stressor if it is perceived as such”, cannot be supported, because the discussion shows that there are external factors such as VUCA conditions and intrapersonal factors such as human fallibility which are adverse but independent of the leaders’ perception. The self-concept of a leader transforms experiences into action and so it cannot be an experience itself. Therefore self-concept has to be treated as a separate entity and independent of experience. Nevertheless, the findings also support the statement of Cameron and Spreitzer (2011) that positive external conditions can lead to adverse experiences by the leader. Therefore, adversity seems to be both a subjective experience and an event.

To clarify this findings regarding the nature of adversity it can be transferred into an ontological perspective of research paradigms. Experiences can be related to the constructivist standpoint that reality is constructed by humans and events can be connected with the positivist point of view that reality exists independent of observers' perception. A third perspective will be opened by the critical realist view that social reality is layered and consists of experiences and events. The constructivist viewpoint will be demonstrated by the discussion of the leaders' sense-making of adversity. The positivist point of view will be shown by discussing the taxonomy of adversity as a quantitative tool of social science and the critical realist view of adversity will be outlined by the stress-strain-resource model.

2.2.2 Leaders' sense-making of adversity

Researchers have investigated sense-making and find that it could be a personal resource with the purpose of fostering a person's adaptation to adversity (Van den Heuvel, Demerouti, Bakker, & Schaufeli, 2013; Van den Heuvel, Demerouti, Schreurs, Bakker, & Schaufeli, 2009). Similarly, Zaccaro, Banks, Kiechel-Koles, Kemp, and Bader (2009, p. 7) outline that the process of complex problem-solving dealing with adversity includes the sense-making of the parameters of the problem and "...the second process of adaptive problem solving entails sense-making ... or diagnosing the nature and meaning of changing events in the environment." Hence, effective adaptive performance is based on the skills of recognising an environmental pattern, critical thinking, and sense-making with the aim of creating adaptive responses (Zaccaro et al., 2009). Bartone (2015) points out that positive sense-making of the mistakes and failures can focus the perception on situations as learning opportunities and develop positive ideas for adaptive responses. Weis (2012) argues that sensitive people recover more efficiently from adverse events as they use such events as learning opportunities to support inner sense-making. In addition, Baran and Scott (2010, pp. 63-64) assert that sense-making in the form of "framing, heedful interrelating, and adjusting" within dangerous contexts might help to organise ambiguity. Regarding the importance of sense-making within team leadership, Zaccaro et al. (2002, p. 461) outline that sense-making "produces shared mental models promoting team adaptation in a dynamic environment."

In contrast, Bonanno (2013) shows that sense-making is not always evident, e.g., people who have coped successfully with adversity do not willingly engage in sense-making of these adverse events or are unable to find any meaning in the experienced adversity. Sales, Merrill, and Fivush (2013, pp. 11-12) conclude that “for individuals who have experienced challenging lives it might be healthier not to reason about their past lives” and “for individuals facing ongoing challenge, it may be more adaptive to simply move forward and assume one can change the future rather than to try to make sense of a past that may simply be senseless.” Park (2010) summarises the critique on sense-making: “...we first need to better understand what sense-making is and then ask for whom, and under what conditions, are particular types of sense-making made helpful and why?” In conclusion, sense-making of adversity is a experience-based reality construction triggered by adverse events. It can affect the leaders’ perception to judge events as stressors. Nevertheless, sense-making is still subjective and do not offer a person-independent evaluation of the adverse event itself. Therefore a taxonomy of adversity can close this gap, as outlined in the following section.

2.2.3 A taxonomy of adversity

Different taxonomies have been used in leadership research to describe particular types of adverse events in the context of leadership (Hannah et al., 2009; Hoffman & Lord, 2013). A taxonomy is a tool in the quantitative tradition of social science to classify and specify aspects of reality (Madge, 1967; Ottaway, 1983) and characterises a leadership event by identifying different features as a multi-dimensional phenomenon (Hoffman & Lord, 2013). Taxonomies, such as the six characteristics of stressful life events, have been identified in the context of adversity with the aim of diagnosing disorders for developing psychotherapy treatments (Dohrenwend (2000, p. 9; 2010, pp. 6-7) or the critical incident severity scale (CRISIS-R) as a measurement of incidental features with the potential to disrupt the workplace (Everly et al., 2013). Therefore, it can be argued that taxonomies to classify adversity are widely applied in research. For example, Hannah et al. (2009) create a taxonomy of extreme leadership events to support a better understanding of the context and mechanisms of how leadership works in extreme contexts. This taxonomy is important because the number of organisations facing extreme events is rapidly increasing and the overall aim is to create “reliably successful performance in these contexts where failure is not an option” (Hannah et al., 2009, p. 914). This taxonomy consists of five components of

an extreme context that could influence leadership processes, especially adaptive leadership response. The components are: location in time (preparation, response, recovery, oscillation), magnitude of consequences (scale of damage), probability of consequences (likelihood of occurrence), physical or psycho-social proximity (e.g., social distance between leaders and followers), and form of threat (e.g., injury, post-traumatic stress) (Hannah et al., 2009).

Researchers argue that the adaptive leadership response itself can attenuate or intensify the extremity level of adversity (Hannah et al., 2009). Attenuators which reduce the level of extremity can be psychological (positive emotions, self-efficacy, resilience), social (social networks, solidarity), and organisational resources (technologies, available processes, equipment), and intensifiers that might increase extremity could be: time (compression, duration, frequency) and complexity (unexpected collapse of highly dynamically intertwined variables) (Hannah et al., 2009). The advantage of such a taxonomy for leaders dealing with adversity could be, that she/he can focus her/his perception on relevant aspects of an adverse event without being overwhelmed by sense-making of VUCA conditions. Leaders are able to judge the adversity objectively and are not biased by e.g. negative emotions such as fear. For example, a taxonomy with the dimensions of magnitude, probability and relevance can help a leader to judge the impact of adverse events on herself/himself. If an adverse event is judged as highly probable, of high personal relevance and with a high level of effect on the leader herself/himself, she/he can get unbiased objective information with the aim to deal well with it. In summary, the taxonomy of adversity can provide leaders with the opportunity to quickly and precisely identify the impact of an adverse event on herself/himself and then select an appropriate adaptive strategy.

Nevertheless, a taxonomy might be able to reduce the depth of information within an adverse event or let the problem of the right classification emerge so that decision making fails based on inadequate information (Terlizzi, Bevilacqua, Frascchetti, & Boero, 2003; Vakil, 1997). In summary, a taxonomy of adversity can provide objective information about the impact of adverse events. Nevertheless, as a single instrument such a taxonomy is still limited regarding sense-making of adversity. Therefore, the stress-strain-resource model, discussed in the next section, focusses on the

connection between external stressors and strain with possible negative or positive consequences for a leader (Rudow, 2005).

2.2.4 Adversity in light of the stress-strain-resource model

Stress can be interpreted as the sum of all person-independent external events that affect leaders' strain (Rudow, 2005, 2014). Strain can be described as the immediate impact of the stress on the cognitive and emotional state of the leader, dependent on the current personal conditions, abilities, and performance to cope with adversity (Nachreiner & Schultetus, 2002; Rudow, 2014). The basic model of stress and strain was originally developed by Rohmert and Rutenfranz (1983) regarding stressors as the cause of physiological strain (Desterreich, 2001; Kirchner, 1993). This model also includes the personal characteristics, traits, and behavioural repertoire of the human being that could influence the cause and effect chain of stress and strain (Kirchner, 1993). Similar to the findings above, positive and negative stress and strain relations were also investigated within this (Kirchner, 1993; Rohmert & Rutenfranz, 1983). Later on this model was extended to social science to validate its applicability for psychological stress and strain (Desterreich, 2001). Rudow (2005) also extends the basis of the model to the stress-strain-resources model related to the salutogenese model (process of healing and health creation) developed by Antonovsky (1997). Depending on the level of the available resource repertoire (e.g., organisational support, work structure, team support) or personal capacities (e.g., traits, competencies, emotions, attitude of the leader), the psychological strain could be a positive one (e.g., eustress, stimulation, diversity, motivation) or a negative one (e.g., distress, fatigue, monotony, saturation) with particular results (e.g., job satisfaction/dissatisfaction or burnout) (see figure 1) (Rudow, 2005, 2014). Figure 1 shows the stress-strain-resource model.

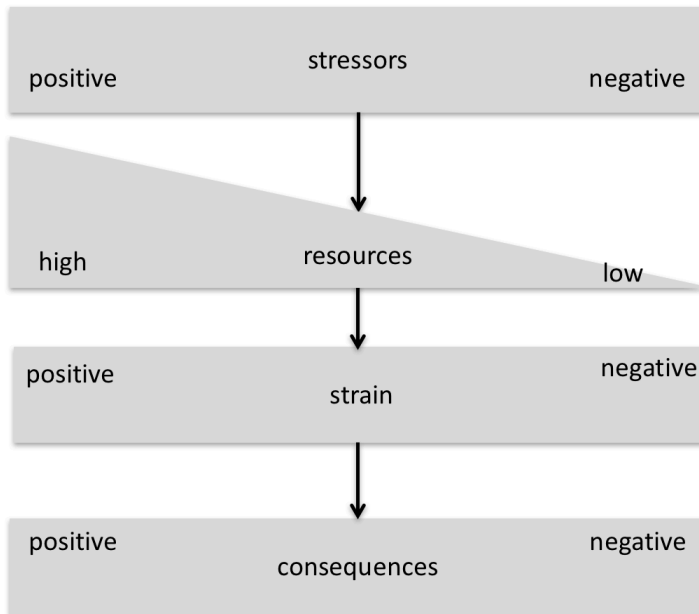


Figure 1: Stress-strain-resource model

Source: Rudow (2005)

According to the conversation of resources model created by Hobfoll (1989), resources can be defined as personal characteristics (general resistance resources), specific conditions (marriage, tenure, seniority), objects (physical nature) or energies (time, money, knowledge) that serve individuals to adapt to adversity and to manage stress (Hobfoll, 1989). More generally, Halbesleben, Neveu, Paustian-Underdahl, and Westman (2014, p. 5) define resources as “anything perceived by the individual to help attain his or her goals”.

There seems to be similarities with the discussion of the nature of adversity previously mentioned. For example, Stoltz (1997) points out that there are three interdependent levels of adversity. Societal adversity, e.g., financial crisis, extreme contexts, high reliability organisations, natural disasters, or forced organisational change could have an influence on the second level of adversity, and the workplace level, e.g., conflicts, time pressure, cost cutting, unbalanced decision latitude. Consequently, the workplace level can determine the third level of adversity, the individual level, with strain phenomena, such as hardship or suffering (Stoltz, 1997).

Arguably, the first and second levels of adversity can be categorised as psychological stress events because they are person-independent, external influencing factors that

have a psychological impact on the leader. The third level can be included in the category of psychological strain because it describes the direct influence of the first and second levels on the person with the effect of cognitive and emotional strain experiences. In the same way, the literature review shows that psychological strain as part of adversity can be positive, e.g., an opportunity for learning and personal growth (Cameron & Spreitzer, 2011; Kouzes & Posner, 2014), as well as negative, such as the perception of obstacles (Howard & Irving, 2012), suffering (Morse, 2001), emotional distress (Linton & Shaw, 2011), hardship (Gonzalez, 2010; Moxley & Pulley, 2003), or burnout (Maslach et al., 2001). However, the fact that the person herself/himself can be a source of adversity is not explicitly included in the stress-strain-resource model, e.g., human fallibility as a lack of attention, weak morals, and blaming persons for their forgetfulness (Reason, 1995), or destructive and toxic behavioural patterns (Padilla et al., 2007). However, it should be stated that both societal adversity and workplace adversity can affect human fallibility and destructive behaviour as a kind of reaction (Bourdoux & Delabelle, 2013).

The stress-strain-resource model is an appropriate frame for the topic under study because it combines the positivist and constructivist aspects of the adversity phenomenon and also synthesise both perspectives. The following section summarises the discussion of adversity and its nature.

2.2.5 Section summary of the nature of adversity

Adversity is a complex phenomenon and can only be understood by the totality of its experiences and events. The complexity of the phenomenon cannot be explained either with the constructivist or positivist worldview alone. Constructivism has two pitfalls regarding the topic under study. It does not acknowledge the existence of the independent observer's external adverse conditions which might limit the understanding of complexity of adversity, such as the financial crisis in 2008/2009. As the main point of critique, constructivism has to manage the problem of biased perception and accuracy of social perception (Kruglanski, 1989; Nater & Zell, 2015). It could be argued, that the perception biases of a leader e.g. high emotional exposure as a lack of accuracy of social construction of adverse events might increase the problem of a leader successfully adapting to adversity.

Positivism lacks understanding of leadership as a social interaction affected by what people believe and how they feel during adaptation to adversity. While positivism focusses on quantitative aspects such as numbers and statistical relations it cannot encompass the stories behind the phenomenon of adversity, which are as useful for leaders to adapt to adversity as statistics. Arguably, neither constructivism nor positivism are useful paradigms for the topic under study. The discussion within the literature review shows that the paradigm of critical realism is an appropriate underlying philosophical standpoint for this study. The critical realist standpoint accepts an observer's independent reality which is relevant when investigating how external adverse events affect leaders' adaptation to adversity. It proposes a layered social reality which is a useful framework to understand leaders' adaptation to adversity as a social event affected by the interaction of specific conditions, processes and mechanisms.

Based on the findings of the literature review, the stress-strain-resource model reveals the nature of adversity to be a complex phenomenon. Person-independent factors, such as VUCA conditions, organisational factors and workplace, and person-dependent factors, such as human fallibility and the leaders' self-concept and the leader role, can be identified as conditions that can trigger strain. The findings show that strain can have a negative impact such as a feeling of pain, difficulty, and struggle but also a positive impact such as promoting the individual growth and learning of leaders, depending on available resources. Burnout has therefore been identified as a major negative strain factor for leaders that occurs under adverse conditions. Furthermore, the findings revealed that sense-making of adversity is also an important process to understand the complexity of the phenomenon regarding the leaders' perception and judgement. Sense-making of adversity can happen during all phases of stress-strain-resource chain and this experience can be a source of learning for future adversity. Another result of the discussion was, that a taxonomy of adversity consisting of three factors: magnitude, probability, and personal relevance can provide a leader with an unbiased perception of the impact a specific adverse event on herself/himself. This taxonomy supports leaders with more objective and comparable data, improves the accuracy of social interpretation of adverse events and can facilitate the sense-making process. In summary, the combination of the stress-strain-resource model and the process of sense-making of adversity included with the taxonomy of

adversity is an appropriate framework to explain the complex phenomenon of adversity. Figure 2 shows the model of adversity developed.

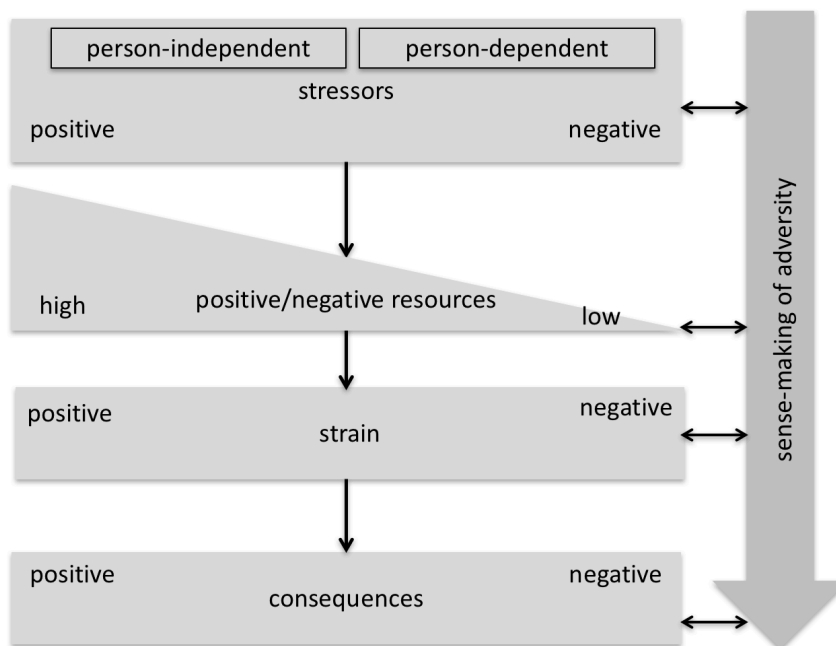


Figure 2: Model of adversity

Source: based on Rudow (2005)

A leader equipped with an understanding of this model of adversity can better deal with the current adverse situation by analysing the sources of stressors, personal impact of adversity, activating useful resources, and self-regulation processes to prevent negative strain, and support positive sense-making. She/he can then improve the likelihood of positive consequences which can be the basis for learning. This can also lead to a better state of well-being and improve a leader's performance. The next section focusses on leaders' adaptation to adversity.

2.3 Adaptation and Adaptive Performance

Following the investigation of the nature of adversity this section clarifies the description of adaptation, adaptive performance, and its influencing factors. It also delineates these aspects from related constructs, such as resilience and other performance descriptions.

2.3.1 Adaptation

Leaders who are equipped with a better understanding of the nature of adversity are better prepared to find a successful strategy to adapt to adversity. Therefore, leaders also need a better understanding of what adaptation means, how it works and which factors influence it in a positive way.

Adaptation can be described as the cognitive, emotional, and behavioural functional change regarding anticipated environmental variances (Banks, Bader, Fleming, Zaccaro, & Barber, 2001). Chan (2000, p. 6) states: "...adaptation refers to the process by which an individual achieves some degree of fit between her/his behaviours and the new work demands created by the novel and often ill-defined problems resulting from changing and uncertain work situations." Chan's personal view of adaptation has been described as actor-based and its aim as to reduce the vulnerability to specific risks by focusing on the processes of decision-making, negotiation, and action (Nelson, Adger, & Brown, 2007; Walker, Holling, Carpenter, & Kinzig, 2004). Focusing on leadership, Heifetz (2003) proposes that adaptation is more than coping with adversity because it is an experimental process of innovation and cultural change under conditions that produces errors, conflictual events, and confusion about where to go next. Also, Part (2011, p. 1) defines adaptability in a military leadership context as, "the ability and willingness to anticipate the need for change, to prepare for that change, and to implement changes in a timely and effective manner in response to the surrounding environment."

One perspective on adaptation related to the above mentioned discussion of adversity offers the stress research with the maximal adaptation model (Hancock & Szalma, 2008). It describes different zones of adaptation forced by stressors (Hancock & Szalma, 2008). Figure 3 shows the maximal adaptation model.

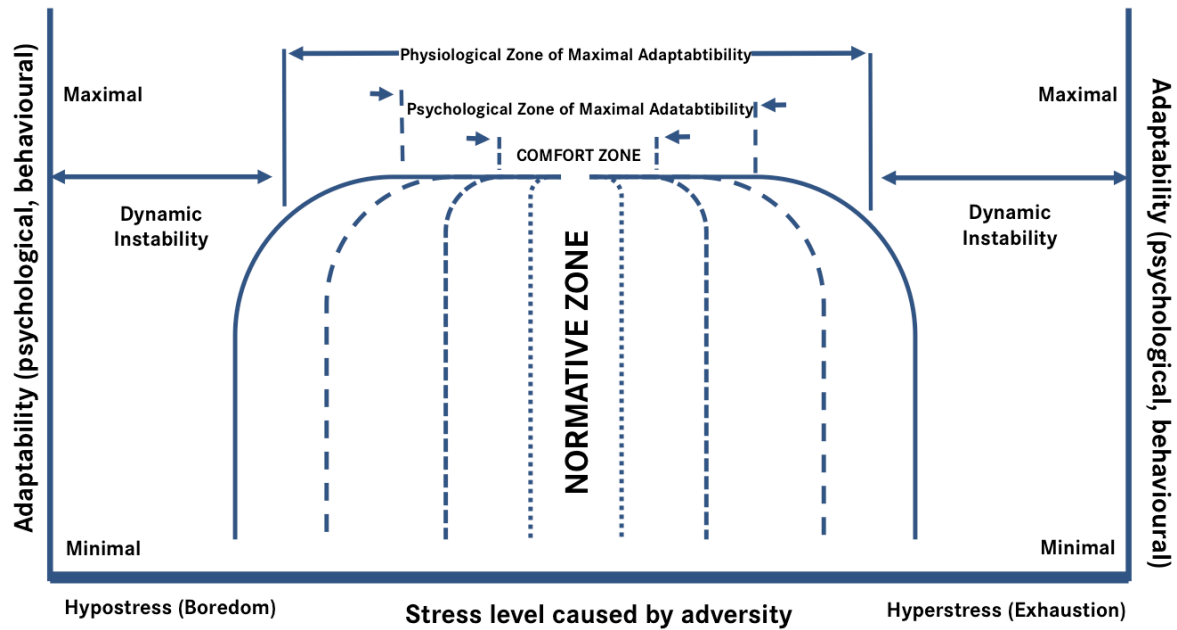


Figure 3: Maximal adaptation model

Source: Hancock and Szalma (2008)

Leaders with high exposure to various stressors over a period of time can leave the comfort zone of an acceptable stress level and experience the need for psychological and physiological adaptation. If the stress level is too high, they can lose their ability to adapt within their capacity for physiological and psychological adjustment, and adaptive behavioural patterns decrease (Matthews, Hancock, & Szalma, 2008; Pomeroy, 2013). Under the conditions of hypostress (boredom) or hyperstress (exhaustion), the performance level can decrease rapidly and result in extreme failure (Pomeroy, 2013).

This model establishes the relationship between the model of adversity (see figure 2) and the need for a leader to adapt to adversity. It shows that there is a normative zone where no adaptation is necessary and there are other zones out of the comfort zone that require adaptation to the point of instability if adaptation fails. Within the zone of maximal adaptability leaders can be forced to lead themselves through unanticipated, negative and emotionally draining conditions (DuBrin, 2013). The shift from the comfort zone to the zone of adaptability can be described as liminality (Doerfel & Prezelj, 2017; Harter, 2014). Liminality is the phase of being between two states, leaving the old and touching the point of no return before arriving at the new state of safety and balance (Doerfel & Prezelj, 2017; Harter, 2014). Within the liminal phase, leaders can have a

feeling of adversity, crisis and setback that motivates them to transform (Bennis, Sample, & Asghar, 2015; Bennis & Thomas, 2002). This motivation comes from being liminal, the opportunity to disrupt established roles and the potentiality of change. However, the liminal state is also dangerous because it is not predictable, constantly in flux and its impact can be highly vulnerable for the leader (Bennis et al., 2015; Bennis & Thomas, 2002). Depending on various stressors there are two unfavourable states of stress: boredom or exhaustion. The leader has no available psychological and physiological resources for adaptation.

This model extends the model of adversity to show that there are specific zones of the stress level that can trigger a need for adaptation and relates this need to the capacity of a leader to adapt. However, the limitation of this model is that it does not show how a leader can assess the level of stress she/he is at, how to identify when the comfort zone was left, or what kind of resource can be used to come back to the normative zone. Another issue is that regarding the aspects of learning new behavioural patterns and changing the mental model to adapt successfully to a novel environment, this model only focusses on stabilising (re-balance) the existing balance states of behaviour and mentality. Furthermore, this model does not define what successful adaptation means in the sense of how adaptation can be measured. Therefore, the next section describes the construct of adaptive performance.

2.3.2 Adaptive performance

This section focusses on the definition of adaptive performance and its delimitation regarding other performance constructs.

2.3.2.1 Definition of performance

Performance has been identified as a multi-dimensional construct that is distinct as a process-oriented view and in an outcome perspective of performance (Sonnentag, Volmer, & Spsychala, 2008). At a deeper level, performance must be distinguished from productivity as a ratio of effectiveness to the costs to produce a particular outcome and effectiveness, which evaluates the results of performance, e.g., financial value (Sonnentag et al., 2008).

There are different types of performance related descriptions. In management

research, job performance is proposed as the overall expected organisational results of particular behaviours that a leader carries out over a defined period of time (Motowidlo, 2003). Similarly, Campbell and Wiernik (2015, p. 48) outline that “individual job performance should be defined as things that people actually do, actions they take, that contribute to the organisation’s goals.” Based on a systematic literature review of individual work performance, Koopmans et al. (2011) identifies four sub-dimensions, such as task performance, contextual performance, counterproductive work behaviour, and adaptive performance. For example, task performance can be described as the proficiency of an individual performing central job tasks (Campbell, 1990; Koopmans et al., 2011). Contextual performance consist of aspects, such as supporting others within their jobs, helping the organisation, and volunteering for additional responsibility (Borman, Penner, Allen, & Motowidlo, 2001). In current research, Pradhan and Jena (2017) introduce an overall triarchy model of employee performance consisting of task performance, contextual performance, and adaptive performance. The process of adaptation can be investigated regarding performance aspects by using the construct of adaptive performance.

2.3.2.2 Definition of adaptive performance

As with the general definition of performance, the construct of adaptive performance can be divided into a process-oriented view and a result-oriented view. Proponents of the process-oriented view such as Chan (2000) describe individual adaptation as a process, and Baard, Rench, and Kozlowski (2013) point out that performance adaptation is “cognitive, affective, motivational, and behavioural modifications made in response to the demands of a new or changing environment, or situational demands.” They identify mechanisms underlying adaptive performance, such as cognitive (attention, learning, knowledge, decision-making/problem-solving, creativity), motivational-affective (goal orientation states, self-efficacy, anxiety), and behavioural, representing skilled action to reach specific goals (Baard et al., 2013).

In contrast, other researchers such as Sweet, Witt, and Shoss (2015, p. 50) describe a result-oriented view of adaptive performance. They outline that adaptive performance means “... contributing effectively to organizational outcomes under conditions of change, by independently seeking out the new knowledge, skills, and capabilities and appropriately modifying workplace behaviors.” In addition, the result of successful

adaptive performance is dependent on an leaders' efficient dealing with adversity, uncertainty, unpredictability, and ambiguity within the changing working environments, e.g., restructuration of organisations or decreasing resources (Charbonnier-Voirin & Roussel, 2012).

Other authors, such as Allworth and Hesketh (1999); Kröger and Staufenbiel (2012), focus on behavioural patterns, and Ployhart and Bliese (2006) propose that adaptability is a personal and constant trait, independent of situational change. Another opportunity to define adaptive performance is developed by Pulakos et al. (2000, p. 615), who create an eight-dimensional taxonomy of "situations in which individuals modified their behaviour to meet the demands of a new situation or event or a changed environment."

In conclusion, the eight-dimensional taxonomy of adaptive performance (Pulakos et al., 2000) is appropriate to classify the adaptive behaviour of leaders to adversity. The main advantage of this taxonomy is that it describes concrete situations of adversity where adaptation is an appropriate strategy. All other models of adaptive performance are more general descriptions that do not specifically focus on concrete adverse events. In contrast, other researchers criticise the conceptual clarity (Sweet et al., 2015) or the exclusion of the organisationally relevant areas (Griffin & Hesketh, 2003) of Pulakos' model. Furthermore, the result-oriented view of adaptive performance is not included in this taxonomy. This limits the model for performance measurement in the sense of productivity and efficiency.

Nevertheless, Pulakos' taxonomy of adversity is an appropriate basis for the definition of adaptive performance for this study because the taxonomy offers specific adverse situations for investigation and provides a rich description of adaptive behaviour to deal with these specific adverse events.

The eight-dimensional taxonomy of adaptive performance created by Pulakos et al. (2000) consists of the following events:

1. Handling emergencies or crisis situations: "Reacts appropriately and decisively to life-threatening or dangerous situations."
2. Handling work stress: "Remains calm under pressure, handles frustration, and acts as a calming influence."

3. Solving problems creatively: “Solves atypical, ill-defined, and complex problems.”
4. Dealing with uncertain and unpredictable work situations: “Adjusts and deals with unpredictable situations, shifts focus, and takes reasonable action.”
5. Learning work tasks, technologies, and procedures: “Anticipates, prepares, and learns skills needed for future job requirements.”
6. Demonstrating interpersonal adaptability: “Adjusts interpersonal style to achieve goals, working with new teams, co-workers, or customers.”
7. Demonstrating cultural adaptability: “Performs effectively in different cultures, learning new languages, values, traditions, and politics.”
8. Demonstrating physically oriented adaptability: “Adjusts to various physical factors such as heat, noise, uncomfortable climates, and difficult environments.”

Pulakos et al. (2000, p. 622) argue that “adaptive performance is a multidimensional construct, as evidenced by exploratory and confirmatory factor analyses of the JAI data that supported the eight-dimension taxonomy.”

A variation of the original model of Pulakos et al. (2000) is developed by Charbonnier-Voirin and Roussel (2012) who reduce the eight dimensions to five (creativity, reactivity in the face of emergency, managing work stress, training and learning effort, interpersonal adaptability). The authors eliminate the physical adaptability dimension because of its poor internal consistency as well as its inappropriate usage in the selected research context. Furthermore, they combine the interpersonal and cultural adaptability dimensions into one interpersonal dimension. They also merge the dimensions dealing with uncertain and unpredictable work situations, and handling emergencies and crises into one new dimension of reactivity (Charbonnier-Voirin & Roussel, 2012, p. 283). Overall, the authors outline that “the results of this study largely corroborate the research by Pulakos et al. (2000, 2002) with respect to the multidimensionality of adaptive performance” (Charbonnier-Voirin & Roussel, 2012, p. 289).

Focussing on the drivers of change, Huang, Ryan, Zabel, and Palmer (2014, p. 2) differentiate between the eight dimensions in reactive (response to the demands of adverse events) and proactive (modify adverse events and adjust their behaviours).

Shoss, Witt, and Vera (2012) suggest that in reactive adaptation the change is externally determined and in proactive adaptation it is self-imitated. The categorization consists of the following dimensions:

Reactive dimensions:

- Handling emergencies or crisis situations: Handles pressure without getting upset, moody, or anxious
- Handling work stress: Handles pressure without getting upset, moody, or anxious
- Dealing with uncertain and unpredictable work situations: Deals comfortably with unclear situations and problems
- Demonstrating interpersonal adaptability: Willing to receive and accept new ideas, approaches, and strategies
- Demonstrating cultural adaptability: Respects, values, and leverages individual differences
- Demonstrating physically oriented adaptability

Proactive dimensions:

- Solving problems creatively: Takes action without the direction of others
- Innovation: Generates creative ideas and perspectives
- Learning work tasks, technologies, and procedures: Effectively implements new methods and systems
- Self-development: Actively acquires knowledge, skills, and abilities to remain current with job requirements
- Political awareness: Recognises and works within the political environment of an organisation

Investigating adaptive performance in the area of military leadership, Tucker and Gunther (2009) apply the eight dimensions of Pulakos et al. (2000) but add a ninth dimension “leading an adaptable team” suggested by White et al. (2005, p. 3). This includes the ability to “help develop adaptability in their teams by encouraging and rewarding adaptive behaviour in the team and by ensuring everyone works together in

a coordinated fashion.” Results show that “the majority of the incidents generated by leaders in operational contexts reflect two dimensions of the model: deals with uncertain and unpredictable work situations and handles emergencies or crisis situations...” (Tucker & Gunther, 2009, p. 3). Contrary to the findings of Tucker and Gunther (2009, p. 4) that the participants “did not generate many incidents reflecting the interpersonal, cultural, or physical adaptability dimensions,...” Al Shdaifat, Ramalu, and Subramaniam (2013, p. 36) identify that cross culture competencies (cultural intelligence, emotional intelligence, social intelligence, and language proficiency) can have a positive impact on adaptive performance, e.g., “language skills and cultural understanding are increasingly critical to the success of an army leader’s adaptive performance.”

In conclusion, five of the eight dimensions of the taxonomy of adaptive performance (Pulakos et al., 2000; Pulakos et al., 2002) are relevant for this study regarding the phenomenon of adversity and adaptive strategies. These five dimensions are summarised and evaluated by Kröger and Staufenbiel (2012) and labelled as “*aufgabenbezogene AP*” - task adaptive performance. The dimension handling emergency or crisis and handling work stress are summarized in one dimension of handling stress and crisis. Two dimensions, i.e., interpersonal adaptability and intercultural adaptability (Pulakos et al., 2000), are excluded because these dimensions focus on particular aspects of interpersonal relations between the leaders and followers, which are not the primary focus of this study. The last dimension of physically oriented adaptability is also excluded because this kind of stressor is not significant to the investigation of adverse situations of leaders. The next section discusses task adaptive performance.

2.3.2.3 Task adaptive performance

The construct of task adaptive performance focusses on specific behavioural patterns that a leader can use to adapt to adversity (Kröger & Staufenbiel, 2012). It consists of 4 sub-dimensions: (1) handling stress and crisis, (2) solving problems creatively, (3) dealing with uncertain and unpredictable work situations and (4) learning work tasks, technologies, and procedure (Kröger & Staufenbiel, 2012).

This sub-dimension can be described as follows:

1. Handling stress and crisis: Reacts appropriately and decisively to dangerous situations and remains calm under pressure, handles frustration, and acts as a calming influence.
2. Solving problems creatively: Solves atypical, ill-defined, and complex problems.
3. Dealing with uncertain and unpredictable work situations: Adjusts and deals with unpredictable situations, shifts focus, and takes reasonable action.
4. Learning work tasks, technologies, and procedures: Anticipates, prepares, and learns skills needed for future job requirements (Kröger & Staufenbiel, 2012).

The task adaptive performance and its dimensions to classify leaders' adaptation to adversity needs to be investigated more deeply. It can then be integrated into the above-mentioned model of adversity to understand the conditions and mechanisms that affect leaders' adaptation to adversity. The next section will therefore discuss a process-oriented view on adaptive performance.

2.3.2.4 Adaptive performance as a process

Despite the distinct description of the foundation of adaptive performance, several authors define adaptation or adaptive performance as a process. For example, Nelson et al. (2007); Walker et al. (2004) categorise adaptation as an actor-based process, while Heifetz et al. (2009b) discuss adaptive leadership as a cyclical process, and Chan (2000) describes individual adaptation simply as a process.

To date, few studies investigate the process of the genesis of adaptive behaviour, and several only examine parts of the process (Beuing, 2009). For example, Ployhart and Bliese (2006) describe a process within their i-adapt theory of adaptive performance, based on the trait of adaptability. The first step of this model includes the participants' perception and evaluation of the current situation, secondly, the selection of an appropriate strategy and, thirdly, its contribution to coping with the given situation. Finally, there is an iterative step of knowledge acquisition aiming to get information about the necessary level of adaptive performance, the success, and the influence of situational conditions. Other researchers focus on routine-breaking conditions in working tasks and reveal that old and strong routines might have a negative influence on adaptive performance in new work environments (Ohly, 2005). Ohly, Sonnentag, and Pluntke (2006) contrast these findings and identify that routinisation can also have

positive effects on creativity and innovation. These perspectives are broadened by the development of a process model of adaptive performance (Beuing, 2009).

Nevertheless, the process model of adaptive performance, as shown in Figure 4, firstly consists of a starting point described as the current routine of work behaviour; secondly, an interruption event of externally determined change; thirdly, a phase of recognising the problem and being aware of the need for adaptation; fourthly, a phase to evaluate the situation and select an appropriate adaptive behaviour, and finally, the execution of this alternate adaptive behaviour. Figure 4 shows the process model of adaptive performance based on Beuing (2009); Ohly (2005).

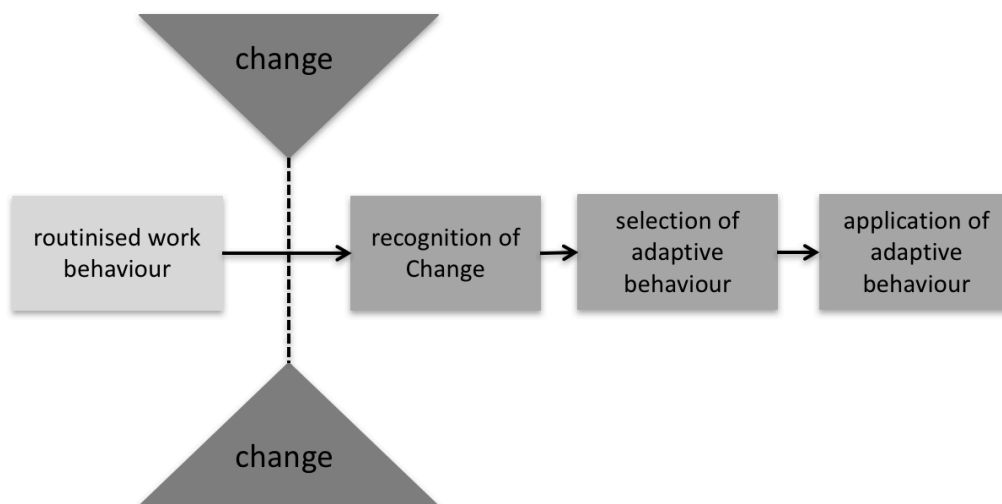


Figure 4: Process model of adaptive performance

Source: Beuing (2009); Ohly (2005)

The advantage of this model is that it includes a starting point of the current balanced routines of work behaviour. This corresponds with the previously mentioned normative zone of no need for adaptation (see figure 3) and the direct state of an interruption event (adversity) of externally determined change. This corresponds with a specific level of stress that could lead to strain and the need for adaptation. The limitation of this model is that it does not include repeatable steps of learning or an implemented feedback loop to the first stage, as mentioned by Ployhart and Bliese (2006) “i-adapt” model with the aim of reaching a new and higher state of balance by learning out of the comfort zone.

2.3.2.5 Summary of adaptation and adaptive performance

The discussion shows that adaptation is a process of individual achievement of a new degree of balance between the leaders' own behaviour affected by cognitive, emotional, and motivational modifications and new work demands that contribute effectively to organisational outcomes. These processes only take place within the zone of maximal adaptability and include learning (see figure 3). Furthermore, task adaptive performance is qualified to measure leaders' adaptation to adversity. The main advantage of this construct is that its dimensions describe specific adverse situations e.g. handling stress and crisis or dealing with uncertain and unpredictable work situations where adaptation is required. Discussion of the process model of adaptive performance shows that adaptation can be understood as a process of distinct phases with a starting point described as a current normative zone of no need of adaptation. The occurrence of an adverse interruption event is determined by externally conditions and the leader applies a systematic step by step approach i.e.; perception of adversity, evaluation of the situation and available resources, selection and execution of alternate adaptive behavioural pattern with the aim to rebalance within a new normative zone. This process description demonstrates similarities with the process model of adversity (see figure 2). Therefore, a synthesis of both models can improve the understanding of leaders' adaptation to adversity. Figure 5 shows the synthesised process of adaptation to adversity.

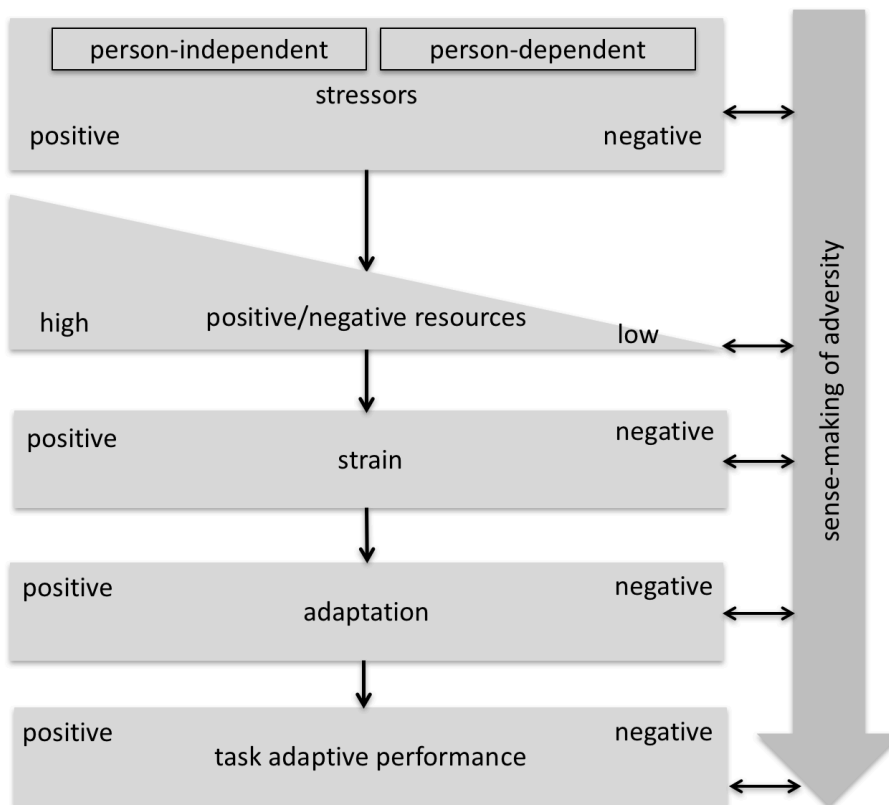


Figure 5: Model of adaptation to adversity

Source: based on Rudow (2005)

The specific level of task adaptive performance is based on the evaluation of the leader regarding the current stressors, the available resources, and the experienced strain that she/he selects and applies to the appropriate adaptive behaviour.

The developed model of adaptation to adversity ensures that a leader experiences the level of stress she/he is under and when the comfort zone has been left (strain), and what kind of resource she/he can use to adapt to adversity. The integrated sense-making process can solve the problem of learning out of the comfort zone with the aim of reaching a new and higher state of balance.

Nevertheless, this model lacks information about the psychological factors that influence leaders' task adaptive performance and possible adaptive leadership strategies. The next sections focusses on these.

2.3.3 Psychological influencing factors of adaptive performance

Besides knowledge about the process of adaptation to adversity, leaders need to identify the psychological factors that influence their task adaptive performance. This can lead to better understanding of how they can increase or decrease their adaptive performance.

Studies show that there are different factors which might influence task adaptive performance. For example, Pulakos et al. (2002) identify factors such as past experience of adaptation, interest in adaptive events, task-oriented self-efficacy, and personality traits such as emotional stability, openness, achievement motivation (a part of personality trait conscientiousness) as well as cognitive ability. Another description of factors based at the individual level consists of categories such as personal, motivational and knowledge-based factors, and personality traits, (Jundt, Shoss, & Huang, 2015). In this section the discussion focuses on personality traits and other psychological factors of a person as these have been identified in both studies and are relevant for this study (Jundt et al., 2015; Pulakos et al., 2002). The positive relation between psychological capital and adaptive performance is identified in the current research (Kuo, Chayan, Ke, & Meng, 2017; Saks & Gruman, 2017). Psychological capital is also related to self-efficacy (Luthans, Avey, Avolio, Norman, & Combs, 2006), self-regulation (Avolio & Gardner, 2005), self-esteem (Goldsmith, Veum, & Darity, 1997) and metacognition (Amini & Mortazavi, 2012). Psychological capital can also be a factor that influences task adaptive performance. Therefore personality traits and psychological capital will be discussed in next section to qualify its relevance.

2.3.3.1 Personality traits

The impact of personality traits on task adaptive performance, leadership effectiveness, and the ability to overcome adversity is confirmed by Bono and Judge (2004); Borman et al. (2001); Huang et al. (2014); Olila (2012).

Despite the contrasting results regarding the significance of particular traits, such as openness, neuroticism (Jundt et al., 2015), and emotional stability and ambition (Huang et al., 2014) on performance, Penney, David, and Witt (2011, p. 3) argue that "...of all the Big Five traits, conscientiousness has shown the strongest and most consistent validities across all three performance dimensions." Conscientiousness can

also be identified as one of the most significant predictors of adaptive performance (Christiansen & Tett, 2013). It is the main personality trait investigated in causal models of job performance (Schmidt & Hunter, 1998; Schmidt, Oh, & Shaffer, 2016). Therefore, the following discussion focusses on conscientiousness.

In earlier research, Strang and Kuhnert (2009, p. 10) propose that "...conscientiousness is the only dimension of the Big Five to successfully predict leader performance." Regarding a positive correlation with leadership effectiveness, conscientiousness is also identified as a predictor (Judge, Bono, Ilies, & Gerhardt, 2002). In addition, Brown and Treviño (2006, p. 603) report that conscientiousness is positively related to ethical leadership as, "highly conscientious individuals exercise self-control, carefully plan, are well organized and reliable and...conscientious individuals are responsible and dependable."

Highly conscientious leaders work longer towards their task achievement, demonstrate greater motivation to deal with greater demands and exert greater effort and motivation (Schmidt & Hunter, 1998; Schmidt et al., 2016). Conscientiousness is also related to motivation to achieve task demands and goal-setting. Leaders with a high level of conscientiousness can better persist in the face of adversity as they look for effective strategies to reach their performance goals (Barrick, Mount, & Gupta, 2003; Judge & Ilies, 2002), and leaders with high level conscientiousness are less motivated to show counterproductive behaviour when they deal with work stressors (Bowling & Eschleman, 2010).

In contrast, people with a low level of conscientiousness make better decisions if an unexpected change in the task context is affected by dependability rather than volition (LePine, Colquitt, & Erez, 2000). Similar findings show that the achievement facet of conscientiousness rather than the dependability facet predicts adaptability (Griffin & Hesketh, 2005; Pulakos et al., 2002). Huang et al. (2014) suggest that there is no significant relation between conscientiousness and adaptive performance, but they suppose that an in-depth focus on achievement orientation can lead to the expected positive correlation. Other researchers claim that there is a positive relation between conscientiousness and adaptive performance, and conscientiousness influences the ability of people to give effective attention toward the competencies that they need to create a high level of task performance influenced by their particular environment (Shoss et al., 2012).

To summarise, conscientiousness has been identified as a relevant personality trait for further investigation in this study. Beside personality traits other psychological factors can affect leaders' task adaptive performance. These are outlined in the next section.

2.3.3.2 Psychological factors

Evidence shows that beside personality traits, other factors such as self-efficacy, self-regulation, and metacognition can also have a positive impact on adaptive performance (Jundt et al., 2015). Self-efficacy, cognitive ability, and self-esteem are found to be predictors of coping within uncertain and changing conditions (Pulakos et al., 2000). A feeling of self-efficacy based on human agency influences a person's goal setting, motivation and availability to activate available resources (Bandura, 1993). Self-efficacy is one component of the psychological capital which has been identified as a resource of human flourishing (Luthans, Vogelgesang, & Lester, 2006). Evidence shows that self-efficacy has a positive influence on task performance, adaptability, and coping with adversity (Avey, Palanski, & Walumbwa, 2011; Bandura & Locke, 2003; Koonce, 2012; Kozlowski, Watola, Jensen, Kim, & Botero, 2009; Locke & Latham, 2006).

Self-regulation is a process through which a person can control, direct, and correct their own behaviour as she/he moves toward a specific goal (Aspinwall, 2004). It supports self-control of cognitive, motivational, and emotional processes with the aim to control one's "self." (Baumeister, Heatherton, & Tice, 1994). The "self" can be underregulated by deficient behavioural standards, inadequate evaluation, or missing strengths or misregulated by false assumptions such as biased perception or misdirected efforts such as being overwhelmed by emotions (Baumeister & Heatherton, 1996). Current studies show that self-regulation is relevant for meeting successful adaptive requirements (McClelland et al., 2018).

Metacognition refers to the ability to recognise one's own successful perceptual processing (Fleming & Lau, 2014). For example, a perceived (in)correct decision can be measured mainly retrospectively through confidence or error detection judgement (Shea et al., 2014).

Self-esteem can be described as an essential element of a person's daily experience

and of how she/he feel about herself/himself (Kernis, 2003). It stands for the valuable point of view that one has of herself/himself as a whole person (Judge & Bono, 2001). It further assesses the level of positive self-worth of humans (Avey et al., 2011). Self-esteem can be seen as a personal resource which can have affective and cognitive elements accompanied by positive feelings (Van den Heuvel et al., 2013). In extreme contexts, a low level of self-esteem can activate unlikely threat responses (Hannah et al., 2009) and low self-esteem has been identified as producing errors (Reason, 1995). Furthermore, leaders in the area of higher education who have survived adversity in the past have a feeling of disparate impact on their self-esteem based on the adverse experience (Diehl, 2014). Beside the single factors of self-efficacy, self-regulation, metacognition and self-esteem also psychological capital can affect leaders' task adaptive performance as shown in the following section.

2.3.3.3 Psychological capital

Psychological capital consists of self-efficacy, optimism, hope, and resilience. It can support the intrinsic motivation and perseverance of leaders and followers to adapt to adversity (Luthans, Avolio, Avey, & Norman, 2007; Sweetman, 2010). According to Luthans, Avolio, et al. (2007, p. 542), the characteristics of psychological capital are:

- (1) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) to succeed now and in the future; (3) persevering toward goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (resilience) to attain success. (p. 542)

Regarding the single components of psychological capital, evidence shows that self-efficacy has a positive influence on goal-setting, leader-member exchange, task performance, adaptability, and coping with adversity (Avey et al., 2011; Judge & Blocker, 2008; Kozlowski et al., 2009). Optimism and hope have been primarily explained together with the construct of self-efficacy as proactive capacities and resilience as a more reactive capacity in facing adverse events (Avey et al., 2011). Additionally, Avey, Hughes, Norman, and Luthans (2008); Snyder, Rand, and Sigmon (2002) propose that leaders with a higher level of hope seem to be more capable of

reaching goals in adverse situations and are better prepared to forecast barriers and problems.

The positive effect of the development of psychological capital as a strategy to manage adversity is shown in various studies. For example, Ofori (2008) claims that it "...provides evidence that psychological capital is positively correlated with transformational leadership and leadership outcomes, especially leadership effectiveness." Avey et al. (2008) find that transformational leadership and psychological capital are significantly related to the followers' feelings of empowerment. A meta-analysis applied by Avey, Reichard, Luthans, and Mhatre (2011, p. 146) shows that followers' psychological capital is positively related to employee attitudes (job satisfaction, organisational commitment, and psychological well-being at work), organisational citizenship behaviour, as well as to employee performance. Avey, Luthans, and Jensen (2009) comment that workplace stress is an increasing concern for human resource managers and recommend that development of psychological capital might help employees to better cope with workplace stress. It is also negatively related to cynicism, turnover intentions, employee stress, and anxiety (Avey et al., 2011, p. 146). Supporting these results, Virga and Paveloni (2016) argue that followers with higher psychological capital perceive a lower level of cynicism. Research also shows positive relations between psychological capital and authentic leadership, such as the impact on nurses' burnout and workplace well-being (Laschinger & Fida, 2014), its positive effect on work engagement (Joo et al., 2016), its impact on extra role behaviour (Malik & Dhar, 2017), and its effect of resilience on productivity applying authentic leadership (Zehir & Narcıkara, 2016).

In conclusion, psychological factors such as self-efficacy, self-regulation, metacognition self-esteem and psychological capital have been identified as relevant factors which influence adaptive performance. Psychological capital is related to all of the other psychological factors and it will be used as the main representative psychological factor of influence on adaptive performance in this study.

At the current level of discussion, the findings provide a better understanding of the phenomenon of adversity and the process of adapting to it. It shows that besides adverse conditions the personality trait of conscientiousness and psychological capital affect the ability to successfully adapt to adversity. Nevertheless, the question of which

strategies leaders can use to adapt to adversity is still unanswered. This question will be discussed in the next section within the context of current leadership research.

2.4 Adaptive Leadership in VUCA Conditions

Leading in VUCA conditions is a “complex dance” (Horney et al., 2010) within a “flat” increasingly unstable and rapidly changing business world (Lawrence, 2014). Researchers suggest that leaders have to change VUCA risks into VUCA opportunities (Johansen et al., 2011; Johansen & Voto, 2013) by adaptive leadership (Kissinger, 2015).

For example, strategies for adaptive leadership include agility in the context of the US Army (Wong, 2004, p. 1), developing adaptive capacity based on iterative crucial experiences of the challenge (Bennis & Thomas, 2002), or applying Piaget’s learning theory as a combination of assimilation and accommodation (Glover, Friedman, & Jones, 2002, p. 27). Other researchers have developed training programmes for leaders in situation analysis and evaluation by applying tools such as systemic thinking, value balancing, and self-reflection (Yukl & Mahsud, 2010). More recent research suggests that mindfulness based on a non-judgmental frame of mind can enable unbiased decisions and the adaptive leadership approach helps leaders to see crises as opportunities by offering a set of guiding tools that improve resilience, build trust and increase creativity (Raney, 2014). Research also shows that when leaders do not feel supported by their organization in the form of caring and concern, withdrawal responses when facing acute stressors become stronger. This is because extreme stressors can negatively affect leaders (Sharma & Pearsall, 2016). Similarly, the implementation of supportive systems including checklists, adversity procedures and active risk management supports leaders in preventing adverse events (Parsons, 2015). Evidence from special leaders such as Shackleton, the great Antarctic explorer and his *Endurance* expedition, shows that in extreme situations leaders should always be optimistic, self-confident and never give up (Giannantonio & Hurley-Hanson, 2013).

Moreover, current research in the military context reveals the importance of considering the ethical behaviour of leaders in order to stabilize social relations within military teams. However, understanding the cultural and social dimensions of each team member regarding coping with unexpected death within attack situations is

equally vital (Kernic, 2017). Sense-making, decision-making, terminating and learning should all be applied by leaders in extreme situations (Stern, 2017). Resilience, the will to act and professional expertise are also relevant to deal with crisis (Holenweger, Jager, & Kernic, 2017). Research shows that an effective crisis response is twofold, dealing with the events “on the ground” and managing the upheaval and instability triggered by these events (Boin & Kuipers, 2018). Furthermore, military leaders should rapidly analyze situations, keep an overview of the dynamic context, maintain effective communication within the team and either take the role of the leader at the right moment or temporarily share the leader role with another team member better qualified to solve the particular issue (Holenweger et al., 2017). Other research found that in particular extreme situations a leader’s decisive action shows her/his courage, trust, resilience and determination in the eyes of the soldiers. Therefore, the human factors are as relevant as “firepower” (Rosinha, Matias, & de Souza, 2017) and a meta-analytical review confirms that a leader’s stress influences their adaptive behaviour (Harms, Credé, Tynan, Leon, & Jeung, 2017).

Similar research shows that besides technical knowledge, clear judgement regarding the management of VUCA situations is important. This is based on a high degree of self-knowledge, self-control and accountability of the leaders (Holenweger et al., 2017). An intensive debriefing to reflect on combat events should also focus on personal emotions, because denying these over a long period of time could lead to stress (Holenweger et al., 2017). The way leaders interpret information within extreme events depends on their situational awareness, self-efficacy and emotional intelligence. The aim is to communicate in a clear and precise manner in order to fulfill their mission (Dixon & Weeks, 2017). Other research also focuses on positive psychology. It investigates its application for empowering military leaders involved in life-threatening events with the purpose of not simply surviving the adverse experience and remaining psychologically and emotionally healthy, but also making sense of the experience itself (Szalma & Hancock, 2017). One finding of a study also in the military field is that the essential practices for adaptation to adversity in military events are to build cohesion, to create a positive command and to improve a sense of purpose (Coughlin, 2018). Overall the findings show that in extreme situations, military leaders need to trust their judgment (Kayes, Allen, & Self, 2017).

The brief overview of existing adaptive leadership strategies seems to be more grounded on practical aspects than theoretical underpinning. Therefore, a theoretical discussion regarding leadership models in the context of this study follows. Current leadership research offers a wide range of theories, Day and Antonakis (2012, p. 3) argue "Leadership is a complex and diverse topic, and trying to make sense of leadership research can be an intimidating endeavor." Nevertheless, the categorization of leadership theories by loci and mechanisms developed by Eberly, Johnson, Hernandez, and Avolio (2013); Hernandez, Eberly, Avolio, and Johnson (2011) can help to identify which leadership model can best represent leaders' adaptation to adversity in VUCA conditions.

Therefore, the next section discusses the loci and mechanisms of leadership.

2.4.1 The loci of leadership

Leadership theories such as the great-man theory Jennings (1960), trait theories Stogdill (1948), the Globe Study House et al. (1999) and the ethical leadership Brown and Treviño (2006) focus on the leader as a person and the leader role. Other theories, such as the path-goal theory developed by House and Mitchell (1975), argues that the followers themselves independent of the leader could make leadership possible. Theories such as authentic leadership (Avolio & Gardner, 2005), transformational leadership (Bass, 1991; Burns, 1978) and leader-member exchange theory (Graen & Uhl-Bien, 1995) point out that the basis of leadership may lie in the relation between leader and follower itself, such as the dyad category. A collective perspective on leadership e.g. the social network approach of leadership (Balkundi & Kilduff, 2006) focusses on the interdependencies of teams. Leadership could also be determined by context, such as VUCA conditions, organisational culture, individual workplace environments or external factors such as the market position of the company regarding its competitors. Various leadership theories focus on this perspective e.g. complexity leadership theory Goldstein, Hazy, and Lichtenstein (2010); Lichtenstein et al. (2006); (Uhl-Bien et al., 2007), and the contingency theory (Fiedler, 1964). Related to the loci of leadership various mechanisms help to categorise leadership as outlined in the next section.

2.4.2 The mechanisms of leadership

Hernandez et al. (2011) categorise four mechanisms: traits, behaviours, cognition, and affect; "this is the actual process through which the locus of leadership exercises influence; we thus define mechanism as the means by which leadership is enacted." Hence, these mechanisms has already been discussed in the previous section of the influencing factors of task adaptive performance. Nevertheless, regarding the focus on leadership, personal traits can be described as a human being's consistent behavioural pattern, emotions and thoughts (Hernandez et al., 2011). Cognition has been described by Hernandez et al. (2011, p. 1168) as the "... focus on the thoughts and sense-making processes related to leadership" through which "cognitive scripts and schemas can directly influence leaders and their decision-making processes, choices, and behaviors". The behavioural mechanisms consist of types of behavioural patterns that make leadership possible (Bass & Bass, 2009; Hernandez et al., 2011; Hogan, 1991). Under the label of 'affects' Hernandez et al. (2011) include moods and emotions involved by influencing a leader's decision-making processes, the ability of social interaction, and the followers' perception of leadership (Erez, Misangyi, Johnson, LePine, & Halverson, 2008; Hernandez, Eberly, Avolio, & Johnson, 2011).

This study focusses on the intrapersonal aspects of the leader, the leader role and the adverse context and therefore the loci of followers, collectives and dyads are not relevant. However, in contrast to Hernandez et al. (2011) it can be argued that authentic leadership should be categorised in the loci of leader as well as in the loci of dyad, because authenticity represents personal facets of the person and the leader role. This is despite the fact that the researcher emphasises that the authentic relation between leaders and followers is important and that the followers' perception of the leaders' behaviour defines the leader as authentic or not. Authentic leadership can be a relevant leadership model within the context of this study, because adverse events can be affected by unethical, value destructive or toxic leadership behaviour (Klenke, 2007; Michel & Lyon, 2015; Padilla et al., 2007).

Other person-oriented theories such as great-man theory (Jennings, 1960), trait theories (Stogdill, 1948), or ethical leadership approach (Brown & Treviño, 2006) cannot provide a comprehensive picture of the phenomenon of leaders' adaptation to

adversity. Traits or great-man characteristics of leaders are shown to have an impact on leaders' adaptation but they are not solely responsible for the adaptive performance of leaders in adverse events (Jundt et al., 2015; Pulakos et al., 2002) and they have been criticised for their negative aspects (Dohrenwend, 2000; Padilla et al., 2007). Regarding leaders' adaptation to adversity adaptive leadership as a kind of transformational leadership might be the appropriate leadership strategy, because Bass (1985) considers adaptive leadership as transformational. This type of adaptive leadership behaviour aims to energise followers facing adversity and other stressful and unpredictable conditions. Flexible and adaptive leaders do their jobs more effectively by facing the adverse situation, sense-making, employing creative solutions, and responding successfully (Bass, Avolio, Jung, & Berson, 2003).

Transformational leadership is characterised by idealised influence (trustworthy and respectful relationship between the leader and follower based on common ethics and values), inspirational motivation (shared visions and common meaning-making ensure positive motivation and optimism by leaders and followers), intellectual stimulation (leaders facilitate followers to be creative and innovative to find new ways of problem-solving), and individualised consideration (leaders use their empathy to perceive the followers' needs and assist mentors for improving the followers' growth) (Avolio, 2010; Bass, 1998; Bass, 1985; Burns, 1978).

Nevertheless, transformational leadership has several decisive disadvantages. Yukl and Mahsud (2010, p. 83) argue that transformational leadership "...fails to capture the complexity of leadership processes in modern organisations." Furthermore, Marion and Uhl-Bien (2001, p. 403) offer a critical view that "leadership theorists may be looking for the wrong solutions to organisational control..." and "...their strategies and charismatic appeal are useless if they fail to foster conditions that enable productive, but largely unspecified, future states." Bass and Bass (2009, p. 624) suggest that "...complexity leadership enlarges transformational leadership to include catalysing organisations from the bottom up through fostering the microdynamics of interaction...". Tourish (2013) highlights the dark side of transformational leadership based on empirical studies, arguing that exaggerated expectations regarding leaders' charisma and influence on followers can result in the followers' passive roles as receptors and malleable human beings whose tasks are only to respond to the leaders'

activity. Tourish (2013) confronts this with the argument that transformational leadership supports the excess of power, conformity thinking of the followers with the leaders' vision, and incentivises destructive leadership behaviour, such as narcissism and bad decision-making, often with disastrous results. Thus, the disadvantages of transformational leadership outweigh its advantages, especially regarding its mismatch in dealing with VUCA conditions.

It can be argued, that regarding the VUCA conditions as the context of leadership in this study, complexity leadership and adaptive leadership might be the most appropriate to cover this aspect of the complex phenomenon of leaders' adaptation to adversity. Authentic leadership is identified as a possible leadership model to investigate the personal aspect as well as the leader role facet within the study design.

Therefore, the relation of complexity leadership, authentic leadership and adaptive leadership will be discussed in the next section as a framework for leaders' adaptive strategies to adversity.

2.4.3 Leaders' adaptive strategies to adversity

In this section the complexity leadership model will be discussed as a framework to cover the leadership perspective within the context of leaders' adaptation to adversity in VUCA conditions. As discussed before the loci of leadership in this study lies on the leader as a person and the leader role. All four leadership mechanisms have to be taken into consideration. Therefore the authentic leadership model is integrated to cover the personal aspects and the adaptive leadership model is selected to investigate the leaders' behavioural strategies of adaptation to adversity.

Hence, the model of behavioural complexity will be integrated within the discussion of the complexity leadership framework, because it might extend the behavioural repertoire of leaders and it supports leaders in a twofold way: to maintain continuity (exploitation) and lead change (exploration) (Lawrence, Lenk, & Quinn, 2009). This model of behavioural complexity has not yet been discussed within the theoretical perspective of leadership but might be relevant within the context of complexity

leadership (Denison, Hooijberg, & R. Quinn, 1995; Hernandez et al., 2011; Lawrence et al., 2009; McCarthy, 2012; Zaccaro, 2001).

2.4.3.1 Complexity leadership model

In comparison with the transformational leadership model, the complexity leadership model integrates the function of adaptive leadership in a wider framework of required leadership functions. It is able to deal with unsecure, chaotic, unstable, and uncertain contexts that increase the level of adversity and demands on leadership to be innovative, adaptive, and to find new ways of dealing with such challenges (Barkouli, 2015). Complexity leadership defines organisations as complex adaptive systems (CAS) which consist of dynamic interactions of agent-networks based on interdependent hierarchies, structures, and processes bonded by common purposes (Homer-Dixon, 2011; Uhl-Bien & Marion, 2009; Uhl-Bien et al., 2007). Organisations are able to learn by creative problem-solving with the aim of fast adaptation (Homer-Dixon, 2011; Uhl-Bien & Marion, 2009; Uhl-Bien et al., 2007). Bright (2011, p. 2) examines the framework of complexity leadership in the field of leadership education and concludes that “under conditions of enabling leadership participants responded to the adaptive challenge by engaging in information flow leading to learning and increased creativity.” Extreme conditions can create adversity and in this context, leadership is defined by Hannah et al. (2009, p. 913) as:

“Adaptive and administrative processes of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives and purpose under conditions where an extensive and intolerable magnitude of physical, psychological, or material consequences may exceed an organization's capacity to counter and occur to or in close physical, social, cultural, or psychological proximity to organization members.” (p. 913)

The administrative leadership function consists of managerial tasks in hierarchical organisations, such as planning and coordination, goal-setting, developing strategy, allocating resources, and managing crises to achieve business results (Uhl-Bien et al., 2007). The adaptive leadership function includes tasks intended to change the *status quo* of an organisation, utilising learning as an instrument to enable the organisation

to adapt to new conditions, and contexts (Hannah & Lester, 2009; Heifetz, 1994; Schein, 2010; Uhl-Bien et al., 2007). Mutual tensions can occur between the administrative function and the adaptive function, so the authors suggest employing the enabling function as a third function to mediate between the other two functions and allow for an effective relationship (Hazy & Uhl-Bien, 2013a; Uhl-Bien & Marion, 2009).

The enabling function should support and balance the two other functions with communication, networking, social interactions, and a healthy work environment (Bright, 2011; Uhl-Bien & Marion, 2009; Uhl-Bien et al., 2007). The enabling function is based on the mechanisms of belonging and building shared identity that produces outcomes, such as trust, follower engagement, motivation, and citizenship behaviour (Hazy, 2013). Furthermore, it supports shared ethics and beliefs, collective identity, and a process of common understanding of acceptable social rules for interaction with the aim of synchronising autonomous decisions and behavioural patterns to reduce uncertainty (Hazy, 2012). Figure 6 shows the general model of complexity leadership based on Hazy and Uhl-Bien (2013a); (Uhl-Bien & Marion, 2009).

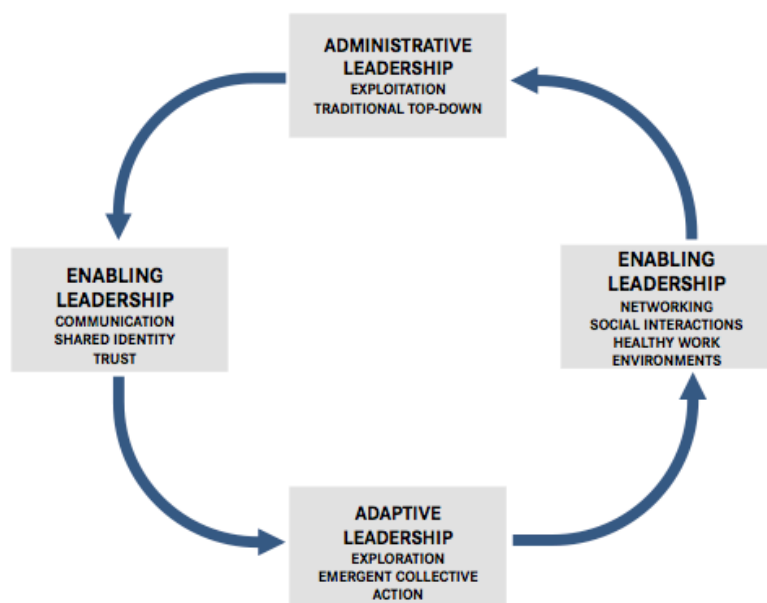


Figure 6: General model of complexity leadership

Source: based on Hazy and Uhl-Bien (2013a); Uhl-Bien and Marion (2009)

There are three issues relevant to the application of the complexity leadership model to leaders' adaptation to adversity.

Firstly, based on the experience of the financial crisis of 2008/2009, Livingston and Lusin (2009, p. 102) point out that the complexity leadership model "failed to adequately incorporate the impact of leaders' characteristics and behaviors on the leadership phenomena,". This could lead to a perceived loss of the leaders' managerial integrity and morality. Livingston and Lusin develop a hybrid model integrating complexity and authentic leadership as "leaders must guide the organisation through turbulence by establishing trusting relationships and inspiring their followers and releasing their inherent creativity" (Livingston & Lusin, 2009, p. 108). Similarly, Bulutlar and Kamaşak (2014) argue that authentic leader attributes are the basis to enable leadership function within the model of complexity leadership because authentic leaders can foster creativity, encourage diverse perspective-taking, and enhance networking. In the context of extreme situations, e.g., combat operations, Kolditz (2010, p. 41) identified that "...leadership is about the success of your people, not about you" and that success depends on authentic leadership. He emphasises the importance of hope, optimism, resilience, and self-efficacy embedded in a highly ethical standard. These highlighted aspects are included in the construct of psychological capital, which is strongly related to authentic leadership (Gardner, Coglisser, Davis, & Dickens, 2011; Luthans, Norman, et al., 2006; Northouse, 2015; Roche, Haar, & Luthans, 2014). Thus, military leaders with a high level of psychological capital are authentic and see themselves as being in control of their own destiny despite the reality of an uncertain and sometimes frightening future (Bartone, 2015).

Secondly, the general complexity leadership model focusses on leadership as an emergent process between agents, e.g., leaders and followers in dynamical contexts (Hazy & Uhl-Bien, 2013a). It is a system-oriented approach with the leaders responsibility for an organisation's survival (Northouse, 2012; Schein, 2010; Uhl-Bien et al., 2007; Zaccaro et al., 2002). This model is limited regarding the leader's self-perspective as she/he has to manage the complexity of the entire organisation. This gap has been identified and described as requisite complexity, which proposes that a leader of a complex organisation has to be able to manage the complexity with her/his own capacities (Hazy & Uhl-Bien, 2013a). Furthermore, requisite complexity is based

on the static and dynamic aspects of a person that include general, social, self, and affective complexity which are essential for the leaders' adaptation to adversity (Lord, Hannah, & Jennings, 2011; Redding, 2016a). It also requires facilitation across various role demands (Hannah, Balthazard, Waldman, Jennings, & Thatcher, 2013b). The framework of behavioural complexity was developed as it allows a behaviourally complex leader to "...both maintain continuity and lead change leadership" (Lawrence et al., 2009, p. 4).

Thirdly, the adaptive function of the complexity leadership model only focusses on tasks intended to change the *status quo* of an organisation. Utilised organisational learning tends to enable the organisation to adapt to new conditions and contexts and the specific leaders' perspective is not included within the adaptive function. This gap is addressed in the adaptive leadership model created by Heifetz, Grashow, and Linsky (2009c, p. 2), which is "...about change that enables the capacity to thrive."

In conclusion, the model of complexity leadership has to be extended in three areas. Firstly, by the authentic leadership model together with the model of psychological capital regarding the ethical aspects of leadership during adverse events, secondly, by the model of behavioural complexity aiming to address the need for leaders to manage complexity in VUCA conditions, and finally, by the adaptive leadership model that allows leaders to temporarily adapt to adversity outside their own comfort zone. An extended model of complexity leadership is created and discussed in the next section.

2.4.3.2 Extended model of complexity leadership

The extended model of complexity leadership is based on the hybrid model of complexity leadership created by Livingston and Lusin (2009). This assumes that the original model of complexity leadership failed to integrate the individual aspects and personal characteristics of a leader which could result in a loss of morality and integrity within leaders' decision making. Nevertheless, these authors did not recognise that authentic leadership is grounded in psychological capital. Psychological capital has already been discussed in the previous sections. However, current research has enhanced the complexity leadership model to include psychological aspects, such as psychological capital, shared identity, trust, follower engagement, motivation, citizenship behaviour, and shared ethics (Hazy, 2012; Hazy & Backström, 2014; Hazy

& Uhl-Bien, 2013b; Sweetman, 2010). Therefore, it can be argued that psychological capital can be important at the individual level of a leader orchestrating the three leadership functions within the complex leadership model. Another possible extension is based on Hooijberg, Hunt, and Dodge (1997) who developed the “leaderplex” model based on the competing value framework (Quinn, 1984) and the theory of leadership complexity (Denison, Hooijberg, & Quinn, 1995). Here the focus is on the “leaders’ ability to integrate and differentiate socially, cognitively, and behaviourally taking into account the context, while adapting their behaviors accordingly” (Hernandez et al., 2011, p. 1173). Finally, the adaptive leadership function can be completed with the adaptive leadership model developed by Heifetz et al. (2009c). Figure 7 shows the extended model of complexity leadership based on Livingston and Lusin (2009).

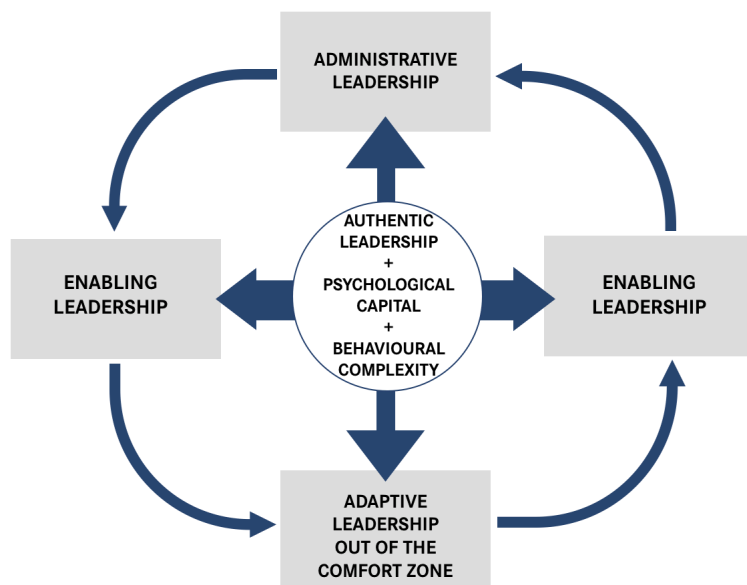


Figure 7: Extended model of complexity leadership

Source: based on Livingston and Lusin (2009)

In the following section, the three extensions: authentic leadership, behavioural complexity, and adaptive leadership are discussed with the aim of better understanding their benefits for a leader regarding her/his adaptation to adversity.

2.4.3.2.1 Authentic leadership

Researchers suppose that the main reason why there are very few authentic leaders today is, because most of them use their positions to command and control (Covelli &

Mason, 2017). This is against authentic leadership which states that there should be cordial relationships between the leaders and those they lead without the use of any force (Covelli & Mason, 2017). This raises some key areas that have been omitted and which have hindered many leaders in being authentic leaders. Unlike other leadership models, authentic leadership is mostly about the personality and the characteristic of the leader and not those being led (George, 2010).

Today, a growing number of leaders fail to achieve the key characteristics expected of any authentic leader. These include; understanding their purpose, practicing solid values, establishing connected relationships, demonstrating self-discipline and leading with heart (Klenke, 2007). Authentic leaders are highly committed to the people they lead by their values and they give feedback to improve the followers performance (Covelli & Mason, 2017).

Authentic leadership can be differentiated from other leadership styles such as servant leadership, ethical leadership as well as charismatic leadership by its aim to build honest relations with the people they lead (Covelli & Mason, 2017; Weiss, Razinskas, Backmann, & Hoegl, 2017). Walumbwa, Luthans, Avey, and Oke (2011, pp. 5-6) propose that authentic leadership consists of the following four behavioural aspects: “balanced processing, internalized moral perspective, relational transparency and self-awareness.” Within balanced processing, leaders can reflect on themselves and the situation, analyse information, prevent the biased mental model, respect different points of view, and accept positive emotions and outcomes, as well as negative ones (Luthans, Norman, et al., 2006). The internalised moral perspective determines reliable behaviour based on intrapersonal ethical standards and a positive self-regulatory process, even against resistance (Northouse, 2012). Relational transparency means the ability to be open and honest in communication with others, to build trust, and express own real feelings, thoughts, beliefs, and motives, whether positive or negative (Northouse, 2012; Walumbwa et al., 2011). Self-awareness consists of self-reflection on own identity, mental models, value, and motives. It also includes the perception of own feelings, such as trust (Kernis, 2003; Northouse, 2012).

Based on psychological capital, including self-efficacy, hope, optimism and resilience (Northouse, 2015), authentic leadership can decrease leaders' stress and increase

their work engagement (Weiss et al., 2017) and it can strengthen the followers' resilience by giving support when necessary, help to cope with adversity and thriving through high levels of change (Gardner & Schermerhorn, 2004). Research results also show that authentic leadership is related to psychological capital and trust (Walumbwa et al., 2011). Avolio, Gardner, Walumbwa, Luthans, and May (2004) propose that authentic leadership can influence followers' attitudes and behaviours in areas, such as job performance. In addition, authentic leadership could facilitate personal and social identification and build hope, trust, optimism, and elicit positive emotions (Avolio et al., 2004). In the context of extreme situations, e.g., combat operations, Kolditz (2010) points out the need for authentic leaders to develop psychological capital within a high level ethical standard.

Other research has criticised authentic leadership for ignoring the imperfections of individuals (Ford & Harding, 2011) and adhering to a too rigid self-concept that could become an "anchor that keeps us from sailing forth" when change is necessary (Ibarra, 2015). There is concern that overemphasising negative or positive situations such as "too little pride makes us meek; too much leaves us narcissistic," could lead to both opportunities and threats (Grant & Schwartz, 2011). Others warn that to be authentic can be dangerous in specific contexts (Grant, 2016), that authenticity is overrated and that its opposite is often more useful for effective leadership (Pfeffer, 2015).

Nevertheless authentic leadership in combination with psychological capital could orchestrate the three complexity leadership functions; the administrative function, the adaptive function, and the enabling function (Livingston & Lusin, 2009). In sum, authentic leadership enhances the complexity leadership model by focus on the self-concept of the leader and the leader role. It support leaders in applying the enabling function of communication while dealing with adversity in VUCA conditions and helps leaders to be a guide for the organisation through adverse events by establishing trust, motivating their followers and improving creativity (Livingston & Lusin, 2009, p. 108).

Still open is the perspective of the need of requisite complexity of the leaders' adaptive behaviour to meet the complexity to deal with adversity in VUCA conditions. This gap will be addressed in the next section.

2.4.3.2.2 Behavioural complexity

Earlier research suggests that CEOs with a high level of behavioural complexity have the capacity to manage multiple and partly conflicting roles and produce stronger performances (Hart & Quinn, 1993). Subsequently, researchers found that highly effective leaders demonstrate more conflicting and paradoxical behaviour than their counterparts (Denison et al., 1995; Hernandez et al., 2011; Lawrence et al., 2009; McCarthy, 2012; Zaccaro, 2001). Hannah, Balthazard, Waldman, Jennings, and Thatcher (2013a) propose that a greater level of self-complexity enables the leaders' adaptive responses. Behavioural complexity consists of four sub-dimensions; "relation to people", "managing processes", "leading change", and "producing results". These can sometimes work in contradiction or conflict with each other. For example, "leading change" needs new behavioural patterns whereas "managing processes" or "producing results" needs more stable and routinised behaviour (Lawrence et al., 2009). Also, maintaining continuity might be related to the administrative leadership function and leading change might be connected with the adaptive function of complexity leadership.

Hannah et al. (2013a, p. 393/394) point out that "...greater levels of complexity promote [the] leaders' ability to both differentiate the various sources of inputs and stimuli in the environment *and* to integrate those inputs with existing cognitive and affective structures to enable adaptive responses." They define this kind of leader adaptability as "...the capacity of leaders to adjust their thoughts and behaviors to enact appropriate responses to novel, ill-defined, changing, and evolving decision-making situations" (Hannah et al., 2013a, p. 393). This kind of leader adaptability is based on the concept of requisite complexity, which means that in situations where a leader faces adversity and new task demands, different identity structures initiate self-regulatory functions regarding perception, consciousness, goal emergence, emotion systems, and working self-concept (Hannah, Lord, & Pearce, 2011; Lord et al., 2011).

Other types of complex behavioural patterns are the ability of ambidexterity, e.g., the "ability to be aligned and efficient in its management of today's business demands while simultaneously being adaptive to changes in the environment..." (Raisch & Birkinshaw, 2008, p. 375), or as the "...ability to develop and utilise new resources and competences (resources exploration) and at the same time make efficient use of

resources already available (resources exploitation)..." within the discussion of ambidextrous, organisational, and individual competencies in the field of open innovations (Hafkesbrink & Schroll, 2014, pp. 11-12). Redding (2016b) found empirical evidence that the requisite complexity model, consisting of general cognitive complexity (ability to assess multiple information), emotional complexity (ability to manage different positive and negative emotions), social complexity (ability to act within multiple social roles and relations regarding various contexts), and self-complexity (level of leader's self-concept within such roles), predicts patterns of engagement within a dynamic decision-making task of a complex conflict. Behavioural complexity can improve the level of self-complexity with the result of maintaining both explorational and exploitative behaviour for better adaptation (Hernandez et al., 2011; Lawrence et al., 2009; McCarthy, 2012; Zaccaro, 2001). It can also be the basis of the self-structured moral self (Hannah, Lester, & Vogelgesang, 2005).

Therefore, it can be supposed that specific sub-dimensions of behavioural complexity, such as relating to people, might have a positive influence on authentic leadership. The ability of a leader to react to different demands with both explorational and exploitative behaviour can have a positive influence on her/his authentic leadership pattern. For example, a leader can be balanced and focussed on her/his values despite adverse events because she/he is able to behave in different ways.

However, other researchers argue that a belief in a high level of ability of behavioural complexity could lead to exaggerated pride or overrated self-confidence with unintended risks and sometimes adverse results (Holten & Bøllingtoft, 2015; Judge, Piccolo, & Kosalka, 2009; Sadler-Smith, Akstinaite, Robinson, & Wray, 2016). Researchers also propose that, despite competing demands in managing different and sometimes conflicting role models, the effect of complexity behaviour could be both positive and negative (Einarsen, Aasland, & Skogstad, 2016). Such behaviour could lead to unintended risks, adverse results, and a "too-much-of-a-good-thing" effect (Holten & Bøllingtoft, 2015). Poor self-evaluation, inflated judgement, or falsely calibrated performances can be affected by exaggerated pride or overrated self-confidence (Judge et al., 2009; Sadler-Smith et al., 2016). For example, the overrated focus of a leader on relationship management, based on followers' expectations, could have a negative influence on the necessary focus of dealing with crisis situations or managing uncertain and unpredictable work situations. On the other hand, an

overrated focus on process management or producing results could have a negative influence on creative problem-solving as a part of task adaptive performance.

Overall, it is difficult, if not impossible, to make a precise explanation of leaders' adaptation to adversity from the possible twofold effects of behavioural complexity on task adaptive performance. Another disadvantage is that behavioural complexity also focusses on the perspective of leader self-concept (self-complexity) which is already integrated within the authentic leadership model. There is a risk that neither behavioural complexity nor authentic leadership can be differentiated enough within the conceptual framework. Therefore, behavioural complexity will not be included.

The issue that the adaptive leadership function of the complexity leadership model mainly focusses on tasks intended to change the *status quo* of an organisation has still not been addressed. Enabling the organisation to adapt to new VUCA conditions and adverse events as well as the leaders' perspective is not included within the adaptive function. This gap will be discussed in the following section.

2.4.3.2.3 Adaptive leadership

Adaptive leadership is “about change that enables the capacity to thrive” (Heifetz et al., 2009c, p. 2). The cyclical process of adaptive leadership consists of three actions: firstly, observing the adverse events and perceiving particular patterns of the specific adverse event, secondly, interpreting the observation by building different hypotheses, and finally, designing incremental (experimental) interventions based on observations and interpretations (Heifetz et al., 2009c). In comparison to biological evolution, adaptive leadership is based on particular assumptions: adaptation needs variation and a combination of current resources together with novel resources to enable the organisation to thrive under challenges. Therefore, adaptive leadership has to orchestrate multiple goals which are sometimes conflicting. For example, short and long-term shareholder value, workforce moral, customer expectations, and social responsibility. It is conservative as it applies useful current knowledge and experiences, and also progressive as it creates new knowledge and novel experiences by iterative experiments over a longer time period (Heifetz et al., 2009c).

Hence, adaptive leadership requires living in a zone of disequilibrium (see also figure 3) with the issue of generating loss and sometimes learning under pain. Leaders may

feel uncomfortable by being forced to change thoughts and old behavioural patterns and consequently feel frustration, distress, and burnout (Heifetz et al., 2009a, 2009c). Heifetz (2003) proposes that adaptation is more than coping with adversity because it is an experimental process of innovation and cultural change under conditions of producing errors, adverse events, and not knowing where to go next. Adaptive leadership works beyond authority-based rules to solve typical technical problems. It focusses on stakeholders and requires permanent learning in risky environments (Heifetz et al., 2009b). Hartley and Hinksman (2003, p. 12) confirm that Heifetz's adaptive leadership reflects the requirements of leadership "...as a set of processes concerned with influencing people and achieving goals and outcomes." The strengths of adaptive leadership seem to be that it is a process-oriented approach centred on the follower, which mobilises them to engage in adaptation and to deal with conflicting values within a challenging work environment by offering a holding environment (safe conditions) (Northouse, 2015).

Nevertheless, there is little empirical research that tests the adaptive leadership approach because the complexity of the adaptive situations is difficult to test and measure (Northouse, 2015). The theoretical framework seems to be too broad, abstract, and the practical recommendations lack clarity and specificity, especially regarding the moral development of the leaders (Northouse, 2015). McCrimmon (2011) suggests that adaptive leadership is less a leadership style than a type of facilitation. Based on this assumptions the adaptive leadership approach (Heifetz et al., 2009c) will not be included in this study. It can also be argued that the focus of adaptation is already been integrated in the study design by the created process of adaptation (see figure 5).

2.4.3.3 Summary of the extended model of complexity leadership

The extended model of complexity leadership enables better understanding of leaders' strategies for successfully adapting to adversity in VUCA conditions. From the leaders' perspective, authentic leadership and psychological capital are essential in applying the adaptive, enabling, and administrative functions within the complexity leadership model. As shown, it can be difficult to explain leaders' adaptation to adversity based on the possible twofold effects of behavioural complexity on task adaptive performance. Therefore, behavioural complexity is excluded from further discussion.

Heifetz' adaptive leadership model suggests a follower-centric view but this is not a fundamental part of this study. In terms of its practical use, this model lacks empirical evidence and is therefore not applicable to this study.

As this study takes a leader-centric view, especially of the leaders' adaptation to adversity, only part of the extended model of leadership complexity is relevant for further discussion. The administrative and enabling functions are excluded, and the adaptation function focusses on the self-perspective of the leaders' adaptation to adversity rather than aspects of leadership such as leader-follower interactions.

Figure 8 shows the relevant aspects (highlighted font) of the extended model of complexity leadership for this study.

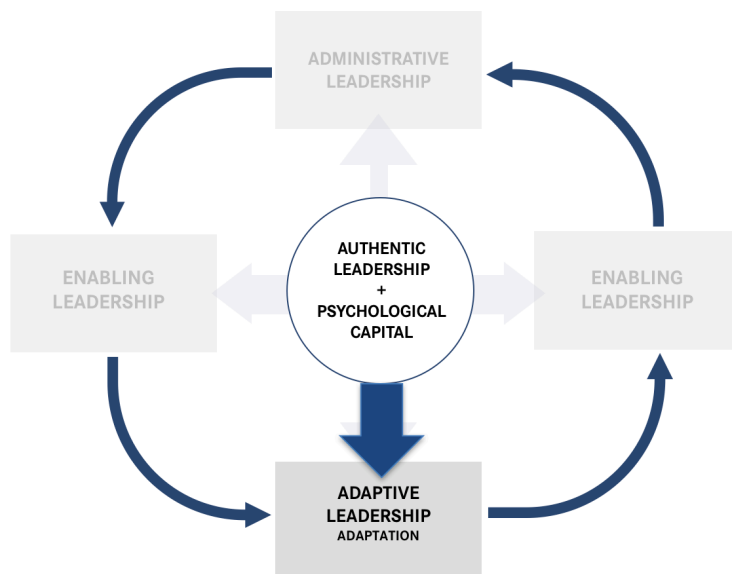


Figure 8: Relevant aspects of the extended model of complexity leadership for this study

Source: based on Livingston and Lusin (2009)

To summarise, there is an empirical evidence base for the complexity leadership model of this study; the existing limitations can be reduced because the focus lies directly on adverse events and integrates the intrapersonal aspects of the leader. Nevertheless, only a part of the model is applied and investigated further for the purpose of this research.

Leaders can use alternative strategies to respond to adversity. The next section focusses on these strategies, because it is necessary to differentiate these possible alternatives from those selected and to evaluate which one might be useful to integrate into the conceptual framework of this study.

2.4.4 Alternative strategies of leaders' response to adversity

Alternative strategies of leaders' response to adversity described in the research literature include psychological resilience, self-leadership, broaden-and-build-theory of positive emotions, coping, mindfulness and self-reflection. Resilience seems to be the most prominent strategy relating to the focus of adaptation. Therefore, resilience will be discussed and differentiated from the understanding of adaptation in this study in order to gain clarity.

2.4.4.1 Psychological resilience

Distinct contextual descriptions of resilience, such as engineering resilience (Holling, 1973), ecological resilience (Walker et al., 2004) and the model of "robustness" of a system are identified within existing literature (Deevy, 1995; Kitano, 2004; McCann, Selsky, & Lee, 2009). Psychological resilience, as the positive adaptation to adversity (Masten, Cutuli, Herbers, & Reed, 2009), seems to be one of the most relevant strategies to manage adversity. From 1985 (Rutter, 1985) until today (Luthar, Crossman, & Small, 2015), resilience was investigated in various contexts, e.g., childhood (Masten, Best, & Garmezy, 1990; Wright, Masten, & Narayan, 2013), young women (Shepherd, Reynolds, & Moran, 2010), subordinates (Harland, Harrison, Jones, & Reiter-Palmon, 2005), workplace adversity (Jackson et al., 2007; McDonald, 2010; Robertson et al., 2015), teams (Maynard, Kennedy, & Center, 2016), sports (Galli & Vealey, 2008), education (Farmer, 2010), populations (Taylor et al., 2010), military (Reivich, Seligman, & McBride, 2011), and leadership (Elkington & Breen, 2015; Everly et al., 2013). Psychological resilience can be understood as:

"... a dynamic process encompassing positive adaptation within the context of significant adversity. Implicit within this notion are two critical conditions: (1) exposure to significant threat or severe adversity; and (2) the achievement of positive adaptation despite major assaults on the developmental process." Luthar et al. (2000, p. 1).

Psychological resilience can also be described as “... a construct reflecting overall individual well-being despite the presence of a significant stressor...” with the aim to create adaptive cognitive and behavioural ambitions, such as coping by acceptance of pain and searching for social support (Sturgeon & Zautra, 2013, p. 4). Other research identifies resilience as a stable personal trait characterised by the ability to bounce back from adversity, adapt to every change in life, and its relation to positive emotions (Fredrickson et al., 2003). In a similar manner, but focussing on maintaining equilibrium mental states, Jackson et al. (2007, p. 3) point out that resilience is the “ability of an individual to adjust to adversity, maintain equilibrium, retain some sense of control over their environment, and continue to move on in a positive manner”. It is therefore an active process of balancing resilience and vulnerability. Nevertheless, research shows that resilience is not always positive. In socio-ecology, Walker et al. (2004, p. 5) note that “...resilience is not always a good thing. Sometimes change is desirable, generally at larger scales, and then effective management requires overcoming the resilience in the system to precipitate changes at these scales”. This socio-ecology idea can be transferred into the context of leaders’ adaptation to adversity. When leaders feel high exposure to various stressors over a period of time they leave the comfort zone of an acceptable stress level and experience the need for psychological and physiological adaptation (Matthews et al., 2008; Pomeroy, 2013). They also try to rebalance their current state within the normative zone. Therefore, resilience can be used by a leader as an available resource to adjust to adversity by coping and bounce back. The aim is to maintain equilibrium (normative zone) and to retain a sense of control over the adverse event, and to continue to move on with the current state of behavioural pattern in a positive manner.

However, there are various risks in such resilience-oriented strategies. It can be that a leader “...accepts change somewhat passively” (Evans, 2011, p. 224) or focus on unattainable goals and be unnecessarily tolerant of adversity by his biased perception of his resilience abilities (Chamorro-Premuzic & Lusk, 2017) or she/he fail by the false hope syndrome of unrealistic expectations of self-change (Polivy & Herman, 2000) or overused strengths (Kaiser & Overfield, 2011). Under such conditions of hyperstress (exhaustion), the adaptive performance level can decrease immediately and result in adverse failure (Pomeroy, 2013).

The main issue of resilience within an adverse context can be that it prevents learning of new behavioural patterns and changing the mental model to adapt successfully to new conditions. Resilience focusses mainly on stabilising (re-balance) the existing balance states of behaviour and mentality, whereby adaptation can be understood as cognitive, affective, motivational, and behavioural modifications (Baard et al., 2013) by selecting and acquiring new knowledge, skills, capabilities and behaviors contributing to organizational outcomes under conditions of change (Sweet et al., 2015) and new work demands (Chan, 2000).

Another issue is that although well trained in resilience, leaders facing adversity can develop a feeling of uncertainty and high pressure with the result that they show tendencies to make decisions too fast and jump to the wrong conclusions in their eagerness to cope with adversity (Michel & Lyon, 2015). Current research shows an increasing level of burnout experiences in leaders (Hannemann, 2015; Zimber, 2015). This might be determined by taking one's own strengths to an extreme (Kaplan & Kaiser, 2010), getting in a struggle with over-passionate goals (Snyder, 2013), or by the failure of emotional self-regulation (Barkouli, 2015). Therefore, the next section presents information about resilience leadership training with the aim to better understand its impact on leaders' adaptation to adversity.

2.4.4.1.1 Resilience training in leadership contexts

The strategy of applying resilience training to leaders to improve their capacities to deal with adversity is supported by Elkington (2013) with the aim of reducing the high fluctuations of pastors from the ministry in pastoral leadership and by Everly et al. (2013) with the purpose of supporting their followers facing adversity. Robertson et al. (2015) investigate workplace resilience trainings with almost cognitive-behavioural approaches from 2003 to 2014. They found that overall resilience training may have beneficial results, especially for mental health, well-being including stress, anxiety, and negative emotions, as well as self-efficacy. For example, Reivich et al. (2011) created a 10-day master resilience trainer course for U.S. Army sergeants with the aim of teaching resilience to officers. This course consists of 4 modules. Module 1 contains teaching on resilience – self-awareness, self-regulation, optimism, mental agility, character strengths, and connections. Module 2 consists of building mental toughness based on cognitive-behavioural approaches. Module 3 teaches about identifying

character strengths, and module 4 contains information about strengthening relationships (Reivich et al., 2011). The course was evaluated in 2009 by 171 out of 183 soldiers with an average 4.7 to 4.9 out of 5.0 maximum regarding their perceptions that this course was beneficial for their personal life as well as military life (Reivich et al., 2011, p. 32).

Nevertheless, Carr et al. (2013, p. 204) investigated a 12-week master resilience trainer programme with deployed soldiers applying a pre- and post-assessment. On the one hand the assessment showed decreased resilient thinking and on the other hand that there was "...no clear change in cognition associated with resilience training" as measured by the CD-RISC - Connor Davidson Resilience Scale". Regarding a list of 30 coping behaviours, it also showed no "commensurate improvement in reported helpfulness of the behaviour after receiving MRT." In the same area of the military, Algoe and Fredrickson (2011) created a three-phase emotional resilience training consisting of phase 1 to better understand the role that emotions play in daily military situations, phase 2 to learn how to regulate emotions that works well, and finally, phase 3 to optimise one's own emotional landscape. The overall aim of the emotional fitness training was to increase emotional resilience by teaching "...a rich emotional vocabulary as well as the skills and ability to decrease the frequency and duration of negative emotions and increase the frequency and duration of genuine and contextually appropriate positive emotions in everyday life" (Algoe & Fredrickson, 2011, p. 5). Based on evidence from the literature, they focussed on outcomes, such as agility in the face of adversity, increased problem-solving, greater empathy, and greater meaning-making of life (Algoe & Fredrickson, 2011).

In a similar way, the concept of pain adaptation applies resilience resources, such as positive emotions, strong social relations, pain acceptance, optimism, and hope, with the aim of activating coping responses and reducing vulnerability mechanisms (Sturgeon & Zautra, 2013).

However, Noltemeyer and Bush (2013) propose that resilience and protection are highly influenced by context and culture, which means that resilience programmes should be highly customised. Following the conclusion of Robertson et al. (2015, p. 533) that "...resilience training has a number of wider benefits that include enhanced psychosocial functioning and improved performance," they do not allow for making any common conclusion about the effectiveness of their content or format. It might be

argued that the general issue is what Luthar et al. (2000, p. 1) describe as the ambiguity in definitions, and the “heterogeneity in risks experienced and competence achieved by individuals viewed as resilient; instability of the phenomenon of resilience; and concerns regarding the usefulness of resilience as a theoretical construct.” Nevertheless, the data shows that resilience training in the context of psychotherapy seem to be more evidence-based on empirical data as in the field of business, management, and leadership. Therefore, it can be argued that the positive effect of resilience training in the context of leaders’ adaptation to adversity can ultimately not be supported by the findings in this study. This might be the reason why well-trained leaders facing adversity cannot adapt to it and suffer increasing levels of burnout.

Overall, the discussion shows that resilience and adaptation should not be taken as synonyms. The next section summarises the differences.

2.4.4.1.2 Distinction between resilience and adaptation

It may be argued that there is no relevant distinction between adaptation and resilience because resilience can be defined as positive adaptation under adversity (Luthar et al., 2000; Masten et al., 2009). However, Pelling (2010); Walker et al. (2006) contrast the models of adaptation and resilience in the area of climate change and socio-ecological systems, and state that high adaptability could lead to loss of resilience and vice versa. Walker et al. (2004) outline that adaptation is an actor-based process and resilience is a system-based process. The actor-based adaptive model focusses on the processes of decision-making, negotiation, and action. This complements the system-based approach of resilience that looks at the impact and consequences of the adaptive processes on the entire system (Nelson et al., 2007). Those who focus on resilience associate it with increased concern about threats, but are less willing to look at individual adaptive behavior (Wong-Parodi, Fischhoff, & Strauss, 2015). Furthermore, resilience focusses mainly on stabilising the existing balance states of behaviour and mentality, but adaptation is a process of acquiring psychological and behavioural modifications regarding new knowledge, skills, capabilities within adverse events (Baard et al., 2013; Sweet et al., 2015). It cannot therefore be argued that resilience and adaptation are synonymous. In sum, resilience is a component of psychological capital and therefore it is already integrated in the conceptual framework

of this study, but it is not recognized as a dominant strategy of leaders to adapt to adversity.

Other research investigates self-leadership with the aim of finding out how it can support leaders' response to adversity. The next section discusses this point of interest.

2.4.4.2 Self-leadership

Self-leadership is a process of self-influence through which leaders can achieve self-motivation and self-direction to reach specific performance goals (Neck & Houghton, 2006). It consists of three categories; behavior-focused strategies, natural reward strategies and constructive thought pattern strategies (Manz, 1986; Neck & Houghton, 2006). The purpose of behaviour-focused strategies, such as self-reflection, goal setting, self-reward and self-punishment is to increase leaders' self-awareness to facilitate their behaviour, especially in relation to unpleasant tasks such as adverse events (Manz, 1986; Neck & Houghton, 2006). Natural reward strategies are intended to increase intrinsic motivation by implementing positive task elements within the process of the task and focusing on enjoyable facets of the task to increase the positive experiences of self-esteem, self-efficacy and competence (Neck & Houghton, 2006). The design of constructive thought pattern strategies is to facilitate the emergence of positive beliefs, positive mental imagery and positive self-talk and to prevent irrational thinking and destructive behavioural patterns within adversity (Neck & Houghton, 2006).

The findings show that self-leadership facilitates leaders to better deal with adverse situations. It is also positively related to adaptive work role performance (Marques-Quinteiro & Curral, 2012), job performance (Demerouti, Van den Heuvel, Xanthopoulou, Dubbelt, & Gordon, 2017) and adaptivity (Hauschildt & Konradt, 2012). Therefore, it can be argued that self-leadership supports leaders' adaptation to adversity. Self-leadership seems to be a subset of leaders' self-development and this supports their ability to adapt to adversity (Reichard & Johnson, 2011). Self-development is related to authentic leadership (Avolio & Gardner, 2005) and self-leadership is also positively related to authentic leadership, influencing self-awareness and balanced processing (Kotze, 2016). Therefore, it can be argued that authentic

leadership might capture the main conceptual ideas of self-leadership and self-development and they do not have to be further investigated within this study. Another reason for their exclusion is that self-leadership is related to self-efficacy as a dimension of psychological capital (Luthans & Youssef-Morgan, 2017). Empirical evidence shows that self-leadership, especially natural reward strategies can increase self-efficacy experiences and higher performance levels (Neck & Houghton, 2006).

In summary, self-leadership is relevant to leaders' adaptation to adversity, but its strategies are mainly covered in this study by other factors such as authentic leadership, psychological capital and self-reflection. Beside self-leadership leaders might be benefit from experiences of past experiences with adversity. The next section give a brief overview.

2.4.4.3 Learning from the experiences of childhood adversity

There is a long tradition of investigating childhood adversity, its impact on personal development of adults, and the applied strategies to survive it, (Dohrenwend, 1998; Feldman, 1996; Masten et al., 1990; Rutter, 1985). Seery, Holman, and Silver (2010, p. 1025) conclude that people who experienced adversity seem to be less affected by recent experiences and literally "...whatever does not kill us may indeed make us stronger." Starr, Hammen, Conway, Raposa, and Brennan (2014) argue that early stress exposure and experiences of childhood adversity could have negative effects on the biological markers for regulating stress and can disrupt the significant development of socioemotional relations, e.g., attachment information with an impact on stress regulation, which is strongly predictive of child and adult depressive and disruptive behavioural disorders and could cause anxiety.

Balancing these aspects, Padilla et al. (2007, p. 182) report that people that overcome childhood adversity can learn positive lessons from it but that there is evidence that adverse conditions are "common themes for exploitive adults." Arguably, those studies might suffer from the so-called "survivor bias" which means that the sample for the study does not include participants that fail to adapt to adversity and the results might show over-optimistic conclusions from the data (Hu, Connett, Yuan, & Anderson, 2016; Jackson et al., 2007; McDonald, 2010; Neiworth, 2015; Shermer, 2014). Past adverse experience can be a factor influencing current leaders' adaptive performance (Jundt et

al., 2015), but it seem to be difficult to validate the influence of such experiences in the research approach of this study.

As mentioned in previous sections, emotions can affect adverse experiences and therefore the impact of emotions on leaders' adaptation to adversity and emotion regulation will be presented in the next section.

2.4.4.4 Broaden-and-build theory of positive emotions

The broaden-and-build theory of positive emotions created by Fredrickson (1998) offers an empirical evident frame for understanding psychological resilience (Tugade & Fredrickson, 2004). The authors provide evidence that resilient people can quickly and successfully bounce back from adversity and that positive emotions can regulate negative feelings and support coping strategies when facing adversity (Tugade & Fredrickson, 2004). This assumes that negative emotions can lead to suffering and feelings of loss, and therefore to cultivating positive emotions regarding the reduction of negative ones and improving resilience Fredrickson (2000). In contrast, Kolditz (2010, p. 116) points out that in the face of adversity, e.g., combat situations, soldiers should focus more on their tasks than on controlling their emotions because it could be "...difficult, if not impossible [for them] to experience emotions."

Similarly, Baumeister, Bratslavsky, Finkenauer, and Vohs (2001, p. 323) outline that "bad emotions, ... have more impact than good ones, and bad information is processed more thoroughly than good.". Furthermore, happiness as an expression of a more positive than negative feeling and life satisfaction is evaluated by Gruber, Mauss, and Tamir (2011, p. 222) as not "... beneficial at every level, in every context, for every reason, and in every variety.". However in specific cases, intensive negative emotions can lead to a powerful self-reflective process and perseverance, which results in creativity (Akinola & Mendes, 2008).

In summary, these findings correspond with the results mentioned in previous sections about the nature of adversity. Positive and negative emotions can affect leaders' adaptation to adversity as they can be judged as either a chance or a threat. The broaden-and-build theory of positive emotions is related with psychological resilience which is a part of psychological capital. Therefore, the role of emotions have already

been covered by the discussion of the nature of adversity and will not be included separately in the conceptual framework of this study.

Coping is discussed in the literature as a strategy to handle adversity and negative emotions (Prati & Pietrantonio, 2009; Schwarzer, 2013; Taylor & Armor, 1996). Therefore the following section discusses coping as a possible response to adversity.

2.4.4.5 Coping

According to Pearlin and Schooler (1978), coping can be defined as a behavioural pattern that protects people from negative psychological impacts by eliminating or modifying the adverse conditions and by sense-making of adversity. The aim is to neutralise the problem or to keep the negative emotions within acceptable boundaries. The more people know about adversity and can learn from it, the better they can cope with it (Slavich & Toussaint, 2014). Farmer (2010) suggests that a positive mental outlook, reflective dialogue, and mentoring can reduce burnout and increase health within the context of educational leadership. Jackson et al. (2007, p. 6) emphasise that if a person understands such emotional needs and reactions she/he might not only cope with current adversity but may develop creative coping mechanisms for dealing with future adversity. Various causes of adversity can be influenced by external conditions, e.g., organisation, environment, and cannot be modified and changed by the leader herself/himself. Therefore coping is limited by the need for support from external sources in the case that the leader cannot solve the problem by internal coping strategies (Pearlin & Schooler, 1978).

In sum, coping seem to be not an appropriate response to adversity because it's purpose to stabilize a current mental and emotional state within an existing level of a comfort zone. It requires no further development of learning new skills, change attitudes and personal growth to reach a higher level of comfort zone. Coping will not be included in the conceptual framework.

The following section will have an investigative look at mindfulness as another possible response to adversity.

2.4.4.6 Mindfulness

Today, mindfulness has been recognized by researchers and leaders as an interest opportunity to deal with adversity (Good et al., 2015). There are two sources for the model of mindfulness as a strategy to deal with adversity. The first is the model of collective mindfulness (Good et al., 2015; Weick & Sutcliffe, 2011; Weick et al., 2008), and the second is the model of mindfulness-based therapy for stress reduction (Chiesa & Serretti, 2009; Grossman, Niemann, Schmidt, & Walach, 2004; Khoury et al., 2013; Segal, Williams, & Teasdale, 2012). According to Good et al. (2015, p. 4), mindfulness can be defined as "... a receptive attention to and awareness of present events and experience" focussing on the perception of present mental states including all facets, e.g., thoughts, emotions, actions, values, and motivations. Bishop et al. (2004, p. 232) add a second element of mindfulness consisting of a non-judgmental orientation to what is experienced in the current event, based on curiosity, openness, and acceptance.

Various meta-analyses support significant evidence of the positive impact of mindfulness-based stress reduction intervention, including, "...coping with distress and disability in everyday life, as well as under more extraordinary conditions of [a] serious disorder or stress." (Grossman et al., 2004, p. 39), secondly, as the ability "...to reduce stress levels in healthy people" (Chiesa & Serretti, 2009, p. 593), and finally, as "...an effective treatment for a variety of psychological problems... especially effective for reducing anxiety, depression, and stress" (Khoury et al., 2013, p. 763).

In contrast, concerns regarding the evidence-based conclusions about mindfulness in organisational psychology are raised by Castille, Sawyer, Thoroughgood, and Buckner (2015). Farias and Wikholm (2016, p. 1) consider the "...range of individual differences within the experience of meditation; although some people may benefit from its practice, others will not be affected in any substantive way, and a number of individuals may suffer moderate to serious adverse effects." In earlier research, Shapiro (1992) finds that mindfulness training can lead to adversity and 7% of the participants reported intensive adverse effects, such as pain, anxiety, panic, or depression. It can be argued, that based on mindfulness applications in leadership contexts (Esquivel, 2017; Guillén & Fontrodona, 2018; Pinck & Sonnentag, 2017) and the converse evidence basis of

its positive impact, mindfulness needs further evidence-based research, therefore it will be excluded in this study.

Similar to mindfulness, but better evidence-based self-reflection is identified as a relevant and overarching interdisciplinary competence or behavioural pattern in the literature discussed in this study. The next section shows the result of the findings regarding self-reflection as a possible response to adversity.

2.4.4.7 Self-reflection

Self-reflection enables leaders to stay personally centred and focussed while leaving their comfort zone within the adaptive leadership model (Heifetz & Linsky, 2002; Yukl & Mahsud, 2010). As a part of adaptive performance, self-reflection on goals, beliefs, values, and strategies within double-loop learning is important for people dealing with rapidly changing and uncertain contexts (Pulakos et al., 2000). It can also be important for self-awareness and the application of relational transparency as an authentic leader (Northouse, 2012; Walumbwa et al., 2011). In relation to ethical decision-making, self-reflection has been described as a process of sense-making (Buckley, Wheeler, & Halbesleben, 2015). Schön (1983) describes reflective practice as supporting the perception of the hidden pattern behind the mental model, e.g., thoughts, meaning, beliefs, values, and motivations, that influence behaviour in adverse situations.

Simultaneously, it is a way of implicit sense-making with the aim of learning by doing (Greenwood, 1998; Schön, 1983). Argyris (2010) proposes that a practitioner can avoid the disadvantages of mental biases by applying behaviour, such as searching for evident data of a situation, to make reflected decisions, and to observe herself/himself and the context in order to recognise adverse divergences and to eliminate errors. According to Rennison (2014); Hilden and Tikkamäki (2013), reflection can be understood as a mental process of examining one's actions, experiences, thoughts, values, social norms, cultural aspects, and feelings in a particular situation. Additionally, it is an in-depth cause and effect analysis designed to find alternative perspectives to develop new cognitive and behavioural patterns.

Rennison (2014) argues that self-reflection can increase negative feelings, such as fear, anxiety, and heightened insecurity due to the need to change old behaviour

without sense-making. Despite the risk of self-rumination as a persons' development of an overemphasised need for absolute truth (Simsek, Ceylandağ, & Akcan, 2013; Simsek, 2013), it can be argued that self-reflection can be used by a leader to assess her/his adaptive strategy and to reflect on her/his own sense-making of adversity with the aim of reducing biased perception.

In summary, self-reflection is widely related to other selected factors of adaptation to adversity in this study and will therefore be included in the conceptual framework.

2.4.4.8 Summary of alternative responses to adversity

Resilience has been identified as one dimension of the construct of psychological capital and positive emotions (broaden-and-build theory) are related to resilience and might regulate negative feelings as well as support coping strategies when facing adversity. Therefore, resilience and positive emotions are already a part of the selected factors of conceptual framework of this study. Past experiences of adversity might affect leaders' sense-making of adversity. It can therefore be argued that it is already included in the sense-making of adversity. Self-leadership is covered by authentic leadership, psychological capital and self-reflection and is therefore excluded. Coping as the protection or recovery of a current state of equilibrium during or after adversity seems to be a different model in comparison with adaptation. Adaptation means to move forward from a state of equilibrium to a more developed one. For this reason, the construct of coping has been excluded from further investigation.

Mindfulness has also been excluded from this study due to a lack of empirical evidence. Self-reflection has been shown to be an integrative aspect of various adaptive strategies to adversity, especially of authentic leadership. For this reason, it has been included as a separate construct in further discussion with the aim to assess its impact on authentic leadership. Furthermore, self-reflection can facilitate leaders' adaptive strategy assessment and reduce biased perception during sense-making of adversity.

The following section synthesises the findings and assumptions regarding the literature review.

2.5 Synthesis of the Literature Review

The discussion about the nature of adversity and leaders' adaptation to it has been synthesised within the model of adaptation to adversity (see figure 5). The specific aspects of the impact of adversity (magnitude, probability, personal relevance) has also been identified as a relevant stressor capturing an overall expected impact of the external factors on the leader herself/himself. Burnout has been recognised as a major strain factor by a large amount of leadership research, because it finalises the negative end of failed adaptation to adversity, increasing emotional exhaustion, depersonalisation and a decreased perception of one's accomplishments. The discussion brought to light that sense-making of adversity facilitates successful adaptation to adversity. Sense-making of adversity can influence the process of stress-strain-resource and vice versa. Therefore, the role of sense-making of adversity is dependent on its level of occurrence, e.g., low or high, and its direction, e.g., positive or negative, as well as a stressor or a resource.

An investigation of the literature on adaptation and adaptive performance resulted in the creation of the process of adaptation to adversity as an extension of the current model of adversity. Task adaptive performance represents the objective of adaptation to adversity on a measurable behavioural basis.

Psychological capital and conscientiousness are identified as factors which influence adaptive performance and categorized as resources. Authentic leadership and psychological capital combined with the application of self-reflection seems to be a useful behavioural strategy for leaders' to increase their task adaptive performance in order to facilitate authentic leadership and to reduce biased perception during sense-making of adversity.

It can be argued that the construct of impact of adversity is a person-independent stressor, while sense-making of adversity is a person-dependent stressor as well as a personal resource. Burnout has been identified as a major strain factor. Psychological capital and conscientiousness are resources to support authentic leadership and self-reflection as behavioural components of adaptive responses. Task adaptive performance is the dependent variable of the conceptual framework and measures the behavioural aspects of adaptation to adversity (see Figure 9).

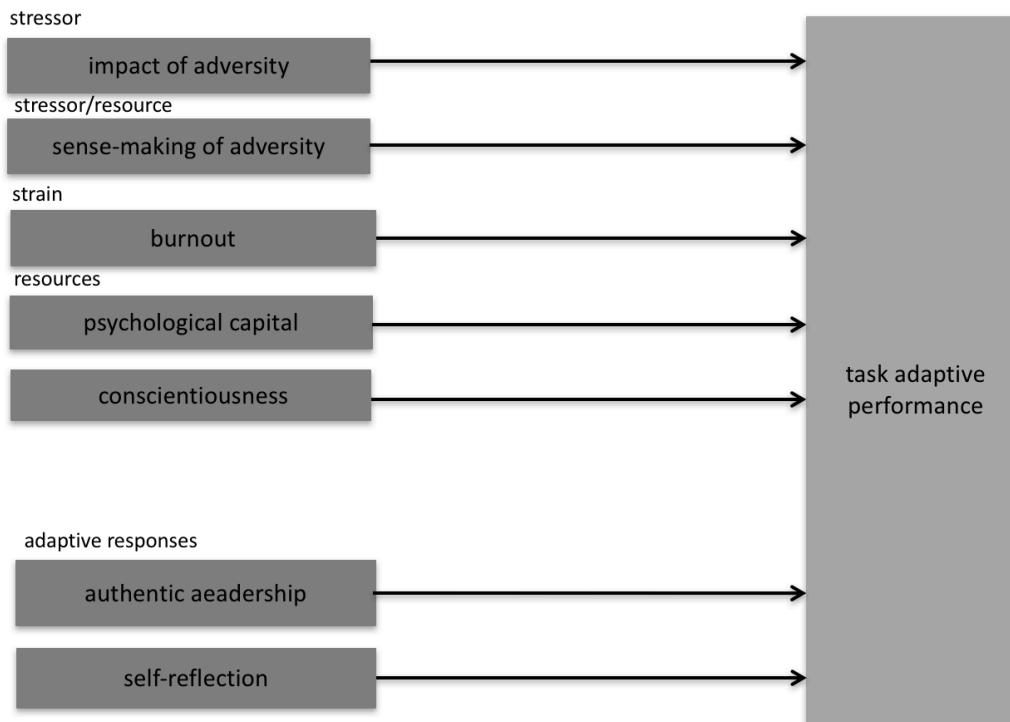


Figure 9: Selected factors influencing task adaptive performance

Source: the author

This research focusses on the process of adaptation to adversity and provides empirical evidence that contributes to a better understanding of the interrelationships among the selected variables by testing their direct effect on task adaptive performance.

Chapter 3: Conceptual Framework

The conceptual framework aims to explain key factors, models and the presumed relationship between them regarding leaders' adaptation to adversity. It is based on the findings synthesised within the model of adaptation to adversity (see figure 5) and the result of the synthesis of the literature review, summarised in figure 9 (Miles & Huberman, 1994). It provides a greater assortment of divergent and complementary views within a qualitative oriented conceptual framework to gain a better understanding of the phenomena of leaders' adaptation to adversity and a quantitative oriented conceptual framework for hypothesis testing (Greene, Caracelli, & Graham, 1989; Venkatesh, Brown, & Bala, 2013).

3.1 Conceptual Framework for Qualitative Research

The aim of the qualitative conceptual framework is to explain how leaders adapt to adversity and to gain a better understanding of the phenomena and the underlying mechanisms. The basis is the model of adaptation to adversity (see figure 5) and the findings regarding the influencing factor of task adaptive performance (see figure 9). The model of adaptation to adversity represents the processes by which adversity and adaptation to it occur. It is also useful to classify the influencing factors within the categories of stressors, strain, resource and adaptive response. This category system can support the qualitative data analysis and data interpretation. The following discussion shows the specific aspects of each component of the process of adaptation to adversity and the selected influencing factors and their interdependences.

3.1.1 Influencing factors

The following section explores the selected influencing factors such as stressors, resources, strain, adaptive response and sense-making of adversity.

3.1.1.1 Stressors

Stressors can be interpreted as the sum of all person-independent and person-dependent influences (Nachreiner & Schultetus, 2002; Rudow, 2014) with both, positive and negative impacts on the leaders' strain (Kirchner, 1993; Rohmert & Rutenfranz, 1983). Stoltz (1997) points out that there are three interdependent levels

of adverse stressors: societal level, workplace level, and individual adversity. Person-independent stressors such as VUCA conditions, e.g. the financial crisis of 2008/2009 can lead to adversity at the workplace level and also affect the individual level of a leader (Barberis, 2011; Gills, 2013; Kessler, 2010; Knights & McCabe, 2015; Taleb, 2010). Extreme events in organisations can cause an unexpected need to change (Hannah et al., 2009; Myers, Hulks, & Wiggins, 2012), but planned changes of organisations derived from decision failures can also result in adaptation to adversity (Weick & Quinn, 1999).

Many stress-related disorders are affected by workplace stressors (Everly et al., 2013). For example, quantitative workloads as well as conflicts associated with the leaders' role are related to an increase in mental health risks (Zimber et al., 2015). Cisik (2012) develops this theory further, suggesting that pressure to succeed, time pressure, constant availability and missing compensation in leisure might affect workplace adversity (Jackson & Daly, 2011; Jackson, Firtko, & Edenborough, 2007; McDonald, Jackson, Vickers, & Wilkes, 2016).

Person-dependent stressors can be triggered by adverse workplace conditions or from individual conditions such as human fallibility created by a lack of attention, weak morals, and blaming other people for their forgetfulness (Reason, 1995, 2000), the destructive behaviours of the leaders themselves (Kaiser et al., 2015; Padilla et al., 2007), or conflicts derived by the leaders' self-concept or the leader role (Epstein, 1973; Klenke, 2007). These stressors can lead to strain, depending on the activated resources (Nachreiner & Schultetus, 2002; Rudow, 2014). Hence, sense-making of adversity can also be a stressor when the leader is not able to find any meaning in the experienced adversity (Bonanno, 2013) or their experience is so negative that it might be healthier for them not to reflect and simply to move forward (Sales et al., 2013).

The selected construct of impact of adversity within the quantitative conceptual framework is excluded from the qualitative conceptual framework, because it quantifies rather than qualifies the effect of adversity (magnitude, probability and personal relevance) at the individual level (Dohrenwend, 2000, 2010; Everly et al., 2013; Hannah et al., 2009; Hoffman & Lord, 2013).

3.1.1.2 Resources

Identified, marshaled and activated personal resources can affect the level of leaders' strain such as burnout (Hobfoll, 1989; Nachreiner & Schultetus, 2002; Rudow, 2014). Depending on a high or low level of applied resources, the experience of strain can be positive, such as eustress and motivation, or negative, such as distress and fatigue, with the possible results of job satisfaction/dissatisfaction or burnout (Rudow, 2005, 2014). Neiworth (2015); Yates and Masten (2004) argue that the experience of overwhelmed resources can lead to adaptive failure. In extreme situations, attenuators, such as positive emotions, self-efficacy, resilience, social moral, social networks, and solidarity can reduce the level of extremity. If the resources to manage time conflicts or to deal with complexity are missing, this can intensify the level of extremity (Hannah et al., 2009). Psychological capital (Luthans et al., 2008; Van den Heuvel et al., 2010; Vogelgesang et al., 2014), conscientiousness (Christiansen & Tett, 2013; Penney et al., 2011; Strang & Kuhnert, 2009) and sense-making of adversity (Van den Heuvel et al., 2013; Van den Heuvel et al., 2009) can also have a positive effect on adaptation. Arguably, a wide repertoire of resources and the possibility to activate them at the right time affects the level and direction of strain.

3.1.1.3 Strain

Strain is the immediate impact of stressors on the perception, cognition and emotional state of a leader dependent on activated personal resources (Nachreiner & Schultetus, 2002; Rudow, 2014). Both, positive and negative stress-strain relations are observed with the assumption that positive conditions can also lead to negative strain and vice versa (Kirchner, 1993; Rohmert & Rutenfranz, 1983). Leaders report that workplace stress can lead to hardship or suffering (Stoltz, 1997) or negative emotional states of "... pain, difficulty, and struggle" (Howard & Irving, 2012, pp. 433-435; Snyder, 2013). Burnout is reported by leaders as the main negative result when adaptation fails (Hannemann, 2015; Nübling et al., 2011; Zimmer, 2015). Others report that strain can be positive, e.g., an opportunity for learning and personal growth (Cameron & Spreitzer, 2011; Kouzes & Posner, 2014). This reflects the evidence that strain can have a negative as well as a positive impact on people (Heifetz et al., 2009a; Kouzes & Posner, 2014; Stoner & Gilligan, 2002; Tugade & Fredrickson, 2004). Nevertheless, leaders often report strain as a feeling of a crisis when there are no resources to

respond in an appropriate manner (DuBrin, 2013; Hannah et al., 2009; James & Wooten, 2005; Osborn et al., 2002). A dilemma event (Cardno, 2001, 2007) can increase the inner tensions of leaders because they feel overtaxed by the demands and expectations of their leadership role (Lee, 2011; Neuberger, 2002).

3.1.1.4 Adaptive responses

A leader selects and applies adaptive responses depending on her/his experience of strain based on available resources and the impact of adversity (Beuing, 2009; Ohly, 2005). The aim is to achieve a degree of fit between her/his available resources and the new work demands (Chan, 2000). Hereby, the leader evaluates the current zone of adaptation determined by her/his available resources and the impact of adversity (Hancock & Szalma, 2008). For example, if the stress level is high, she/he could lose their ability to adapt so that their resources for physiological and psychological adjustment decrease and adaptive behavioural patterns are not available (Matthews et al., 2008; Pomeroy, 2013). Authentic leadership (Avolio et al., 2004; Leroy et al., 2012; Luthans, Norman, et al., 2006) and self-reflection (Hilden & Tikkamäki, 2013; Kernis, 2003; Northouse, 2012; Rennison, 2014; Schön, 1983) are identified as adaptive responses.

Overall, the purpose of adaptive responses is to successfully handle emergencies or crisis situations, manage work stress, solve problems creatively, deal with uncertain and unpredictable work situations, and learn new work tasks, technologies, and procedures (Kröger & Staufenbiel, 2012). Besides the processes of adaptation determined by the adaptive responses, a process of sense-making of adversity can take place with the aim to give the adaptation a valuable meaning for learning in order to deal with future adversity.

3.1.1.5 Sense-making of adversity

Sense-making of adversity occurs in parallel to the process of adaptation, and can be used as an additional resource (Van den Heuvel et al., 2013; Van den Heuvel et al., 2009). Positive sense-making of experiences of mistakes, failures, or success can be used as a learning opportunity (Bartone, 2015; Weis, 2012). Sense-making of adversity can facilitate the process of complex problem-solving (Zaccaro et al., 2009) and support the organisation of ambiguity within dangerous contexts (Baran & Scott, 2010).

The next section summarises all selected influencing factors and shows the conceptual framework for the qualitative research strand.

3.1.2 Qualitative conceptual framework

The model of adaptation to adversity is synthesised to its main categories and its possible interrelations. The result of the literature review shows there seem to be multiple interplays between the categories such as that the stressors can directly affect strain, strain might affect resources and resources might be related with adaptive responses. Therefore, various feedback and feedforward loops have been integrated to show that this process is not strictly linear. The phases of adaptation and task adaptive performance are summarised in the phase of adaptive responses because adaptive responses are an expression of adaptation and adaptive performance outlines the result. The phase of sense-making of adversity is added at the end because, as mentioned previously, this process is influenced by all phases of adaptation to adversity and vice versa and is therefore only finished after the adaptation to adversity. Nevertheless, sense-making of adversity can be used as an additional resource shown as feedback loop (see figure 10).

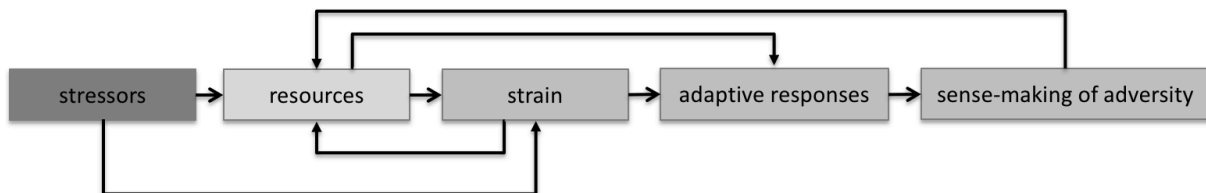


Figure 10: Conceptual framework for the qualitative analysis of the process of adaptation to adversity

Source: the author

In summary, the selected categories of stressors, resources, strain, adaptive responses and sense-making of adversity offer an appropriate category system to classify the selected factors influencing task adaptive performance. This category system will be used as a basis of coding within the qualitative data analysis.

The next section outlines the conceptual framework for quantitative research.

3.2 Conceptual Framework for Quantitative Research

Similar to the qualitative research, the basis of the conceptual framework for quantitative research is the model of adaptation to adversity (see figure 5) and the findings regarding the influencing factor of task adaptive performance (see figure 9). Regarding the model of adaptation to adversity (see figure 5) and the selected factors affecting task adaptive performance (see figure 9), the influencing factor of impact of adversity is categorised as a relevant stressor capturing an overall expected impact of the external factors on the leader herself/himself. Burnout was identified as a major strain factor expressed by increasing emotional exhaustion, depersonalisation and a decreased perception of one's accomplishments. Sense-making of adversity can be a resource if positive sense-making of experiences of failure are used as a learning opportunity to facilitate the process of complex problem-solving or support the organisation of ambiguity within dangerous contexts. It can also be a stressor if leaders are unable to find any meaning in the experienced adversity or their experience is so negative that it is healthier for them not to reflect and simply to move forward. Psychological capital and the personality trait of conscientiousness are categorized as personal resources. Authentic leadership and self-reflection were identified as behavioural components of adaptive responses. Task adaptive performance represents the objective of adaptation to adversity on a measurable behavioural basis.

This conceptual framework aims to test the hypothesised effects of independent variables (see figure 9) on the dependent variable task adaptive performance, testing selected hypothesised interrelations among those variables, and testing the conceptual framework by investigating the correlations and the model fit (Barrett, 2007; Miller & Tsang, 2011). The impact of adversity, sense-making of adversity, burnout, psychological capital, conscientiousness, self-reflection, and authentic leadership were selected as the independent variables because there is evidence that these factors can directly or indirectly affect task adaptive performance. Developing the hypotheses, the following section gives an overview of the selected factors.

Relations between stress and strain were identified in previous research (Nachreiner & Schultetus, 2002; Rudow, 2005, 2014). This enables hypothesis of the relation between the stressors' impact of adversity (Dohrenwend, 2000, 2010; Everly et al.,

2013; Hannah et al., 2009; Hoffman & Lord, 2013), sense-making of adversity (Pan, Wong, Chan, & Chan, 2008; Van den Heuvel et al., 2013; Van den Heuvel et al., 2009; Zaccaro et al., 2009), and the selected strain factor of burnout (Nübling, Stößel, Hasselhorn, Michaelis, & Hofmann, 2006; Nübling et al., 2011). A direct effect of the impact of adversity on task adaptive performance was identified within the discussion of the influencing factors of task adaptive performance (Jundt et al., 2015). A relation between the impact of adversity and the dependent variable of task adaptive performance can therefore be proposed. Research shows a relation between sense-making of adversity and psychological capital (Yadav & Kumar, 2017) as well as an interrelation between sense-making of adversity and the single components such as resilience and hope (Weick, Sutcliffe, & Obstfeld, 2005) or self-efficacy and optimism (Van den Heuvel et al., 2009). A corresponding hypothesis was created. Another hypothesis was created to show the relation between self-reflection and psychological capital because evidence shows that self-reflection is related to self-efficacy, a single component of psychological capital (Bandura & Locke, 2003; Luthans, Youssef, & Avolio, 2007b).

A further hypothesis was based on the assumption that self-reflection is related to authentic leadership (Luthans, Norman, et al., 2006). Empirical evidence shows a positive relation between conscientiousness and psychological capital (Choi & Lee, 2014; Coomer, 2016; Luthans, Avolio, et al., 2007) and a corresponding hypothesis was also created for this. Another hypothesis was created to show the relation between conscientiousness and task adaptive performance because there is evidence that conscientiousness as a personality trait is related to task adaptive performance (Christiansen & Tett, 2013; Jundt et al., 2015; Penney et al., 2011; Strang & Kuhnert, 2009).

The relation between burnout and psychological capital was identified (Laschinger & Fida, 2014), because increasing psychological capital prevents burnout and vice versa. Burnout is identified as loss of control (Browning, Ryan, Thomas, Greenberg, & Rolniak, 2007) and locus of control related with self-efficacy (Luthans, Avolio, Walumbwa, & Li, 2005). Increasing burnout as an expression of perceived loss of control is similar to an external locus of control orientation, whereby leaders feel

they are controlled by others or by external factors with the effect of a low level of self-efficacy (Newcomb & Harlow, 1986).

Research shows that psychological capital provides a basis for authentic leadership (Avolio & Gardner, 2005; Gardner et al., 2011). Psychological capital is a personal resource of authentic leaders (Avolio & Gardner, 2005). Therefore, it can be hypothesised that there is a relation between psychological capital and authentic leadership (Rego, Lopes, & Nascimento, 2016). The direct effect of psychological factors, such as psychological capital on task adaptive performance, is examined and confirmed by Jundt et al. (2015). A relation between psychological capital and task adaptive performance was hypothesised. Current research shows that authentic leadership is related to performance indicators (Avolio et al., 2004; Leroy, Palanski, & Simons, 2012). The relation between authentic leadership and task adaptive performance was hypothesised.

After giving an overview of the possible relations between the selected factors, the next section discusses the basis for each hypothesis of the quantitative conceptual framework and outlines the arguments in detail.

3.2.1 Hypotheses

The following hypotheses are based on the conceptual framework of the influencing factors of task adaptive performance and the proposed interrelation of the variables based on the literature review.

3.2.1.1 Impact of adversity

The assumptions of the literature review reveal that adversity is a multi-dimensional phenomenon and its impact on the leader can be characterised by the taxonomy of impact of adversity (Dohrenwend, 2000, 2010; Everly et al., 2013; Hannah et al., 2009; Hoffman & Lord, 2013). This taxonomy aims to categorise specific adverse events such as a low level impact event or high level impact event. The specific taxonomy of adversity consists of three factors based on the existing taxonomies discussed in the literature review: magnitude (Dohrenwend, 2000, 2010; Everly et al., 2013; Hannah et al., 2009; Hoffman & Lord, 2013), probability (Dohrenwend, 2000, 2010; Everly et al., 2013; Hannah et al., 2009), and relevance (Hoffman & Lord, 2013). Adverse events

can have a direct influence on leaders' task adaptive performance because this contextual factor can affect leaders' task adaptive performance (Dohrenwend, 2000, 2010; Everly et al., 2013; Hannah et al., 2009; Jundt et al., 2015). It can therefore be hypothesised that:

H1: The greater the impact of adversity, the lower the task adaptive performance.

The impact of adversity can be a negative one and lead to stress (Howard & Irving, 2012; Snyder, 2013), burnout (Kaplan & Kaiser, 2010; Snyder, 2013), and negative emotions such as suffering, fear, and anger (Fredrickson, 2013; Linton & Shaw, 2011; Stoner & Gilligan, 2002). The possible impact of adversity as a type of stressor on burnout as a strain factor can be hypothesised as follows:

H2: The greater the impact of adversity, the greater the burnout.

3.2.1.2 Sense-making of adversity

Research shows that in specific contexts, sense-making of adversity has a positive impact on people dealing with adversity (Van den Heuvel et al., 2009; Weick, 1995). Nevertheless, research also proposes that under specific conditions sense-making of adversity seems to be less useful than expected (Bonanno, 2013). Despite the finding that sense-making of adversity can support the organisation of ambiguity within a dangerous environment (Baran & Scott, 2010), it can be associated with poor health outcomes (Bonanno, 2013; Sales et al., 2013). Assuming this twofold effects it would be useful to clarify the relation between sense-making of adversity and burnout as a potential poor health outcome (Pan et al., 2008). Thus, the following hypothesis can be formulated:

H3: The lower the level of sense-making of adversity, the greater the burnout.

A relation between sense-making of adversity and psychological capital can be hypothesised, because a high level of psychological capital can increase successful interpretation of reality and improve sense-making skills and vice versa (Yadav & Kumar, 2017). Research also identifies that sense-making of adversity makes individuals more resilient in the face of personal criticism and more hopeful of

increasing the feeling of being stable enough to face the future (Weick et al., 2005). It also gives meaning to life and is therefore the basis of self-efficacy and optimism (Van den Heuvel et al., 2009).

H4: The higher the level of sense-making of adversity, the greater the psychological capital.

3.2.1.3 Self-reflection

Evidence shows that self-reflection is related to self-efficacy, as a component of psychological capital (Bandura & Locke, 2003; Luthans, Youssef, et al., 2007b). Self-reflection allows individuals with a higher feeling of self-efficacy to behave more purposefully, motivate themselves, improve their goal-setting and to anticipate future opportunities (Bandura & Locke, 2003). Self-reflection also supports authentic leadership which is mainly based on psychological capital (Luthans, Youssef, et al., 2007b). So, it can be hypothesised that:

H5: The greater the self-reflection, the greater the psychological capital.

Self-reflection can support self-awareness, as a sub-dimension of authentic leadership, consisting of the perception of the hidden pattern behind the mental model, e.g., thoughts, meaning, beliefs, values, social norms, cultural aspects, and feelings and motivations, that influence the behaviour in adverse situations, e.g., adaptation (Hilden & Tikkamäki, 2013; Kernis, 2003; Northouse, 2012; Rennison, 2014; Schön, 1983). Self-reflection in particular enables leaders to stay personally centred and focussed while leaving their comfort zone (Heifetz & Linsky, 2002; Yukl & Mahsud, 2010). This is contained in the sub-dimension of balanced processing of authentic leadership (Luthans, Norman, et al., 2006). Furthermore, self-reflection on goals, beliefs, values, and strategies within double-loop learning is important for people dealing with rapidly changing and uncertain contexts, as a part of task adaptive performance (Argyris, 1993; Rennison, 2014). This could be important for applying relational transparency as an authentic leader (Northouse, 2012; Walumbwa et al., 2011). Thus, the following hypothesis can be formulated:

H6: The higher the level of self-reflection, the greater the authentic leadership.

3.2.1.4 Conscientiousness (personality dimension)

Conscientiousness is related to motivation to achieve task demands and goal-setting, and leaders with a high level of conscientiousness can persist more effectively in the face of adversity (Barrick et al., 2003; Judge & Ilies, 2002). Also, highly conscientious leaders show less counterproductive behaviour when they deal with work stressors (Bowling & Eschleman, 2010). Similarly, empirical evidence shows a positive relation between conscientiousness and psychological capital (Choi & Lee, 2014; Coomer, 2016; Luthans, Avolio, et al., 2007) with a positive effect on authentic leadership. So, the following hypothesis can be formulated:

H7: The higher the level of conscientiousness of a leader, the greater the psychological capital.

The important role of personality traits in relation to task adaptive performance, leadership effectiveness, and the ability to overcome adversity is confirmed by Bono and Judge (2004); Borman et al. (2001); Huang et al. (2014); Olila (2012). Conscientiousness is identified as one of the most significant personality dimension as a predictor of leader performance (Penney et al., 2011; Strang & Kuhnert, 2009), especially for task adaptive performance (Christiansen & Tett, 2013). It is the main personality trait investigated in causal models of job performance (Schmidt & Hunter, 1998; Schmidt et al., 2016). Highly conscientious leaders work harder towards their task achievement and show greater motivation, efforts and motivation to deal with demands (Schmidt & Hunter, 1998; Schmidt et al., 2016).

In contrast, people with low level conscientiousness make better decisions after an unexpected change in the task context affected by the aspect of dependability rather than volition (LePine et al., 2000). Similar findings show the achievement facet of conscientiousness predicts adaptability, rather than the dependability facet (Griffin & Hesketh, 2005; Pulakos et al., 2002). Huang et al. (2014) find no significant relation between conscientiousness and adaptive performance, but suppose that an in-depth focus on achievement orientation can lead to the expected positive correlation. Other researchers find a positive relation between conscientiousness and adaptive performance, even though this conscientiousness influences the ability of people to give attention toward the competencies they need to create a high level of task

performance influenced by their environment (Shoss et al., 2012) Nevertheless, it is hypothesised:

H8: The higher the level of conscientiousness, the greater the task adaptive performance.

3.2.1.5 Burnout

There is evidence that burnout as a strain factor affected by chronic stressors (Cheung & Cheung, 2013; Etzion, Eden, & Lapidot, 1998; Kremer, 2016) or long-term exposure to stressors (Perrewé et al., 2002) is related to performance indicators (Bakker, Demerouti, & Verbeke, 2004; Maslach & Leiter, 2008; Penney et al., 2011; Shirom, 2003) and burnout seem to be negatively related to adaptive performance (Eui Young, 2016). Therefore, it might be appropriate to hypothesise a relation between burnout and task adaptive performance. Other research shows that the relation between burnout and performance factors e.g., work performance lack of empirical support (Monteiro, 2015; Wright & Bonett, 1997) and burnout fails to influence job performance or other ratings of performance (Demerouti, Bakker, & Leiter, 2014). Hence, managing workplace stress, e.g., burnout, is one subdimension of task adaptive performance (handling stress and crisis) (Kröger & Staufienbiel, 2012), therefore this aspect is already included in the relevant performance indicator. The ambiguous research findings regarding the relation between burnout and task adaptive performance and the circumstance that the phenomena of stress (burnout) is already included within task adaptive performance no hypotheses will be created to test this relation. Another perspective is more of interest.

The interdependence between adverse job demands and available job resources could reduce the effect of job strain including burnout on performance factors e.g., the impact of job demands could be buffered by coping resources (Beuing, 2009; Demerouti & Bakker, 2011). Burnout can also affect psychological capital and authentic leadership (Laschinger & Fida, 2014). The phenomenon of burnout is two-fold. On the one hand, it is a feeling of exhaustion affected by stressful working conditions or the high pressure of work demands, and on the other hand, it is an emerging callous and cynical attitude as a coping strategy in which the person builds an emotional and mental distance to work (Bakker, Van Emmerik, & Van Riet, 2008).

Arguably a decreasing psychological capital can intensify burnout and vice versa (Browning et al., 2007). Assuming that burnout is described as a 'loss of control' (Browning et al., 2007) and self-efficacy is related to a leaders' belief that she/he determines what happens based on own ability, effort, and actions (locus of control) (Luthans et al., 2005), increasing burnout might cause leaders to feel that his/her actions are controlled by others (external locus of control) (Newcomb & Harlow, 1986). The result can be that the psychological capital decrease based on a low level of self-efficacy. It can therefore be hypothesised that:

H9: The greater the burnout, the lower the level of psychological capital.

3.2.1.6 Psychological capital

Research shows that psychological capital provides a basis for authentic leadership (Avolio & Gardner, 2005; Gardner et al., 2011). This supports the idea that self-efficacy, optimism, hope and resiliency are personal resources of authentic leaders (Avolio & Gardner, 2005). Psychological capital can also positively affect the authentic leader's self-awareness (Luthans, Norman, et al., 2006). Assuming this, the following hypothesis can be formulated:

H10: The higher the level of psychological capital, the greater the authentic leadership.

Several studies outline significant relations between psychological capital and relevant factors regarding adaptation to adversity (Luthans, Norman, Avolio, & Avey, 2008; Van den Heuvel, Demerouti, Bakker, & Schaufeli, 2010; Vogelgesang, Clapp-Smith, & Osland, 2014). For example, a meta-analysis demonstrates that psychological capital predicts individual performance (Avey, 2014). Tugade and Fredrickson (2004) identify the positive relation between psychological resilience, as a part of psychological capital, and the efficiency of adaptation in the face of adversity. Similarly, Visser (2012) argues that personal resources, e.g., psychological capital can affect task adaptive performance. Given this background, the following hypothesis can be formulated:

H11: The higher the level of psychological capital, the greater the task adaptive performance.

3.2.1.7 Authentic leadership

Various researchers investigate the relation between authentic leadership and different kinds of performance. For example, Avolio et al. (2004) outline that authentic leadership can have a positive relation to job performance. Other researchers find evidence that authentic leadership is related to the performance of followers (Leroy et al., 2012). When dealing with extended stress, authentic leaders showed adaptive responses, such as effective communication, competence, coordination, support, structure, role clarity and maintained cohesion, focus, calm, and a sense of humour (Hannah et al., 2009). Celik, Akgemci, and Akyazi (2016) investigate the impact of authentic leadership regarding crisis management and find that there seems to be a need for more authentic, inspirational, and empowering leaders in today's organisations. Focussing on the impact of authentic leaders on employees' adaptive performance, Laurence (2011); Perko, Kinnunen, Tolvanen, and Feldt (2016) find evidence for a positive relation. There is also empirical evidence that authentic leadership is positively related to active constructive conflict behaviours (Fotohabadi & Kelly, 2018).

Therefore, the following relationship can be proposed to test:

H12: The greater the authentic leadership, the higher the level of task adaptive performance.

The next section summarises all the hypothesised relations and shows the conceptual framework for the quantitative research strand.

3.2.2 Quantitative conceptual framework

The final conceptual framework consists of the hypothesised relations between the independent variables of task adaptive performance and task adaptive performance as the dependent variable. Figure 11 shows the hypothesised conceptual framework with its categorization regarding the model of adaptation to adversity (see figure 5 and figure 9).

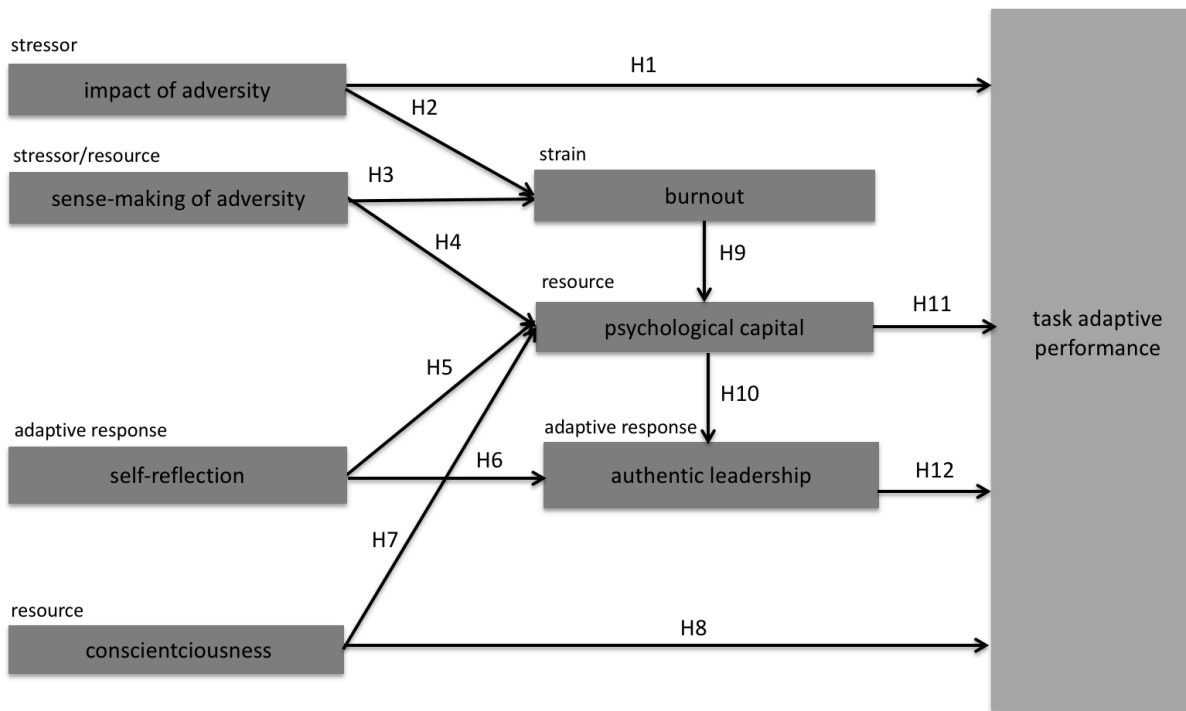


Figure 11: Hypothesised conceptual framework for the quantitative analysis of the process of adaptation to adversity

Source: the author

3.3 Summary of the Conceptual Framework

In conclusion, the selected convergent research design can provide the basis for a more comprehensive picture of leaders' adaptation to adversity, because both research strands apply the same model of adaptation to adversity (see figure 5) and integrate the same influencing factors (see figure 9) to develop particular conceptual frameworks with specific aims.

The qualitative research strand aims to explain the process of leaders' adaptation to adversity by capturing specific characteristics of stressors, strain, resources, adaptive responses and sense-making of adversity. It provides a better understanding of the phenomena regarding the personal experiences of leaders by their sense-making of it.

The quantitative research strand empirically tests the proposed hypotheses and evaluates on the one hand the single relations between the selected independent variables and the task adaptive performances as the dependent variable and on the other hand tests the model fit of the entire quantitative conceptual framework. It therefore improve the evidence of the hypothesised relations and interdependencies

within the event of leaders' adaptation to adversity with the aim of explaining what conditions and mechanisms have to be activated so that leaders' adaptation to adversity can happen.

The philosophical underpinning of critical realism, the selected mixed-methods approach, the research design, the quantitative research, and the qualitative researchh are demonstrated in the following methodology chapter.

Chapter 4: Methodology

This chapter includes justification for the critical realist approach of this study, a discussion of the selected mixed-methods approach, retroduction as the critical realist inference and an explanation of the comprehensive research design and the applied methodology and methods followed by the presentation of the chapter summary.

According to Kothari (2004, p. 8), a research methodology is "...a way to systematically solve the research problem" in a manner that "we not only talk of the research methods but also consider the logic behind the methods we use in the context of our research study...".

Therefore, the discussion starts with justifying the critical realist approach selected.

4.1 The Critical Realist Approach

The literature review shows that leaders' adaptation to adversity is a complex phenomenon consisting of the processes of adaptation to adversity, sense-making of adversity and several factors that influence the task adaptive performance. The process of adaptation to adversity consists of different phases such as impact of stressors, activation of resources, experiencing and judging strain, selection and application of adaptive responses affecting task adaptive performance and the parallel working process of sense-making of adversity (Rudow, 2005). The process of sense-making of adversity refers to leaders' experience of the adverse event and her/his judgement based on available psychological resources (Van den Heuvel et al., 2009). The characteristic of this event is that VUCA conditions and the derived workplace adversity can occur independently from the experience of the leader (Stoltz, 1997). Therefore, it can be argued that these conditions and mechanisms exist independent from the leaders' experience (Maxwell & Mittapalli, 2010). If two persons in the leader role experience the same adverse event simultaneously, it is possible that they judge it differently, depending on their biased perception or lack of accuracy of social construction or vice versa (Kruglanski, 1989; Nater & Zell, 2015).

Nevertheless, the leaders' experience, thoughts, beliefs and feelings are relevant for activating available cognitive and affective resources, decision-making regarding adaptive responses and sense-making of adversity (Boin & Kuipers, 2018; Cameron

& Spreitzer, 2011). Overall, the interdependence of the contextual and processual facets and the perceptual facet of the phenomenon under study require a philosophical underpinning that can explain the underlying structures, conditions and mechanisms (Bygstad & Munkvold, 2011). It assumes that humans' understanding of the experienced reality is a result of a sense-making process based on subjective experience while interacting with others and the environment (Creswell, 2013; Guba & Lincoln, 1994).

Therefore, critical realism postulates a layered ontology divided into three interleaved domains: the real, the actual, and the empirical (Bhaskar, 1975a, 1975b; Bygstad & Munkvold, 2011). The domain of the real consists of often hidden but relatively stable structures and related mechanisms with inherent causal powers which can be triggered by their interplay. The actual domain is that what is known, cannot always be observed as a subset of the real (Dyson & Brown, 2005; Walsh & Evans, 2014). It is comprised of the events that are emerged by the underlying structures, conditions and mechanisms (Sayer, 1992; Zachariadis, Scott, & Barrett, 2013). Within the domain of the actual, the domain of the empirical is only related to the subcategory of events that can be experienced by humans (see figure 12) (Sayer, 1992; Zachariadis et al., 2013).

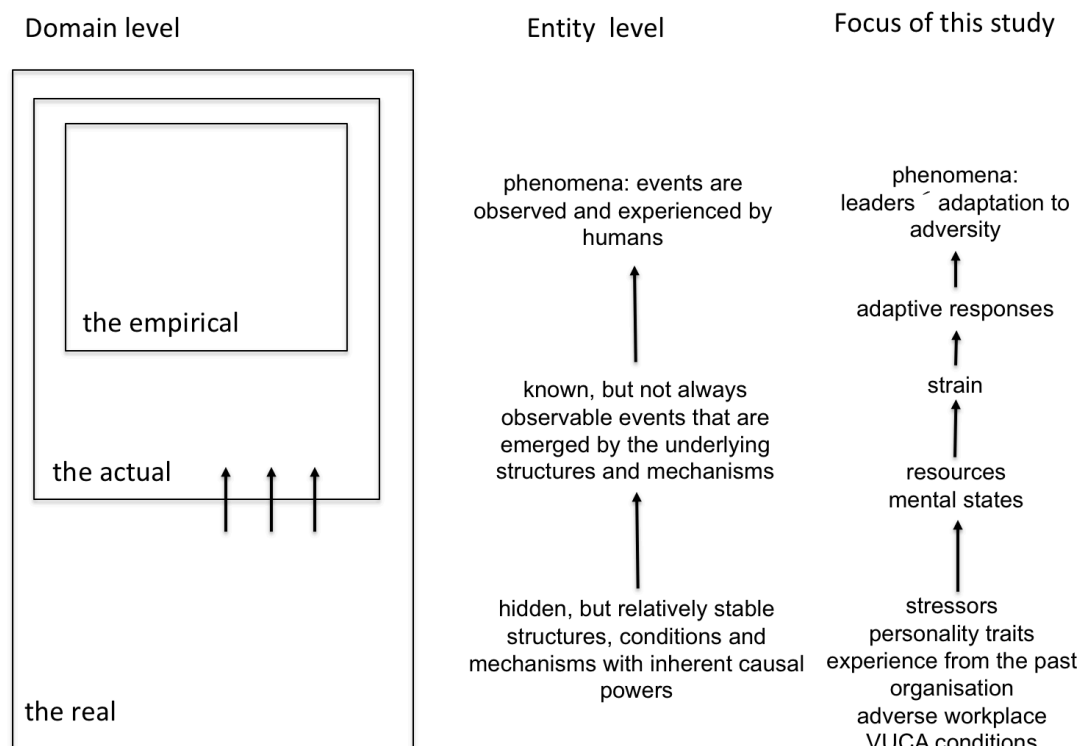


Figure 12: The layered ontology of critical realism

Source: based on Zachariadis et al. (2013)

The purpose of this study (see figure 12) is to identify the underlying structures, conditions and mechanisms that affect leaders' adaptation to adversity (Zachariadis et al., 2013). The layered ontology of critical realism provides a useful structure to organize the phenomenon under study with the aim to differentiate several processes, influencing factors and conditions which might not have been discovered by other research approaches. Critical realism is suitable to identify these factors as a differentiated mode of inference in order to explain such events (Sayer, 1992). Critical realism offers a methodological pluralism to analyse mechanisms with methods that best meet the requirements of successful identification of conditions and mechanisms (Danermark, 2002b). Also, critical realist researchers specify a combination of qualitative and quantitative research methods, such as triangulation of both research strands to develop a better understanding of complex phenomena (Venkatesh et al., 2013).

Leaders' adaptation to adversity is complex, therefore a mixed-methods approach is necessary for this study as shown next: If there is a given situation in which a leader experience strain triggered by various known and unknown stressors. She/he can use a taxonomy sheet to assess the consequences of adversity with three dimensions: magnitude of consequences, probability of consequences and personal relevance. Then, she/he is able to classify the personal impact of this adverse event. If this adverse event is judged as highly probable, of high personal relevance and with a high level of effect on herself/himself, she/he can get non-biased, objective information regarding the adverse event. This classification of the impact of adversity can provide this leader with a fast and precise view of the nature of the adverse event with the opportunity to select the right adaptive strategy.

Nevertheless, such a taxonomy might reduce the richness of information needed by the leader to decide on sense-making of adversity with the possible effect of decision failure (Terlizzi et al., 2003; Vakil, 1997). In sum, neither the single objective information nor the single interpretive information about the adverse event can provide a comprehensive picture of all relevant data for the leader to decide what and how to do. In analogy, to cover the complexity of leaders' adaptation to adversity it is necessary to apply a mixed-methods research approach in this study.

A second argument is that this study focusses on the leader as a person and therefore requires the discussion of human agency and the leader role. Human agency has been described as “human intentional causality” Hartwig (2015, p. 18) consisting of properties such as planning strategies and actions, goal orientation and future anticipation, self-reactiveness with the purpose of acting and self-reflectiveness including self-awareness regarding the own self-efficacy (Bandura, 2006). Assuming this perspective it can be argued that leaders’ adaptation to adversity consists of intentional decision-making in order to plan adaptive strategies and anticipate future adversity and the subjective act of sense-making of adversity as a part of human agency.

Hence, human agency is a conceptual basis of critical realism (Bhaskar, 2014). Bhaskar (1998, p. 89) argues that: “...intentional human behaviour is affected ... by reasons that it is properly characterized as intentional. The agent may or may not be aware of the reasons that cause his/her intentional behaviour.” He suggests that “...any explanation...of human actions may necessarily have resource both to psychological mechanisms, unavailable to consciousness, and to non-psychological (e.g., physiological and sociological) mechanisms.” Bhaskar’s argument reflects the above mentioned phenomenological description of leaders’ adaptation to adversity, where stressors that are so far unrecognised can subsequently lead to experienced strain and the intentional act of adaptation. Arguably, critical realism serves the requirement of this study to discuss human agency.

The leader role is another specific context that has to be considered in the discussion, because it can contextualise human identity, mind and behaviour (Bass & Stogdill, 1990; Steiger, 2013; Tourish, 2014), especially in the context of adversity where others expect from leaders to solve problems for them (Hannah et al., 2009).

Leading people can be described as an intentional social interaction to achieve a common goal (Bass & Bass, 2009; Northouse, 2015) and social interactions need social structures and other conditions in which they can happen (Bhaskar, 2014; Bhaskar & Danermark, 2006). The structure versus agency debate within social science also has a long tradition. This focusses on whether human actions are based on free will and autonomy or are determined by social forces and socialization (King,

2010) and culture (Archer, Bhaskar, Collier, Lawson, & Norrie, 2013; Bygstad & Munkvold, 2011; Danermark, 2002). A critical realist view assumes that although they rely on each other, social structures such as organizations exist independently from the humans which are a part of them (Archer, 2000; Bhaskar, 2013; King, 2010). Society, culture and humans are interrelated within processes of emergence and feedback loops but both have distinct characteristics, demonstrating that they exist independently (Archer, Bhaskar, Collier, Lawson, & Norrie, 2013; Bhaskar, 2013; Bygstad & Munkvold, 2011; Danermark, 2002). Structures and agents interact within a continuous, cyclical flow over time (Fleetwood & Ackroyd, 2004). This debate is similar to the discussion of complexity leadership theory which claims that organisations are complex adaptive systems (CAS) consisting of dynamic interactions of agent-networks based on interdependent hierarchies, structures, and processes bonded by common purposes. (Uhl-Bien & Marion, 2009; Uhl-Bien et al., 2007).

Nonetheless, there has been criticism of critical realism. Magill (1994) argues that it can be dangerous as it proposes a universal ontology that does not allow researchers to hear voices from others and to only focus on their own terms. Similarly, others recommend that social science should be applied without any philosophical legislation (Kemp, 2005; Steele, 2005) because critical realism can fail to justify critical social research (Hammersley, 2009).

Taking this critique into consideration, the application of mixed-methods can avoid the risk of denying “voices from others” by critical reflection on both research strands. This allows for the application of different perspectives and positions within the role as a researcher, as presented in the next section. In summary, it can be argued, that with respect to the ongoing debate of the ontological fundament of critical realism, this approach can cover the complexity of leaders’ adaptation to adversity by providing a layered view of reality. Critical realism can support moving from theoretical issues to the future leadership challenges outlined by Avolio, Walumbwa, and Weber (2009, p. 442): “The field of leadership is evolving to a more holistic view of leadership, ...viewed as a complex and emergent dynamic in organizations,...determining the causal mechanisms that link leadership to outcomes”. This study can be a starting point.

To better understand the requirements of critical realism regarding the role as a researcher, it is useful to know more about the underlying issues. These are presented in the next section.

4.1.1 The role of a critical realist researcher

With a critical realist view, events such as leaders' adaptation to adversity can happen at the actual domain level, independently of the leaders' experience and perception of them. Such events are only observable and can be experienced if they are transferred into the empirical domain by the human agency of the leader (Bhaskar, 1978; Leca & Naccache, 2006). The main task of a researcher using critical realism is to explain such events by moving beyond common sense and reaching a comprehensive understanding of the underlying abstract character (Selboe, 2002). The researcher should be able to identify and uncover events which might not have been perceived by the participants of the phenomenon (Leca & Naccache, 2006).

In earlier research the philosophical divide between qualitative and quantitative research strands requires the researcher to define whether her/his role is more "etic" or "emic" (Punch, 2013). An "etic" position is applied in cross-cultural leadership research. It represents a universal, objective view of the researcher on the topic of the study (Punch, 2013). An "emic" position takes an insider role within the study, looking at specific cultural aspects (Chhokar, Brodbeck, & House, 2013; Pike, 1967; Punch, 2013; van de Vijver, 2010). In this study, an etic position towards leaders' adaptation to adversity would involve external assessment of adversity while an emic position would focus on experiences and personal interpretations of the adverse event with a detailed description of the phenomenon (Morris, Leung, Ames, & Lickel, 1999; Spiers, 2000).

In summary, it can be argued that the complexity of the phenomena of leaders' adaptation to adversity requires a synthesis of the researcher's etic and emic point of view to comprehensively explain the reality of the phenomenon. However, the main problem for critical realist researcher is how to provide plausibility of the hypothesised structures, conditions and mechanisms, assuming that they are not immediately recognisable (Sayer, 1992). To solve this problem, the critical realist researcher

applies the inference mode of retroduction towards the participants' actions, practices and meaning making of it (Leca & Naccache, 2006).

To achieve this requires consideration of the following perspectives of the researcher and her/his influence on the study (Holmes, 2014; Maxwell & Kiegelmann, 2002; Savin-Baden & Major, 2013; Sikes, 2004):

- a.) personal aspects such as experiences, beliefs, values or personality that the researcher brings to the research study
- b.) the researcher's decision whether to separate their research from the rest of their life, based on the idealistic positivist position that any personal involvement is "bias."
- c.) the researcher's positionality as the selected research paradigm within the chosen research study, reflected by the individual world-view of the researcher
- d.) the researcher's position: etic or emic or synthesis of both
- e.) the researcher's implicit and explicit conceptual ideas about the conceptual framework and its purposes
- f.) the researcher's relation to the participants of the study

A critical realist researcher applying the selected convergence mixed-method design, should take an etic position, using preexisting theories and hypotheses as constructs and investigate a particular phenomenon from an outside perspective to find out the general and more abstract structures, conditions and mechanisms of the phenomena over a wider range of adverse events (Olive, 2014). She/he also have to apply an emic perspective, walking in the leaders' shoes while adapting to a particular adverse event. Emic also means to focus on the leaders' sense-making, try to understand his/her thoughts, beliefs and feelings and express the findings in the researchers' own words. With the etic perspective, usually within the quantitative research strand, she/he have to follow a formal research process (Bartunek & Louis, 1996), and ensure that there is always a sufficient psychological distance between the research object and the person as a researcher to reduce any bias (Lee, 1992). In this phase she/he have to be careful that her/his beliefs, values and emotions do not influence the research inquiry (Ponterotto, 2005).

The emic perspective, usually within the qualitative research strand, requires a participatory role within data gathering but simultaneously the researcher have to manage the risk that her/his own mental model influences data gathering and interpretation in a negative way (Crowe et al., 2011). She/he have to be aware of distinct social realities between the view of the participants and my viewpoint (Hardy, Phillips, & Clegg, 2001). Therefore, she/he use an intensive reflexive process to adapt her/his interpretation of reality to the understanding of the involved participants (Hardy et al., 2001; Onwuegbuzie et al., 2012). It is also significant for the researcher to evaluate the interviewees' emotional state, because they can be overwhelmed by emotions during interviews (Hubbard, Backett-Milburn, & Kemmer, 2001).

Another critical point is the phase of data triangulation and data interpretation within convergent research design. The central task as a critical realist researcher is to explain the event of leaders' adaptation to adversity by moving beyond common understanding to draw a comprehensive picture of the underlying structure, conditions and mechanisms (Selboe, 2002). Overall, the discussion has shown that an etic-emic-etic perspective of the researcher best meets the selected retroductive inference approach. Etic in the quantitative research strand, emic in qualitative research strand and etic within the data triangulation and interpretation.

As a critical realist researcher it is important to build a collaborative partnership with all participants taking part in the study (Lee, 1992). It is also essential for her/him to be trustworthy, show mutual tolerance and respect with all participants, and to accept social responsibility at all phases of the research process (Coughlan & Coughlan, 2002; Hubbard et al., 2001; Torbert & Taylor, 2007).

To better understand critical realism it is useful to know more about its understanding of causality, as presented in the next section.

4.1.2 The critical realist understanding of causality

Critical realism causality has been described as "...identifying causal mechanisms and how they work, and discovering if they have been activated and under what conditions." Sayer (2000, p. 14). Wynn and Williams (2012, p. 789) argue that critical realism provides a clear, concise, and empirically supported conclusion about how and why a phenomenon occurred. However, other researchers suggest that critical realism

causality can only explain mechanisms in social systems and not predict them, because of singular context and the general openness of social systems (Bygstad & Munkvold, 2011, p. 4; Danermark, 2002a). Figure 13 shows the process of causation by critical realism, based on Sayer (2000, p. 15).

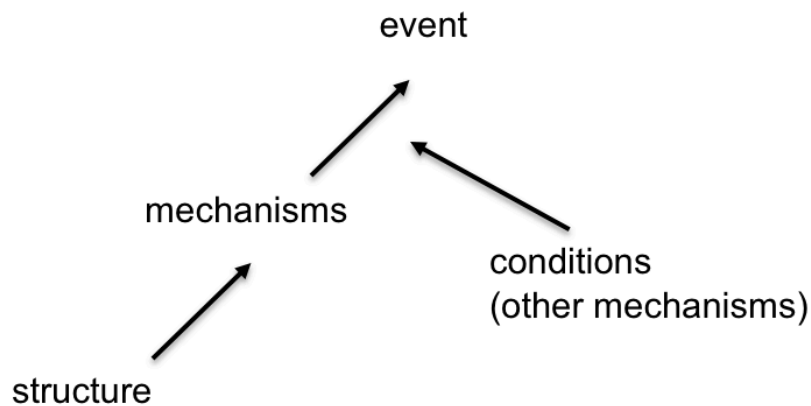


Figure 13: View on causation by critical realism

Source: Sayer (2000)

Structures and conditions are the prerequisites in which specific mechanisms are attenuated or intensified with the result that an particular event happen in a characteristic way and not others. Events are a specific happening or action resulting from the enactment of one or more mechanisms and structures and contextual conditions involved in a particular setting (Bhaskar, 2007, p. 161; Wynn & Williams, 2012, p. 792). Social structures are a set of related objects and practices usually contain human beings, groups, organisations, and different kinds of rules. They have characteristics and tendencies that cannot be reduced to those of their component entities (Danermark, 2002b, p. 47; Fleetwood, 2004, p. 13; 2005; Wynn & Williams, 2012, p. 792). Conditions are particular contextual conditions influence the emerging event (Wynn & Williams, 2012, p. 790/791).

Mechanisms are the ways of acting of things and exist as the causal powers of things. They are inherent to physical and social structures, enabling or limiting what can happen within a given context. Mechanisms are either causal powers or tendencies. Powers are dispositions, capacities, and potentials that do certain things, but not others. Tendencies are actions that are characteristic or typical of a given class, species, or type of thing (Bhaskar, 1978; Fleetwood & Ackroyd, 2004; Sayer, 2000;

Wynn & Williams, 2012). Zachariadis et al. (2013) point out that an understanding of causality (see Figure 13) within the critical realist paradigm needs a specific mode of inference, called retroduction.

The next section provides insights into this kind of inference.

4.1.3 Retroduction – the critical realist inference

The application of retroduction in this study aims to explain the event of leaders' adaptation to adversity by identifying conditions and mechanisms that are able to produce them (Downward & Mearman, 2007). Retroductive inference entails reasoning about the conditions and mechanisms that underpins a phenomenon and is responsible for events that are observed in social reality (Blaikie, 2009; Bryman, 2015). For example, it can identify how VUCA conditions can lead to burnout experienced by a leader affected by available resources such as psychological capital. It can give reason how leaders are able to apply adaptive responses such as authentic leadership. The purpose is to understand the underlying complexity of conditions and mechanisms of a particular phenomenon similar to the notion of Archer, Bhaskar, Collier, Lawson, and Norrie (2013, p. 156): "The aim is not to cover a phenomenon under a generalisation ... but to identify a factor responsible for it, that helped produce, or at least facilitated, it."

In distinction, the inductive inference is based on observation and measurement of aspects of a phenomenon such as pattern and regularities and the subsequent process of analysing and generalising data to develop a theory (Johnson - Laird, 1991; Lawson, 2005; Lee, 2000). Within the deductive inference the researcher begins to develop a theory about the topic under study, then to narrow it down to hypothesis, collect data by observation and test the hypotheses with the gathered data to confirm or reject it (Bryman, 2015; Johnson-Laird, 1991). Based on their own worldview within the abductive inference, the researcher has to understand the participants' perspective of the topic under study by investigating the meaning, thoughts, feelings and contextual perspectives that form their view of reality and reflect it with her/his own worldview (Blaikie, 2009; Bryman, 2015).

In earlier research, the inference models of abduction and retroduction were used as synonyms, as described by Lawson (2010, p. 338), “...note that [C.S.] Peirce did not conceptualize abduction and retroduction as different and distinct inferences; thus, he used the terms interchangeably...”. Olsen (2004, p. 15) argued in a different manner: “Retroduction means working out what might have affected the observations we have in our data; and abduction means grasping the inner meaning of a phenomenon.” Retroductive inference means moving from a conceptual framework of a particular phenomenon to a model of underlying conditions and mechanisms that have made this phenomenon happen (Easton, 2010).

Critical realism is the selected philosophical view for this study with the aim to better understand how leaders’ adaptation to adversity works and which factors influence this phenomenon. The retroductive inference provides the basis to explore which kind of conditions and mechanisms can be observed or have an effect but are not directly observable. The conceptual framework of the study facilitated the aim to find out how these factors are related to each other and to explain the event of leaders’ adaptation to adversity.

Having discussed the specific understanding of causality within critical realism and described retroduction as the critical realist inference, the next section focusses on the implications of applying retroduction for the validity of inferences produced.

4.1.4 Validity of retroductive inferences

Validity characterises the level of quality and rigor of the research study and can significantly influence the quality of retroductive inferences that are generated from this study (Zachariadis et al., 2013). As mentioned before, the specific understanding of causality in critical realism requires differentiated description regarding the conventional interpretation of validity concepts. Table 1 gives an overview of critical realist interpretations of conventional validity concepts for quantitative and qualitative research, based on Campbell and Stanley (1963); Cook and Campbell (1979); Johnston and Smith (2010); Venkatesh et al. (2013); Zachariadis et al. (2013).

Table 1: Critical realist interpretation of conventional validity concepts for quantitative and qualitative research

Source: based on Campbell and Stanley (1963); Cook and Campbell (1979);
Johnston and Smith (2010); Venkatesh et al. (2013); Zachariadis et al. (2013)

Validity	Quantitative Research	CR Description	Qualitative Research	CR Description
Design Validity	Internal validity	Actual events are manifestations of the particular generative mechanism in the context of the field	Descriptive validity/ Credibility	Explanations of mechanisms in action and the conditions with which they are interacting; appreciation of the field by identifying, prioritizing, and scoping boundaries of the study
	External validity	The likelihood that similar or related events that occur (or might occur) in other settings are affected by the generative mechanism that affected the actual events in the field	Transferability	The idea that similar or related events that occur (or might occur) in other settings are affected by the generative mechanism that affected the actual events in the field
Measurement Validity	Reliability	The measurements used in the extensive methods do not have measurement error	Theoretical validity	Theory is used to help hypothesize about the mechanisms and provide explanations for the events that have occurred
	Construct validity	Whether data that is empirically available gives valid knowledge about the actual manifestation of the alleged generative mechanism in the field	Plausibility	Whether data that is empirically available gives valid knowledge about the actual manifestation of the alleged generative mechanism in the field
Inferential Validity	Statistical conclusion validity	Findings from statistics can provide	Interpretive validity/ Confirmability	Findings from qualitative research can provide

		information about the relationships of events observed in the empirical domain (not causal assumptions)		information about the mechanisms that cause the events at the empirical level
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This overview is similar to the description of Teddlie and Tashakkori (2009) about quality issues in mixed methods. They provide an integrative framework of inference quality for good inferences in mixed-method research. A selection of audit questions applied in this study are (Teddlie & Tashakkori, 2009, p. 301/302):

- Do the strands of the mixed method research address the same research questions?
- Do the mixed-method design capturing the relation, impacts and meaning of the underlying structures, conditions and mechanisms?
- Are the data analysis procedures adequate to provide answers for the research questions?
- Are multiple inferences made on the basis of same findings consistent with each other?
- Are the inferences consistent with existing knowledge in the field?
- Are the inferences distinctively more plausible than other explanations?
- Do the convergent inferences adequately incorporate the inferences that are made in each strand of the study?
- Do the inferences correspond to the stated questions of the study?

Both, critical realism validity criterions and the audit questions have been used to guide the research process of this study.

The next section justifies and discusses the mixed-methods approach as a methodological basis for retrodution.

4.2 The Mixed-Methods Approach

A multi-perspective view is needed to explore the data concerning leaders' adaptation to adversity and consideration of the full complexity of conditions and mechanisms is

needed to identify that such events can happen. Sayer (1992) and Danermark (2002b) suggest that critical realism offers a methodological pluralism with methods that can identify generative mechanisms. Venkatesh et al. (2013) suggest triangulation as combining quantitative and qualitative research methods to develop a better understanding of complex phenomena. The mixed-methods approach is accepted by critical realist researchers as an important methodological basis for retrodution (Downward & Mearman, 2007; Eastwood, Jalaludin, & Kemp, 2014; McEvoy & Richards, 2006; Modell, Morris, & Scapens, 2007; Zachariadis et al., 2013). Hence, in this study the combination of objective information for decision-making about adaptive strategies and the simultaneous sense-making of adversity is essential to identify all its underlying conditions and mechanisms.

The hypothesis testing provides empirical data about the relation between the influencing factors. The richness of qualitative data increases the chance of uncovering hidden mechanisms by sense-making and self-reflection during the planned interviews. This enables the identification of the core conditions and mechanisms independent from biased perceptions, missing accuracy of social construction (Kruglanski, 1989; Nater & Zell, 2015) or lack of information by inadequate sense-making (Terlizzi et al., 2003; Vakil, 1997). Therefore, the mixed-method approach is necessary for the data gathering, analysis and interpretation of this study. A retroductive inference can be applied within a critical realist paradigm.

Mixed-methods data analysis integrates statistical and thematical data analytic tools within the strategy of triangulation (Teddlie & Tashakkori, 2009) to study a single phenomenon (Leech & Onwuegbuzie, 2009). Creswell (2013) argues that mixed methods provides the opportunity to overcome the limitation of single methods and reduce biases regarding the triangulation of the data sources. The main rationales for the identified mixed-methods based on Doyle, Brady, and Byrne (2016) are:

- Triangulation: Usage of both quantitative and qualitative methods in a way that the results can be triangulated. Data from both quantitative and qualitative methods can be divergent, but unanticipated results and convergence can also happen.

- Explanation and exploration: Data can be explored and explained within the same study. critical reflection on exploration and explanation strengthens the retroductive inference.
- Completeness: Provides a more multi-faceted and comprehensive perspective of the phenomena under study.
- Offset weaknesses: Reduces weaknesses of each method by combining with others. Provides the opportunity to analyse each method regarding its sufficient rigorousness by comparing it with the other methods used.
- Different research questions: Both quantitative and qualitative research questions can be proposed.
- Illustration: Qualitative data can be used to illustrate the sense-making, experience, thoughts, and meaning of the subjects regarding the phenomenon under study. Quantitative data can provide a better understanding of the hypothesised relations regarding if they can be confirmed or rejected.

Despite the increasing interest in the field of mixed methods, it is still criticised. For example, Bryman (2007) doubts whether the findings of qualitative and quantitative data are always integrated in a reliable manner. There is still a large proportion of the research community who prefer the mono method approach, e.g., Maxwell and Delaney (2004); Popper (1972); Schrag (1992) stand for quantitative research and Guba and Lincoln (1994); Silverman (2013) advocate qualitative research. The following weaknesses of mixed methods are identified by Zachariadis et al. (2013):

- Can be difficult for a single researcher to carry out both qualitative and quantitative research, especially if two or more approaches are expected to be used concurrently; it may require a research team.
- Researcher has to learn about multiple methods and approaches and understand how to mix them appropriately.
- Methodological purists argue that one should always work within either a qualitative or a quantitative paradigm.
- More expensive.
- More time consuming.
- Some of the details of mixed research have still not been fully explored by research methodologists (e.g., problems of paradigm mixing, how to qualitatively analyse quantitative data, how to interpret conflicting results).

These weaknesses were addressed during this study. In particular, it was time consuming to learn about multiple methods and approaches and understand how to mix them appropriately. However, this was solved by a structured time schedule planning process and the containment of the aspects of investigation.

Another issue was how to interpret partly conflicting or divergent results of the data. This issue was solved by the iterative process of triangulation, reflection, and rewriting the conclusion chapter and by discussing the results with field experts. Experts has been described as people who have special knowledge of a social phenomenon, specific experiences or a particular research field which the interviewer is interested in (Gläser & Laudel, 2009). Experts interviews can be seen as points of crystallization for insider knowledge often difficult to gain access to it (Bogner, Littig, & Menz, 2009). The systematising expert interview has become an important tool for the collection of data in the framework of triangulation multi-method approach (Bogner et al., 2009). Systematising interviews can be provided as open and qualitative interviews or also applied as standardised surveys such as those applied in the Delphi method (Aichholzer, 2002, 2009; Bogner et al., 2009).

The application of mixed-methods, especially triangulation and completeness of the data improves the retroductive inference and provides multi-perspective data for analysis and interpretation within this study.

4.3 Mixed Methods Approach of Critical Realism

McEvoy and Richards (2006, p. 77) point out that the usage of mixed-methods within their critical realist study gave their inquiry "...a greater sense of balance and perspective." and it has improved the "retroductive reasoning". Hurrell, Edwards, O'Mahoney, and Vincent (2014, p. 263) conclude that critical realist mixed-methods research "... can help overcome the false qualitative/quantitative divide to achieve the 'best of both worlds' and, in doing so, can allow the complexity and mechanisms of the social world to come alive." Downward and Mearman (2007, p. 16) argue that "...the logic of retroduction makes some form of MMT [Mixed-Method] not only possible but also necessary to reveal different features of the same layered reality without the presumption of being exhaustive." They also suggest that "...mixed-methods

triangulation can be understood as the manifestation of retroduction, the logic of inference espoused by critical realism” (Downward & Mearman, 2007, p. 1). Modell (2009, p. 2) points out that “...triangulation implies that different methods are combined to provide complementary insights into the same empirical phenomenon with the aim of enhancing the validity of representations.” There is some evidence that triangulation can increase credibility by increasing both internal consistency using qualitative and quantitative methods in the same study (Hussein, 2015).

The identification of underlying conditions and mechanisms of the phenomenon of leaders’ adaptation to adversity requires a multi-method approach to gather data from different perspectives, analyse data with distinct techniques and ultimately to use triangulation to combine the findings from both research strands into one comprehensive picture. In summary, a mixed-methods within a critical realist approach using retroductive inference is necessary to achieve the research objectives: to clarify the nature of adversity, to identify the ways in which leaders can adapt to adversity and to identify the factors that influence leaders’ task adaptive performance. The following section provides comprehensive insights into the selected research design.

4.4 Research Design

Easterby-Smith, Thorpe, and Jackson (2012); Williams (2011) outline that a research design consists of the decision of what will be investigated and the application of a specific plan to support the researcher through the process of data selection, data analysing, and data evaluation. The applied mixed methods research design of triangulation can be characterized as a convergent design (Creswell & Plano Clark, 2007; Teddlie & Tashakkori, 2009). The quantitative and qualitative data gathering occurs in parallel and data is analysed separately and then merged (Fetters, Curry, & Creswell, 2013) in order to provide a comprehensive picture of the phenomenon under study (Creswell, 2013) (see figure 14).

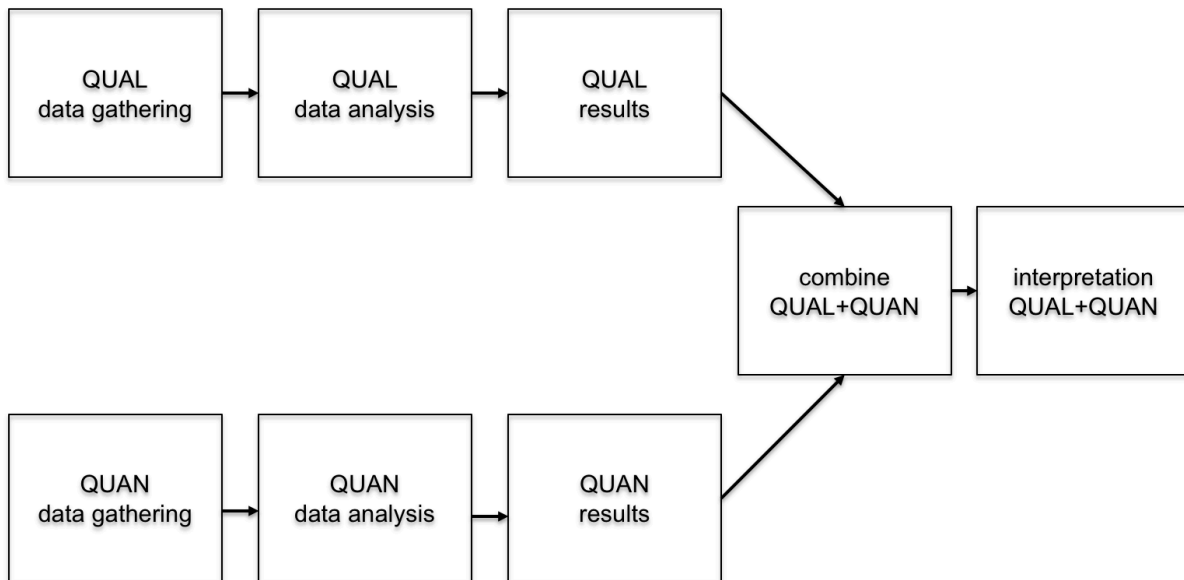


Figure 14: The convergence model

Source: based on Creswell and Plano Clark (2007)

Convergent design aims to extend the scope and depth of understanding of a specific phenomenon and to enhance validity by acknowledging that there can be biases and across-methods errors (Fielding, 2012). The convergent research design of this study offers the necessary frame for retrodution (Downward & Mearman, 2007) and for different methods to be combined to provide deeper insights into the same empirical phenomenon of leaders' adaptation to adversity (Modell, 2009). The risk that there might be biases and across-methods errors (Fielding, 2012) is reduced by applying the same underlying model of adaptation to adversity (see figure 5) and the framework of findings derived from the literature review (see figure 9). This is the basis for the development of the conceptual framework for qualitative and quantitative research. Each research strand investigates the same factors that are identified as conditions and mechanisms for leaders' adaptation to adversity, but from different perspectives. Therefore, the applied convergent design aims to extend the scope and depth of understanding of leaders' adaptation to adversity and to support the validity of this study.

The next section outlines the qualitative research approach as one research strand of the convergent research design of this study.

4.5 Qualitative Investigation - the Interview Study Approach

The qualitative research in this study seeks to explain how leaders' adaptation to adversity occurs and to therefore provide a better understanding of the phenomena and the underlying mechanisms.

4.5.1 Fundamentals of qualitative research approach

Qualitative research means to study specific social relations and the experiences of the participated agents within a particular context and to make sense of it (Flick, 2014). Campbell (2014, p. 3) argues that qualitative research "...mainly takes place in a natural setting, using multiple methods that are interactive and humanistic, emerging data rather than prefigured data, and being fundamentally interpretive." Similarly, Jones (1995, p. 311) points out that the purpose of qualitative research is "...to make sense of, or interpret, phenomena in terms of the meanings that people bring to them." Creswell (2013) argues that qualitative research is primarily based on constructivist perspectives, i.e., multiple meanings of individual experiences and that meanings are socially and contextually constructed.

Nevertheless, there is some criticism of qualitative research, i.e., it seems to be anecdotally, influenced by researcher bias, and different researchers might come to different conclusions (Mays & Pope, 1995). It may also be grounded on past experience and culture and the perception of reality might be constructed and affected by interpretation and sense-making of the world through interaction with it (Crotty, 1998).

Hence, the mixed methods convergent design of this study allows qualitative research to purposefully collect details of the participants' experience of adverse events, how they adapt to, and how they make sense of adversity. According to Creswell (2013, p. 14/15), there are different strategies to applying the qualitative approach:

- Ethnographies: Observational studies of an intact cultural group in a natural setting over a longer period of time.
- Grounded theory: Development of a general, abstract theory of a process or interaction based on sense-making of the participants.
- Case study: In-depth exploration of an entire event coercing all aspects, facets,

and conditions.

- Phenomenological research: Study of the "essence" of human experiences regarding a specific phenomenon.
- Narrative research: Inquiry into people's story telling about their life.

The ethnographies and grounded theory strategy are not appropriate for this study because it is impossible to observe the leader over an extended period of time within her/his working environment and it is not the aim of this study to develop a theory. A case study can also be excluded because the planned focus of semi-structured interviews focusses on the experiences of the leaders regarding their adaptation to adversity and does not include other kinds of information sources, e.g., data about the company, hierarchical, and organisational aspects, how many followers are there etc. A narrative research focusses on the participants' storytelling about their life regarding a coherent sense-making consistent with past experiences (Sandelowski, 1991). Thus, this qualitative strategy might be associated with the inference type of abduction which can be used in critical realist design (Lawson, 2010). However, Olsen (2004) defines abduction as grasping the inner meaning of adversity and retroduction as working out what has affected the observation of leaders' adaptation to it.

Therefore, retroduction is the selected type of inference based on the research topic. Moreover, leaders' adaptation to adversity is identified as a complex phenomenon which requires a phenomenological strategy.

4.5.1.1 Phenomenological research approach

Phenomenology investigates the experiences of humans to identify the essence of a particular phenomenon (Willis & Jost, 2007) and to understand its meaning (Creswell & Poth, 2017; Rutledge, 2014). It provides a systematic approach with methods for data collection, e.g. semi-structured interviews and interpretation, e.g. coding and analysis (Flick, 2008) and draws assumptions regarding the examined phenomena (Byrne, 2001). Two types of approaches can be applied; hermeneutic phenomenology and empirical phenomenology (Hein & Austin, 2001). The hermeneutic phenomenology approach collects information from data (transcribed interviews) to explore the essence of phenomenon and make sense of the experience of the leader (Cohen, Kahn, & Steeves, 2000; Hein & Austin, 2001). The empirical phenomenology

approach gathers empirical data regarding the phenomenon under study (Moustakas, 1994) and focusses on the participants' experiences of the phenomenon and the researcher's reflections on the gathered data (Hein & Austin, 2001).

Critical realism is a possible philosophical position underpinning interpretive research, similar to phenomenology and hermeneutics (Walsham, 2006), and critical realism and phenomenology can be synthesised (Budd, Hill, & Shannon, 2010). Others argue that phenomenology can be applied as a method applicable within a critical realist paradigm (Clark, 1998). The focus on "essence" which means to portray the perceived quality and relevance of significant experiences in a comprehensive manner is consistent with critical realist thinking (Manen, 1997; Racher & Robinson, 2003). As phenomenology is a method within a critical realist paradigm (Clark, 1998) and the "essence" of experience is similar to the identification of conditions and mechanisms that let a phenomena happen, the phenomenological approach is useful for the qualitative research strand of this study. The selected hermeneutic phenomenology approach collect information from transcribed interviews to portray the perception of significant experiences such as stressors, strain, activated resources and adaptive responses. Coding and analysis is then used to make a final report describing the sense-making of adversity, based on the leaders' experience.

4.5.1.2 Interview as a phenomenological method

Interviews remain the most common method of data gathering in qualitative research (Cassell & Symon, 2004; Gill, Stewart, Treasure, & Chadwick, 2008; Smith & Elger, 2014). Others have applied self-administered questionnaires (Bryman, 2004), case studies (Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Patton & Appelbaum, 2003) or focus groups (Gill et al., 2008; Kitzinger, 1995) as qualitative methods for data gathering or combinations of these techniques (Bryman, Stephens, & a Campo, 1996). Observation, focus groups and case studies were not selected for this study because observation of leaders' adaptation to adversity in real life is difficult as it requires permanent observation over a period of time and leaders are often reluctant to be observed. The leader-centric view of this study focusses on the individual description and meaning of the phenomena, rather than group sense-making. Furthermore, a wider integration of other data sources and environmental enlargement, such as involving the followers, the peers, and the organisation is not planned.

Semi-structured interviews are a widely-used interviewing format for qualitative research (DiCicco-Bloom & Crabtree, 2006). Tong, Sainsbury, and Craig (2007, p. 351) point out that: "...semi-structured interviews explore the experiences of participants and the meanings they attribute to them. Semi-structured interviews are applied in various research fields, such as organisational interviews of leaders (Barkouli, 2015), social science (Osteen, 2009), and leadership research (Balyer, 2012; Bryman, Bresnen, Beardsworth, & Keil, 1988; Klenke, 2016).

A semi-structured interview method was selected for this study, because it enables a phenomenological approach to the exploration of experiences and sense-making of them (Creswell & Poth, 2017; Tong et al., 2007).

4.5.2 Data gathering - semi-structured interview

Harrell and Bradley (2009) point out that semi-structured interviews are useful for gathering data about the participants' thinking, feeling, mental models, and experiences from present or past experiences of specific events within particular conditions. In this study, semi-structured interviews were conducted to explore specific conditions, and mechanisms that affected leaders' adaptation to adversity (Corbin & Strauss, 2007; Eisenhardt & Graebner, 2007; Karlsson & Ackroyd, 2014). Semi-structured interviews ensure information is obtained from the interviewee by asking questions in a conversational way, responding flexibly to their answers and needs and directly reflecting on the understanding and meaning of the words and context (Drever, 1995; Noor, 2008).

All the face-to-face interviews lasted 60-90 minutes. The participants gave permission for the interviews to be audio recorded and handwritten notes were taken to ensure accurate transcription and to record important aspects for further analysis (Merriam, 1988). The basis for the face-to-face interview was the general interview guide so that the same interview process, main focus themes and set of open-ended question was applied in all interviews (Turner, 2010). This ensured consistency in collecting data from the same perspective/themes from each participant. The general interview guide also allows flexibility within the interview to go forwards and backwards to open the minds of the participants and to build trust during the process and provide additional questions if the interviewee wants to talk more about a specific facet of an event

(McNamara, 1999). The general interview guide consists of two parts. The first part relies on the reconstruction and exploration of the participants' experience regarding the experienced adverse event, stressors, strain, resources and adaptive responses and sense-making of it. The second part allows reflection on learnings. At the end the interview was summarised and any open questions from the interviewee were answered.

At the beginning of the interview, the researcher introduced himself and thanked the interviewee for her/his participation. Table 2 shows the interview guidelines for the face-to-face interview.

Table 2: Interview guideline for the face-to-face interview

Introduction	<ul style="list-style-type: none"> • Explaining the purpose of the interview. • Addressing the terms of data protection. • Outlining the interview approach and the time line. • General questions before starting the interview. • Gratitude for the participants' involvement. 	
Interview Part 1	Reconstruct the interviewees' view of the adverse event, the adaptive responses and the sense-making of adversity	
	<i>Main Questions</i>	<i>Additional Questions</i>
Context and Conditions	Please describe the situation in detail. How did you experience the situation?	<ul style="list-style-type: none"> • What proved to be a problem in this situation? • How did you explain the problem? • Please describe the context at that time.
Mechanisms	What was most important for you during that situation? What were the key factors for you in that situation? How did you respond in that situation?	<ul style="list-style-type: none"> • Which thoughts did you have at the time? • Which emotions did you have at the time? • What did you do in that situation?
Adaptation	Please describe how you adapted to the situation?	<ul style="list-style-type: none"> • What were all the things that you did to reach a solution?

		<ul style="list-style-type: none"> • What did you do concretely to adapt to the situation? • How did the adaptation proceed? • What were the positive aspects? • What were the negative aspects? • Which resources did you use for the adaptation? • How did you handle (manage) your emotions? And why? • How did you handle (manage) your thoughts? And why? • How did you treat yourself? And why? • What support did you receive from your environment?
Interview Part 2	Reflection	
	<i>Main Questions</i>	<i>Additional Questions</i>
Learning and Sense-Making	<p>How could you make sense of the experienced adverse event?</p> <p>What have you learned so far?</p>	<ul style="list-style-type: none"> • What is important for you to successfully adapt to future adverse events? • How do you deal with such events today?
Close Interview	<ul style="list-style-type: none"> • Wrap up the interview • Ask anything else? • Thanks for participation and emphasise the participants' contributions. 	

The interviewee was also informed about the purpose of the study, the interview procedure, data protection, and that participation in the study was based on free will and they could withdraw from the interview at any time. The interviewee's expectations regarding the interview procedure were clarified before starting with the questions. To build an atmosphere of trust the interviewees were invited to talk about themselves and their current working environment (Patton, 1980). A set of open-ended questions was offered to gather data from the interviewees of the qualitative investigation regarding their reconstruction of the experienced adverse event. Subsequent questions were adjusted according to what the interviewees had talked about to encourage them to be open and feel free to reflect on their experiences (Bogdan & Biklen, 1998; Denzin & Lincoln, 2011; Esterberg, 2002; Kvale, 2008). The audio tapes from the interviews were transcribed and were reviewed by the researcher while

listening to the audio tapes to ensure accuracy. They were then sent to each interviewee to review.

4.5.3 Sampling

The sample size for a phenomenological approach ranges between 5 to 25 participants (Polkinghorne, 2005). A theoretical sampling approach was selected for the purpose of this study to investigate the phenomenon of leaders' adaptation to adversity. Teddlie and Tashakkori (2009, p. 177) categorise theoretical sampling as "Sequential Sampling" and argue that it is useful to investigate specific factors of a phenomenon to identify different manifestations by following "...the principle of gradual selection, with each site or interview providing information that leads to the next logical site or interview." Kempster and Parry (2011, p. 108) also argue that "theoretical sampling ... helps the researcher to engage in several iterations of data gathering and analysis such that the emerging explanation is as valid and reliable as possible." Theoretical sampling provides the opportunity to discover variations among the same phenomena (Corbin & Strauss, 2007).

The sampling focusses on a wide range of different experiences from leaders dealing with adversity in various contexts, such as different organisations, different industries and market environments, various hierarchical levels, and diverse demographical dimensions (Corbin & Strauss, 2007; Strauss & Corbin, 1994). This maximises the opportunities for reconstruction and combination of different adverse events experienced by leaders. Therefore, the search for interviewees was initially not limited by a pre-defined number of interviewees. The selection was limited by the search for profit-oriented organisations in the German economic area.

The cumulative characteristic of theoretical sampling aims to enhance the database and the findings with each additional event. Therefore, a step by step approach was applied for each semi-structured interview, including analysing, comparing, evaluating, densifying, and saturating of the identified categories. The process was closed when marginal progress and the knowledge gained became less and less. In this study the process of data gathering was closed after 6 interviews. The first, third, fourth, fifth and sixth interview show leaders' adaptation to adversity triggered by negative conditions. The second interview shows the need for adaptation to adversity was based on positive

conditions. After the sixth interview the decision was made to end the data gathering process as there was a recognised pattern that adaptation to adversity is mostly driven by negative conditions.

4.5.4 Data analysis – retroduction

The selected inference type of retroduction was selected to analyse the qualitative data of the interviews (Bygstad & Munkvold, 2011; Sayer, 1992). Therefore, an existing analysis process of retroduction (Danermark, 2002a) was adopted. For this study, the process of analysis has been summarised as a three-stage approach. Stage 1 consists of a comprehensive description of the event under study and the individual interpretation by the interviewee. In stage 2 the aim of analytical resolution is to identify and describe specific conditions and mechanisms of the event under study (Danermark, 2002a). This task was applied within the qualitative analysis by coding the transcribed interview data (Wynn & Williams, 2012) and by interpreting and combining the findings for each interview by using the results of the literature review (Danermark, 2002a). Iterative processes of analysis within coding are a part of retroductive inference (Wynn & Williams, 2012).

The aim of coding, permanent reflection and questioning the findings is to identify the underlying structures, conditions and mechanisms of leaders' adaptation to adversity (Kempster & Parry, 2011; Oliver, 2012; Strauss & Corbin, 1997). Charmaz (2001) defines coding as the critical link between the gathered data and their interpretation by the researcher. More explicitly Saldaña (2012, p. 4) proposes that "a code is a researcher generated construct that symbolizes and thus attributes interpreted meaning to each individual datum for later purposes of pattern detection and categorization". Boyatzis (1998, p. 1) points out that a "good code" is a code that contains the qualitative thoughtfulness and comprehensiveness of a specific phenomenon. Coding consists of perceiving a relevant aspect and then encoding the underlying information and constructing a theme as "a pattern in the information that at minimum describes and organises the possible observations and at maximum interprets aspects of the phenomenon" Boyatzis (1998, p. 161).

The applied coding process follows a systematical, iterative and reflexive approach (Boyatzis, 1998; Crabtree & Miller, 1999; Fereday & Muir-Cochrane, 2006). It provides a category system of code based on the qualitative conceptual framework (see figure

10) with the aim of organising the codes created later. The coding process required a closed reading, selecting possible categories from the category systems to organise the emerged code from the transcribed interviews. In several iterations of open and axial coding the interaction of the categories, the created codes and, the comprehensive text of the transcripts were scrutinised before starting the data interpretation (Crabtree and Miller, 1999).

The final stage synthesises the investigation of the interdependence of the mechanisms, the interpretation of the meaning, and the contribution to knowledge regarding the particular conditions. Summarising this analysing process, stages 1 and 2 were applied to each selected interview to get deep insights into each particular adverse event. In stage 2, the findings were examined, coded and combined with particular reference to the findings of the literature review. Stage 3 synthesised all the findings of the 6 single interview analyses.

4.5.5 Quality criteria - validity, reliability

Easterby-Smith, Thorpe, Jackson, and Lowe (2008) propose that the validity, reliability, and generalisability of a study is important to evaluate the contribution to theory and to ensure that the study will stand up to external scrutiny. The implied use and interpretation of the quality criteria is different depending on the researcher's ontological and epistemological standpoint as presented in table 1 regarding critical realism (Zachariadis et al., 2013, Easterby-Smith et al., 2008). Before starting the discussion on validity and reliability regarding this study, the controversy regarding generalizability in qualitative research has to be examined (Bryman, 2007; Horsburgh, 2003; Morse, 1999).

It has been argued that the understanding of human complexity in qualitative research is more important than the generalisability of the findings (Marshall, 1996). The interviewees were purposefully selected so that they could add to a holistic and saturated point of view of the phenomenon under study and the emerged findings from the data could then be transferred to other adverse situations beyond the group of interviewees (Horsburgh, 2003; Morse, 1999). Popay, Rogers, and Williams (1998, p. 348) argue that: "...the aim is to make logical generalizations to a theoretical

understanding of a similar class of phenomena rather than probabilistic generalisations to a population.”

The population of leaders was wide-ranging and consisted of various environmental, cultural, and organisational contexts. The uniqueness of each particular adverse event meant that comprehensive, complete, and saturated insights into the phenomenon of leaders' adaptation to adversity could not guarantee the development of a general theory. However, the aim of this study was to improve the understanding of a similar class of phenomena, here leaders' adaptation to adversity (Popay et al., 1998). Summarising the discussion, generalisability should not be excluded in the discussion of quality criteria for qualitative research in general, but the application of this criteria and its characteristics should be determined by the particular research objectives of each qualitative study.

4.5.5.1 Validity

Maxwell (1992, p. 279) points out that: “Qualitative researchers rely - implicitly or explicitly - on a variety of understandings and corresponding types of validity in the process of describing, interpreting and explaining phenomena of interest.” Hammersley (1992, p. 69) discusses validity as follows: “An account is valid or true if it represents accurately those features of the phenomena that it is intended to describe, explain or theorise.” Long and Johnson (2000) argue that there are three main perspectives of validity: content oriented, criterion-relation oriented, and construct oriented. Content validity focusses on whether the selected instruments include all relevant aspects of the phenomenon under investigation and is determined through sampling and the appropriate research design (Long & Johnson, 2000; Neuendorf, 2002; Schreier, 2012). Criterion-related validity compares the selected instruments and research results with an already verified model to determine the relationship between them (Neuendorf, 2002; Schreier, 2012). Construct validity compares results between the model under study and other relationship models to derive and test the hypothesis (Schreier, 2012). Regarding critical realism table 1 outlines specific interpretations of validity concepts.

A rigorous research process was applied to improve the validity of this study. The phenomenon of leaders' adaptation to adversity was examined from different

perspectives by applying a narrative literature review and these results were integrated in a conceptual framework. The type of semi-structured interview selected and the theoretical sampling provide the framework to gather data from interviewees from a variety of environmental and organisational backgrounds with a wide range of experiences and interpretations of the impact of adversity on leaders.

The following discussion shows the criteria that was applied to improve the validity of this study adopted from Eisenhardt (1989); Hamel, Dufour, and Fortin (1993); Stake (1995) and also the used specific interpretations of validity concepts shown in table 1. A clear vision of the research objective and the derived objectives enabled the design of a conceptual framework that had enough space to be flexible regarding new directions. The interview selection was planned strategically, so that the interviews allowed for a comprehensive investigation of the phenomenon under study. The interview approach applied and the selected theoretical sampling made for a comprehensive examination of the phenomenon of leaders' adaptation to adversity. The conceptual framework was based on existing literature. This supports the frame of the interview study and increases confidence in the results, especially when the findings are similar or different to the existing literature. A rigorous design for a data gathering instrument was applied so that the huge amount of data was not overwhelming. The application of face-to-face semi-structured interviews, and later transcription and review by the interviewees also enabled the gathering and analysing of the data without danger of being overwhelmed.

The focus of data analysis was to uncover hidden patterns, and to reconstruct the mental models of the participants who gave their experiences meaning. Therefore, a rich and detailed description of the findings contextualises the study so that other researchers will be able to transfer the findings into their research fields. This is presented and enhanced by reference to the relevant literature and data triangulation (Lincoln & Guba, 1985; Merriam, 2002).

4.5.5.2 Reliability

According to Hammersley (1992, p. 67), reliability “refers to the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions.” Schreier (2012) points out that reliability,

as a matter of degree of error free data, can be assessed by comparisons between different persons (intersubjectivity) and by comparisons between a specific time table by one researcher (stability). Reliability can give information about the quality of the code frame and the degree to which the analysis has been accepted by others (Schreier, 2012). The problem of reliability in qualitative research might be that a social phenomenon cannot be replicated, as required in the natural sciences (LeCompte & Goetz, 1982).

The phenomenon of leaders' adaptation to adversity is, a unique social event. The analysis of several unique phenomena can provide both subjective and intersubjective perceptions of the interviewees and the researcher's interpretation. The dependency of the interpretation of the findings on the researcher's point of view can be seen as a limitation to achieving reliability as another researcher with his/her own way of interpretation might not reach the same conclusions.

Nevertheless, a systematic and chronological interview study protocol with precise descriptions of how the research process and the comprehensive explanation of the interview database was applied can improve the degree of reliability of this study (Cook & Campbell, 1979; Schreier, 2012). Stability, as consistency of the findings over time, was reached by the applied interview research process and self-reflection units and by cross-checking the data through a close reading of the text and the emerged findings. After discussing the qualitative investigation the next section describes the quantitative investigation.

4.6 Quantitative Investigation – the Research Survey Approach

The quantitative research survey approach tests the hypothesised direct effects of independent variables (see figure 9) on the dependent variable task adaptive performance. It aims to examine the hypothesised interrelations among those variables, and also test the hypothesised conceptual framework (see figure 11) by investigating the correlations and the model fit (Barrett, 2007; Miller & Tsang, 2011).

4.6.1 Fundamentals of quantitative research

Various researchers point out that the fundament of quantitative research is the focus on objectivism, positivist epistemology, statistical analysis and measurement, and the

standpoint of a reality that is independent from the researcher (Bryman, 2006; Lee, 1992; Mackenzie & Knipe, 2006; Williams, 2011). Quantitative research investigates the relation, cause, and consequences of the independent variables on a dependent variable by building and testing hypotheses based on survey data and then on statistical analysis (Creswell, 1994; Levine, 2013). Zikmund, Carr, and Griffin (2012) describe the general approach of a quantitative scientific method, as shown in figure 15.

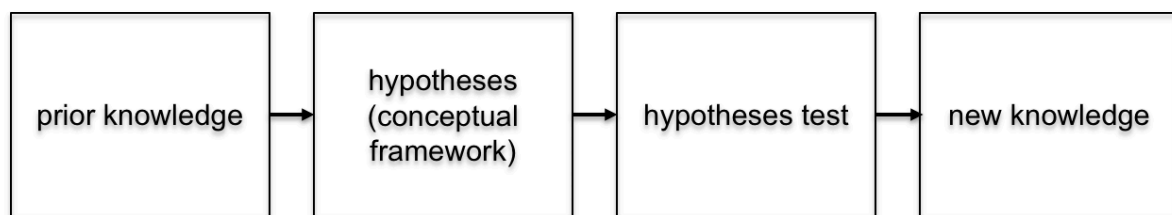


Figure 15: Model of general quantitative approach

Source: based on Zikmund et al. (2012)

With this approach, aspects of the sampling procedure, the sample size, and methods of testing data have important consequences for the statistical power and meaningfulness of quantitative research (Kelley, Clark, Brown, & Sitzia, 2003; Lipsey, 1990). Based on the selected sampling procedure, a quantitative survey design supports the investigation of numerous patterns of behavioural scenarios and opinions of a population by studying a representative sample (Creswell, 1994). Surveys are able to thoroughly record the results and interdependencies between the observed variables (Gable, 1994). To gather and analyse quantitative data it is useful to apply pre-selected and structured questions that reduce complexity and context (Kaplan & Duchon, 1988; Pinsonneault & Kraemer, 1993). Therefore, survey research is the most efficient way of gathering empirical data from a large amount of individuals (Kelley et al., 2003).

There are limitations to quantitative research, such as the possibility of being driven by theoretical conclusions (Diamantopoulos & Sigauw, 2006), less understanding of the phenomenon (Kaplan & Duchon, 1988), possibility of not including all relevant variables to explain a phenomenon and the elimination of an in-depth analysis of the contexts (Gable, 1994; Kelley et al., 2003). However, this is reduced by the thorough

review of the literature, the development of a conceptual framework based on the result of the literature review and the applied convergent mixed-method design.

The researcher has to ensure there is always a sufficient cognitive and emotional distance between himself and the research object, follow a formal research process, and to avoid bias by handling gathered data. A quantitative research process is employed to mitigate these risks and this is described in the next section (Bartunek & Louis, 1996; Evered & Louis, 1981; Lee, 1992; Ponterotto, 2005).

4.6.2 The survey development

The study uses a survey based on the self-administered structured interview questionnaire (Burgess, 2001; Kasunic, 2005), developed as an online questionnaire (www.unfrageonline.com) (Lumsden, 2005). The application of this online questionnaire offers several advantages including reduced costs, access to the participants (leaders), speed, flexibility, functionality and usability (Lumsden, 2005).

The majority of its questions, and rating scales are adopted from existing and evidence based questionnaires (Krosnick & Presser, 2010). One exception was the development of the items for the impact of adversity construct. No validated measurement instrument currently exists. Therefore the item selection was based on existing taxonomies for extreme context (Hannah et al., 2009), leadership events (Hoffman & Lord, 2013), stressful live events (Dohrenwend, 2000, 2010), and the critical incident severity scale (Everly et al., 2013). The created items were evaluated with an iterative process by leadership experts.

Likert scales with 5 to 7 scale points were applied to create reliable ratings (Krosnick & Presser, 2010). The majority of the questions were closed-ended combined with three open questions at the beginning of the questionnaire. These were used to enlarge the qualitative database and focussed on the leaders' current context and the rating of the perceived adversity for further analysis (Burgess, 2001; Kasunic, 2005). Most of the questions were phrased in the present tense to avoid recall error. The participants were informed that there are no right or wrong answers to reduce stress and any misinterpretation (comprehension) (Krosnick & Presser, 2010). Furthermore, a "don't know" or "no answer" option was offered for all items in case a participant had

had no-opinion regarding an item or was not willing to answer specific items affected due to privacy aspects (Krosnick & Presser, 2010).

The total number of questions was over 60 to allow for diversity of the conceptual framework of the study and to enable the inclusion of a variety of factors influencing task adaptive performance. To reduce the risk of the survey being abandoned because of its length, the participants were informed about the time required (25 – 30 minutes) within the invitation and the introduction of the survey and the questionnaire was divided into two parts. The participants were assured that they could complete the first part at one time and the second part at another time. To do this, the questionnaire software offered an individual code. A break and relaxation time was included at the end of the first part of the questionnaire to increase the motivation to continue and to reduce single source bias (Söhnchen, 2009). Task adaptive performance as the dependent variable and the various influencing factors as independent variables were collected within the same questionnaire, but at separated parts of the questionnaire and so each at a separate time (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

4.6.3 Population under study

According to the topic of this study, leaders make up the examined population and are the unit of analysis (Creswell, 1994; Pinsonneault & Kraemer, 1993). According to statistics of the “DIW Führungskräfte-Monitor” (DIW – German Institute of Economic Research), in 2013 around 4 million people were employed as leaders in business oriented companies in Germany, and 29 percent or 1.160.000 were female (Holst, Busch-Heizmann, & Wieber, 2001). Knowledgeable key informants were German speaking, actively working as leaders within different hierarchical levels of companies in Germany during the time table of the study (Eastwood et al., 2014; Mitchell, 1994). A single country context was chosen to reduce macro-environmental influences, e.g., cultural aspects that cannot be controlled, (Makino, Isobe, & Chan, 2004). Germany was selected as the environmental context as the researcher is a native of Germany and has had access to German companies.

This study investigates leaders' adaptation to adversity and current studies show that more than 50 percent of German managers (around 2 million) suffer from stress. 23 percent of female leaders (around 266.800) are affected by burnout which is twice as

high as male leaders with 12 percent (around 336.000) (Baumman, 2015; Sander & Hartmann, 2009). In sum, 602.800 leaders (male and female) and 15.07 percent of the whole population seem to be affected by burnout and stress (Zimber et al., 2015).

4.6.4 Sampling strategy

The sampling strategy and sample size is determined by the selected research topic and design (Onwuegbuzie & Collins, 2007). An important aspect of this study is that some leaders may be uncomfortable talking about their experiences of adversity and therefore not willing to participate in the survey. To reduce this bias a snowball sampling was used to reach such leaders, which made use of any existing trust relationship with their HR Manager. The HR Manager could invite leaders to participate in the study (Bolton, Becker, & Barber, 2010). Invitation e-mails were sent with an introduction to the survey to 590 leaders and HR Managers from an existing business database. This was drawn from the researcher's personal and professional contacts with HR Managers, with the aim of inviting leaders within their companies to participate in the survey (Atkinson & Flint, 2001; Goodman, 1961; Kröger & Staufienbiel, 2012; Pattison, Robins, Snijders, & Wang, 2013). The introduction to the survey informed all participants about regularities of data security and that participation in the questionnaire was optional and could be cancelled at any time.

4.6.5 Sample size – comparative studies

The applied sample sizes of leaders and employees ranges from 20 to 416 in comparative studies regarding adaptive performance and its influencing factors, e.g., personality (Huang et al., 2014) or transformational leadership (Charbonnier-Voirin, El Akremi, & Vandenberghe, 2010). Charbonnier-Voirin et al. (2010) use a sample of 120 followers to test a confirmatory factor analysis. Data collected from 92 of 134 call centre employees of a financial services organisation was used to measure task adaptive performance and its relation to higher task performance (Shoss et al., 2012). Predicting the unit performance of light infantry rifle platoon leaders in relation to transformational and transactional leadership, Bass et al. (2003) use a sample size of 72. To investigate the relation between organisations and the complexity of leadership, a sample of 118 healthcare leaders was examined (McCarthy, 2012). Furthermore, Neiworth (2015)

grounds her study of “From Adversity to Leadership” on the database of 150 U.S. women who pursued leadership development against the odds.

Other studies examining leadership use sample sizes of more than 400 (Lawrence et al., 2009; Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008). Nevertheless, Barlett, Kotrlik, and Higgins (2001); (Field, 2013) recommend that the sample size should not be under 100 observations when using multiple regression. Furthermore, Onwuegbuzie and Collins (2007) recommend that the minimum sample size for the majority of common qualitative and quantitative research designs ranges between 21 participants for experimental, 51-64 participants for causal-comparative, and 64 – 82 participants for correlational research design. Another factor that can influence the sample size are limitations of access to leaders in companies that are willing to participate in a survey about experienced adversity, own personality, emotions, their leadership behaviour, and other difficult contextual factors (Krasikova et al., 2013; Miller & Tsang, 2011). Therefore, this study aimed to yield more than 100 complete questionnaire records of leaders to sufficiently reach the statistical requirements of the proposed testing and analysis.

4.6.6 Reduction of method bias and same source bias

Several procedural remedies were applied to counterbalance these effects and reduce the effect of method bias (MacKenzie & Podsakoff, 2012). For example, the selection and invitation process of the sampling and later on the introduction of the survey ensured that only leaders with the necessary experience of adaptation to adversity (Söhnchen, 2009) participated. This increased the likelihood that they would answer the questions accurately. The introduction of the survey presented the interested participants with the sense of the topic’s urgency for themselves and for leadership development in general and motivated them to participate. Hence, the participants were also informed of the option to break at any time. There was also the option not to answer a question they did not want to with the offering of the separate scale of “no answer”. The instructions for the participants on how to do the survey consisted of recommendations, such as “take time before answering”, and “ensure an appropriate environment to complete the survey”. This increased the motivation to answer accurately.

Nevertheless, the same source bias might be a relevant aspect in this study as the data for dependent and independent variables was measured at the same time, when it might be preferable to gather data at different times (MacKenzie & Podsakoff, 2012; Podsakoff, MacKenzie, Lee, et al., 2003). However, this option was not applicable as the selection of a single source approach was appropriate for this research topic (Söhnchen, 2009) due to the limited time table and the constraints of the resources. The structure of the survey ensured that the dependent variable (task adaptive performance) and the independent variables were answered in two separate parts. Furthermore, measurement bias was reduced by the application of different Likert scales, such as 5, 6, and 7 point scales with different semantic interpretations, e.g., “strongly agree” or “always”, or “often”, as well as the implementation of free text options with open-ended questions at the beginning of the survey and the inclusion of some reverse worded items (Podsakoff, MacKenzie, Lee, et al., 2003).

4.6.7 Measurement of constructs

The constructs of authentic leadership (Walumbwa et al., 2008; Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2007) and psychological capital (Avey et al., 2011; Lorenz, Beer, Pütz, & Heinitz, 2016; Luthans, Youssef, & Avolio, 2007a) can be conceptualised as higher-order constructs based on the existing results of psychometric questionnaires. Higher-order latent variables can be specified as dimensions of first-order latent variables, if there is a conceptual and theoretical rationale for such a model (Koufteros, Babbar, & Kaighobadi, 2009; Rindskopf & Rose, 1988). The contribution of each dimension to a higher-order construct can be compared to bundling all items together in one single composite score (Koufteros et al., 2009; Podsakoff, MacKenzie, Podsakoff, & Lee, 2003; Rindskopf & Rose, 1988).

All other variables can be conceptualised as aggregate constructs consisting of a composite of their sub-dimensions (Edwards, 2001). The survey language was German and so questionnaires based in English, such as engagement in self-reflection (Grant, Franklin, & Langford, 2002) and sense-making of adversity (Leung & Shek, 2013), were translated by two independent translators, evaluated by various leadership experts, and back-translated. Psychometric questionnaires which have already been developed in German are adaptive performance (Kröger & Staufienbiel, 2012), personal burnout based on Copenhagen Burnout Inventory (Nübling et al., 2006;

Nübling et al., 2011), personality (Rammstedt, Kemper, Céline, Klein, & Kovaleva, 2013), and the compound psychological capital scale (Lorenz et al., 2016). The original items from the authentic leadership questionnaire Authentic Leadership - ALQ 1.0 Self (Walumbwa et al., 2007) with official ALQ Licence to be reproduced by the authors (see Appendix A) were offered in a German version. The construct “impact of adversity” was self-created based on existing taxonomies (Dohrenwend, 2000, 2010; Everly et al., 2013; Hannah et al., 2009; Hoffman & Lord, 2013). All items were evaluated by various experts and later on pilot-tested, evaluated, and modified.

4.6.7.1 Dependent variable - task adaptive performance

Task adaptive performance was measured with 12 items of the German adaptive performance self-assessment questionnaire (Kröger & Staufenbiel, 2012). The German questionnaire developed by Kröger and Staufenbiel (2012) consists of 6 sub-dimensions. 5 sub-dimensions are similar to the dimensions of adaptive performance created by Pulakos et al. (2000), such as handling stress and crisis, solving problems creatively, dealing with uncertain and unpredictable work situations and learning work tasks, technologies, and procedures. These sub-scales were categorised as task adaptive performance.

The “social adaptive performance” dimension of the questionnaire that consists of demonstrating interpersonal and intercultural oriented adaptability (Pulakos et al., 2000) was excluded because this dimension focusses on aspects which are not the primary focus of this study. Responses were indicated on a 7-point Likert scale from 1 (disagree strongly) to 7 (agree strongly). For items signed with an “*” a reversed scale was applied. The two-dimensional model of adaptive performance shows a good to acceptable fit, based on a structural equation model. All variable loadings were statistically significant and greater than 0.65 (Kröger & Staufenbiel, 2012, p. 63). The operational items in original (Kröger & Staufenbiel, 2012) and translated description are:

- Ich strahle bei Stress eine Ruhe aus, die anderen Halt gibt: I express calmness during stress, which gives others support.

- Ich fälle in Notsituationen durchdachte und zielgerichtete Entscheidungen:
During emergencies, I make decisions in a goal-oriented and purposeful manner.
- Ich verliere in schwierigen Arbeitssituationen oft das Wesentliche aus dem Blick.*: In difficult work situations, I often lose sight of what is essential.
- Ich gehe bei der Lösung neuer Probleme ziellos vor.*: I am aimless in solving new problems.
- Ich finde auch bei unzureichenden Ressourcen (z. B. Mangel an Zeit, Geld, Mitarbeitern) immer einen Weg zur Lösung eines Problems: I also find ways to solve a problem, even with insufficient resources (e.g., lack of time, money, employees).
- Ich zeige Freude an der Herausforderung durch neue Probleme.: I am happy to meet new challenges.
- Ich benötige viel Zeit, um mich in neue Sachverhalte einzuarbeiten.*: I need a lot of time to get involved in new issues. *
- Ich eigne mir schnell das relevante Wissen über neue Arbeitsinhalte an: I quickly get the relevant knowledge about new job content.
- Ich gehe Lernprozesse selbstsicher an.: I am self-confident about learning processes.
- Ich arbeite auch in unsicheren Situationen effektiv.: I work effectively even in uncertain situations.
- Ich lasse mich durch unklare Arbeitsaufträge verunsichern.*: I am irritated by unclear work orders. *
- Ich reagiere auf unvorhersehbare Arbeitssituationen schnell frustriert.*: I am quickly frustrated by unpredictable work situations.

The following section shows the description of the independent variables.

4.6.7.2 Independent variables

4.6.7.2.1 Impact of adversity

The construct of Impact of adversity was self-created by applying existing and empirically validated items (Dohrenwend, 2000, 2010; Everly et al., 2013; Hannah et al., 2009; Hoffman & Lord, 2013). The first item: “If the possible negative effects occur,

its impact is high” was adopted from the magnitude dimensions of the questionnaires created by Dohrenwend (2000, 2010); Hannah et al. (2009) which measures the scale of damage or the amount of change regarding usual activities. The second item: “The probability of the occurrence of the negative impact is high” is based on the dimension of the probability of consequences which measures the likelihood of the occurrence (Hannah et al., 2009) and the dimension of unpredictability which measures the likelihood of occurrence regarding usual expectations (Dohrenwend, 2000, 2010). Finally, the third item: “The possible negative effects are very relevant to me personally” derives from the dimension of “personally relevant vs. irrelevant” which measures the amount of personal significance (Hoffman & Lord, 2013). The responses were administered with a 5-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree).

4.6.7.2.2 Sense-making of adversity

Sense-making of adversity was measured with the adopted 12-item Chinese Making Sense of Adversity Scale CMSAS (Pan et al., 2008). Despite the critique outlined by Baessler, Oerter, Fernandez, and Romero (2003) that meanings depending on the cultural aspects and measures of meaning developed in one culture may not be applicable in another one, Flick et al. (2013) use the CMSAS Scale in the Western context. The understanding of the item: “To me, adversity is a kind of discipline” was discussed with the author of the questionnaire. Ms Pan answered: “The original scale is in Chinese. The Chinese presentation of this item is 对我来说困难意味着一种磨练。磨练 which means ‘this is a kind of suffering’ in Chinese. In Chinese culture, people believe that if we want to achieve something, we have to experience some suffering or hardship. Difficulty is a kind of suffering that we have to experience for great achievement” (Pan, 2016).

Therefore, the items were translated into German: “Persönliche Belastungen, Beanspruchungen und Herausforderungen ... geben mir die Chance, etwas erreichen zu können” (English: Adversity provides an opportunity to succeed in something). On this basis, the items were evaluated and accepted within the pilot test regarding the semantic and understanding within the German culture. Responses were gathered with a 6-point Likert scale from 1 (disagree strongly) to 6 (agree strongly). Responses from the 4 items representing the negative sense-making of adversity were reversed

and calculated together with the 8 items of the positive sense-making of adversity to get a one-dimensional construct of sense-making of adversity. Overall, the CMSAS presented high internal consistency reliability and good concurrent validity (Pan et al., 2008). The operational items in original (Pan et al., 2008) and translated description are:

- Adversity provides a good opportunity for learning.: Persönliche Belastungen, Beanspruchungen und Herausforderungen bieten gute Chancen um daraus zu lernen.
- To me, adversity is a kind of discipline.: Persönliche Belastungen, Beanspruchungen und Herausforderungen geben mir die Chance, etwas erreichen zu können.
- To me, coping with adversity is a process of accumulating life experiences.: Persönliche Belastungen, Beanspruchungen und Herausforderungen sowie deren Bewältigung ist für mich ein ständiger Prozess Lebenserfahrung zu sammeln.
- Adversity is indispensable in life.: Persönliche Belastungen, Beanspruchungen und Herausforderungen sind im Leben unbedingt notwendig.
- Adversity not only causes pressure, but it is also a motivation.: Persönliche Belastungen, Beanspruchungen und Herausforderungen verursachen nicht nur Druck, sondern ist auch Motivation.
- Adversity constitutes a platform for future development.: Persönliche Belastungen, Beanspruchungen und Herausforderungen schaffen die Voraussetzungen für persönliche Entwicklung in der Zukunft.
- Adversity is normal and natural, and everyone will have to face it in life.: Persönliche Belastungen, Beanspruchungen und Herausforderungen sind etwas Normales und Natürliches, und jeder wird sich damit in Leben auseinandersetzen müssen.
- Adversity makes me feel that life is meaningless.: Persönliche Belastungen, Beanspruchungen und Herausforderungen geben mir das Gefühl, dass das Leben sinnlos ist.
- Adversity means the end of the world and I am not able to resolve it.: Persönliche Belastungen, Beanspruchungen und Herausforderungen bedeuten für mich das Schlimmste was es gibt.

- I have lost a lot because of adversity.: Persönliche Belastungen, Beanspruchungen und Herausforderungen haben für mich zu vielen Verlusten geführt.
- I have wasted precious time in my life because of the adversity I have experienced.: Persönliche Belastungen, Beanspruchungen und Herausforderungen haben in meinem Leben schon kostbare Zeit verschwendet.

4.6.7.2.3 Burnout

Burnout was measured with the 6-item Copenhagen Burnout Inventory (CBI) (Borritz & Kristensen, 1999) as part of the German shortened version of COPSOQ (Copenhagen Psychosocial Questionnaire) for the assessment of psychosocial factors at work (Nübling et al., 2006; Nübling et al., 2011). Overall, the reliability and validity of the COPSOQ shows medium to good measuring qualities (i.e., Cronbach's alpha mostly >0.7). However, the Cronbach's alpha of the CBI was 0.8 to 0.91 depending on the short and long versions of COPSOQ (Nübling et al., 2006; Nübling et al., 2011). The responses were administered with a 5-point Likert-type scale from 1 (never) to 5 (always). The operational items in original (Nübling et al., 2006; Nübling et al., 2011) and translated description are:

- How often do you feel tired?: Wie häufig fühlen Sie sich müde?
- How often are you physically exhausted?: Wie häufig sind Sie körperlich erschöpft?
- How often are you emotionally exhausted?: Wie häufig sind Sie emotional erschöpft?
- How often do you think: "I can't take it anymore?": Wie häufig denken Sie: "Ich kann nicht mehr"?
- How often do you feel worn out?: Wie häufig fühlen Sie sich ausgelaugt?
- How often do you feel weak and susceptible to illness?: Wie häufig fühlen Sie sich schwach und krankheitsanfällig?

4.6.7.2.4 Psychological capital

Psychological capital was measured with the 12-item German self-report scale (CPC-12) based on the State Hope Scale (SHS) to measure hope, the German version of

the Life Orientation Test (LOT-R) to measure optimism, the German thirteen item short version of the Resilience Scale (RS-13) to indicate resilience, and the German General Self-Efficacy Scale (GSE) to measure self-efficacy (Lorenz et al., 2016). Responses were gathered by using a 6-point response format ranging from 1 (strongly disagree) to 6 (strongly agree) (Lorenz et al., 2016). According to the authors, the CPC-12 fits very well to the model of psychological capital.

Furthermore, the four sub-dimensions of hope, resilience, optimism, and self-efficacy can be identified as relevant sub-components of the overall measured model. Hence, the higher-order construct could incrementally explain the additional variance in the gathered data (Lorenz et al., 2016). The higher-order core construct was also confirmed by Avey et al. (2011); Luthans, Youssef, et al. (2007a) as shared variance between the four first-order constructs of hope, optimism, self-efficacy, and resilience. The categorized operational items in original (Lorenz et al., 2016) and translated description are:

Hope:

- If I find myself in a jam, I could think of many ways to get out of it.: Sollte ich mich in einer Zwickmühle befinden, würden mir viele Auswege einfallen.
- Right now, I see myself as being pretty successful.: Im Moment betrachte ich mich als recht erfolgreich.
- I can think of many ways to reach my current goals.: Mir fallen viele Strategien ein, um meine derzeitigen Ziele zu erreichen.

Optimism:

- I am looking forward to the life ahead of me.: Ich freue mich auf das Leben, das noch vor mir liegt.
- The future holds a lot of good in store for me.: Die Zukunft wird für mich viel Gutes mit sich bringen.
- Overall, I expect more good things to happen to me than bad.: Alles in allem erwarte ich, dass mir mehr gute als schlechte Dinge widerfahren.

Resilience:

- Sometimes I make myself do things whether I want to or not.: Ich kann mich auch überwinden, Dinge zu tun, die ich eigentlich nicht machen will.

- When I'm in a difficult situation, I can usually find my way out of it.: Wenn ich in einer schwierigen Situation bin, finde ich gewöhnlich einen Weg heraus.
- It's okay if there are people who don't like me.: Ich kann es akzeptieren, wenn mich nicht alle Leute mögen.

Self-Efficacy:

- I am confident that I could deal efficiently with unexpected events.: In unerwarteten Situationen weiß ich immer, wie ich mich verhalten soll.
- I can solve most problems if I invest the necessary effort.: Wenn ein Problem auftaucht, kann ich es aus eigener Kraft meistern.
- I can remain calm when facing difficulties because I can rely on my coping abilities.: Schwierigkeiten sehe ich gelassen entgegen, weil ich mich immer auf meine Fähigkeiten verlassen kann.

4.6.7.2.5 Authentic leadership

The German version of the authentic leadership questionnaire (ALQ 1.0) as a self-assessment was applied to measure authentic leadership with licence by the authors (see Appendix A) (Walumbwa et al., 2008; Walumbwa et al., 2007). Responses were indicated with a 5-point response format ranging from 1 (Not at all) to 5 (Frequently, if not always). The internal consistency alphas (Cronbach's alpha) of all four dimensions provided acceptable scores: internalised moral perspective, 0.76; self-awareness, 0.92; balanced processing, 0.81; and relational transparency, 0.87; and the standardised factor loadings of the second-order factor of authentic leadership model ranged between 0.66 to 0.93 shows acceptable scores. Empirical research supports the assumption that authentic leadership is a higher-order construct consisting of the dimensions of self-awareness, relational transparency, internalised moral perspective, and balanced processing (Alok & Israel, 2012; Peus, Wesche, Streicher, Braun, & Frey, 2012; Walumbwa et al., 2008; Youssef & Luthans, 2012). Only 3 items regarding the requirements in the licence were presented in the study. Three examples of operational items in original and translated by the authors description are (Walumbwa et al., 2008; Walumbwa et al., 2007):

- Demonstrate beliefs that are consistent with actions.: zeige ich Überzeugungen, die genau mit meinen Handlungen übereinstimmen.

- Listen carefully to different points of view before coming to conclusions.: höre ich mir verschiedene Standpunkte gut an, bevor ich eine Entscheidung treffe.
- Seek feedback to improve interactions with others.: erbitte ich Feedback, um die Interaktion mit Anderen zu verbessern.

4.6.7.2.6 *Self-reflection*

Self-reflection as a behavioural pattern was measured with the 10-item construct “engagement in self-reflection” as part of the SRIS-SR self-reflection and Insight Scale (SRIS) (A. Grant et al., 2002). Responses were gathered with a 7-point Likert scale from 1 (disagree strongly) to 7 (agree strongly). Research by Grant et al. (2002) give evidence for the validity and an acceptable test-retest reliability over a 7-week period of 0.77 (SRIS-SR). The operational items in original (Grant et al., 2002) and translated description are:

- Demonstrate beliefs that are consistent with actions.: zeige ich Überzeugungen, die genau mit meinen Handlungen übereinstimmen.
- I don't often think about my thoughts (R).: Ich denke nicht oft über meine eigenen Gedanken nach.
- I rarely spend time in self-reflection (R).: Ich verwende selten Zeit auf Selbst-Reflexion.
- I frequently examine my feelings.: Ich analysiere meine Gefühle regelmäßig.
- I don't really think about why I behave in the way that I do (R).: Ich denke nicht wirklich darüber nach, warum ich mich so verhalte, wie ich es tue.
- I frequently take time to reflect on my thoughts.: Ich nehme mir regelmäßig Zeit über meine Gedanken zu reflektieren.
- I often think about the way I feel about things.: Ich denke oft darüber nach wie mich Dinge berühren.

4.6.7.2.7 *Conscientiousness (Personality Dimension)*

Personality, in particular conscientiousness, was measured with two items of the German version of the short scale for assessing the Big Five dimensions of personality - 10 Item Big Five Inventory (BFI-10) (Rammstedt et al., 2013). The items of “Ich bin

bequem, neige zur Faulheit (Müßiggang)” (I see myself as someone who tends to be lazy) and “Ich erledige Aufgaben gründlich” (I see myself as someone who does a thorough job) were gathered from the original questionnaire (Rammstedt, Kemper, Klein, Beierlein, & Kovaleva, 2012). The responses were administered with a 5-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). Despite some limitations the validation study of the BFI-10 based on a large and population representative sample shows sufficient psychometric properties and support the construct and criterion validity of the instrument (Rammstedt et al., 2013). Therefore, results of the BFI-10 evaluation presents sufficient validity and reliability of the BFI-10 scales and items.

The categorized operational items in original (Rammstedt et al., 2013) and translated description are:

Extraversion:

- I see myself as someone who is reserved.: Ich bin eher zurückhaltend, reserviert.*
- I see myself as someone who is outgoing, sociable.: Ich gehe aus mir heraus, bin gesellig.

Agreeableness:

- I see myself as someone who is generally trusting.: Ich schenke anderen leicht Vertrauen, glaube an das Gute im Menschen.
- I see myself as someone who tends to find fault with others.: Ich neige dazu, andere zu kritisieren.*

Conscientiousness:

- I see myself as someone who tends to be lazy.: Ich bin bequem, neige zur Faulheit (Müßiggang)*
- I see myself as someone who does a thorough job.: Ich erledige Aufgaben gründlich.

Neuroticism:

- I see myself as someone who is relaxed, handles stress well.: Ich bin entspannt, lasse mich durch Stress nicht aus der Ruhe bringen.*
- I see myself as someone who gets nervous easily.: Ich werde leicht nervös und unsicher.

Openness:

- I see myself as someone who has few artistic interests.: Ich habe nur wenig künstlerisches Interesse.*
- I see myself as someone who has an active imagination.: Ich habe eine aktive Vorstellungskraft, bin fantasievoll.

4.6.8 Pre-testing

A pre-test was also applied as a structured interview through a self-administered online questionnaire (Burgess, 2001; Kasunic, 2005; Lumsden, 2005) via the online survey platform www.unfrageonline.com. The pre-test lasted 6 weeks. From 118 invited leaders, 28 participated in the pre-test and 19 finished it. The aim was to evaluate the instructions and to check the items for clarity of wording, and participant acceptance of the questions and understanding. Particular attention was given to investigation of the cultural adaptation of the sense-making items. Instructions were given for clarity based on the results of the pre-test. Some items were identified as not understandable and were modified slightly afterwards.

4.6.9 Data gathering - self-administered online survey

Self-administered online surveys with the survey embedded in an e-mail linking to the survey URL, as used in this study, are a viable alternative to face-to-face surveys (Evans & Mathur, 2005; Sadler, Lee, Lim, & Fullerton, 2010). Self-administered online surveys can be administered quickly and conveniently for the respondents (Evans & Mathur, 2005; Granello & Wheaton, 2004).

The data collection was based on a snowball sampling technique whereby e-mails were sent to 590 leaders and HR managers in the SYNK GROUP database asking for them to participate themselves and invite other leaders from their companies to do so (Atkinson & Flint, 2001; Goodman, 1961; Kröger & Staufienbiel, 2012; Pattison et al., 2013). Overall, 199 participants took part in the questionnaire, and 143 completed it.

4.6.9.1 Response rate

The response rate of 34% is within the average response rate range from online surveys of 33% (Nulty, 2008). However, non-response seems to be increasing over time and various researchers recommend comparing the results of a particular

response rate with a score of what is typically identified in a given area of research, without eliminating a non-response bias (Rogelberg & Stanton, 2007). Response rates in the area of leadership research vary between 2.1% and 6% (Bernstein, 2014), 26% (McCarthy, 2012), 31% (Neiworth, 2015) and 83% (Charbonnier-Voirin et al., 2010). The response rate obtained from this study was acceptable.

4.6.9.2 Verification of non-response bias

Non-response bias could refer to total non-response whereby individuals fail to return the survey at all or to participants who do not complete the entire questionnaire. This is called unit or item non-response bias (Sax, Gilmartin, & Bryant, 2003).

A standard procedure to evaluate the unit or item of non-response bias can be the assessment of the statistical significance by comparing the responses between a group of early and late returns (Armstrong & Overton, 1977; Lambert & Harrington, 1988). However this has been criticised by others, as there is little evidence that non-response bias is avoided by comparing two subgroups (Groves & Peytcheva, 2008). Nevertheless, a randomly selected part of the sample was split into two groups: group 1 earlier answers with $n=51$ and group 2 late answers with $n=51$, and a t-test was performed for each variable of the conceptual framework with no statistically significant differences (Prahinski & Benton, 2004). Table 3 shows the result of the group comparison between group 1 and group 2 regarding the mean and standard deviation of all selected constructs with no significant differences.

Table 3: Overview of the group comparison

	Group	Mean	Standard
impact of adversity	1	2.3856	0.78704
	2	2.522	0.83847
sense-making of sdversity	1	5.1212	0.59701
	2	5.0691	0.55761
burnout	1	2.4087	0.73178
	2	2.4878	0.65552
psychological capital	1	4.9512	0.57196
	2	4.8131	0.39929
conscientiousness	1	4,0488	0.62053
	2	4.1	0.54538
self-reflection	1	5.7597	0.83119
	2	5.6822	1.01693

authentic leadership	1	4,0936	0.3413
	2	4.1308	0.37436
task adaptive performance	1	5.5652	0.71274
	2	5.555	0.52137

Levene's test for equality of variances tests whether the two groups have the same or different amounts of variability between scores (Muijs, 2010). A significance value of the Levene test - greater than 0.05 means that the variability in the two groups is about the same (Muijs, 2010). Apart from the values of the constructs of psychological capital and task adaptive performance, all significance values of the Levene test were greater than 0.05. At first view, a value of less than 0.05 means that the variability in the two groups is not the same, for example, psychological capital and task adaptive performance. However, a second test was made. The t-test shows if the means for the two groups were statistically different (significantly different). If the significance level, 'Sig' (2-Tailed) value is greater than 0.05 it can be concluded that there is no statistically significant difference between the two groups (Muijs, 2010). The Sig (2-Tailed) values for psychological capital and task adaptive performance were greater than 0.05, so there is no statistically significant difference between the two groups. Table 4 shows the result of the Levene Test and the t-test for all constructs.

Table 4: Result of the Levene test and the t-test for all constructs

		Levene-Test		T-Test	df	Sig. (2-tailed)
		F	Significance	T		
impact of adversity	Variance equal	0.186	0.667	-0.855	102	0.395
	Variance not equal			-0.856	101.939	0.394
sense-making of adversity	Variance equal	1.976	0.164	0.411	81	0.682
	Variance not equal			0.411	80.845	0.682
burnout	Variance equal	0.229	0.634	-0.518	81	0.606
	Variance not equal			-0.519	80.414	0.605
psychological capital	Variance equal	6.509	0.013	1.241	77	0.218

	Variance not equal			1.247	69.828	0.217
conscientiousness	Variance equal	0.515	0.475	-0.394	79	0.694
	Variance not equal			-0.395	78.161	0.694
self-reflection	Variance equal	1.343	0.25	0.387	84	0.7
	Variance not equal			0.387	80.8	0.7
authentic leadership	Variance equal	0.174	0.678	-0.46	76	0.647
	Variance not equal			-0.458	74.458	0.648
task adaptive performance	Variance equal	3.99	0,049	0,079	91	0.937
	Variance not equal			0,079	82.374	0.937

4.6.10 Data analysis - retrodution with structural equation modelling

The data analysis approach is based on retrodution as a specific kind of critical realist inference in which phenomena are explained by identifying and hypothesising mechanisms that are responsible for their occurrence (Sayer, 1992). Structural equation model (SEM) is a compatible statistical research technique with critical realism (Miller & Tsang, 2011; Osteen, 2009; Van Bouwel, 2003). The gathered data was analysed by using the structural equation model (SEM) that evaluates and tests theoretical relationships among latent and observed variables (Anderson & Gerbing, 1988; Gefen, Straub, & Boudreau, 2000; Schumacker & Lomax, 2004). This is identified as a “must” for researchers in the social sciences (Hooper, Coughlan, & Mullen, 2008). The overall purpose of SEM is to better understand the underlying patterns of correlation and covariances among various variables and to explain as much of their variance as possible with the specified model (Kline, 2015; Suhr, 2006). SEM can be seen as a path analytical method to manage multiple relationships and to assess relationships from exploratory analysis to confirmatory analysis (Anderson & Gerbing, 1988; Steinmetz, 2015). It has also been used in similar studies to examine leadership in extreme contexts and performance measurement (Avey et al., 2008; Bass et al., 2003). Therefore, SEM was applied to test the hypothesised conceptual framework.

The data analysis within SEM follows a process of validity and reliability test, model estimation, evaluation of the model fit and reporting the results (Weiber & Mühlhaus, 2014). To analyse the quantitative data of the SEM model, the inference type of retrodution was selected (Bygstad & Munkvold, 2011; Sayer, 1992) and combined with the general process of SEM data analysis of validity and reliability test, model estimation, evaluation of the model fit and reporting the results (Weiber & Mühlhaus, 2014). Therefore, the existing analysis process of retrodution (Danermark, 2002a) was adopted. The process of analysis was structured into a three-stage approach. Stage 1 describe the sample demographics, examination of data entry, missing data and normality and measurement development. The second stage contains the analytical resolution by the model and hypotheses test and retrodution by investigating the results in relation to the findings of the existing literature review and their combination. The data was also analysed in relation to an expert review - the leadership experts' opinion of the plausibility of the hypotheses. The results were synthesised in stage 3.

The next section presents the expert review approach.

4.6.11 Expert review

An expert interview approach was conducted to assess plausibility of the hypotheses and to improve the content validity of the quantitative research results (Hasbollah & Baldry, 2016; Osteen, 2009; Otto & Osterle, 2012). Experts can be defined as people who have special knowledge of a social phenomenon, specific experiences or a particular research field which the interviewer is interested in (Gläser & Laudel, 2009). Expert interviews are points of crystallization for insider knowledge which is often difficult to access (Bogner, Littig, & Menz, 2009). For example, expert interview were used to investigate shared leadership in dangerous conditions (Ramthun, 2013).

Leadership experts for the convenience sample were selected on the basis of their body of work in the field of leadership as university professors and researchers or on their experience in the role as a senior leader or as leadership consultant (Bellamy, Bledsoe, & Traube, 2006; Muskat, Blackman, & Muskat, 2013). All experts were educated to doctoral level. Additionally, a snowball method of expert selection was

used where known field experts referred the author to other experts. They were then invited to participate in the expert interviews (Bellamy et al., 2006). In total, thirteen experts took part in the expert interview. These included five professors of leadership, one principal lecturer of leadership, two anonymous researchers, two leadership consultants, one expert with a senior leader role and two anonymous experts within a senior leader role.

The systematising expert interview approach selected was an important tool for the collection of data in the framework of a triangulation multi-method approach (Bogner et al., 2009; Van Audenhove, 2007). The systematising expert interview approach is used to focus on exclusivity and relevance of expert knowledge in a particular field, when the person has gained expertise in leadership praxis based on expertise derived from exclusive positions (Van Audenhove, 2007). It focuses on the systematic and full disclosure of information from different experts as well as different aspects of the phenomena under study and impacting issues (Van Audenhove, 2007). Systematising interviews can be used as open and qualitative interviews or as standardised surveys, such as those applied in the Delphi method (Aichholzer, 2002, 2009; Bogner et al., 2009). The standardised survey was based on the self-administered structured interview questionnaire (Burgess, 2001; Kasunic, 2005), applied as an online questionnaire (Lumsden, 2005). The expert invitation and the introduction and background description of the questionnaire (see appendix D) focus on clarifying the purpose of the questionnaire, the task and the thematical background. The experts were also informed about the interview procedure, data protection, that participation in the study was based on free will and that they could withdraw from the interview at any time.

Overall, there were thirteen participants in the two-step expert review approach (Bogner et al., 2009). A 5 point likert scale was used to create a reliable rating (Krosnick & Presser, 2010) to a closed-ended question such as “How would you agree with the hypotheses?” with a later rating for each of the hypotheses. Further on the questions were open-ended as the experts were asked for “Your comments for hypotheses you strongly disagree” and “Your comments for hypotheses you strongly agree”. The data analysis was based on the selected three-stage approach of analysis of retrodution (Danermark, 2002a). This process of analysis consists of a summation of the experts

ratings regarding each hypotheses (see table 15), an analytical resolution regarding the ratings of the hypotheses with 'strongly agree' or 'strongly disagree' by interpreting and combining the findings of the experts comments and converging it with the results of the literature review (Danermark, 2002a). Finally, the results of the expert interview were synthesized to show if the hypotheses were plausible.

4.7 Methodology Summary

Leaders' adaptation to adversity is a multi-dimensional and highly complex phenomenon. The intrapersonal aspects of the leader meet interpersonal, situational, and environmental conditions within the process of adaptation to adversity. Therefore, the critical realism with the assumption of a layered reality and containing quantitative and qualitative research approaches can provide answers to the research questions. The mixed-methods convergent research design of triangulation and retrodution as the type of inference support in this study. There is a concise research structure and the opportunity to reach a holistic understanding of the phenomena and to identify the underlying mechanisms and conditions of its occurrence. Overall, the selected research design gives a precise structure to follow with the aim to of creating evidence-based results. This contributes to theory and practice.

In Chapter 5, the results of the data analysis of the qualitative and quantitative research are analysed and interpreted in the sense of retrodution.

Chapter 5: Data Analysis

The following section will present the findings of the qualitative data analysis as the first research strand regarding the selected convergent research design.

5.1 Qualitative Data Analysis

The following qualitative data analysis is based on the above mentioned analysis process of retroduction (Danermark, 2002a). Stage 1, a comprehensive description of the adverse event and the individual interpretation by the interviewee and stage 2 the analytical resolution are applied to each selected interview to get deep insights into each event. Stage 2 consists also of an iterative process of analysis within coding (Wynn & Williams, 2012) and interpreting and combining the findings by using the results of the literature review (Danermark, 2002a) with the aim to identify and describe specific conditions and mechanisms of the event under study. Stage 3 synthesises all the findings of the 6 single interview analyses by examining the interdependences of the mechanisms, the interpretation of its meaning, and the role of influence regarding the particular identified conditions.

5.1.1 Sampling - the selected interviews

For data saturation, six interviews were applied within a step-by-step approach based on the assumption of theoretical sampling aiming to reconstruct different experiences of leaders who dealt with adverse events (see Appendix C). As mentioned above, the process of data gathering was closed after six interviews when less and less progress and knowledge was gained. In sum, the first, third, fourth, fifth and sixth interview showed that negative conditions triggered leaders' adaptation to adversity. Nevertheless, the second interview brought to light that also positive conditions trigger the need for adaptation to adversity. After the sixth interview it has been recognised that the pattern of adaptation to adversity is mostly driven by negative conditions. At this point the decision was made to end the gathering process. The context of each interview is based on different industries to ensure a wide range of variability of the phenomenon under study. The sample of the interviews shows an equality of hierarchical levels of three middle and three top management members. The gender aspect could not be balanced because there was little access to female participants within the time table offered; 5 participants were men and only one was a woman. Five

of the six interviewees worked for a profit-oriented company and the one female interviewee was an employee of a semi-profit-oriented company within the social work industry. Table 5 characterises the six interviewees and their current working context.

Table 5: Overview of the structure of the six interviews

Inter- view	Interviewees	Gender	Function	Leader- ship Level	Industry	For Profit
1	Interviewee 1	Male	Site Manager & Managing Director	Top	Textiles Germany	Yes
2	Interviewee 2	Male	CEO	Top	Finance	Yes
3	Interviewee 3	Male	Leader	Middle	Agriculture	Yes
4	Interviewee 4	Male	Director /Interims Management	Middle	Finance	Yes
5	Interviewee 5	Male	Supply Chain Manager	Middle	Paper/ Industry	Yes
6	Interviewee 6	Female	Managing director	Top	Education/ Social Work	Partly Yes

The this section describes stage 1 of the qualitative data analysis with a comprehensive description of the adverse events in appendix C and a summarized description as well as the individual interpretation of the interviewee as follows.

5.1.2 Stage 1 description of the event under study

Retroductive analysis starts with the description of the adverse events reconstructed and interpreted by the interviewees based on their experiences. The description of each interview is summarised, based on the coded interview transcripts (see appendix C).

5.1.2.1 Interview 1

Interviewee 1 is the managing director of a textile company based in Germany with European competitors. The overall market conditions shown a continual drop in demand so that the company has had to restructure its organisation.

Interviewee 1: "...within Europe, there has been a continuous decline in demand and, for this reason, the decision was made to close down certain locations due to cost and the location where I work because the preliminary products were manufactured there. Consequently, the situation got more and more complex, volatile, uncertain, and ambiguous, and these considerable factors of insecurity cause negative emotions of the employees, such as a great deal of nervousness. For this reason, they were worried about their future, disappointed, and frustrated.

Interviewee 1: "...if you find yourself in such a situation, especially when the workforce sees that the utilisation of the machines has clearly dropped, yes, then, there is considerable nervousness on the site, ... people are concerned about their future, ... naturally that has an influence on the working atmosphere. We have seen that in the figures."

Interviewee 1, faced adversity as he struggled for meaning with these situations: "Every time it is a great challenge for me personally." He felt in conflict regarding the tension between the rational decision to restructure and the necessity of various consequences, e.g., closing departments, and his social responsibility for the employees.

Interviewee 1: "It is more the gap between future orientation, which, from an objective point of view is indispensable for the continued existence of the company, and human feelings in terms of, the social responsibility that one bears in such situations and which one cannot really do justice to as one would like."

Furthermore, Interviewee 1 reported his struggle with the moral questions regarding the fate of those to be made unemployed.

5.1.2.2 Interview 2

Interviewee 2 is the CEO of a regional banking institute in Germany. Following a regulation within the board of directors, he became the CEO of the organisation with

the consequence that he also became the leader of the other directors in the existing board. The previous CEO had a different leadership style from Interviewee 2.

Interviewee 2: "...as I became CEO, I was on the Board of Directors and became chairman, ... there was my predecessor who also had a social vein but who ran things in a somewhat patriarchal way. I am someone who has a more collegial style of leadership and is more team-oriented and - eh - I don't have to deal with everything but work very strongly through delegation."

His management board colleagues continue to have trust in him despite a feeling of uncertainty regarding the new situation.

Interviewee 2: "(Board colleagues) have had a lot confidence in me. I have always felt that, namely, that the trust was very, very high, that there was insecurity about a certain destabilising but there was always a feeling of trust."

Nevertheless, the situation brought some difficulties and adversities for Interviewee 2. The management board colleagues expected a different form of leadership from him.

Interviewee 2: "...a very difficult situation for me was feeling that the way that I am undertaking my leadership is not what the people expect at the moment."

Interviewee 2 felt that he was not allowed to be authentic and he felt tensions between his own expectations and the expectations of others.

Interviewee 2: "I knew that it wasn't my way because I would have had to completely reverse my view of how I imagine leadership to be."

His struggle was being able to deal with his own doubt and fear in this adverse situation.

Interviewee 2: "...and to manage to cope with that, to cope with that process, up to the management, and then again afterwards, also with doubts, with fears, with nights where I thought about how I could manage it now, should I do it differently...[but] I don't find that I am authentic, but more imposed."

5.1.2.3 Interview 3

Interviewee 3 is a leader in a hierarchical middle level position of a German transportation company (Ready-mix concrete) that was taken over by another company. Subsequently, the corporate climate deteriorated and employee satisfaction has also dropped significantly. Interviewee 3 pointed out that decision-making failures were taken concerning communication and transparency.

Interviewee 3: “Yes. Wrong decisions were taken. Yes, and not everything was communicated. In the beginning, no one thought that it was such a difficult and complex topic.”

Interviewee 3 reported a strong conflict between the works council that did not want any changes and the board that wanted the takeover.

Interviewee 3: “There was a strong conflict between the partner and the works council. There was destruction and confrontation. They desperately wanted to stop it from being done and we wanted to implement it.”

Meanwhile the employees showed negative emotions, such as anger and aggressiveness.

Interviewee 3: “That was anger that was expressed.”

He reported that these conditions led to a struggle for him because he tried to solve the situation in a rational and reasonable way.

Interviewee 3: “The most difficult situation arose as I had brought the parties together (new leadership) with the employees and when it became very emotional on the part of the employees and where we once had to interrupt a meeting.”

Furthermore, he pointed out that: “Yes, and also to convince employees who have been with the company for donkey's years to go to a different company. That a small company does not have the same security as a larger one that has been in the market for a long time.”

Asked about the duration of this conflict, he answered: “...that took at least two years.”

5.1.2.4 Interview 4

Interviewee 4 holds a hierarchical middle-management position (leader of a branch store) in a German banking organisation as a kind of interim management.

Interviewee 4: “I had greater responsibility for personnel matters. Yes, it was in the year ..., I had taken over a branch because the branch manager had had a baby and I managed the branch for ten months during the absence of the colleague. And that started in the middle of January/February and went on until the end of October.”

He had to lead a team of team leaders of this branch store. One of his team leaders had had two difficult challenges, firstly, a conflict between him and an employee regarding his/her performance.”

Interviewee 4: “...one of these leaders (team leader under my management) had a, yes, very messy personal situation. A member of staff who was not a performer, I mean

someone who performed below average, on whom immense pressure was exerted in ... already, yes, to improve performance, otherwise well, that means a very, very gridlocked situation in which this team leader was also caught considerably. Well, that means, one comment was enough or a contact or a result that wasn't clean, which, then was very, very sensitive in the reaction. ... Yes, completely different positions, the one thought I am going to lose my job, and the other one thought that it doesn't work like that..."

And secondly, a female employee that had a problem with a colleague that was always sick and she always had to substitute for the sick colleague.

Interviewee 4: "...at the same time, there was another member of the team who, ... was a performer but in a completely different personal situation with her female colleague who suffered from migraine attacks, usually after the weekend. Due to this, it was relatively difficult, to take over the customer appointments or to cancel them, to put them off. In the meantime, it had a sensitive effect upon the topic of customer loyalty." Regarding this situation, Interviewee 4 reported that, on the one hand, he had to struggle with it: "Well, that was a really challenging situation...", because the employee who had a conflict with the team leader showed him some facts that gave evidence that the team leader had done something wrong and that she/he expected from him fast and direct decisions against his/her team leader. However, on the other hand, he felt emotions like curiosity and motivation because he thought: "...you haven't had such an exciting situation so far, now see how you can deal with it best."

5.1.2.5 Interview 5

Interviewee 5 is a supply chain manager based in a hierarchical middle management position in a paper industry company in Germany. A part of this company merged with part of another company and there were: "two very different operating philosophies. Our company is more pragmatic. The other company is a very centrally organised one." Furthermore, Interviewee 5 described the situation as: "...very different cultures met each other and if you do not speak the same language. ... one finds it easier if one tends simply to have a common basis and when one simply goes on. If it is really very different, then, a new company culture has to be developed."

Interviewee 5 perceived another issue when a proportion of employees from his team he worked for and the new team members from the other company did not work well together.

Interviewee 5: "... the way I see it, in the area in which I mainly work, we had the misfortune that the proportion didn't really function."

He described his perceived adversity as a feeling of crisis: "...not downcast but somewhat groggy..." and felt somewhat irritated, because he thought that he had been dazzled by the situation. Hence, he outlined: "The fuse has perhaps become a little shorter."

Interviewee 5: "for a moment certainly a bit, well, yes, not depressed but certainly a bit, ... groggy... Well, if you take the time to look at this in detail, the statements that were made from the others had no substance. We allowed ourselves to be dazzled by the situation a bit. Naturally, this means that we needed the first months to recognise that ..., good, one had to spend valuable time..."

5.1.2.6 Interview 6

Interviewee 6 is the managing director of a social work company for education in Germany. The company itself is not profit-oriented but has to do fundraising regarding public investments. The specific condition of this company is that the requirements for application for public investments changes again and again depending on new political goals and the current investment programme based on legal conditions no longer applies after 31.12 of this year without there being any perspectives afterwards.

Interviewee 6: "(my company is) ...a non-profit society, working for qualification partners, we have been in the market for a long time, since 1977, ... again and again having to deal with new political goals. And, at the moment, there is the instrument of active citizenship in German politics, and, within this framework a very large number of jobs have been created where people pay social security; these are for three years and they disappear this year on 31.12 without any subsequent perspective.

Interviewee 6 described how this condition of insecurity affected obstacles in understanding the meaning of that situation. It affected negative emotions although it was important to be rational.

Interviewee 6: "Yes, of course it happens, that many colleagues who know that ask what the personal perspectives are like. That is certainly a topic for the management that can be found to be emotionally moving, and, where it is important to keep cool in order to be able to fight for follow-up solutions but, despite that, to be able to express one's sympathy.

Furthermore, Interviewee 6 talked about specific psychological stress: “Well, there will have to be a reorganisation but that it not only bad. That is the one thing, but the restructuring will also mean a reduction in the structure and, naturally it cuts right into the heart that real are going to lose their jobs.”

In the next section the stage 2 of analytical resolution is applied to each selected interview to get deep insights into each adverse event.

5.1.3 Stage 2 analytical resolution and retroduction

The purpose of this stage is analytical resolution to identify and describe the specific conditions, structures, mechanisms, and responses of the adverse event and the leaders’ adaptation to adversity. Than retroductive reasoning will be applied to interpret and combine the findings by using the results of the literature review with the aim of analysing the data for patterns and to answer questions such as how leaders’ adaptation to adversity occurs.

5.1.3.1 Analytical resolution

The leaders’ description and interpretation of the conditions of the experienced adversity are given in stage 1. The aim in stage 2 is to separate the composites of the adverse event and to dissolve the complexity by distinguishing various components defined as stress factors, resources, strain factor, adaptive responses, and sense-making of adversity (see figure 10). These components were used to create the category system for the coding and to establish boundaries to the studied aspects. Next, the summary of each interview analysis will be presented.

5.1.3.1.1 Interview 1

Interviewee 1, the managing director of a textile company, described the main stress factor as the constantly increasing complexity, volatility, uncertainty, and ambiguousness of the external environment affected by changing market pressures, and a feeling of insecurity that creates negative emotions and nervousness in the employees who worry about their future, and get disappointed and frustrated. These stress factors activate hope, optimism, social responsibility, solution-orientation, self-reflection, and internal struggling (consciousness). These are often associated with the

tension arising from a role with conflicting rational decisions and emotional needs for social responsibility and justice in lay-offs and a feeling of unmet expectations. The response to stressful situations was behavioural and expressed by empathy towards employees, a process of sense-making, and a forward-looking perspective coupled with appreciation of individual commitment. Interviewee 1's sense-making of the adverse event focussed on his enhanced self-awareness of issues when dealing with people facing adversity and his role in helping the remaining employees regain hope, optimism and motivation. Figure 16 summarises the process of adaptation in this interview.

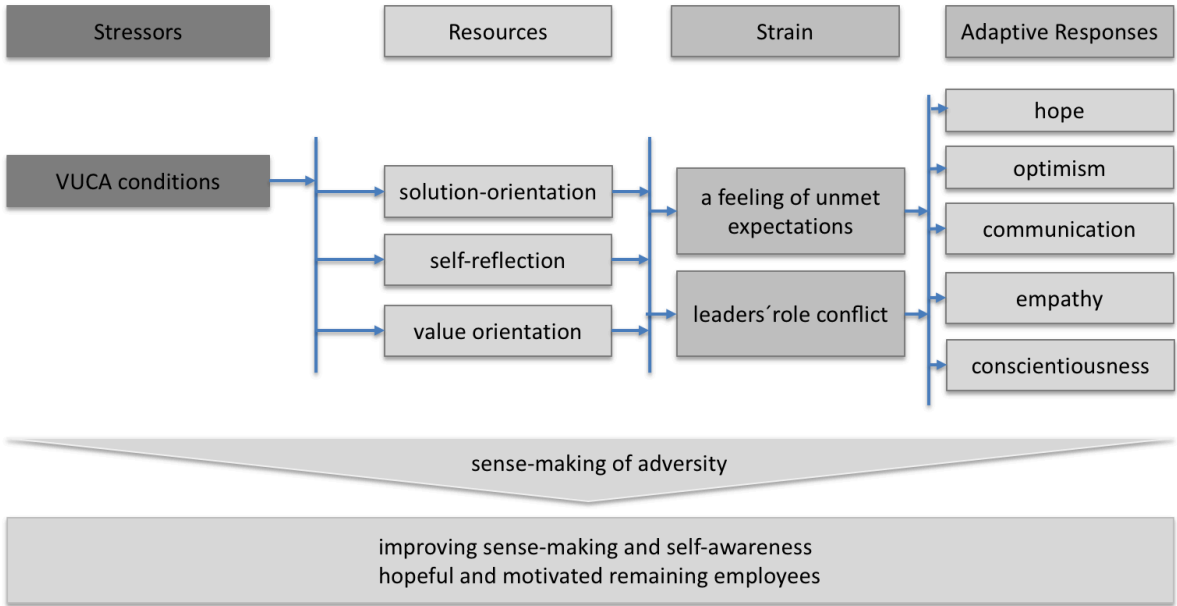


Figure 16: Overview of the process of adaptation to adversity in interview 1

Interviewee 1's feeling of unmet expectations was affected by the value of social responsibility conflicting with the expectation of the leader's role for rational decision-making. Disappointed, frustrated employees with worrying about their future exacerbated Interviewee 1's struggling for adaptation. Surprisingly, Interviewee 1's value orientation of social responsibility was also the key driver for the adaptation strategy to the adverse situation. One could gain the false impression that the same mechanism of social responsibility affected the negative feelings of struggling and the created adaptation strategy due to social responsibility. This was simultaneously activated with other interdependent resources, such as the conflicting role expectation of rational decision-making with the result of a sense of struggle affected by the feeling

of unmet expectations and self-reflection and solution orientation with the outcome of adaptive responses. This means that the positive or negative impact of value orientation, e.g., social responsibility, is affected by the context and the specific combination of activated resources. For example, due to his high level of social responsibility, Interviewee 1 adapted with valuable and empathic communication with the employees. His leadership with a process of sense-making and a forward perspective gave the remaining employees hope and motivation. Additionally, Interviewee 1 made sense of this adverse event by focussing his enhancement on his self-awareness of dealing with people in adverse situations.

The behavioural pattern showed by Interviewee 1 and the underlying mechanisms are part of an authentic leadership style. The internalised moral perspective was represented by the value of social responsibility, the balanced processing and relational transparency were implemented by the hopefully and empathic communication with the employees, and the process of sense-making and giving an optimistic perspective for all. Finally, the dimension of self-awareness was applied by self-reflection, the outlined need of social responsibility, and by enhancing his self-awareness.

The implication of this adaptive process is that leaders applying the authentic leadership style are able to adapt to adverse events, especially situations of struggle affected by conflicts between value orientation and rational decision-making. In sum, to support the process of adaptation, leaders should use authentic leadership, self-reflection and solution orientation.

5.1.3.1.2 Interview 2

Interviewee 2, the CEO of a regional banking institute, outlined that the main stress factor was that the former CEO had had a patriarchal leadership style and therefore the management board colleagues expected the same style from him. Nevertheless, the board members had had trust despite a feeling of uncertainty regarding the new situation. These stress factors activate self-centred resources, such as authenticity, value orientation, emotion regulation, self-efficacy, a basic feeling of trust, and self-reflection, but also self-doubt, bad feelings, and an internal struggling arising from his own doubts and fear of how to deal with this expectation in relation to his own style of

leadership. The responses to strain situations were structural giving time for change, using team building activities, qualifying the board member in strengths-orientation, as well as the usage of external coaching. However, behavioural aspects were represented by empathy in communication and demonstrating his own emotions and feelings. Interviewee 2's sense-making of adversity focussed on his improved self-awareness about his and others' strengths, and his knowledge that he was a victim of his own expectations. Later on, he got positive feedback from others. The feedback at the start was critical. Figure 17 summarises the process of adaptation in this interview.

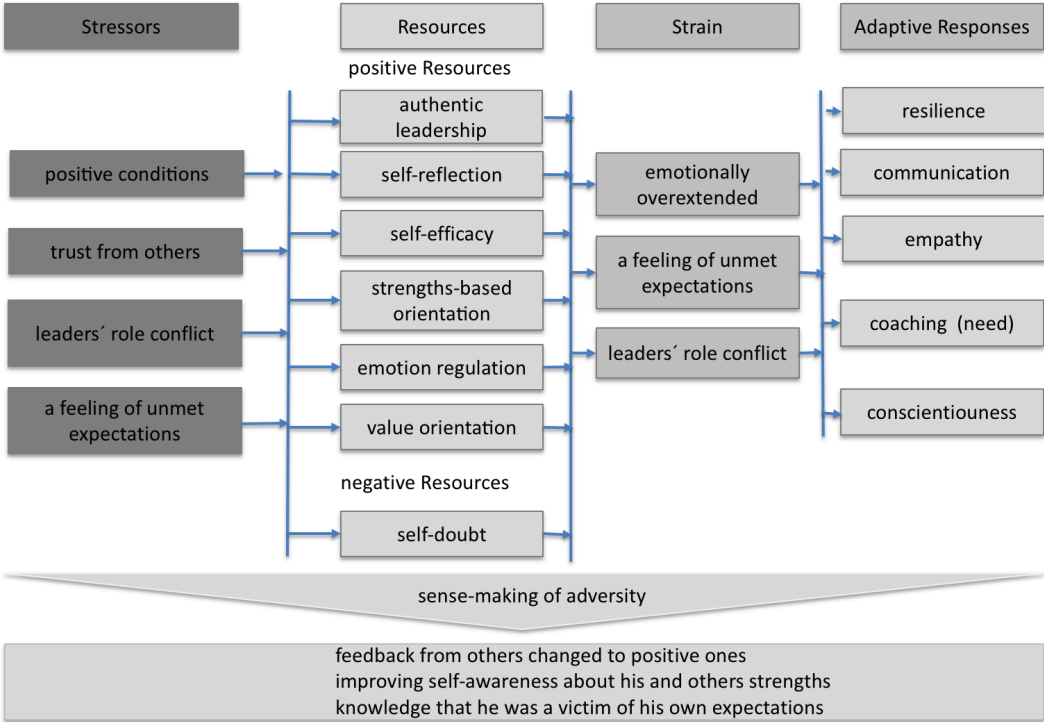


Figure 17: Overview of the process of adaptation to adversity in interview 2

The special feature of this adverse situation is that it occurred within an environment of positive conditions and the basic trust of the other involved people. Long-term experiences from the board members of a patriarchal leadership style led to the expectation that leadership would continue in this pattern. This gave them psychological safety - like a comfort zone. Interviewee 2 tried to break the old pattern based on his understanding of authentic leadership and intended to leave the comfort zone. A feeling of his own doubts and fears and of how to deal with this dilemma was affected by a feeling of unmet expectations. However, the board members' basic trust of Interviewee 2 prevented resistance against the forthcoming activities. Interviewee

2's adaptive strategy was to use team building to intensify trust and to educate the board members in his preferred leadership style while applying this style during the process. Leading the people out of the comfort zone within a given holding environment is a similar behavioural pattern to the adaptive leadership style. Furthermore, the activated resources, such as authentic leadership, value orientation, emotion regulation, self-efficacy, and self-reflection, are similar expressions of the authentic leadership style. Hence, an extraordinary facet of Interviewee 2's adaptive strategy was the use of external support by a coach regarding his own stress management and training, resilience-oriented behaviour and the qualification of the board members as a trust building activity. The implication of this adaptive process is that an authentic leadership style is able to adapt to the adverse event of a change situation, which takes people out of their comfort zone. Hence, the prerequisite for this is trust and external support that to help stabilise the change process.

5.1.3.1.3 Interview 3

Interviewee 3, a middle level manager within a transportation company (Ready-mix concrete), expressed that the relevant stress factors were being taken over by another company, deterioration in corporate climate, a loss of employee satisfaction, and negative emotions of anger and aggression as a result of decision failures concerning communication and transparency. These stress factors activate optimism, positive attitudes, value orientation, self-efficacy, self-reflection, and an internal struggle that emerged from an inner tension between a rational and reasonable intended solution orientation and a very negative emotional environment. In response to strain situations he tried to calm down emotions, offer a moderation role, and reach a consensus between all stakeholders. Later on, he applied reflection with other leaders when discussing the situation. Interviewee 3's sense-making of adversity focussed on his enhanced knowledge about the importance of empathic communication and the necessity of a prepared coping strategy. He identified the need for a coach as a sparring partner and his role in supporting the adaptation process so that at the end "...the settlement was also once again easier." Figure 18 summarises the process of adaptation in this interview.

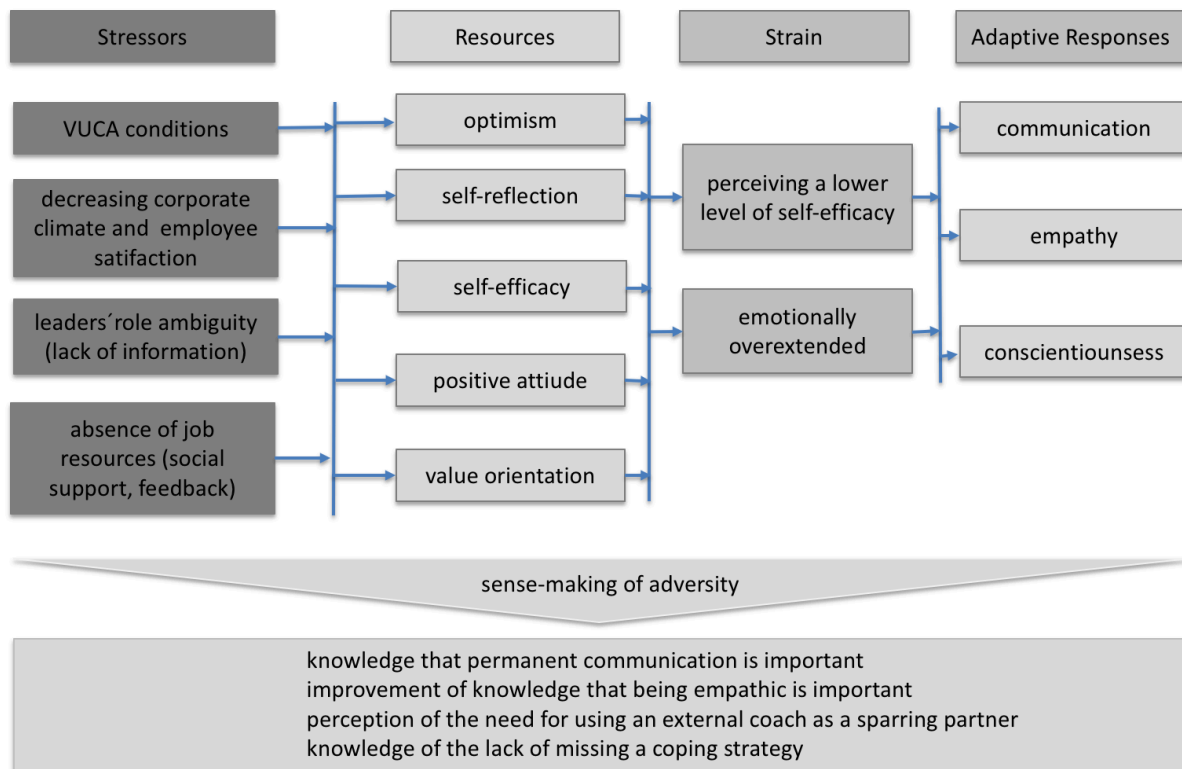


Figure 18: Overview of the process of adaptation to adversity in interview 3

The environmental conditions of this adverse situation could often be found in such contexts. In this particular situation Interviewee 3 was in a sandwich position as a middle management leader dealing with the results of decision failures from above. The retrospective sense-making showed that he was not prepared for such situations and he had no opportunity for external support. His adaptive strategy was mainly based on his optimism and positive attitude “...in the long run that gave me the backing...” and his value orientation “...I held them high for myself...” In the absence of other available strategies, he applied a typical conflict moderating strategy of calming down the environment, moderating the distinct interests, and trying to find a consensus. His adaptive strategy of positive attitudes, value orientation, self-efficacy, and self-reflection corresponds with particular facets of the authentic leadership style, especially regarding value orientation.

The implication of this adverse situation is that middle management leaders are in a “sandwich position” should have adaptive strategies for distinct scenarios and the company should provide external support, such as coaching. Hence, middle management leaders benefit from the authentic leadership style as a basis for adaptation to adversity.

5.1.3.1.4 Interview 4

Interviewee 4, the interim manager in a German banking organisation, identified the main stress factor as the conflict between different employees with their expectations for him to solve the problem in their own specific interests. These stress factors activate positive motivation, optimism, such as curiosity, a feeling of responsiveness and morality, trust, sense of belonging, self-efficacy, self-reflection, role clarity, and internal struggling, that was associated with the tension arising from conflicting motivational needs of curiosity "...you haven't had such an exciting situation so far so let's now see how you can deal with it best" and the rational decision-making related to the expectations of the employees. The response to that strain situation was expressed by trustful communication with his supervisor to get support and to communicate the facts to employees in a rational and valuable way with the aim of offering different perspectives and giving the participants the option to make their own decisions about what they wanted to do. Interviewee 4's sense-making of the adverse event focussed on his learning and self-development, and increased trust in his supervisor because "if I had not had a budget [from a supervisor] for this settlement job, I would not have managed it" and his role in supporting fair solutions to solve conflicts. Figure 19 summarises the process of adaptation in this interview.

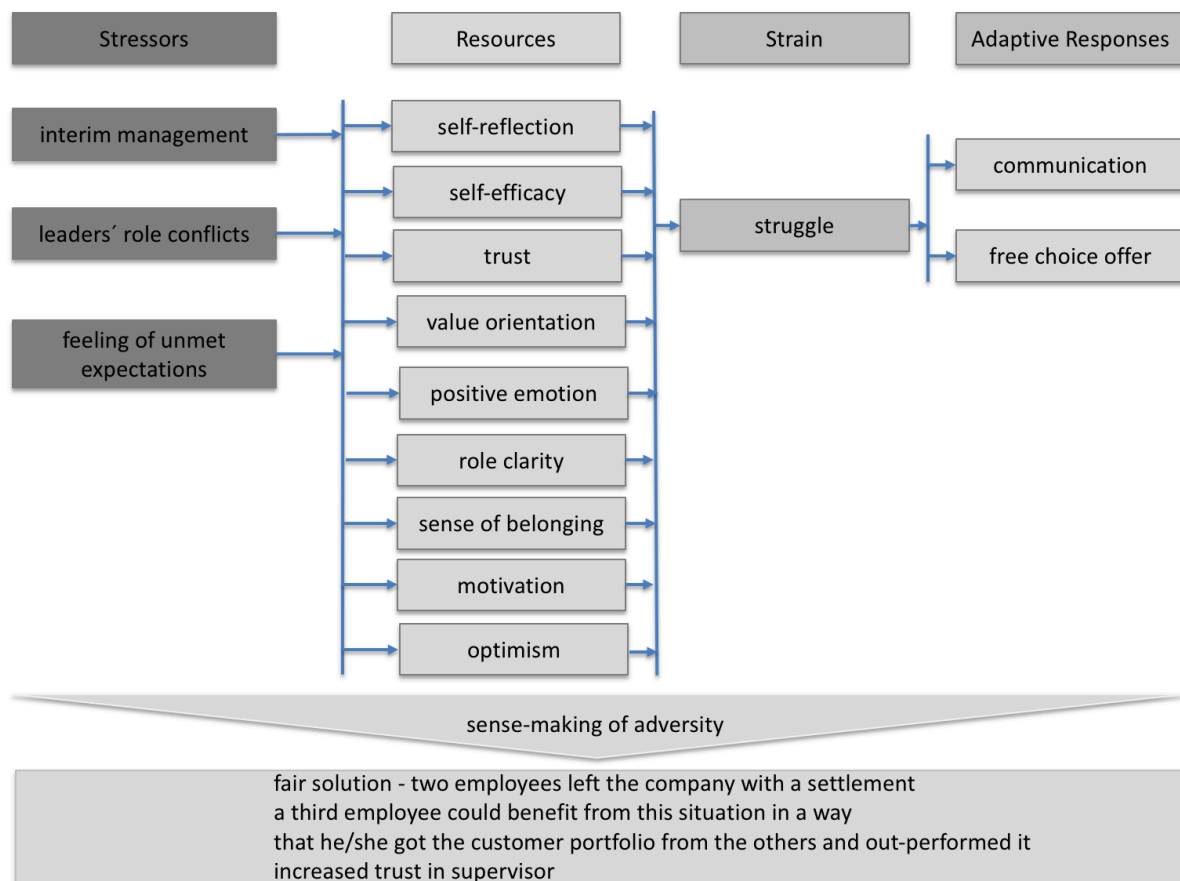


Figure 19: Overview of the process of adaptation to adversity in interview 4

The context of this adverse event was determined by both, positive conditions such as interim management and negative conditions derived from human fallibilities of interpersonal conflicts and intrapersonal conflict based on specific working conditions, e.g., a permanently ill team member. Hence, the expectations of the conflict participants that the leader should solve the problem in their specific interests lead to a leaders' role conflict and a feeling of unmet expectations. Another very interesting question in this situation was: What was the basis for the motivation (attitude) of the leader to deal with this adverse event? It might be an ambiguous one: "Well, with situations that I do not know already, first of all, I see them as a challenge or a possibility to learn and to further develop myself." Did this focus rely on his own development without emphasising the impact on others or was it an authentic and optimistic way to deal with the adversity in a valuable manner based on his principle to "...always to see the human being," and trust, that "...is for me indispensable." Interviewee 4's significant statement was: "if I had not had a budget for this settlement job, I would not have managed it.". It might be that a perception bias was affected by an overoptimistic view of the situation. Another issue might be that due to avoiding

acknowledgement of his own weaknesses and feelings of “I am not strong enough” by his supervisor, he might overplayed his strengths and made wrong conclusions.

The data gives evidence that the basis for the motivation was an authentic one based on humanity combined with a coaching oriented style of leadership reflecting all possible perspectives with the participants having free choice to find their own best solution. The activated resources such as optimism are similar to the authentic leadership style. Nevertheless, the data also shows that Interviewee 4’s decision-making was determined by an external source of a given budget from the supervisor, otherwise the solution would not work and he could not manage the situation. There was no alternative plan. Therefore, some level of biased perception about his own opportunities can be supposed. Nevertheless, Interviewee 4 used his trust relationship with the supervisor to create a fair solution for all participants.

The implication of this situation is that the authentic leadership style could also be applied in the interim management context to adapt to adversity. Regarding this specific context, a trust relationship with the supervisor is essential for decision-making. The supposed biased perception can be reduced by external support, such as coaching.

5.1.3.1.5 Interview 5

Interviewee 5 is a supply chain manager in a paper industry company who expressed that the main stress factors were a merger of his company division to another company with a different operating style and a disproportion of employees from his team regarding the merger team with the result that “...it didn’t work well.” These stress factors activate trust as the basis for communication, self-reflection with a future and change orientation. He experienced that reflection on the past might lead to change resistance, a feeling of crisis “...not downcast but somewhat groggy...” and a feeling of being dazzled down by the situation: “The fuse has perhaps become a little shorter.” The responses to strain situations were a mixture of confrontation and biding his own time, spending time to get to know each other, and empathic communication. Interviewee 5’s sense-making of the adverse event focussed on his skill enhancement of active listening, no prejudice, taking others seriously, being empathic, and asking

what the problems were. Figure 20 summarises the process of adaptation in this interview.

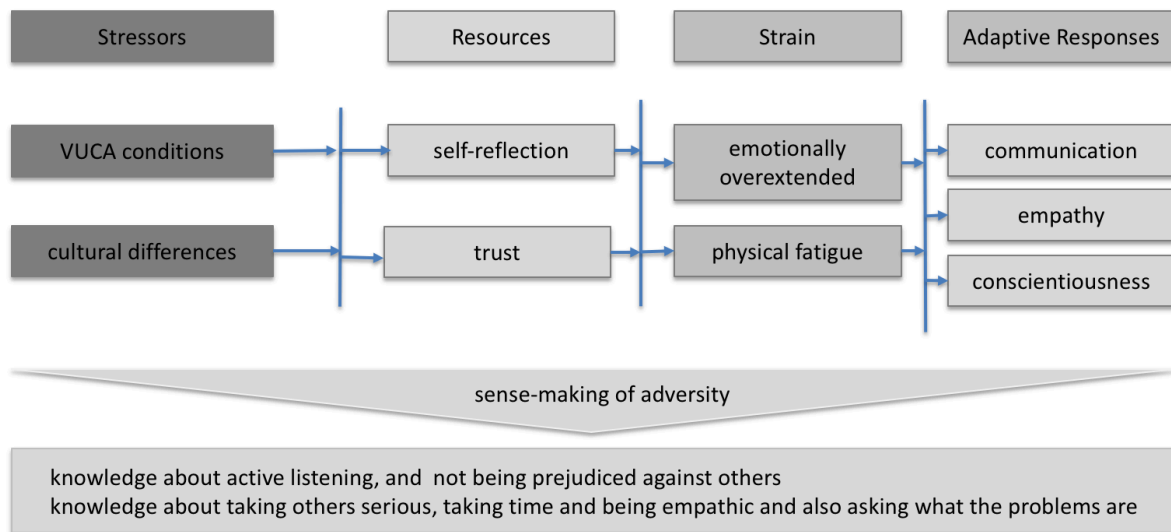


Figure 20: Overview of the process of adaptation to adversity in interview 5

This situation shows a change process during a merger context with a significant level of temporal overwhelming of Interviewee 5 - emotional exhaustion. The affected people were not informed in time and included in the decision process. The main basis for adaptation was expressed as trust "...after all, we are all new colleagues and trust, I think, is incredibly important..." Regarding the specific report "...after all, we are all new colleagues..." it can be argued that this kind of trust feeling was based on hope and optimism because Interviewee 5 criticised later within the aspect of self-reflection that "...continuously reflecting, the past becomes more and more rosy and that is, of course, the reason why change is sometimes difficult. When people want to stick to the established..." and "...for some things it can be more of an obstacle...". This expressed his underlying motivation for future orientation and quickly moving forward. Regarding his critique on self-reflection, it can be supposed that he had to spend a lot of time communicating with suffering employees. Subsequently, he perceived that he got impatient and nervous "...my fuse has perhaps become a little shorter". He would react with confrontation but in time recognised "...that [it] would be problematical but, after all, it did not make sense to adopt a course of confrontation any earlier." Surprisingly, the motivation of Interviewee 5 changed during the process because activities to get to know each other took place and the people developed a certain amount of appreciation for the environment of the others. Interviewee 5 made positive

progress in terms of his skill improvement in the learned skills of active listening, no prejudice, taking others seriously, being empathic, and asking what the problems are. Interviewee 5's motivation changed from future orientation and moving quickly forward to mutual understanding and appreciation which supports trust building. The improved skillset is similar to the skills someone needs to apply an authentic leadership style. It can therefore be argued that Interviewee 5 enhanced his style repertoire regarding authentic leadership.

The implication is that in crisis situations trust improves the adaptation process because it gives meaning to people who are at risk or vulnerable. Furthermore, the behavioural pattern of active listening, and asking what the problems are as well as the psychological skills of no prejudice, being empathic, and taking others seriously supports overcoming emotional exhaustion events because it improves trust building based on the authentic leadership style. Furthermore, there is evidence that self-reflection needs a structured and controlled application otherwise it is at risk of producing a negative impact, such as suffering or self-rumination.

5.1.3.1.6 Interview 6

Interviewee 6, the managing director of a social work company for education, outlined that the main stress factors were the current investment programme was based on legal conditions which no longer applied after 31.12 of that year without there being any further prospects. Subsequently people were going to lose their jobs and colleagues were asking what their personal prospects were. These stress factors activated responsiveness and fairness, self-efficacy, trust, especially "trust in god", a reflecting process, but also temporary self-doubt and internal struggling associated with insecurity and the tension arising from conflicting rational decisions and emotional needs for sympathy. The response to strain situations were to involve all stakeholders inside and outside the company by applying transparency and communication about all facts and to provide optimism and communication with the employees based on actively listening to their concerns. Interviewee 6's sense-making of the adverse event focussed on her experience that such adverse situations need teamwork to be manageable and the enhanced self-awareness that the responsibility to overcome the adverse event was not based on her alone. Figure 21 summarises the process of adaptation in this interview.

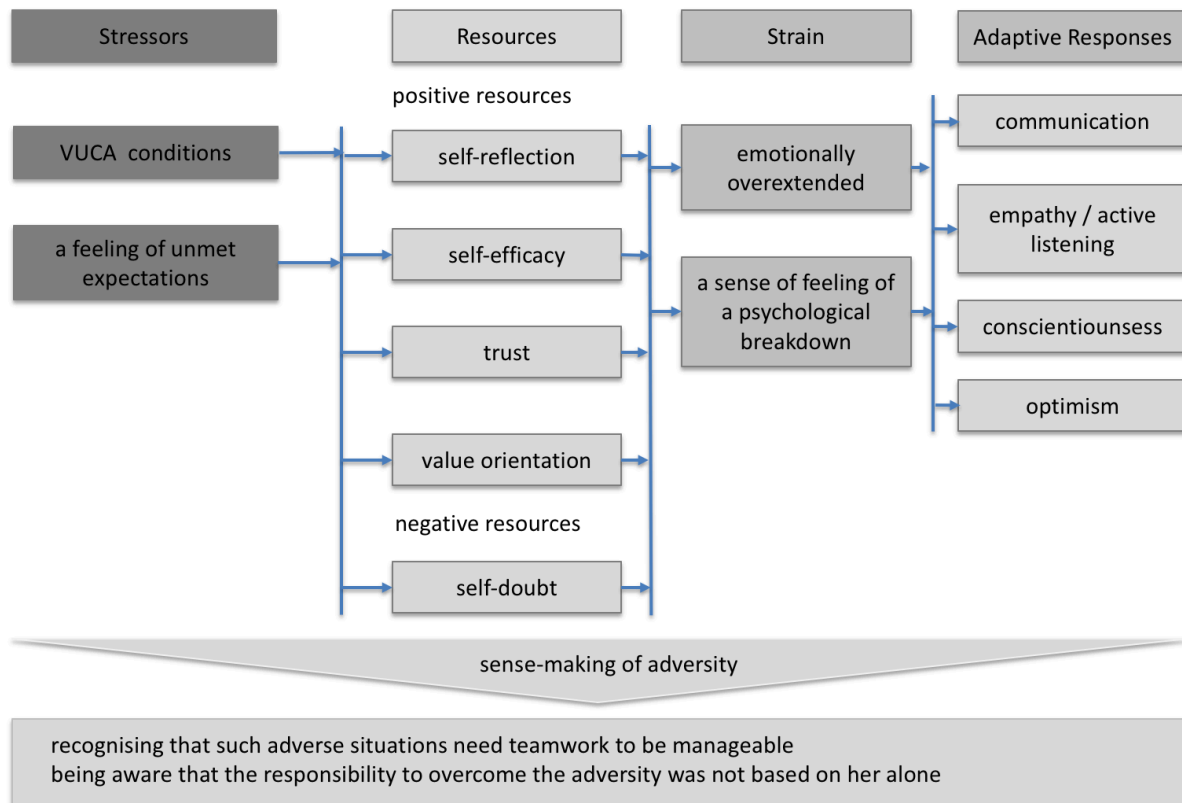


Figure 21: Overview of the process of adaptation to adversity in interview 6

Within the extreme conditions where the organisation had no perspectives for survival, Interviewee 6 judged the adverse event as feeling emotionally overextended and a sense of feeling of a psychological breakdown; "...naturally, that cuts right into the heart, that it is real people that are going to lose their jobs.". This was affected by experiences from the past with similar situations, and consequently she built a high level of trust "...at least partially trust in god, we are used to such situations ...". This feeling of trust was accompanied by hope: "What did I hope for at the beginning of the year..." and temporary self-doubt "...certainly also partially self-doubt whether one has thought about everything, that does exist...", whereby her high level of self-efficacy "...my feeling that what I do, I do correctly,..." reduced the self-doubt during the process. It can be supposed that Interviewee 6 had a high level of expectation of her own ability to solve the problems derived from the basic values of responsiveness, fairness, and relational orientation. This was evidenced in the way that she talked about "emotional needs for sympathy" and in the retrospective sense-making that there is a need for teamwork to manage such adverse events and that she is not solely responsible for the success. The behavioural pattern shown by Interviewee 6 and the underlying resources are similar to the authentic leadership style. The internalised moral

perspective was represented by the value of responsibility and fairness, the balanced processing and relational transparency that were implemented by involving all stakeholders inside and outside the company, applying transparency and communication about all facts and providing optimism and communication with the employees based on actively listening to their concerns. In addition, the dimension of self-awareness was applied through self-reflection, self-efficacy, and then outlining the need for responsibility and fairness. The implication of this adaptive process is that leaders applying the authentic leadership style based on trust are able to adapt to such extreme adverse events. Experiences from the past helped to build trust and hope to deal successfully with future adversity. Thereby, a high level of self-efficacy can reduce self-doubt. Leaders should reflect on their own expectations to reduce the risks of perception biases, e.g. thinking that they must solve problems alone.

Beside the analytical resolution of each interview, the transcribed text of each interview was coded. The following section describes the coding process of the findings.

5.1.3.2 Summary of coding scheme from all interviews

The summarising of the codings (see appendix C) regarding their categories supports the process of retroduction. It allows for the identification of possible relations within a single interview and for combination of the interview findings. The aim is to find mechanisms and conditions that make leaders' adaptation to adversity possible. Table 6 shows the codings of all interviews regarding their categories.

Table 6: Overview of the codings of all interviews

Inter- view	Stress factors	Resources	Strain factor	Adaptive Responses	Sense- making of adversity
1	job related conditions of burnout - VUCA and negative emotions of employees	Solution orientation Team- and Self-reflection to find the best solutions	leaders' personality and job attitudes of burnout - a feeling of unmet expectations job related conditions of burnout - leaders' role conflicts	Give a hopeful and optimistic view by fast transparency and clarity about the situation, what happens next and what is the future goal valuable and empathic communication with the employees	Sense-making and Self-Awareness of Interviewee 1 Hopeful and motivating remaining employees

		Social responsibility and justice		Sense-making and give a forward perspective, conscientiousness (achievement), hope Appreciation for the commitment of all participants	hope in terms of future perspectives
2	<p>Positive Assumption of a CEO Position</p> <p>Different leadership styles</p> <p>Trust, despite a feeling of uncertainty regarding the new situation</p> <p>Young age, allowed to break the rules</p> <p>job related conditions of burnout - leaders' role conflicts</p> <p>leaders' personality and job attitudes of burnout - a feeling of unmet expectations</p>	<p>Identity, self-concept - value orientation</p> <p>Strengths based Workshops</p> <p>Authentic leadership "to be authentic"</p> <p>Not having to be a superman (emotion regulation, self-efficacy, and social identity)</p> <p>Emotion regulation - be aware of one's feelings</p> <p>Self-doubt - Simultaneously switch back and forth between a basic trust feeling and doubts</p> <p>Self-Reflection to be authentic</p>	<p>Emotional exhaustion - emotionally overextended</p> <p>leaders' personality and job attitudes of burnout - a feeling of unmet expectations</p> <p>job related conditions of burnout - leaders' role conflicts</p>	<p>Usage of external Coaching</p> <p>Allow and show emotions/communication</p> <p>Resilient behaviour, expressing feelings - a process that lasts years</p> <p>Usage of workshops and trainings/ Conscientiousness (achievement)</p>	<p>Feedback comments changed to positive ones</p> <p>Self-Awareness</p> <p>Authentic leadership</p>
3	<p>job related conditions of burnout - VUCA conditions</p> <p>Decrease corporate climate and employee satisfaction</p>	<p>Positive attitude</p> <p>Optimism gave backing on the long run</p> <p>Value orientation</p> <p>Self-efficacy</p>	<p>leaders' personality and job attitudes of burnout - perceiving a lower level of self-efficacy</p> <p>emotional exhaustion - emotionally overextended</p>	<p>Be calm and consensus oriented/take time</p> <p>Moderator role/communication/ Conscientiousness (achievement)</p> <p>Self-efficacy</p>	<p>permanent communication</p> <p>Be empathic</p> <p>Missing strategy</p> <p>External Coach as a</p>

	<p>job related conditions of burnout - role ambiguity (lack of information)</p> <p>job related conditions of burnout - absence of job resources (social support, feedback)</p>	Self-Reflection		Reflection with leaders	sparring partner
4	<p>(Leadership) Interim management</p> <p>job related conditions of burnout – leaders' role conflicts</p> <p>leaders' personality and job attitudes of burnout - a feeling of unmet expectations</p>	<p>Positive emotion</p> <p>Motivation</p> <p>Optimism – a challenge or a possibility to learn from them</p> <p>Responsiveness and Morality</p> <p>Sense of belonging</p> <p>Trust</p> <p>Self-efficacy and values</p> <p>Self-reflection</p> <p>Role clarity</p>	<p>Struggle really challenging situation and exciting situation so far now see how you can deal with it best</p>	<p>Communicating the facts</p> <p>Communication with supervisor</p> <p>Free choice offer</p>	<p>Two employees left the company</p> <p>Third party benefit</p>
5	<p>job related conditions of burnout - VUCA conditions</p> <p>Cultural differences</p>	<p>Trust</p> <p>Self-reflection</p>	<p>emotional exhaustion - emotionally overextended, physical fatigue</p>	<p>Mixture of confrontation and biding one's time</p> <p>Get to know each other/ Conscientiousness (dependability)</p> <p>Empathy/communication</p>	<p>Active listening, no prejudice</p> <p>Take others seriously</p> <p>be empathic</p> <p>Ask what the problems are</p>
6	<p>job related conditions of burnout - VUCA conditions</p>	<p>Responsiveness and Fairness</p> <p>Self-efficacy</p>	<p>Emotional exhaustion - emotionally overextended, a</p>	<p>Transparency and Communication</p>	<p>Teamwork</p> <p>Self-efficacy</p>

	leaders' personality and job attitudes of burnout - a feeling of unmet expectations	Trust Reflection Self-doubt	sense of feeling of a psychological breakdown	Optimism – pass the challenge in order to deal with it Talking about risk management/ Conscientiousness (dependability) Active Listening based on optimism	
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The table above represents the primary codes. The next step is retroduction, which means to summarise them under more abstract categories and to identify the underlying mechanisms and conditions, and to combine the findings with the existing literature.

5.1.3.3 Retroduction

The starting point of retroduction is a process of abstraction of the codings regarding the categories of stress factor, strain factor, resources, and responses. Table 7 shows the categorisation of the codings regarding their appearance in the interviews. Single codes, which only appear in a single interview are categorized under a higher-level code. Higher-level code categories are job related conditions of burnout, leaders' personality and job attitudes of burnout, emotional exhaustion, psychological capital, authentic leadership and positive conditions. The interviews identified regarding the specific code, e.g., VUCA conditions, are presented in parentheses e.g., (Interviews 1, 3, 5, 6) in a separate column.

Table 7: Overview of the categorised codes

Stress factor	Resources	Strain	Adaptive Responses
job related conditions of burnout - VUCA conditions (Interviews 1, 3, 5, 6) - leaders' role conflicts	Self-Reflection (Interviews 1, 2, 3, 4, 5, 6)	Leaders' personality and job attitudes of burnout - a feeling of unmet expectations (Interviews 1, 2, 3)	Communication (Interviews 1, 2, 3, 4, 5, 6)

<p>(Interviews 2, 4)</p> <p>- role ambiguity (lack of information) (Interview 3)</p> <p>- absence of job resources (social support, feedback) (Interview 3)</p>		<p>- perceiving a lower level of self-efficacy (Interview 3)</p>	
<p>leaders' personality and job attitudes of burnout - a feeling of unmet expectations (Interviews 2, 4, 6)</p>	<p>Psychological capital</p> <p>- self-efficacy (Interviews 2, 3, 4, 6)</p> <p>- optimism (Interviews 3, 4)</p>	<p>Emotional exhaustion</p> <p>– emotionally overextended (Interviews 2, 3, 5, 6)</p> <p>- physical fatigue (Interview 5)</p> <p>- a feeling of psychological breakdown (Interview 6)</p>	<p>Empathy (Interviews 1, 2, 3, 5)</p>
<p>Positive conditions (Interview 2)</p>	<p>Trust (Interviews 4, 5, 6)</p>	<p>job related conditions of burnout - leaders' role conflicts (Interviews 1, 2)</p>	<p>Coaching (need) (Interviews 2, 3)</p>
	<p>Value Orientation/Ethics/Responsiveness (Interviews 1, 2, 3, 4, 6)</p>	<p>Struggle</p> <p>really challenging situation and exciting situation so far now see how you can deal with it best (Interview 4)</p>	<p>Conscientiousness (Interviews 1, 2, 3, 5, 6)</p>
	<p>Self-doubt (Interviews 2, 6)</p>		<p>Psychological capital</p> <p>Hope (Interview 1)</p> <p>Optimism (Interviews 1, 6)</p> <p>Resilience (Interview 2)</p>

	Authentic leadership (Interview 2)		
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The following section outlines the results of the code abstraction and its combination with the literature review results.

5.1.3.3.1 Stress factors

Job related conditions of burnout are identified in all 6 interviews (Maslach et al., 2001). VUCA conditions were found in 4 of the 6 interviews. This supports the assumption that economic-oriented external factors can affect adverse conditions (Barkouli, 2015; Breen, 2017). In particular, the data shows leaders' role conflicts in interview 2 and 4, leaders' role ambiguity and the absence of job resources (social support, feedback) in interview 3 can affect a stress-strain reaction by the leaders (Maslach et al., 2001). Further on, in interviews 2, 4 and 6 the job-related conditions of burnout were accompanied by a feeling of unmet expectations which could affect higher risks of burnout (Everall & Paulson, 2004; Lait & Wallace, 2002; Maslach et al., 2001). Surprisingly, in interview 2, overall positive conditions, such as occupying a CEO Position and to get trust from other board members lead to a feeling of uncertainty regarding the new situation. This phenomenon could be confirmed by the findings of Schein (2010); Weick and Quinn (1999) that also planned changes of organisations or planned cultural changes labelled as "true transformations" can also lead to adversity.

5.1.3.3.2 Strain

In 4 of the 6 interviews 2, 3, 5, 6 the burnout dimension of emotional exhaustion (Maslach & Jackson, 1981b) was identified as a response to job stressors such as overwhelming work demands and adverse working conditions (Everall & Paulson, 2004). In particular, in interviews 2, 3, 5, 6 the data shows the strain aspects of being emotionally overextended and in interview 5 of physical fatigue and also a feeling of psychological breakdown in interview 6. Further on, the leaders in interviews 1, 2, and 3 identify strain as a feeling of unmet expectations and in interview 3 as accompanied by perceiving a lower level of self-efficacy. Also, the leaders in interview 1 and 2 expressed strain affected by conflicts in their role as leaders. For example, in interviews 1, 3 and 6, the leaders outlined that their feeling of strain was high by dealing with the dilemma between rationality and emotion. The rational aspect was trying to

solve the situations with objective data, facts, and arguments, and the emotional aspects were influenced by thoughts about social responsibility, justice, ethics, and social relations. In interview 2, the strain was derived from intrapersonal aspects of doubt and fear based on an intrapersonal role conflict between the leaders' and others' expectations about his own behaviour. This phenomenon was also reported by Stoner and Gilligan (2002) in the way that fear could accompany adversity related to leaders' expectations of success and their feelings of control (self-doubt). The experience reported by the leader in interview 5 can be categorised as a tendency for emotional exhaustion with a feeling of physical fatigue (Maslach & Jackson, 1981b), identified negative and emotionally draining conditions, such as "...well, yes, not depressed but certainly a bit, ..., groggy..." and he also pointed out that "The fuse has perhaps become a little shorter." In interview 6 the leader reported her sense of a feeling a psychological breakdown "...naturally, that cuts right into the heart, that it is real people that are going to lose their jobs."

Furthermore, interview 4 confirms the findings of Kouzes and Posner (2014); Pellegrini (2009) that adversity is an opportunity to learn and grow. The leader described a "really challenging situation" together with feelings of curiosity and motivation to learn "...you haven't had such an exciting situation so far, now see how you can deal with it best." The findings in interview 4 could also be interpreted as revealing a positive psychological strain, e.g., stimulation and motivation depending on the available resources (Rudow, 2005, 2014).

All interviews show a pattern of burnout tendencies. The burnout dimension of emotional exhaustion is particularly evident. The burnout conditions of unmet expectations and the leaders' role in conflict were perceived by the leaders as particular strains of dilemma situations. Therefore, it can be argued that burnout tendencies are the predominant pattern for leaders affected by stress conditions.

5.1.3.3.3 Resources

The majority of participants described self-reflection, dimensions of psychological capital such as self-efficacy and optimism, trust, and value orientation/ethics/responsiveness as resources that they applied. Resources identified

in single interviews also included solution orientation (Interview 1), emotion regulation (Interview 2), positive attitude (Interview 3), and role clarity (Interview 4).

Self-Reflection

In all 6 interviews, the participants reported the ability to use self-reflection. Self-reflection was used to find the best solutions and ways of communication (Interview 1), to be authentic (Interview 2), to question one's own behaviour (Interview 3), to ask myself first of all whether it is my fault (Interview 4), to see where you come from and where you want to go (Interview 5), and to use the quality management system to assess the organisation (Interview 6). This interview study data confirms the finding in the literature review that self-reflection enables, for example, staying personally centred and focussed while leaving the comfort zone within the adaptive leadership model (Heifetz & Linsky, 2002; Yukl & Mahsud, 2010).

In interview 5, the leader had some criticism of self-reflection. According to this leader, if people focus too much on the past, it can become more and more rosy as it is a human characteristic to quickly forget bad things and only to remember the good. However, outside of the selected literature, there is a small amount of literature that criticises self-reflection and investigates the dark side of it, including self-rumination and the need for absolute truth within the context of mental health (Simsek et al., 2013; Simsek, 2013). According to Rennison (2014) there could be specific restrictions to using self-reflection, e.g., the perception of needing to change old behaviour could cause negative feelings, such as fear, anxiety, and a heightened sense of insecurity.

Psychological capital

Two dimensions of psychological capital: self-efficacy and optimism were found to be activated as a resource within this study.

The mechanism of self-efficacy was identified in 4 interviews (Interviews 2, 3, 4, 6). In Interview 2 the leader had a feeling of not having to be always “a superman” and in Interview 3 self-efficacy influenced the level of experienced tensions depending upon the situation, for example, it got better towards the end of adversity. In interview 4 the

leader outlined that self-efficacy is down to him and that it is based on knowing oneself and knowing one's own strengths. Furthermore, in Interview 6, the leader reported some self-doubt and absence of self-efficacy but later on he remembered a feeling that "...what I do, I do correctly..." This data confirms the description of self-efficacy in the selected literature where it is defined as the belief that someone has the power to produce intentional effects, even in the face of difficulties (Bandura & Locke, 2003). It can regulate humans' behavioral patterns by cognition, motivation and emotions (Bandura, 1977) and influence the feeling of vulnerability to stress (Bandura & Locke, 2003). Hence, self-efficacy is one dimension of psychological capital (Avey et al., 2009) and it indicates that psychological capital can be identified as a relevant resource of leaders to adapt to adversity.

Optimism was activated in 2 interviews (Interviews 3, 4). For example, the leader in interview 3 reported that his positive attitude supported him in the long run and the leader in interview 4 talked about how he saw adverse events as a challenge or an opportunity to learn for future development. This corresponds with making a positive attribution (optimism) about succeeding now and in the future (Luthans, Avolio, et al., 2007).

Trust

4 interviews (Interviews 2, 4, 5, 6) identified the two distinct mechanisms of trust, including self-trust (Govier, 1993; Lehrer, 1997) and trust in others (Fukuyama, 1995; Luhmann, 1982). For example, the leader in interview 2 had dealt with a conflict between self-trust and self-doubt. The phenomenon of self-trust seems to be an important condition of personal autonomy and self-respect and it also includes a positive sense of motivation and acceptance of vulnerability (Govier, 1993). These conditions were discussed in interview 2. Interviews 4, 5, 6, discussed the social mechanism of trust in others. Trust in others was indispensable to the leader in interview 4 and the leader in interview 5 outlined the huge importance of trust in others, especially when being with new colleagues. One special characteristic of trust in others was reported by the leader in interview 6 as being trust in god and this trust was a necessary condition for her sense of belonging. This confirms the description of trust as a mechanism of structuring social relations (Luhmann, 1982). Trust is related to psychological capital and both of these were identified as mediators between authentic

leadership and performance (Clapp-Smith, Vogelgesang, & Avey, 2009; Norman, 2006; Walumbwa et al., 2011).

Value orientation/ethics/responsiveness

The mechanism of ethics and value orientation characterised by being responsible for one's own decisions, behaviour, and attitudes was identified in 4 interviews (Interviews 2, 3, 4, 6). In interview 2 the leader showed some value orientation and responsibility for his decisions regarding his understanding of authentic leadership by reflecting on his weaknesses and strengths. He also described his leadership style as "authentic". The leader in interview 3 stated that a high level of value orientation was important for him throughout the process. In interview 4 the leader presented a calm and active listening behaviour based on his belief in always considering the human being with the effect of taking responsibility for decisions over a longer period of time. The leader in interview 6 spoke of justice and a natural responsibility with employees and management considering everything together. These findings reflect the existing literature regarding the internalised moral perspective of authentic leadership (Kolditz, 2010; Northouse, 2012).

Self-doubt

In interviews 2 and 6 the leaders dealt with self-doubt in relation to trust conditions. In interview 2 the leader had had to manage a conflict between self-trust and self-doubt. In interview 6 feelings of trust and hope were accompanied by temporary self-doubt, "...whether one has thought about everything...". Low self-efficacy can cause self-doubt (Jerusalem & Schwarzer, 1992; Siu, Lu, & Spector, 2007) and leaders facing adversity with a high level of self-doubt about their own efficacy can be overwhelmed by endless situation analysis so that their performance decreases (Bandura & Wessels, 1994). Self-doubt seems to be a phenomenon related to trust and self-efficacy, whereby self-efficacy is an aspect of psychological capital.

Sense-making of adversity

Leaders in all 6 interviews described the sense-making of the adverse event they experienced. One leader made positive sense of her/his adaptive strategy and another reported an increased self-awareness about his and others' strengths. Other leaders learnt not to be a victim of their own expectations and the necessity of a prepared coping strategy and having a coach as a sparring partner. Some also reported the need for skills such as active listening, no prejudice, taking others seriously, being empathic, and asking what the problems were as well as recognizing the need for teamwork to manage adverse events. The interview data also shows that all leaders made positive sense of their experience of adversity and used it as a learning opportunity (Bartone, 2015; Weis, 2012). Some used sense-making of adversity to facilitate their process of complex problem-solving (Zaccaro et al., 2009) and others supported their organisation of ambiguity within adverse contexts (Baran & Scott, 2010).

To sum up, all activated resources were confirmed by the existing literature. The discovery that all of them are related to authentic leadership and psychological capital was surprising. Authentic leadership and psychological capital were identified as a key driver of adaptation to adversity.

5.1.3.3.4 Adaptive responses

All the leaders identified using communication as an adaptive response to adversity. Communication with employees was valuable and driven by transparency and fact orientation. In 4 interviews, empathic behaviour, such as active listening, hopeful and motivational communication and feedback was identified as a behavioural pattern to adapt to adversity. In 5 interviews, conscientious behavioural patterns, especially achievement orientation in Interviews 1, 2, 3 and dependability orientation in Interview 5, and 6 were applied by the leaders with the aim of adapting successfully to adversity. Leaders also applied particular aspects of psychological capital to support their adaptation e.g. hope in Interview 1, optimism in Interviews 2, 6 and resilience in Interview 2. It can be argued that the behavioural patterns of communication, empathy, conscientiousness and coaching describe expressions of an authentic leadership style (Luthans, Norman, et al., 2006).

Authentic leaders reflect on themselves and their situation, analyse information, prevent a biased mental model, respect different points of view, and accept positive emotions and outcomes, as well as negative ones (Luthans, Norman, et al., 2006). They show reliable behaviour based on intrapersonal ethical standards and a positive self-regulatory process even when faced with resistance (Northouse, 2012). They also demonstrate open and honest communication with others, build trust, and express their own real feelings, thoughts, beliefs, and motives, whether positive or negative (Northouse, 2012; Walumbwa et al., 2011). These patterns were all found within the analysed interviews.

Furthermore, self-awareness consists of self-reflection on one's own identity, values, and motives, and includes the perception of one's own feelings such as trust (Kernis, 2003; Northouse, 2012) This was identified within the coding process. Authentic leadership is positively related to trust (Walumbwa et al., 2011) and empirical research shows that empathy (emotional intelligence) predicts authentic leadership (Kotzé & Nel, 2015, p. 2). A combination of these factors was expressed in the interview data.

Coaching was also identified as a specific type of response. Coaching is a guided but self-directed process of unlocking people's potential to achieve their personal objectives such as increased performance, learning new skills and enhancing individual growth (Passmore, 2015; Whitmore, 1994). Meta-analysis data reveals the positive effect of coaching on coping, goal-directed self-regulation (Theeboom, Beersma, & van Vianen, 2014) and on organizational outcomes as well as on individual skill-based and affective outcomes (Jones, Woods, & Guillaume, 2016). Coaching is a method used within authentic leadership (Hassan & Ahmed, 2011; Lee, 2017; Lee & Roberts, 2010; Wong & Laschinger, 2013). In summary, the discussion of the resources and the adaptive responses revealed that authentic leadership is a key driver of leaders' adaptation to adversity.

The next step is to synthesise the results of stage 2.

5.1.4 Stage 3 synthesising

This stage synthesises the findings from stage 2 with the purpose of investigating the interdependence of mechanisms, the interpretation of their meaning, and to identify the influence of particular conditions.

Job related burnout conditions (VUCA conditions, leaders' role conflict) and leaders' personality and attitudes to burnout (unmet expectations) were identified as factors that affect the particular level of burnout. The interviews showed that burnout was the major strain factor for leaders. Surprisingly, positive conditions were also experienced as stressors. One new finding was that different situations can lead to similar phenomenon of internal struggle. Internal struggle is often associated with the tension arising from conflicting positions between internal and external expectations. The source of expectations can be divided into the internal value driven expectations of the leader herself/himself, specific expectations regarding the leader role, and other external expectations, e.g., followers, stakeholders. The interviews often conveyed an image of dilemma situations. In typical dilemma situations a leader often has to decide under pressure between two equal but opposite alternatives. The analysis shows that there was expectation on the leaders for rational decision making, and there was also the value driven expectation of humanity. Leaders were expected to solve the problems of others in a rational way and others expected empathy and sympathy. Another source of inner tension was the leaders' own expectations of their leader role. In the majority of interviews this led to strain and burnout tendencies, except in interview 4 where the struggle was perceived positively as a chance to learn and grow. Figure 22 shows the identified stress-strain relation.

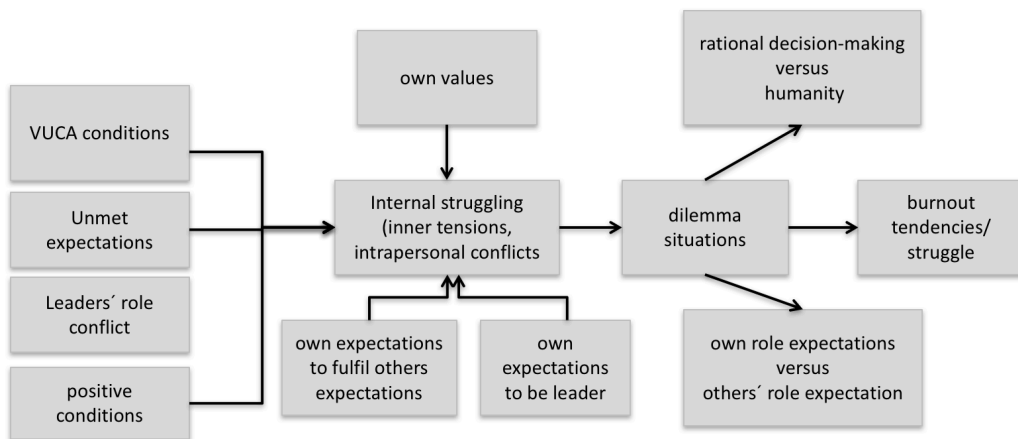


Figure 22: Identified stress-strain relation

Source: the author

In all six interviews authentic leadership behaviour was identified as a main driver of adaptation accompanied by psychological capital, trust, and external support (coaching). Figure 23 summarize the identified stress-strain relation (see figure 22) with the process of adaptation.

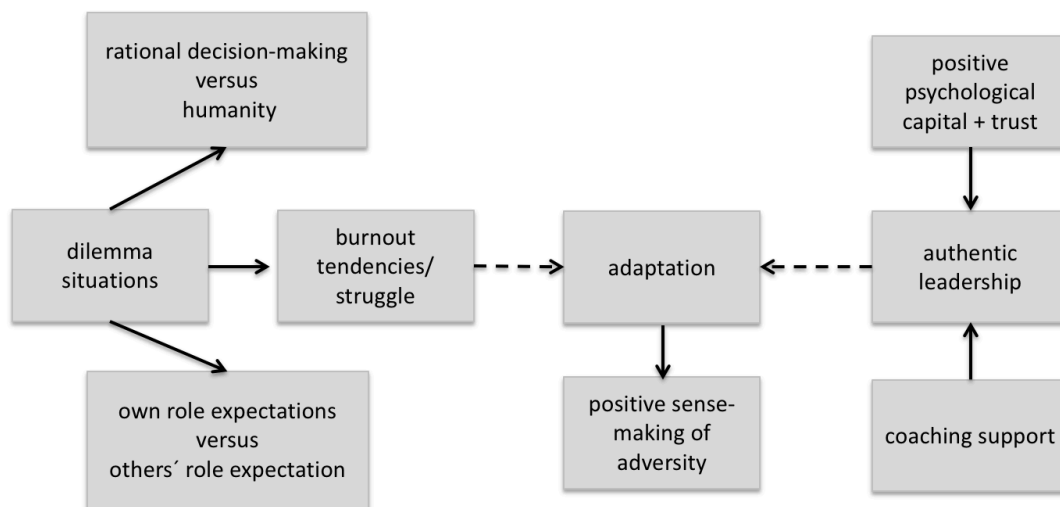


Figure 23: Identified process of adaptation

Source: the author

Additionally, the application of solution orientation, adaptive leadership strategies, and experiences from the past help to build trust and hope and were applied in combination with the main drivers to adapt to adversity. Psychological capital, value orientation, and self-reflection were the main basis of the authentic leadership response.

Overall, adaptation leads to the following sense-making of adversity:

- Increased self-awareness when dealing with people in adversity, the leaders strengths and those of others, and the responsibility to overcome the adverse event was not only based on the leader alone.
- Greater awareness of not being a victim of one's own expectations, the necessity of a prepared coping strategy, and the need of a coach as a sparring partner.
- Skill enhancement of active listening, no prejudice, taking others seriously, being empathic, and asking what the problems are.
- Further experience that adverse situations need teamwork to be manageable.

Hence, in two interviews, temporary self-doubt influenced the adaptation process that was affected by inner conflict between self-trust and a low level of self-efficacy, and also by the conditions of decision-making within dilemma situations. By applying authentic leadership behaviour during the process of adaptation, the phenomena of self-doubt were significantly reduced. Figure 24 shows the identified influence of self-doubt on adaptation and its interdependence.

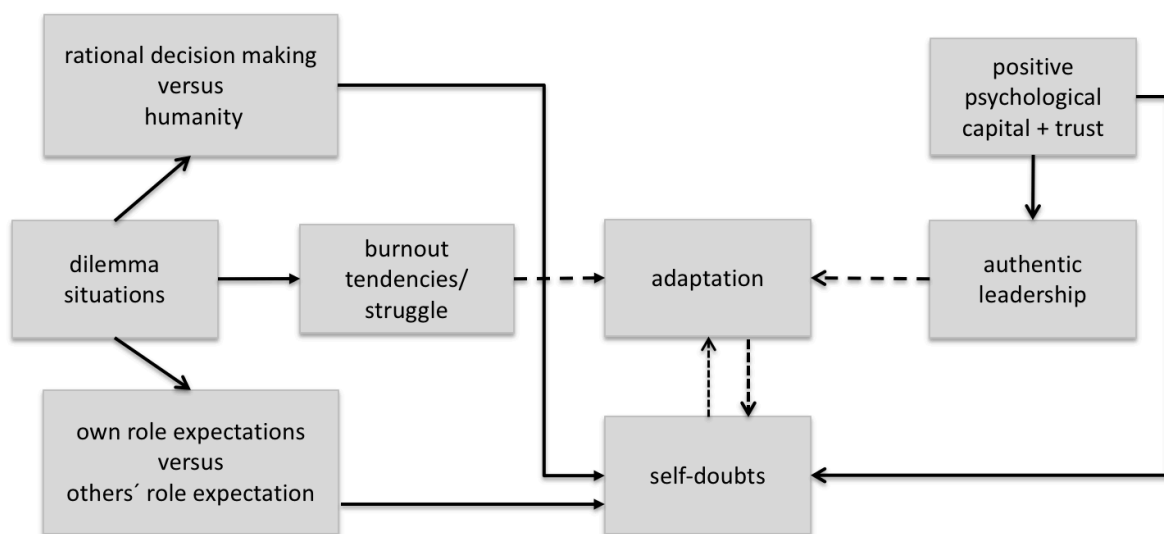


Figure 24: Identified influence of self-doubt on adaptation and its interdependence

Source: the author

The straight lines show the influence of the variables on each other and the dashed lines show the temporarily possible relationship between adaptation and self-doubt.

In conclusion, job related burnout conditions and leaders' personality and job attitudes to burnout were identified as the main stress factors. Leaders can be affected by both negative and positive conditions in the way that she/he experiences strain derived from unmet expectations, leaders' role conflicts and role ambiguity. As a result, internal struggle can lead to dilemma situations with the effect that leaders experience burnout tendencies such as emotional exhaustion or a sense of feeling of struggle. To adapt to adversity the leaders mainly used resources of psychological capital combined with trust, and self-reflection to support authentic leadership and conscientious behaviour. Making sense of adversity was identified as another supportive resource at the beginning, during and end of the adaptation process.

5.2 Quantitative Investigation – Data Analysis

Quantitative research procedures are based on quantitative data gathering and statistical analysis to identify regularities and patterns (Danermark, 2002a; Eastwood et al., 2014). The data was gathered by a self-administered online survey and analysed with a 3 staged process of retrodution, as mentioned previously (Danermark, 2002a; Weiber & Mühlhaus, 2014). The first stage consists of the sample demographics, examination of data entry, missing data and normality and measurement development. The second stage includes the analytical resolution of the data and a hypothesis test as well as retrodution inference through a discussion of the results in relation to the findings of the literature review. The third stage outlines the results of the synthesised data.

5.2.2 Stage 1 data structure and measurement development

The following sections describe the sample demographics, examination of data entry, missing data and normality and the measurement development.

5.2.2.1 Sample demographics

One limitation of self-administered online surveys can be sampling bias, as gathering data from a particular population via online questionnaires does not always yield a representative sample (Birnbaum, 2004). However, the online survey does provide an opportunity for people who have access to the internet to reach a wide range of participants and so reduces lack of representativeness (Evans & Mathur, 2005; Scholl,

Mulders, & Drent, 2002). This issue was considered for this study and the appropriate data screening methods, such as descriptive analysis and statistics, and treatment of missing data from the interviews are discussed in this section. Regarding the analysis of the statistical database, there seems to be a rare socio-demographic database of leaders within the population of leaders in Germany. It was also necessary to clarify the leadership role for measurement in official statistics (Körner & Günther, 2011). Therefore, the “German Leadership Monitor 2015” (Holst, Busch-Heizmann, & Wieber, 2015) was used as a reference for creating a database to compare the sample demographics. Table 8 shows data for the study sample on four socio-demographic characteristics; sex, age, education level, and four role-specific characteristics; length of experience, hierarchical leadership level, area of responsibility, and manager-to-employee ratio.

Table 8: Socio-demographic and role-specific characteristics of the study sample

Socio-demographic characteristics	Attributes	All	
		Frequency	Percent
Sex	female	120	60.3
	male	79	39.7
	total	199	100
	missing	0	0
	total	199	100
Age	< 30	12	6,0
	31-40	60	30.2
	41-50	84	42.2
	51-60	37	18.6
	> 60	6	3,0
	total	199	100
	missing	0	0
total	199	100	
Education	PhD/Dr	17	8.5
	Master	30	15.1
	Bachelor	20	10.1
	Diploma	89	44.7
	Magister	9	4.5

	High-school (German Abitur)	14	7,0
	others	14	7,0
	total	193	97,0
	missing	6	3,0
	total	199	100
Leaders' length of experience	< 1 year	19	9.5 (10.9)
	1-3 years	32	16.1 (18.3)
	4-5	15	7.5 (8.6)
	6-10	30	15.1 (17.1)
	> 10	79	39.7 (45.1)
	total	175	87.9 (100)
	missing	24	12.1
	total	199	100
Hierarchical leadership level	Top Management	31	15.6 (18.7)
	Middle Management	64	32.2 (38.6)
	Head of Department	23	11.6 (13.9)
	Team Manager	48	24.1 (28.9)
	total	166	83.4 (100)
	missing	33	16.6
	total	199	100,0
Area of Responsibility	Organisation	43	21.6 (26.9)
	Business Unit	40	20.1 (25,0)
	Team	77	38.7 (48.1)
	total	160	80.4 (100)
	missing	39	19.6
	total	199	100
Manager-to-employee ratio	< 5	42	21.1 (25,0)
	5-10	67	33.7 (39.9)
	11-20	38	19.1 (22.6)
	21-50	12	6,0 (7.1)
	>50	9	4.5 (5.4)
	total	168	84.4 (100)

	missing	31	15.6
	total	199	100

The sample for this study appears to be overrepresented in the female category with 60.3% in comparison to 29% female leaders in the population (Holst et al., 2015). If female leaders suffer from stress and burnout almost twice as much as male leaders (Baumman, 2015; Sander & Hartmann, 2009), this might be motivation to participate in this study. In contrast, male leaders are underrepresented at 39.7%.

The majority of the leaders appear to be representative of the of 31-60 age range with 91%, compared to the age range of German leaders in 2013 (26-64 years, 88.6%) (Databyte-GmbH, 2013). Of the 72.2% of the participants aged between 31-50, 3% were over 60, and 6% younger than 30. This is nearly consistent with the database of the Haufe study (Participants' ages ranged from 30 to 63 years) (Akademie, 2009).

Academics appear to be overrepresented in the sample for this study with 82.9%, in contrast to the average percentage of 65% in the population of German leaders (Holst et al., 2015). The "diploma" degree level has a very high representation of 44.7%. This could be because the majority (42.2%) of participants were located in the age range of 41-50 and the diploma is the academic degree in Germany. Non-academic education level appears to be underrepresented with 14%.

There was no representative data available regarding the population of German leaders and so it can't be compared with the data of this study. Regarding the condition of missing data, the percentage score was measured on the basis of the sum of the completed interviews and outlined in parentheses. 45.1% of the leaders identified their length of leadership experience as more than 10 years, 44,0% outlined that their experience varied between one year and less than ten years, and finally 10.9% of the leaders had less than one year's experience. It could be argued that the sample for the study represents an experienced group of leaders. Furthermore, the sample represents all hierarchical levels from top management with 18.7% to team managers with 28.9%. The highest score could be identified by the middle management category with 38.6%. The sample of the study appears to represent all areas of responsibility, organisational level (26.9%), business unit level (25,0%), and 48.1% of the leaders were responsible for the team level. The manager-to-employee ratio shows that the

sample of the study represents a wide range of ratios, with 64.9% of the managers leading less than 11 followers and 12.5% of the managers leading 21 or more followers.

5.2.2.2 Examination of Data Entry, Missing Data, and Normality

A further step of data analysis is the investigation of the data entry and analysis of missing data (Hair, Anderson, Tatham, & Black, 1998). A descriptive statistical analysis including frequency distribution, mean, and standard deviation was applied using SPSS software to check the data entry. The analysis yielded two mistakes regarding data transfer from the questionnaire database (umfrageonline.de) to the SPSS database. All other data were accurate.

143 of the 199 interviews collected were complete. Missing data is a common issue for researchers using structural equation modelling (SEM) techniques (Enders & Bandalos, 2001). Various statistical methods were developed to address this (Allison, 2001; Enders & Bandalos, 2001; Graham, 2009). However, the full information maximum likelihood (FIML) method was identified as the most unbiased efficient method (Enders & Bandalos, 2001) and so was applied in this study. The missing data reduced the valid sample size, but overall the valid sample size of all relevant variables was over 100; exactly 143 valid interviews. Hence, as discussed below, the sample size is an important factor to test SEM. For example, Bagozzi and Yi (2012) recommend trying to reach a sample size over 100 and preferably above 200. An appropriate method was applied to reduce possible biases of a small sample size. The SWAIN-function was applied to evaluate the structural equation model regarding the current sample size (over 100) with the aim of correcting the model fit statistics from the output SEM (Boomsma & Herzog, 2013).

The requirement of multinormality for SEM is a conventional assumption (Mardia, 1985; Weiber & Mühlhaus, 2014). However, non-normal data with small sample sizes is a common problem in research practice (Bentler & Yuan, 1999; Steinmetz, 2015; Weiber & Mühlhaus, 2014). The critical ratios for skewness and kurtosis have been identified by various researchers as between + 1.96 and – 1.96 (strong version) with alpha = 5% and between +2.57 and -2.57 (moderate version) with alpha = 1% (Field, 2013; Weiber & Mühlhaus, 2014). Evaluating the data outlined in Table 6, the critical

ratio of the skewness of the variables of “self-reflection” (-2.99), “sense-making of adversity” (-2.69), and “task adaptive performance” (-3.31) can be identified as probably non-normal distributed samples. Therefore, Yuan and Bentler’s correction was applied to handle both aspects; a small sample size and a non-normal distributed sample (Bentler & Yuan, 1999; Steinmetz, 2015). The critical ratio of kurtosis was in the acceptable range for all variables. Table 9 shows the results of the descriptive statistic.

Table 9: Overview of descriptive statistic

Variables	Minimum	Maximum	Mean	Standard Deviation	Skewness	Standard Deviation	Critical Ratio	Kurtosis	Standard Deviation	Critical Ratio
							Skewness			Kurtosis
impact of adversity	1	5	2.43	0.79	0.44	0.22	2,02	0,01	0.43	0,02
sense-making of adversity	3.27	6	5.11	0.57	-0.60	0.22	-2.69	0.26	0.44	0.58
burnout	1	4.83	2.49	0.74	0.53	0.22	2.37	0.17	0.44	0.39
psychological capital	3.67	6	4.88	0.50	-0.02	0.23	-0.07	-0.65	0.45	-1.46
conscientiousness	2.5	5	4.11	0.65	-0.34	0.22	-1.50	-0.66	0.44	-1.48
self-reflection	3	7	5.75	0.89	-0.69	0.23	-2.99	0.22	0.46	0.48
authentic leadership	3.31	4.88	4.12	0.35	0,04	0.23	0.16	-0.52	0.45	-1.14
task adaptive performance	3.5	6.75	5.53	0.65	-0.70	0.21	-3.31	0.52	0.42	1.24

5.2.2.3 Measurement Development

The basis of this quantitative approach was the usage of linear structural equations (see Appendix B) (Jorskog & Sorbom, 1993). This is a kind of covariance-based SEM technique applied to estimate the model fit by comparing the covariance structure fit of the model under study with an appropriate possible fit covariance structure (Byrne, 2013; Gefen et al., 2000). The technique of structural equation modelling (SEM) is used to prove whether a model of *a priori* hypothesis is valid by estimating and evaluating a model of linear relations between a set of latent variables (not observable variable) and manifest variables (observable) (Gefen, Straub, & Boudreau, 2000; Shah & Goldstein, 2006). Various fit indices were developed to estimate the model fit (Hooper et al., 2008). The relevant fit indices for this study can be divided into absolute fit indices and incremental fit indices, as follows.

5.2.2.4 Absolute fit indices

The absolute fit indices are one of the best indications of how well *a priori* model fits the sample data (Jöreskog & Sörbom, 1993; McDonald & Ho, 2002). The chi-square test, root mean square error of approximation (RMSEA), and standardised root mean square residual (SRMR) (Hooper et al., 2008) were selected for this study.

5.2.2.4.1 Model chi-square (χ^2)

The traditional approach of the chi-square value was applied to estimate the overall model fit and to evaluate the magnitude of difference between the sample and fitted covariances matrices (Hu & Bentler, 1999). Simulations showed that the chi-square value is a very sensitive measurement regarding a model rejection affected by a large sample size (Jöreskog & Sörbom, 1993), complexity of the model (Kenny & McCoach, 2003), or a non-multivariate normality (McIntosh, 2007). The chi-square statistic is less powerful with small samples as it can be differentiated between good fitting and poor fitting models (Hooper et al., 2008; Kenny & McCoach, 2003; Weiber & Mühlhaus, 2014). Taking these limitations into account, several researchers prefer the application of “normed” χ^2 , whereby χ^2 is divided by the degrees of freedom (df) (Holmes-Smith, Coote, & Cunningham, 2006). A ratio of χ^2 /df smaller than 2 indicates a good model fit (Byrne, 2013; Hair et al., 1998; Holmes-Smith et al., 2006; Weiber & Mühlhaus, 2014). Another measurement to estimate the model fit, the “ χ^2 exact fit test”, which accepts the model as “fitting”, when the null hypothesis “of no difference” between the model-implied population covariances and the current observed sample covariances cannot be rejected with a probability of occurrence >0.05 (Barrett, 2007).

5.2.2.4.2 Root mean square error of approximation (RMSEA)

The second fit statistic usually reported is the root mean square error of approximation (RMSEA) (Steiger, 1990). The RMSEA estimates the model fit including unknown but optimal selected parameters' fit regarding the populations covariance matrix (Byrne, 2013). A value of RMSEA less or equal to 0.05 would be identified as a good fit (Browne, Cudeck, Bollen, & Long, 1993), near to 0.06 (Hu & Bentler, 1999) up to the

upper limit of 0.07 (Steiger, 2007) indicates a mediocre fit, and values above 0.10 indicates poor fit and a cut-off (MacCallum, Browne, & Sugawara, 1996). The advantage of the RMSEA is the opportunity of calculating a confidence interval (MacCallum et al., 1996) based on the known distribution values of the statistic with the aim of testing a null hypothesis (poor fit) more precisely (McQuitty, 2004). The lower limit of the confidence interval is near to 0 while the higher limit should be less than 0.08 (Hooper et al., 2008) based on a RMSEA and on a well-fitting model.

5.2.2.4.3 Standardised root mean square residual (SRMR)

The standardised root mean square residual (SRMR) measures the square root of the discrepancy between the residuals of the sample covariance matrix and the hypothesised covariance model (Hooper et al., 2008). A value for the SRMR of 0 indicates a perfect fit (Hooper et al., 2008), values less than 0.05 a good fit (Byrne, 2013; Diamantopoulos, Sigauw, & Sigauw, 2000), values as high as 0.08 are deemed acceptable (Hu & Bentler, 1999), and the cut off is higher than 0.1 (Weiber & Mühlhaus, 2014). The value of the SRMR will be lower based on a high number of parameters in the model and large sample sizes (Hooper et al., 2008).

5.2.2.5 Incremental fit indices - CFI (Comparative fit index)

The Comparative Fit Index (CFI) was first introduced by Bentler (1990). It assumes that all latent variables are uncorrelated (null/independence model), and compares the sample covariance matrix with the null model (Hooper et al., 2008). The CFI is a revision of the NFI normed-fit index and it also evaluates the model by comparing the χ^2 value of the model with the χ^2 of the null model, and it is defined as the worst scenario as it specifies that all measured variables are uncorrelated (Hooper et al., 2008). It also takes into account sample size (Byrne, 2013) and works well even with a small sample size (Fan, Thompson, & Wang, 1999; Tabachnick, Fidell, & Osterlind, 2001). A value of CFI ≥ 0.95 is defined as being indicative of a good fit, more specifically a value > 0.90 is required in order to make sure that any misspecified models are not accepted (Hu & Bentler, 1999).

5.2.2.6 Reporting fit indices

The chi-square test and its degrees of freedom and p value, the RMSEA and its related confidence interval, the CFI, the SRMR and the squared multiple correlations of each equation will be reported, based on the recommendations of Kline (2005); Boomsma (2000); Hooper et al. (2008).

5.2.3 Stage 2 Analytical resolution and retrodution

This section describes the analytical resolution by the model and hypotheses test as well as the retrodution inference by examining the results in relation to the findings of the literature review.

5.2.3.1 Model testing – analytical resolution

The aim of analytical resolution in a critical realist approach is to identify and analyse mechanisms that affect the phenomena under study (Danermark, 2002a). This task was applied within the quantitative analysis by testing the proposed model. This means to investigate how well the data fits with the proposed model and how well the conceptual framework is supported by the gathered sample data (Schumacher & Lomax, 1996). To evaluate the model fit, this section consists of the bivariate correlation matrix between all included variables, the test result of the proposed model (fit indices), and the r-squared value analysis.

5.2.3.2 Bivariate correlations matrix

Structural equation modelling is based on a computed variance–covariance matrix (Schumacher & Lomax, 1996). The covariance indice shows the value of influence between two variables and its direction (positive or negative). For a better comparison it is useful to standardise the covariance indice to get the correlation value (Schumacher & Lomax, 1996). A positive correlation means that if one variable increases the other variable also increases and a negative correlation means if one variable decreases the other variable increases (Weiber & Mühlhaus, 2014). Table 10 shows the correlation matrix of all included variables and the estimated significance.

Table 10: Correlation matrix of included variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) impact of adversity							
(2) sense-making of adversity	-0.12						
(3) burnout	0.30**	-0.41***					
(4) psychological capital	-0.17	0.47***	-0.44***				
(5) self-reflection	0.08	-0.05	0.13	0.12			
(6) conscientiousness	0.01	0.15	-0.14	0.34***	-0.03		
(7) authentic leadership	0.12	0.17	-0.16	0.30**	0.36***	0.18	
(8) task adaptive performance	-0.22*	0.22*	-0.35***	0.48***	0.17	0.34***	0.31***

Note. *p < 0.05, **p < 0.01, ***p < 0.001

The result of the correlation matrix review reported in Table 7, shows that “task adaptive performance” as the dependent variable is significantly correlated with most of the independent variables, with the exception of self-reflection. The highest correlation exists between psychological capital and task adaptive performance. Sense-making of adversity, conscientiousness, and authentic leadership are positively correlated with task adaptive performance. Impact of adversity and burnout are negatively correlated with task adaptive performance. The correlation matrix outlines that psychological capital is positively correlated with sense-making of adversity, conscientiousness, authentic leadership and task adaptive performance and negatively correlated with burnout.

5.2.3.4 Testing the proposed model and fit indices

Table 11 outlines the estimated fit indices of the SEM test for the proposed model according to the reporting requirements (Weiber & Mülhhaus, 2014).

Table 11: Overview of the SEM test output, fit indices, and desired level of fit (swain corrected)

Level of Model Fit	Overall Model Fit					
	Model Fit					Model Comparison
	Inference Statistical Fit-Indices		Descriptive absolute Fit-Indices			Incremental Fit Indices
Fit Measures	RMSEA	RMSEA confidence interval	χ^2 (df)	probability of occurrence (not rejected)	SRMR	CFI
Acceptable Scale for Good as well as Adequate Fit	< 0.05	0.000 – < 0.08	< 2	> 0.05	< 0.08	>= 0.95
Composed Model Fit	0.045	CI 90%: (0.000 - 0.107)	12.859 (10) 1.2859	0.232	0.040	0.981

The overall model fit is acceptable as all fit indices show acceptable fit values according to the required acceptable scale for good as well as adequate fit. The RMSEA with 0.045 is lower than the acceptable value of 0.05 and the RMSEA confidence interval of 90% is 0.000 - 0.107. The lower level limit of the confidence interval is acceptable, and the higher one is with 0.107 a little bit higher than the recommended value of 0.08. The ratio of χ^2/df is with 1.2859 smaller than 2 and indicates a good model fit and the “ χ^2 exact fit test” is with 0.232 higher than 0.05 and also accepts the SEM model as “fitting”. The comparative fit index CFI with 0.981 is greater than 0.95 is defined as a good fit to make sure that any misspecified models are not accepted.

After evaluating the model fit, the next step was the analysis of the SEM results and the test of the proposed hypotheses, as outlined in the next section.

5.2.3.5 Analysis of the structural equation model results and hypotheses test reporting

The analysis of the SEM results consists of the r-squared value (R^2) analysis to describe the amount of variation from the dependent variable of task adaptive performance. All hypotheses were tested regarding their plausibility and judgement of the statistical parameters (Boomsma, 2000; Hooper et al., 2008; Kline, 2005). Figure 16 presents the proposed SEM model with the estimated standardised regression coefficients regarding the hypothesised paths' links. Significant paths are identified with stars (significance levels: *** 0.001, ** 0.01, and * 0.05 levels) or with "n.s." if there was no significance estimated. The arrows above burnout, psychological capital, authentic leadership, and task adaptive performance stand for the 'error' term in SEM models, which includes estimating errors and the determined influence of other possible factors not in the model. Figure 25 shows the proposed structural equation model.

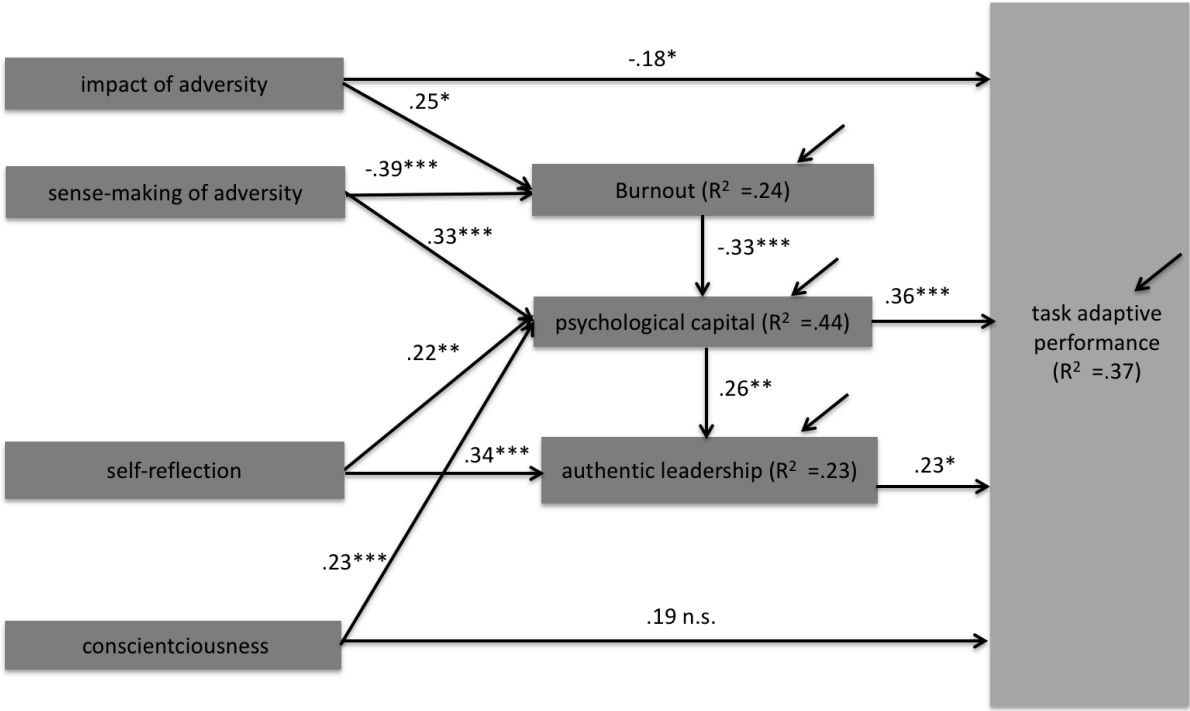


Figure 25: The proposed structural equation model

Source: the author

The r-squared value (R^2) describes the amount of variation explained by the model produced and its evaluation with the recommended acceptable range of r-squared ≥ 0.67 as substantial, ≥ 0.33 as moderate, and ≥ 0.19 as weak (Weiber & Mühlhaus, 2014). The R^2 values of task adaptive performance 0.37 and psychological capital 0.44 are validated with a moderate explanatory power and for authentic leadership 0.23, and burnout 0.24; with weak explanatory power. The results of the tested hypotheses are presented in the next section.

5.2.3.6 Hypotheses testing

A set of hypotheses based on the proposed conceptual framework were developed and tested to answer the research questions. The results are shown in this section. The standard decision rule to evaluate if certain parameters (i.e., path coefficient) deviate significantly from zero is by dividing the path coefficient by its standard error. The resulting quantity is a z-value, when “under the” null hypothesis of a zero effect in the population is evaluated. This by inspecting its probability by means of a standard normal distribution. Consequently, path coefficients with associated z-values greater than or equal to 1.96 have a lower probability of 5% for randomness and are thus conventionally treated as significantly different from zero (Chin, 1998). Table 12 shows the result of all the tested direct effects denoted in the hypotheses. The table outlines the hypothesised path, e.g., H1, its relation, e.g., impact of adversity \rightarrow task adaptive performance and its estimated indices such as B as the non-standardised regression coefficient, SE as the standard error, C.R. as the critical ratio (z-value), p-value as the significance level, and b as the standardised correlation with its different significance levels described with stars (***) 0.001, ** 0.01, and * 0.05 level), and its conclusion based on the hypotheses’ test (not supported or supported). Hypotheses were accepted as “supported” if the previously mentioned C.R. value is > 1.96 , the p-value $< 0,05$, and the direction of the correlation (positive or negative) is as expected.

Table 12: Overview of the direct effects of the hypotheses

Hypotheses	Path	B	SE	C.R. Value (z-value)	p-value	b	Conclusion
H1	impact of adversity → task adaptive performance	-0.15*	0.07	2.18	0.029	-0.18*	supported
H2	impact of adversity → burnout	0.24*	0.09	2.51	0.012	0.25*	supported
H3	sense-making of adversity → burnout	-0.50***	0.12	-4.12	0.000	-0.39***	supported
H4	sense-making of adversity → psychological capital	0.30***	0.07	4.20	0.000	0.33***	supported
H5	self-reflection → psychological capital	0.13**	0.05	2.81	0.005	0.22**	supported
H6	self-reflection → authentic leadership	0.14***	0.03	3.93	0.000	0.34***	supported
H7	conscientiousness → psychological capital	0.19**	0.05	3.44	0.001	0.23**	supported
H8	conscientiousness → task adaptive performance	0.19 n.s.	0.10	1.83	0.068	0.19 n.s.	not supported
H9	burnout → psychological capital	-0.23***	0.06	-3.80	0.000	-0.33***	supported
H10	psychological capital → authentic leadership	0.18**	0.06	2.83	0.005	0.26**	supported
H11	psychological capital → task adaptive performance	0.45***	0.11	4.16	0.000	0.36***	supported
H12	authentic leadership → task adaptive performance	0.41*	0.20	2.06	0.039	0.23*	supported

Note: Significant at different levels: Note. *p < 0.05, **p < 0.01, ***p < 0.001, n.s. = not significant, B= not standardised regression coefficient, SE = standard error, C.R. (z-value) = critical ratio, b = standardised correlation

The following section presents the hypotheses of Table 19 whether “supported” or “not supported”, based on the path coefficient (b) and the significance level outlined by the p-value (p). The report presents the results of the hypotheses regarding the direct effects.

H1 impact of adversity → task adaptive performance

Hypothesis H1: “The greater the impact of adversity, the lower the task adaptive performance” was supported because the test showed significant path coefficient (b = -0.18, p = 0.029). The expected negative correlation between impact of adversity and task adaptive performance was confirmed.

H2 impact of adversity → burnout

The finding supports the hypothesised relationship of H2: “The greater the impact of adversity, the greater the burnout” based on the result of a reasonable certainty in significance (b= 0.25, p = 0.012).

H3 sense-making of adversity → burnout

The estimation of the path coefficient (b = -0.39, p = 0.000) provides support to hypothesis H3: “The lower the level of sense-making of adversity, the greater the burnout”. A negative correlation between sense-making of adversity and burnout was expected and could also be confirmed.

H4 sense-making of adversity → psychological capital

The hypothesis H4: “The higher the level of sense-making of adversity, the greater the psychological capital” was supported based on a significant path coefficient (b = 0.33, p = 0.000). The proposed positive correlation between sense-making of adversity and psychological capital is as expected.

H5 self-reflection → psychological capital

The finding supports the hypothesised relationship of H5: “The greater the self-reflection, the greater the psychological capital” based on the result of a reasonable certainty of a highly significant path coefficient (b = 0.22, p = 0.005). Therefore, a positive correlation between self-reflection and psychological capital was expected and can also be confirmed.

H6 self-reflection → authentic leadership

The estimated path coefficient ($b = 0.34$, $p = 0.000$) provides support to hypothesis H6: “The higher the level of self-reflection, the greater the authentic leadership”. The expected positive correlation between self-reflection and authentic leadership was confirmed.

H7 conscientiousness → psychological capital

The estimation of the path coefficient ($b = 0.23$, $p = 0.001$) shows that the proposed hypothesis H7: “The higher the level of conscientiousness of a leader, the greater the psychological capital” is significant, therefore H7 has been supported. The positive correlation between conscientiousness and psychological capital is as expected.

H8 conscientiousness → task adaptive performance

Hypothesis H8: “The higher the level of conscientiousness, the greater the task adaptive performance” is not supported by the estimated path coefficient ($b = 0.19$, $p = 0.068$). The positive relation between conscientiousness and task adaptive performance was confirmed, but without significance. The p-value failed to show the 0.05 significance level.

H9 burnout → psychological capital

The SEM findings with the estimated path coefficient ($b = -0.33$, $p = 0.000$) provide strong support for the hypothesis H9: “The greater the burnout, the lower the level of psychological capital”. As expected the negative correlation between burnout and psychological capital was confirmed.

H10 psychological capital → authentic leadership

The estimated path coefficient ($b = 0.26$, $p = 0.005$) shows an acceptable level of significance, but the proposed positive relation of the hypothesis H10: “The higher the level of psychological capital, the greater the authentic leadership” was supported based on the expected result of a positive correlation.

H11 psychological capital → task adaptive performance

The findings support the hypothesised relationship of H11: “The higher the level of psychological capital, the greater the task adaptive performance” based on the result of a reasonable certainty in significance ($b = 0.36$, $p = 0.000$). The expectation of a positive correlation was fulfilled.

H12 authentic leadership → task adaptive performance

The SEM findings with the estimated path coefficient ($b = 0.23$, $p = 0.039$) provide strong significant support for the hypothesis H12: “The greater the authentic leadership, the higher the level of task adaptive performance”. As expected the positive correlation was confirmed.

After the discussion of the tested hypotheses the following section focusses on retroductive reasoning regarding the results of the hypotheses test.

5.2.3.7 Retroduction

The retroductive inference was based on the results of the analytical resolution in the form of testing the proposed SEM-Model and the derived hypotheses. It was applied by entailing reasoning about the mechanism that underpins the particular hypothesized relation and that can be responsible for its occurrence (Blaikie, 2009; Bryman, 2015; Downward & Mearman, 2007). Therefore, the results of the hypotheses test of each hypothesis is discussed within the findings of the literature review. The plausibility of the hypotheses was checked by an expert review.

5.2.3.7.1 H1 impact of adversity → task adaptive performance

The findings confirm the assumption that the impact of adversity as a contextual factor can have an influence on task adaptive performance (Dohrenwend, 2000, 2010; Everly et al., 2013; Hannah et al., 2009; Jundt et al., 2015). It has been shown that environmental adversity can affect workplace adversity as well as the personal level of adversity (Stoltz, 1997) and that VUCA conditions as well as workplace conditions can have an influence on task adaptive performance (Hannah et al., 2009; Jundt et al., 2015). The impact of adversity, in particular its magnitude, probability and personal relevance can lead to adaptive failure (Neiworth, 2015; Yates & Masten, 2004). The negative relation between impact of adversity and task adaptive performance can be grounded in a way that facing extreme events can cause a feeling of loss of control, increasing fears, loss of self-efficacy and decreasing sense-making with the result of adaptive errors (Hannah et al., 2009). The results of the tested hypotheses do not support the findings from other studies which outline that a high level of impact of adversity can increase positive outcomes such as a sense of personal significance and

self-control (Stoner & Gilligan, 2002) as well as to see adversity as an opportunity to learn and grow (Brownstein, 2009; Cameron & Spreitzer, 2011; Kouzes & Posner, 2014; Pellegrini, 2009). Overall, the data in this study, suggests that a negative effect of the impact of adversity is predominant.

5.2.3.7.2 H2 impact of adversity → burnout

The hypotheses results give evidence that impact of adversity as a kind of stressor can increase the level of burnout as a strain factor (Nachreiner & Schultetus, 2002; Rudow, 2014). This supports the assumption that external stressors such as societal adversity, e.g. financial crisis, extreme contexts can have an influence on workplace adversity with effects on individual experience of adversity (Stoltz, 1997) such as burnout (Kaplan & Kaiser, 2010; Snyder, 2013), emotional distress (Linton & Shaw, 2011) or hardship (Gonzalez, 2010; Moxley & Pulley, 2003). Assuming that burnout partly consists of a feeling of exhaustion (Bakker et al., 2008) the data suggests that the estimation of the impact of adversity by a leader does not only depend on the leader's individual experience. Leaders' burnout level in the workplace can be affected by the quantitative workload, conflicts associated with leaders' roles, low job security, or less social support (Everly et al., 2013; Zimber et al., 2015). Leaders facing extreme events can experience burnout, loss of mindfulness, and missing sense-making of adversity (Hannah et al., 2009). All these factors can increase the level of the impact of adversity.

5.2.3.7.3 H3 sense-making of adversity → burnout

The result of this hypothesis test confirms the assumption derived from literature that positive sense-making of adversity can decrease burnout and stress in extremis leadership situations and vice versa (Dixon, Weeks, Boland Jr, & Perelli, 2017; Krok, 2016; Leiter, Gascón, & Martínez-Jarreta, 2010; van den Heuvel, Demerouti, Schreurs, Bakker, & Schaufeli, 2009; Weick, 1995). The data do not support the results of other studies that sense-making of adversity is not always as useful as expected, because it might be associated with poor health outcomes such as posttraumatic stress disorder and increased depression (Bonanno, 2013; Sales et al., 2013).

5.2.3.7.4 H4 sense-making of adversity → psychological capital

The hypothesis test shows that the relation between sense-making of adversity and psychological capital was confirmed as expected (Yadav & Kumar, 2017). The positive correlation supports the assumption that sense-making of adversity can make individuals more resilient in the face of personal critique, more hopeful of feeling stable enough to manage the future (Weick et al., 2005), and feeling that life has meaning as the basis of self-efficacy and optimism (Van den Heuvel et al., 2009). The findings do not confirm other research that sense-making of adversity can also be a stressor in a way that a leader is not able to find any meaning in the experienced adversity (Bonanno, 2013) or that it might be healthier for leaders not to reason about adverse events and to simply move forward (Sales et al., 2013).

5.2.3.7.5 H5 self-reflection → psychological capital

Evidence regarding the tested hypotheses shows as expected that self-reflection is positively related to psychological capital (Bandura & Locke, 2003; Luthans, Youssef, et al., 2007b). The data suggests that self-reflection can increase self-efficacy and encourage leaders be more motivated to improve their goal-setting and to anticipate future opportunities (Bandura & Locke, 2003). The data shows no evidence of the negative effects of self-reflection, such as the particular risk of self-rumination that can decrease psychological capital including hope or optimism (Simsek et al., 2013; Simsek, 2013).

5.2.3.7.6 H6 self-reflection → authentic leadership

The hypothesis test supports the idea that self-reflection can help to improve authentic leadership, for example self-awareness (Hilden & Tikkamäki, 2013; Kernis, 2003; Northouse, 2012; Rennison, 2014; Schön, 1983). Self-reflection can increase leaders' ability to stay personally centered and focused when leaving their comfort zone (Heifetz & Linsky, 2002; Yukl & Mahsud, 2010) as part of the balanced processing aspect of authentic leadership (Luthans, Norman, et al., 2006). The findings give evidence that self-reflection can support the relational transparency of an authentic leader (Northouse, 2012; Walumbwa et al., 2011). The positive correlation provides no evidence that self-reflection has a negative impact on authentic leadership, for

example by increasing leader's self-doubt affecting self-awareness (Simsek et al., 2013; Simsek, 2013).

5.2.3.7.7 H7 conscientiousness → psychological capital

The result of the hypothesis test endorses the evidence from earlier research of a positive relation between conscientiousness and psychological capital (Choi & Lee, 2014; Coomer, 2016; Luthans, Avolio, et al., 2007). It can be argued that conscientiousness made leaders more optimistic about task demands and increase their resilience to adapt to adversity (Barrick et al., 2003; Judge & Ilies, 2002). Similarly, a high level of conscientiousness reduces leaders' motivation to show counterproductive behaviour when they deal with work stressors (Bowling & Eschleman, 2010). The data are limited regarding whether the achievement facet or the aspect of dependability of conscientiousness is relevant to this result. Earlier research shows that people can make better decisions after an unexpected change affected by dependability (LePine et al., 2000) and the achievement facet of conscientiousness positively affects adaptability (Griffin & Hesketh, 2005; Pulakos et al., 2002).

5.2.3.7.8 H8 conscientiousness → task adaptive performance

Unexpectedly, the hypotheses test show a positively correlated but not significant relation between conscientiousness and task adaptive performance, despite the findings from earlier research that conscientiousness is one of the most significant predictors of leader performance (Penney et al., 2011; Strang & Kuhnert, 2009), especially for task adaptive performance (Christiansen & Tett, 2013). However, it supports other research results which finds no significant relation between conscientiousness and adaptive performance (Huang et al., 2014). This research also suggests that achievement orientation, a facet of conscientiousness, might lead to the expected positive correlation (Huang et al., 2014) and similar findings show that only the achievement facet of conscientiousness, and not the dependability facet, predicts adaptability (Griffin & Hesketh, 2005; Pulakos et al., 2002). The study is limited regarding this differentiation. Hypotheses H7 shows that conscientiousness is significantly related to psychological capital and psychological capital is related to task adaptive performance. A mediator role of psychological capital can be proposed,

although this is not the focus of this study. Nevertheless, a separate mediator analysis gives evidence that the ‘total effect’ of conscientiousness is significant (.29**). Total effect is the sum of the direct effect of conscientiousness on task adaptive performance (H8) and of all other indirect effects via mediators e.g. psychological capital within the SEM-model. Similarly, research shows that psychological capital can control personality traits (Choi & Lee, 2014) and it can work as a “...motivational framework through which other personality traits impact job performance” (Coomer, 2016, p. 35).

5.2.3.7.9 H9 burnout → psychological capital

The hypotheses test gives evidence that burnout can affect psychological capital (Laschinger & Fida, 2014). The negative correlation between burnout and psychological capital can be induced by a feeling of exhaustion or by an emerging callous and cynical attitude. This can have an influence on the emotional and mental distance to work (Bakker et al., 2008) and might decrease the feeling of being the locus of control (Luthans et al., 2005), or increase the feeling of loss of control (Browning et al., 2007). Burnout can influence leaders’ experience in a way that it activate psychological capital with the possible effect of a decreased level of cynicism as a part of burnout (Avey et al., 2009; Avey et al., 2011; Virga & Paveloni, 2016). It also supports the finding that a low level of psychological capital can negatively affect job burnout (Bitmiş & Ergeneli, 2015).

5.2.3.7.10 H10 Psychological capital → authentic leadership

As expected, the data of the hypotheses test gives evidence that psychological capital is positively related to authentic leadership (Avolio & Gardner, 2005; Gardner et al., 2011). Self-efficacy, optimism, hope and resilience are personal resources of authentic leaders (Avolio & Gardner, 2005) and it can therefore positively affect authentic leader’s self-awareness (Luthans, Norman, et al., 2006). The concept of psychological capital and authentic leadership are intertwined, because authentic leadership is defined as a process that is based on positive psychological capacities (Gardner et al., 2011; Luthans & Avolio, 2003) For example, hope is agentic and goal oriented and authentic leaders are recognised as having the ability to foster hopeful agentic thinking, even when they face extremely difficult situations (Walumbwa et al., 2011). The positive correlation also confirms that decreasing hope and optimism can lead to a low

resilience level which badly affects moral as part of authentic leadership (Maher, Mahmoud, & El Hefny, 2017).

5.2.3.7.11 H11 psychological capital → task adaptive performance

The findings confirm the assumption that psychological capital is positively related to individual performance (Avey, 2014; Rabenu, Yaniv, & Elizur, 2016; Visser, 2012). There is also evidence that each component of psychological capital can be related to performance indicators, for example, self-efficacy has a positive influence on task performance, adaptability, and coping with adversity (Avey et al., 2011; Bandura & Locke, 2003; Hannah, Avolio, Luthans, & Harms, 2008; Judge & Blocker, 2008; Kozlowski et al., 2009; Locke & Latham, 2006). Optimism supports self-efficacy as proactive capacities as well as resilience help to deal with adverse events (Avey et al., 2011). Hopeful leaders are better prepared to forecast barriers and problems (Avey et al., 2008; Snyder et al., 2002). Tugade and Fredrickson (2004) suggest that psychological resilience influences the effectiveness of adaptation. Nevertheless, the data limits knowledge of possible negative effects of psychological capital on performance indicators such as exaggerated self-efficacy which can lead to overconfidence (Ho et al., 2016; Loeb, 2016; Moores & Chang, 2009) or false hope and a kind of over-optimism that causes unrealistic expectations resulting in a spiral effect of more and more bad feelings and less adaptability (Shepperd et al., 2016).

5.2.3.7.12 H12 authentic leadership → task adaptive performance

As expected, the hypothesis test supports findings from earlier research that authentic leadership is generally positively related to performance indicators such as job performance (Avolio et al., 2004) and work role performance (Leroy et al., 2012). There is evidence for such a relation e.g. while managing adversity authentic leaders show adaptive responses such as effective communication, maintained cohesion, focus, calm and a sense of humor (Hannah et al., 2009). Livingston and Lusin (2009) also argue that authentic leadership is necessary to adapt successfully within a complex world. Being authentic can have a positive effect on various aspects of psychological functioning such as the ability to respond simultaneously to conflicting feelings and goals (Goldman & Kernis, 2002). The positive correlation between authentic leadership and task adaptive performance does not confirm current critical assumptions about

authentic leadership that a too rigid self-concept of being authentic can become an “anchor that keeps us from sailing forth” when change is necessary (Ibarra, 2015). Nevertheless, the critique of Pfeffer (2015) that authenticity is overrated and its opposite is often more useful for effective leadership is brought into question by the data showing a positive correlation.

5.2.3.7.13 Results of the expert review

The aim of this section is to strengthen the retroductive reasoning about the structure, conditions and mechanisms that underpin the phenomenon of leaders’ adaptation to adversity by discussing the expert review results and assess the plausibility of the tested hypotheses. Thirteen leadership experts (see appendix E) judged the tested hypothesis by participating in a two-step expert review approach. A standardised survey focusing on the experts’ meaning and judgements about their agreement or disagreement with the tested hypothesis is followed by discussion of the expert review results.

Overall, the majority of the experts agreed or strongly agreed with all the tested hypotheses except hypotheses H1 (see table 13).

Table 13: Experts votings regarding the hypotheses of this study

No.	Hypotheses Description	Expert Voting		
		Strongly agree/ Agree	Strongly disagree/ disagree	Neither agree nor disagree
H1	The greater the impact of adversity on the leader (magnitude, probability, relevance), the lower the leaders adaptive performance.	4	5	4
H2	The greater the impact of adversity on the leader (magnitude, probability, relevance), the greater the leaders' burnout.	8	2	3
H3	The lower the level of leaders' sense-making of adversity, the greater the leaders' burnout.	7	3	3
H4	The higher the level of leaders' sense-making of adversity, the greater the leaders' psychological capital (hope, optimism, self-efficacy, resilience)	12	0	1
H5	The greater the leaders' self-reflection, the greater the leaders' psychological capital (hope, optimism, self-efficacy, resilience).	12	0	1
H6	The higher the level of leaders' self-reflection, the greater the leaders' authentic leadership ability.	12	0	1
H7	The higher the level of conscientiousness of a leader, the greater the her/his psychological capital (hope, optimism, self-efficacy, resilience).	12	0	1
H8	The higher the level of conscientiousness of a leader, the greater the her/his adaptive performance.	8	2	3
H9	The greater the leaders' burnout, the lower the level of her/his psychological capital (hope, optimism, self-efficacy, resilience).	10	1	2
H10	The higher the level of psychological capital, the greater the authentic leadership"	10	2	1
H11	The higher the level of leaders' psychological capital (hope, optimism, self-efficacy, resilience), the greater her/his adaptive performance.	10	0	2* *1 no answer
H12	The greater the leaders' authentic leadership ability, the higher the level of her/his adaptive performance.	10	2	1

Regarding the hypotheses H1 “The greater the impact of adversity on the leader (magnitude, probability, relevance), the lower the leader’s adaptive performance.” 4 experts confirm with “strongly agree/agree”, 4 experts judged with “neither agree nor disagree” and 5 experts rejected the hypotheses with “strongly disagree/disagree”. Their main argument against the hypotheses was, that the adverse situation is not the only component which affects a leader’s adaptation. In their understanding, the adverse situation can affect the outcome of adaptation but other factors also have impact on whether the leader adapts successfully or not. The experts suggest that a leader’s understanding and experience of adversity affect her/his task adaptive performance.

Hypotheses H2 was rejected by 2 experts and H3 by 3 experts, but 7 experts confirm with hypotheses H2 and 8 experts confirm with H3. Mainly the experts confirming with the hypotheses argue that a leader’s ability to make sense of adversity affects her/his understanding and perceptions. If such abilities are lacking in a leader, her/his level of burnout may increase. The leadership experts acknowledge that every leader has unique qualities and characteristics (see hypotheses H7 and H8) but may or may not be naturally capable of handling adverse situations. The ability to adapt to adversity is not solely affected by a leader’s confidence.

However, good leadership skills do not automatically result in good adaptation skills. The comments of the leadership experts can be related with the human’s ability and responsibility to come up with intentional decisions (human agency). This is possible due to proper planning and strategising, setting targets and clarifying expectations. A leader’s ability to adapt to adverse events can be affected by purposeful decision-making and their understanding of the adverse situation (see hypotheses H1 and H2). Experts confirming with hypotheses H1 and H2 argue that sometimes leaders may be unaware of unidentified stressors which can ultimately lead to strain and overreaction by trying to adapt to adversity. Therefore, experts confirming with H5 and H6 and H12 argue that a leader’s ability for self-reflection and a high level of personal morality (authentic leadership) as the basis of responsibility are essential because it affects her/his thinking and behavior.

Hence, these findings assumes that majority of the experts confirm with the assumption that structures (organisations), conditions (VUCA conditions) and agents (leaders) rely on each other and interact within a continuous, cyclical flow over time. Moreover, the experts mainly have the meaning that human's acts (leaders' adaptation) are based on free will and autonomy, but it can be also be determined by social forces (expectation of others), socialization (past experience of adversity) and impact of adversity.

10 of 13 experts confirm with hypotheses H11 and H12 with "strongly agree/agree" that the study's assumption that psychological capital and authentic leadership are the main mechanisms of leaders' adaptation to adversity. Also 10 experts confirm with hypotheses H10 that increased psychological capital increases authenticity of leaders' behaviour and both can positively affect the leaders' adaptation. They acknowledge that richness of a leader's psychological capital raises her/his task adaptive performance. Hope, resilience and optimism help in adapting well to adverse events and self-efficacy improves task adaptive performance. 12 of 13 experts affirm that self-reflection and sense-making can increase the ability of a leader to be hopeful, optimistic and resilient.

Regarding the role of authentic leadership 2 experts rejected the hypotheses H12 that a leader's ability to be authentic increases her/his ability to adapt to adverse events. Theses experts reason that leaders can be perceived by others as a "great leader" and seem to be highly authentic and self-confident, but at the same time show no ability for adapting to adversity. This statement can be seen to be in line with the debate over which style of leadership works best in a VUCA driven world with leaders that spend more time on "marketing" themselves, rather than undertaking the necessary adaptation of their own authentic leadership development. It is in line with recent critique from other researchers which argues that, "Why feeling like a fake can be a sign of growth" Ibarra (2015, p. 1). Grant (2016) argues that "be yourself" is a "terrible advice". The comments of the leadership experts in line with this critique may address the fact that leaders often play a false game or are masqueraded so that what they say does not correspond with what they do. It implies the risk that sometimes expectations of the leader role can overwhelm the leaders themselves and lead to exaggeration of usually positive leadership attributes or increase leader role conflicts or dilemmas as

founded with the the qualitative interview data. In contrast, the qualitative data also shows that despite issues of role conflicts, authentic leaders were able to adapt successfully to adversity.

Converging the findings of expert review with the results of the literature review the statement of the experts that some leaders thrive on adversity and others do not depending on their personality and how the leader reacts to adversity, reflects the discussion about how human factors such as personality traits, past experience of adaptation, interest in adaptive situations, task-oriented self-efficacy, and emotion regulation as well as cognitive ability can affect the leader's ability to adapt (Jundt et al., 2015; Pulakos et al., 2002). It also corresponds with the findings that personality traits are relevant for adaptation to adversity (Bono & Judge, 2004; Borman et al., 2001; Huang et al., 2014; Olila, 2012). This study shows that a leaders' personality such as the dimension of conscientiousness, as well as other human factors such as psychological capital are relevant to their adaptation to adversity. This confirms the assumptions of leadership experts.

However, the study also provides evidence that external factors, evaluated by their magnitude, probability and personal relevance can have a direct impact on leaders' adaptation to adversity independent of their personality. The leadership experts state that the better the understanding regarding the outside world and the personal perception of it, the better a leader can adapt to it. This raises the possibility of objectively measuring and evaluating the impact of external adverse conditions. Therefore, trained leaders should be able to objectively analyse adverse conditions, process the gathered data and make rational decisions about it, independent of their personality. This assumption is highly relevant to this study because it supports the conclusion that structural/conditional factors as well as human factors are responsible for leaders' adaptation to adversity.

There are some experts who question the hypothesis that a leader's lack of sense-making increases her/his burnout. They argue that a leader's sense-making of adversity can affect their level of burnout but it is not the only factor that affects it. This statement is in line with the assumption of this study that besides sense-making of adversity, the impact of adversity can also influence the level of burnout. A high level

of impact of adversity and a low level of sense-making can both increase the level of burnout. The leadership experts comment that sense-making is related to the understanding of experiences and perspectives and that self-awareness in leadership is an important skill to guide leaders how to adapt to adversity. This expert opinion is in line with other research that sense-making of adversity can facilitate the process of complex problem-solving (Zaccaro et al., 2009) and it can support self-organisation of ambiguity from leaders dealing with adverse events (Baran & Scott, 2010) and therefore reduce burnout. It also supports the findings that giving adverse experiences a meaning can be the basis of self-efficacy and optimism (Van den Heuvel et al., 2009) and can increase leaders' feeling of being stable enough to manage the future (Van den Heuvel et al., 2009; Weick et al., 2005) with the aim of preventing burnout.

The leadership experts assume that other factors can also be responsible for a higher level of burnout. This might support the finding that overestimating personal strengths, exaggeration of personal goals based on a feeling of losing control, and the failure of emotional regulation can increase burnout level (Bonanno, 2013; Sales et al., 2013). It corresponds with the argument of the leadership experts that the leaders' adaptation into adversity is also affected by the leaders' personality and other human factors. The leadership experts draw the attention to the leaders' self-awareness and postulate an importance of it regarding adaption to adversity. This is in line with this study's finding that self-awareness as a part of authentic leadership can improve learning of new work tasks, technologies, and procedures (Kernis, 2003; Northouse, 2012) and help leaders to recognise their own mental biases and learning needs (Northouse, 2012; Walumbwa et al., 2011). Few leadership experts criticise the role of authentic leadership, including self-awareness in relation to leaders' adaptation to adversity. The overall opinion of the experts is therefore ambiguous.

The result of the expert review shows a high degree of agreement regarding the tested hypotheses. It is also in line with the assumption that there is a need to combine the aspects of social structures/conditions and personality/human agency to explain the phenomenon of leaders' adaptation to adversity. These give evidence to the conclusion that critical realism and the selected mixed-method approach was the necessary way to investigate leaders' adaptation to adversity.

The results of the discussion will be interpreted and synthesised in the following section.

5.2.4 Stage 3 synthesising

The previous section gives the retroductive discussion of each hypotheses regarding the results of the literature review and the expert review. In this section all the results are synthesized regarding the proposed SEM model (see figure 16) to identify the relation between the underlying conditions and mechanisms that affect the complex phenomenon of leaders' adaptation to adversity. The discussion starts with the synthesis of direct related factors that affect task adaptive performance. This is followed by a discussion of the two central mechanisms affecting task adaptive performance, psychological capital and authentic leadership.

5.2.4.1 Task adaptive performance

Task adaptive performance can be directly affected by impact of adversity, psychological capital and authentic leadership. Psychological capital is identified as the most significant factor and authentic leadership as another relevant factor of task adaptive performance. Impact of adversity is negatively related to task adaptive performance.

A high level of psychological capital increases task adaptive performance. Therefore, leaders with an optimistic and hopeful outlook, and with resources of resilience and self-efficacy, can perform a more successful adaptation to adversity. Optimism, for example can promote self-efficacy and also resilience, with the aim of successfully adapting to adversity (Avey et al., 2011). Hopeful leaders can better anticipate barriers and problems (Avey et al., 2008; Snyder et al., 2002) and are more effective in their adaptation (Tugade & Fredrickson, 2004). Therefore, psychological capital can be seen as a significant resource for a leader to increase her/his ability to handle emergencies or crisis situations, manage work stress, solve problems creatively, deal with uncertain and unpredictable work situations and learn new work tasks, technologies, and procedures. It can be argued that a leader should improve her/his personal psychological capital to be prepared for adverse events, adapt to current

adversity, and to better recover after it occurs (Avey et al., 2009; Walumbwa, Peterson, Avolio, & Hartnell, 2010).

Psychological capital and authentic leadership are intertwined, because authentic leadership is based on psychological capital (Gardner et al., 2011; Luthans & Avolio, 2003). This is confirmed by the results of this study. The higher the level of psychological capital of a leader the higher the potential for her/his authentic leadership level. For example, hope is related to human agency and goal orientation. Authentic leaders can foster hopeful agentic thinking, even when they face adversity (Walumbwa et al., 2011). Likewise, decreasing hope and optimism can negatively affect resilience and cause low moral which is not how authentic leaders should behave (Maher et al., 2017). In conclusion, psychological capital can have a direct positive affect on task adaptive performance and can simultaneously have a positive impact on authentic leadership. This can also affect task adaptive performance in a positive manner. Authentic leaders can apply effective patterns of useful communication, maintained cohesion, focus, and calmness and maintain a sense of humor (Hannah et al., 2009) to adapt successfully within a complex world (Livingston & Lusin, 2009).

Psychological capital and a high level of authentic leadership can increase task adaptive performance, but it can also be decreased by a high level of impact of adversity. Contextual factors with a high magnitude of impact, a high probability of its occurrence, and a high degree of personal relevance to the leader herself/himself can directly affect task adaptive performance and increase adaptive failure (Neiworth, 2015; Yates & Masten, 2004). Facing adversity or anticipating possible adversity in the near future by building expectations regarding its impact, can produce a feeling of being overwhelmed by the consequences (Rudow, 2005). The identified negative correlation between the impact of adversity and task adaptive performance shows that such a low level of a taxonomy specifying the consequences of adverse contextual factors (Madge, 1967; Ottaway, 1983) can lead to a lower level of task adaptive performance. This can lead to decision making failure based on inadequate information (Terlizzi et al., 2003; Vakil, 1997) or possibly even by a feeling of loss of control, increased fears or loss of self-efficacy (Hannah et al., 2009).

This conclusion is endorsed by the finding that impact of adversity also directly affects burnout. This means that the higher the impact of adversity, the higher the burnout rate; the higher the burnout rate the lower the psychological capital and finally the lower the task adaptive performance.

The impact of psychological capital on task adaptive performance can be affected by other selected factors. Therefore, the following section discusses these relations and interdependencies.

5.2.4.2 Psychological capital

Psychological capital is identified as the most significant factor to positively influence task adaptive performance. Moreover, it is the most connected factor within the conceptual framework which is influenced by burnout, sense-making of adversity, self-reflection, and conscientiousness. Psychological capital influences authentic leadership as the second most significant influencing factor of task adaptive performance. The effect of a high level of psychological capital is twofold. It can directly increase task adaptive performance based on positive correlation and it can improve authentic leadership grounded on positive correlation with the result of higher task adaptive performance. Hence, psychological capital itself is affected by other factors of the conceptual framework and the next section focusses on these relations.

Burnout is negatively correlated with psychological capital which means that the higher the level of burnout the lower the psychological capital. Burnout is the phenomenon of emotional exhaustion, depersonalisation and decreased perception of one's accomplishments (Burisch, 2006; Maslach & Jackson, 1981a; McDonald, 2010; Sherring & Knight, 2009). Burnout can be increased by adverse work environment factors quantified by impact of adversity (Van den Heuvel, 2013) and the result of taking one's own strengths to an extreme, qualified by less sense-making of adversity (Kaplan & Kaiser, 2010). Similarly, positive sense-making of adversity can decrease burnout (Krok, 2016; Leiter et al., 2010; Van den Heuvel et al., 2009; Weick, 1995). Feelings of exhaustion can build emotional and mental distance to work (Bakker et al., 2008) which can decrease self-efficacy e.g. less feeling of being the locus of control (Luthans et al., 2005) and increased feeling of loss of control (Browning et al., 2007). The result can be that a leader feels herself/himself controlled by others (Newcomb &

Harlow, 1986). Similarly, a low level of psychological capital can affect job burnout negatively (Bitmiş & Ergeneli, 2015) and increase the level of cynicism as a part of burnout (Avey et al., 2009; Avey et al., 2011; Virga & Paveloni, 2016). Sense-making of adversity is significant to the relation between burnout and psychological capital, because it is negatively correlated with burnout and positively correlated with psychological capital (Yadav & Kumar, 2017). The higher the sense-making of adversity, the lower the burnout and simultaneously the higher the psychological capital can be. Lower burnout rate can also increase psychological capital. Sense-making of adversity can improve personal resilience even in the face of personal criticism, can help leaders be more hopeful regarding their feeling of being stable enough to face the future (Weick et al., 2005), and can be the ground of self-efficacy and optimism (Van den Heuvel et al., 2009). Self-reflection is also positively correlated with psychological capital which means that it can increase leaders' self-efficacy so they can be more motivated to focus on their goals and to anticipate future opportunities (Bandura & Locke, 2003).

Similarly, conscientiousness can support leaders' optimism about achieving task goals and can positively influence their resilience to adapt to adversity (Barrick et al., 2003; Judge & Ilies, 2002). Vice versa, psychological capital can control personality traits (Choi & Lee, 2014) in a way that it is a motivational framework through which other personality traits e.g. conscientiousness can have an impact on task adaptive performance (Coomer, 2016). Conscientiousness is a leader's achievement orientation and dependability. The higher the level of conscientiousness, the higher the level of psychological capital and the greater the task adaptive performance. It can also reduce leaders' motivation to show counterproductive behaviour when they deal with work stressors (Bowling & Eschleman, 2010). The analysed data cannot not show which facet of conscientiousness can be precisely correlated with psychological capital because this differentiation was not part of this study.

The discussion shows that psychological capital is the dominant factor within the created conceptual framework, because it can have an high impact on task adaptive performance and is interdependent with most of the other selected factors, such as authentic leadership. This will be discussed in the next section.

5.2.4.3 Authentic leadership

The study shows that the higher the level of authentic leadership, the better task adaptive performance of a leader. Authentic leadership is related to psychological capital and self-reflection. Authentic leadership consists of balanced processing, internalized moral perspective, relational transparency and self-awareness (Walumbwa et al., 2011) to improve task adaptive performance (Avolio et al., 2004; Leroy et al., 2012). Authentic leaders use self-reflection to analyse a situation, try to reduce biased perception and accept negative feelings and outcomes while handling emergencies or crisis situations (Luthans, Norman, et al., 2006). They show reliable behaviour grounded on ethical standards and they are able to positively self-regulate even in uncertain and unpredictable work situations (Northouse, 2012). Authentic leaders are open and honest in their communication with stakeholders, increase trust, and express their own real feelings and thoughts even if work stress is high (Northouse, 2012; Walumbwa et al., 2011). They constantly improve their self-awareness based on self-reflection (Kernis, 2003; Northouse, 2012) to improve learning of new work tasks, technologies, and procedures.

Self-reflection is the most significant factor to influence authentic leadership within the given conceptual framework (Hilden & Tikkamäki, 2013; Kernis, 2003; Northouse, 2012; Rennison, 2014). As discussed above, it can help leaders to stay personally centered and focused while leaving their comfort zone in crisis situations or in uncertain and unpredictable work situations (Heifetz & Linsky, 2002; Yukl & Mahsud, 2010) and it can improve their self-awareness to recognise their own mental biases and learning needs (Northouse, 2012; Walumbwa et al., 2011). The data of this study shows that psychological capital is interrelated with authentic leadership and research confirms this result because authentic leaders emphasise hope, optimism, resilience, and self-efficacy embedded in high morality (Kolditz, 2010).

In sum, the model fit of the tested SEM model (see figure 16) shows acceptable fit value. All hypotheses of the quantitative conceptual framework are confirmed except hypotheses H8: The higher the level of conscientiousness, the greater the task adaptive performance. The analysis also shows that psychological capital and authentic leadership are positive related with task adaptive performance and both

show a highly significant relation. The impact of adversity is significantly negative correlated to task adaptive performance. These three factors have been identified as directly related to task adaptive performance. The findings also show that burnout can affect negatively psychological capital. Sense-making of adversity can have mutual influence on other selected factors such as burnout and psychological capital and self-reflection can affect psychological capital and authentic leadership.

The following chapter provides the data triangulation and interpretation of the qualitative and quantitative data analysis.

Chapter 6: Data Triangulation and Data Interpretation

This study follows a convergent research design and in this chapter the results of the quantitative and qualitative data analysis are combined to explain the nature of adversity, how leaders can adapt to adversity, and the influencing factors of task adaptive performance. It aims to identify the underlying structures and conditions and the mechanisms to provide a comprehensive picture of leaders' adaptation to adversity (Fetters et al., 2013). This chapter presents the answers to the research questions based on the overall interpretation of the findings and outline the results of a leadership experts review regarding the study findings.

6.1 What is the Nature of Adversity?

To answer the research question, "What is the nature of adversity?", it is necessary to identify the structures, conditions and mechanisms that affect it (Danermark, Ekström, Jakobsen, & Karlsson, 1997; Meyer & Lunney, 2013). To achieve this aim this study provides data regarding leaders' adaptation to adversity from different sources.

As discussed in the literature review, burnout is increasingly recognised as the main facet of adversity in leadership (Cisik, 2012; Sedlacek, 2011; Zimber et al., 2015). It is defined as a decreased experience of one's own accomplishments, emotional exhaustion, and depersonalisation (Burisch, 2006; Maslach & Jackson, 1981a; McDonald, 2010; Sherring & Knight, 2009). It can have negative effect on health (McDonald, 2010) and affect low level task performance (Demerouti et al., 2014) and decreased psychological capital as a combination of a feeling of loss of control (Browning et al., 2007) and feeling that one's own actions are controlled by others (Newcomb & Harlow, 1986). The empirical data shows that burnout significantly correlates with various factors of the conceptual framework: impact of adversity, sense-making of adversity, psychological capital. This finding is consistent with the data analysis from several interviews where the interviewees reported feeling emotionally exhausted by unmet expectations or role conflicts, partly accompanied by physical fatigue, a feeling of psychological breakdown or inner struggle. The selected retroductive reasoning identified the phenomenon of burnout as the main adverse event.

Two central mechanisms emerged from the empirical quantitative and qualitative data of this study, as described below.

The mechanism of impact of adversity (magnitude, probability and relevance) quantify the level of consequences of adversity on the leader due to external conditions which can result in a specific level of burnout. The significant positive relation between impact of adversity and burnout confirms that stressors can affect strain which is the assumption of the stress-strain-resource model (Rudow, 2005). These findings are consistent with the majority of interviewee's reports stating that job related burnout conditions such as VUCA conditions, leaders' role conflict and unmet expectations of others can affect their level of burnout characterized by emotional exhaustion. This explanation was strengthened by the report of a "extreme" situation (Danermark et al., 1997; Meyer & Lunnay, 2013) where positive external conditions also increased a feeling of burnout tendencies and struggle. A condition such as becoming a CEO which are usually seen as positive, can lead to role conflicts and self-doubt derived by inter- and intrapersonal role and value conflicts.

Sense-making of adversity is the second identified mechanism that can support leaders by addressing ambiguity within a dangerous environment (Baran & Scott, 2010). It enables a leaders to see adverse experiences, mistakes and failures as a learning opportunity (Bartone, 2015; Weis, 2012) and to solve complex problems (Zaccaro et al., 2009). The significant negative correlation between sense-making of adversity and burnout explains, in line with Krok (2016); Leiter et al. (2010); Van den Heuvel et al. (2009); (Weick, 1995) that a high level of sense-making of adversity decreases the level of burnout. The finding also supports the assumption that a low level of sense-making of adversity can increase the level of burnout. It can negatively affect leaders' health as they overestimate their own strengths, struggling with exaggerated visions based on a feeling of losing control, and the failure of emotional labour strategies (Bonanno, 2013; Sales et al., 2013).

These findings are supported by the majority of the interviewee's comments that they made sense of the adverse event while dealing with it. This increased their self-awareness of their own and others strengths as they learnt not to be a victim of their own expectations, recognised the necessity of a prepared coping strategy, and realized the necessity of the skill enhancement of active listening, no prejudice, taking

others seriously, being empathic, and asking what the problems are. Some also recognised the need for teamwork to manage adverse events.

In summary, the findings show that burnout can be classified as an adverse event, in line with a critical realist categorisation about the phenomenon of adversity. The most important mechanisms are impact of adversity and sense-making of adversity. These mechanisms were experienced in VUCA conditions or adverse workplaces. It also identified social structures and culture consisting of a particular company, a specific organisational understanding of the leader role and the individual structure of the leader herself/himself, including personality, mental model and human agency. Social structure i.e. role expectations and individual structure i.e. own expectations and values accompanied by VUCA conditions were identified as the basis in which the mechanisms of impact of adversity and sense-making of adversity attenuate or intensify burnout as the experienced adverse event (see figure 26).

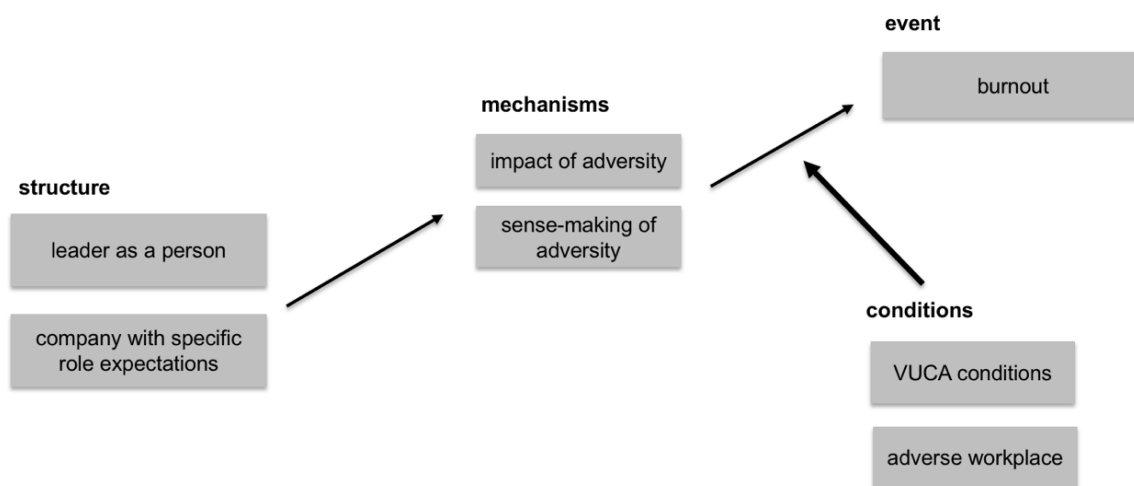


Figure 26: Process of adversity (burnout) occurring within the given context

Source: the author

Overall, it can be argued, that:

The higher the level of the impact of adversity and the lower the level of sense-making of adversity, the greater the burnout.

The lower the level of the impact of adversity and the higher the sense-making of adversity, the less the burnout.

The findings in this study reveal the central dichotomy between social structures/ conditions and personality/human agency because there is an underlying need to combine both to explain the phenomenon of adversity. Social structure and conditions are preconditions of leaders' agency in which the mechanisms of impact of adversity and sense-making of adversity are operated by the leader resulting in a particular level of burnout. Based on this assumption, the leader can reproduce or positively change the structures and conditions, because, as argued by Archer, she/he is the "...ultimate fons et origio..." of social structures and not only a epiphenomenon of it (Archer, 2000, p. 18). Therefore, it can be argued that:

Leaders are able to change given conditions, at least partly, to reduce the negative side of adversity and increase the positive side.

6.2 How can Leaders adapt to Adversity?

The research question "How can leaders adapt to adversity?" focusses on the leader herself/himself with the aim of explaining what kind of structure, conditions and mechanisms must be activated for a leader's adaptation to adversity to become real. Within the context of this study, adaptation is understood to be an leaders' process of achieving balance between her/his own behaviour affected by cognitive, emotional, and motivational modifications and adverse events affected by volatile, uncertain, complex and ambiguous conditions with the aim of contributing effectively to organizational outcomes. Adaptation to adversity is qualified by the construct of task adaptive performance, because this includes the behavioural patterns of leaders dealing with adverse events such as burnout (Kröger & Staufienbiel, 2012). This section discusses the underlying prerequisite structures, conditions and mechanisms of leaders' adaptation to adversity (Danermark et al., 1997; Meyer & Lunnay, 2013).

The findings of this study show that four mechanisms are directly related to task adaptive performance (see figure 16). These are: impact of adversity, psychological capital, authentic leadership and the personality trait of conscientiousness. Impact of adversity is identified in line with Dohrenwend (2000); Hannah et al. (2009) as a factor that is context dependent and directly and significantly related to task adaptive performance. The personality trait of conscientiousness is directly related to task

adaptive performance, but the relation within the tested conceptual framework is not significant. Therefore, conscientiousness will be discussed in the next section as a factor indirectly influencing task adaptive performance. Investigation into the intrapersonal aspects of adaptation to adversity reveal that psychological capital and authentic leadership have to be operated for leaders' adaptation to adversity to happen. The relation will be discussed in the following section.

6.2.1 Impact of adversity

The mechanism of impact of adversity (magnitude, probability and relevance) quantify the level of consequences of adversity on the leader due to external VUCA-conditions which can result in a decreased level of task adaptive performance (Dohrenwend, 2000, 2010; Everly et al., 2013; Hannah et al., 2009; Jundt et al., 2015). The negative correlation between the impact of adversity and task adaptive performance shows that a high level of the impact of adversity (taxonomy specifying the consequences of adverse contextual factors such as VUCA-conditions) (Madge, 1967; Ottaway, 1983) can lead to a lower level of task adaptive performance by for example decision making failure based on inadequate information (Terlizzi et al., 2003; Vakil, 1997), possibly even by a feeling of loss of control, increased fears or loss of self-efficacy (Hannah et al., 2009) or by adaptive failure (Neiworth, 2015; Yates & Masten, 2004). It has also been shown that environmental adversity can affect workplace adversity as well as the personal level of adversity such as adaptive behaviour (Stoltz, 1997) and that VUCA conditions as well as workplace conditions can have a negative influence on task adaptive performance (Hannah et al., 2009; Jundt et al., 2015). These findings are consistent with the majority of interviewee's reports stating that economic-oriented external factors can affect adverse VUCA-conditions (Barkouli, 2015; Breen, 2017) and also job related conditions such as leaders' role ambiguity and the absence of job resources (social support, feedback) and a feeling of unmet expectations can lead to adaptive failure (Neiworth, 2015; Yates & Masten, 2004). Confirming with the findings of Schein (2010); Weick and Quinn (1999) that also planned changes as "true transformations" can also lead to adaptive failure the positive conditions, such as occupying a CEO Position and a trust-based relation to other board members lead to a feeling of uncertainty and to less task adaptive performance at the beginning of process regarding the new situation.

Therefore, it can be argued:

The higher the level of the impact of adversity, the lower the task adaptive performance.

6.2.2 Psychological capital

The results of this study show that psychological capital is the most significant factor to positively affect task adaptive performance. Psychological capital supports the intrinsic motivation and perseverance of a leader to adapt to adversity by activating self-efficacy, optimism, hope, and resilience (Luthans, Avolio, et al., 2007; Sweetman, 2010). In line with Luthans, Avolio, et al. (2007) it can be argued that self-efficacy supports a leader by giving her/him confidence to strive to succeed at challenging tasks. Leaders' optimism can make a positive contribution to succeeding now and in the future. Hope facilitates a leader to persevere or redirect paths to goals in order to succeed, and resilience enables a leader to sustain and bounce back after problems and adversity. Optimism supports self-efficacy and resilience so that leaders can better adapt to adversity (Avey et al., 2011). A high level of hope helps leaders to anticipate barriers and problems (Avey et al., 2008; Snyder et al., 2002) and improves their adaptive effectiveness (Tugade & Fredrickson, 2004). These assumptions are consistent with the feeling of self-efficacy reported by the interviewees. They realised that they did not always have to be "a superman", and a reduced perception of tensions meant improvement towards the end of adversity as they gained a better understanding of themselves and their strengths.

However, some self-doubt and absence of self-efficacy reported at the beginning of adversity strengthened the finding, because the leader subsequently remembered a feeling of high self-efficacy; "...what I do, I do correctly..." Several interviewees also reported optimism and their positive attitude gave them support in the long run as they saw the event as a challenge or an opportunity to learn for future development.

Therefore, it can be argued:

The higher the level of psychological capital, the greater the task adaptive performance.

6.2.3 Authentic leadership

The results of this study show that authentic leadership is the second significant factor to positively affect task adaptive performance. Leaders can use balanced processing, internalized moral perspective, relational transparency and self-awareness (Walumbwa et al., 2011) to improve their task adaptive performance (Avolio et al., 2004; Leroy et al., 2012). For example, authentic leaders use self-reflection to analyse situations, try to reduce biased perception and accept negative feelings and outcomes when handling emergencies or crisis situations (Luthans, Norman, et al., 2006). They apply reliable behaviour, grounded on ethical standards and they use positive self-regulation even in uncertain and unpredictable work situations (Northouse, 2012).

Authentic leaders are open and honest in their communication with stakeholders, increasing trust as they express their own real feelings and thoughts, even if work stress is high (Northouse, 2012; Walumbwa et al., 2011). They are constantly aware of their own identity, mental models, values, and motives based on self-reflection, by learning new work tasks, technologies, and procedures even if they are outside their comfort zone (Kernis, 2003; Northouse, 2012). Authentic leaders apply effective patterns of useful communication and maintain cohesion, focus, and calm (Hannah et al., 2009) with the aim of adapting successfully within a complex world (Livingston & Lusin, 2009). These results are consistent with the reports of the interviewees. Various Leaders described their ethics and value orientation with the characteristic of being responsible for their own decisions, behaviour, and attitudes. Another leader reflected on his own weaknesses and strengths and described his leadership style as “authentic”. Others pointed out that value orientation was important for them and they applied calm, empathy and active listening based on an acknowledgment of their responsibility for decisions.

The results of this study reflect those of Gardner et al. (2011); Luthans and Avolio (2003) that psychological capital and authentic leadership are intertwined. The findings show that the higher the level of psychological capital the greater the authentic leadership. For example, a decrease in optimism and hope affects a leader’s resilience and morality even if she/he wants to behave authentically (Maher et al., 2017). Similarly, an increase in hope facilitates goal orientation, which authentic leaders use

to foster their agentic thinking, even when they face adversity (Walumbwa et al., 2011). This is consistent with the findings from the interviews of the qualitative investigation. The leaders were stressed by self-doubt derived from inner conflicts based on a low level of self-efficacy or forced by the conditions of decision-making within dilemma situations but the application of authentic leadership reduced self-doubt over time.

Summarising the findings regarding the critical realist approach leaders' adaptation to adversity, characterised by task adaptive performance is classified as an event according to critical realist categorisation. Impact of adversity, psychological capital and authentic leadership are the central mechanisms. These mechanisms operate in a condition of burnout. The leader herself/himself is categorised as an individual structure consisting of personality, mental model and human agency aspects. Adversity, characterised as burnout, is a prerequisite condition of adaptation (see table 14).

Table 14: Elements of the process of leaders' adaptation to adversity

Critical realism elements	Findings
Event	Adaptation - Task adaptive performance
Structures	Individual structure (personality, mental model and human agency)
Conditions	Burnout (adversity)
Mechanisms	Impact of adversity Psychological capital Authentic leadership

To sum up, in this study adaptation is described as a process of a leader achieving a new degree of balance between her/his own behaviour and adverse events with the aim of effectively reaching organisational goals. This result is consistent with the maximum adaptation model (see figure 3). This argues that leaders experiencing high exposure of to many stressors over a longer period of time can leave their comfort zone of acceptable stress level and lose their ability to adapt due to their decreased capacity for physiological and psychological adjustment (Matthews et al., 2008; Pomeroy, 2013). Otherwise leaders work within conditions of a normative zone where no adaptation is necessary. These assumptions can be contrasted with the argument that the results of this study show that leaders' adaptation to adversity is necessary

even if adverse conditions such as burnout are at a low level. This argument is supported by the significant direct relation identified between impact of adversity and task adaptive performance. It has been shown that the higher the level of impact of adversity, the lower the level of task adaptive performance. This gives rise to the assumption that the contextual factor of impact of adversity can directly affect task adaptive performance.

However, impact of adversity is also related to burnout, as shown above. This means that both the condition of burnout and the mechanism of the impact of adversity have to be taken into consideration regarding the occurrence of task adaptive performance and their combination is a prerequisite of leaders' adaptation to adversity.

In summary, it can be argued, that:

A higher level of psychological capital and authentic leadership accompanied by a lower level of impact of adversity and burnout leads to greater task adaptive performance.

A lower level of psychological capital and authentic leadership, accompanied by a higher level of impact of adversity and burnout, leads to less task adaptive performance.

The following section outlines the influencing factors of leaders' task adaptive performance and answers the research question below.

6.3 What are the Factors influencing Leaders' Task Adaptive Performance to Adversity?

The research question, "What are the influencing factors of leaders' task adaptive performance to adversity?" seeks to identify which structures, conditions and mechanisms affect task adaptive performance. Overall, the findings of the study show that all of the selected factors within the conceptual framework directly or indirectly affect task adaptive performance in their own way. Direct influencing factors with significant relations are: impact of adversity, psychological capital and authentic leadership. Indirect influencing factors are: sense-making of adversity, burnout, self-reflection and conscientiousness. The findings of the reports from the interviewees of the qualitative investigation are consistent with this result. The interviewees reported that external conditions such as VUCA conditions can affect their feeling of burnout. The direct relation between various influencing factors regarding burnout and task adaptive performance have already been explained in the discussion of nature of adversity and how leaders can adapt to it. Therefore, this section focusses on the other indirect relations hypothesised in the conceptual framework. The results of this study show that three factors have an indirect influence on task adaptive performance: sense-making of adversity, self-reflection and conscientiousness.

6.3.1 Sense-making of adversity

As previously discussed, sense-making of adversity is negatively related to burnout, but it is also significantly positive related to psychological capital. In line with Van den Heuvel et al. (2009); Weick et al. (2005) this study supports the assumption that sense-making of adversity makes individuals, more hopeful of increasing their feeling of being stable enough to manage the future and to give adverse experiences a meaning as the basis of self-efficacy and optimism (Van den Heuvel et al., 2009). These results are consistent with comments from the interviewees of the qualitative investigation that the leaders who made positive sense of their adaptive response, increased their self-awareness of their own and others' strengths, learned not to be a victim of their own expectations, developed their skills of active listening, held no prejudice and took others seriously. They were also empathic and asked what the problems were as well as recognising the need of teamwork to manage adverse events.

Overall, the reports of all interviewees show they applied sense-making of adversity in order to facilitate their process of complex problem-solving (Zaccaro et al., 2009) and to support their self-organisation of ambiguity within adverse contexts (Baran & Scott, 2010).

6.3.2 Self-reflection

This study shows that self-reflection is significantly related to psychological capital and authentic leadership. In line with Bandura and Locke (2003); Luthans, Youssef, et al. (2007b), the relation has a positive direction; the higher the level of self-reflection the higher the level of psychological capital and the greater the authentic leadership. Self-reflection can increase self-efficacy and the leaders' motivation to improve their goal-setting and to anticipate future opportunities (Bandura & Locke, 2003). It supports the self-awareness about possible patterns hidden behind their own biased mental model that affects their own behaviour in adverse situations (Hilden & Tikkamäki, 2013; Kernis, 2003; Northouse, 2012; Rennison, 2014; Schön, 1983). It also helps the leaders to focus when leaving their comfort zone (Heifetz & Linsky, 2002; Yukl & Mahsud, 2010). These findings are consistent with the assumption that self-reflection of the interviewees supported them in finding the best solutions and ways of communication, to be authentic, to question their own behaviour, to ask themselves first of all whether it is their fault, and to see where they came from and where they want to go. In contrast, one interviewee saw a risk in self-reflection as the past might become more and more rosy to people who focus too much on it, because people quickly forget the bad things and remember only the good. This finding is in line with research on self-rumination whereby a person develops an overemphasised need for absolute truth (Simsek et al., 2013; Simsek, 2013) based on fear and perceived threats and losses (Trapnell & Campbell, 1999). Such behaviour is shown by the perception of the necessity to change old behaviour and of less motivation to do it (Rennison, 2014).

6.3.3 Conscientiousness

The personality trait of conscientiousness consists of two components; the intention to achieve a goal and dependability, e.g., being careful, responsible, and organised (MacCann, Duckworth, & Roberts, 2009). The achievement orientation is useful in situations of anticipating adversity and adaptation (Griffin & Hesketh, 2005; Pulakos et

al., 2002) and dependability supports the behavioural pattern within unexpected situations (LePine et al., 2000). The result of this study that the positive relation between conscientiousness and task adaptive performance is not significant, confirms the existing research (Huang et al., 2014). However, it is not in line with Christiansen and Tett (2013); Penney et al. (2011); Strang and Kuhnert (2009) who suggest that conscientiousness is one of the most significant personality dimension affecting task adaptive performance. Following the argumentation of Huang et al. (2014) that these different results might be explained by the findings that achievement orientation rather than dependability seems to be significantly related to task adaptive performance. The result of this study is more precise with regard to the relation between conscientiousness and psychological capital. In line with Choi and Lee (2014); Coomer (2016); Luthans, Avolio, et al. (2007) conscientiousness is significantly related to psychological capital. Conscientiousness can make leaders more optimistic about achieving task demands and can increase their resilience to better adapt to adversity (Barrick et al., 2003; Judge & Ilies, 2002).

Furthermore, a high level of conscientiousness can reduce leaders' motivation to show counterproductive behaviour while dealing with adversity (Bowling & Eschleman, 2010). Overall, the findings of the interview reports are consistent with the results. Some leaders shared a hopeful perspective with their followers and tried to reach a consensus with them and others took time to get to know each other and to be empathic with the aim of showing their optimism and responsibility and organising the situation.

This study shows that sense-making of adversity, self-reflection and conscientiousness are conditions of leaders' adaptation to adversity. They affect other conditions such as burnout and they are significantly related to the central mechanisms of psychological capital and authentic leadership, but are not directly related to task adaptive performance.

Based on the answers to the research question the following section shows the summary and interpretation of the process of leaders' adaptation to adversity.

6.4 Interpretation of the Process of Leaders' Adaptation to Adversity

In summary, figure 27 presents the findings from all the research perspectives including the explanation of what the nature of adversity is, how leaders can adapt to it and which factors influence its occurrence. Hence, burnout itself has been identified as an event with its own process of occurrence (see figure 26) and marked with the sign “*”.

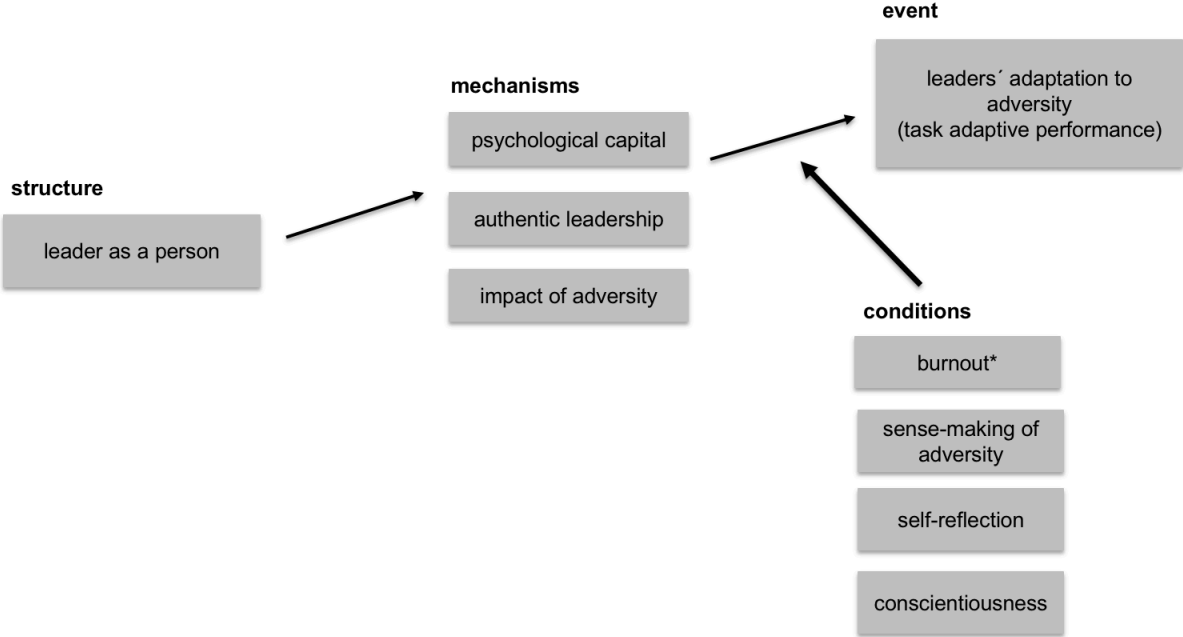


Figure 27: Process of leaders' adaptation to adversity

Source: the author

The combination of the levels of influencing factors explaining the positive and negative aspects of leaders' adaptation to adversity is shown in Table 15. This identifies what is necessary for a leaders' positive adaptation to adversity and what can lead to a low level of leaders' adaptive performance. It also explains what highly adaptive leaders have and and what less adaptive leaders lack. (+ sign means a high level and – sign means a low level.)

Table 15: Levels of the influencing factors of leaders' positive and negative adaptation to adversity

Influencing factors	Leaders' positive adaptation to adversity	Leaders' negative adaptation to adversity
Psychological capital	+	-
Authentic leadership	+	-
Burnout	-	+
Impact of adversity	-	+
Sense-making of adversity	+	-
Self-reflection	+	-
Conscientiousness	+	-

There are two central mechanisms; psychological capital and authentic leadership which affect leaders' adaptation of adversity. The type and level of adaptation to adversity is influenced by several conditions such as the impact of adversity, sense-making of adversity, burnout, self-reflection and conscientiousness.

The next sections interpret the factors that affect a leaders' positive or negative adaptation to adversity.

6.4.1 A leaders' positive adaptation to adversity

Highly adaptive leaders experience a low level of impact of adversity, even in a volatile, uncertain, complex, and ambiguous business environment. They feel less strained by adverse conditions and do not suffer with negative emotions like anger, fear, and doubts. They therefore have a low level of burnout. Their task adaptive performance is not greatly affected by the impact of adversity, because of their positive judgement. Hereby a highly adaptive leader adopts a positive perspective by consistently creating ways of developing and creating insights about the adverse situation rather than dwelling on the negativity. In maintaining a positive perspective, highly adaptive leaders consider the adverse situation and they encounter it as an opportunity for them to learn and grow.

A specific condition of highly adaptive leaders is a high level of sense-making of adversity. Greater sense-making of adversity can help them in addressing ambiguity in dangerous environments, evaluating outcomes prior to their occurrence and anticipating the necessary activities in a way that the impact of adversity is under their control and leads to a low level of burnout. This allows highly adaptive leaders to minimise the negativity of the impact of adversity and at the same time to maximise benefits obtained from the adverse event. A high level of sense-making of adversity helps highly adaptive leaders to be more resilient even when they encounter criticism and it gives them a sense of confidence in facing the adverse future. With a high level of sense-making of adversity, highly adaptive leaders are in a better position to draw meaning from adverse events and hence, improve the basis of their hope, optimism and self-efficacy. Greater sense-making of adversity enables highly adaptive leaders to act within human agency, for example to express free will, to make decisions based on a high level of morality and to take responsibility for their decisions and actions. A high level of sense-making to adversity means that highly adaptive leaders take time to monitor the adverse situation, analyse it and draw a reasonable conclusion from it.

A high level of self-reflection supports highly adaptive leaders to increase their psychological capital, for example, self-efficacy. Through self-reflection, highly adaptive leaders are in a position to act with purpose, remain motivated, set better goals, and anticipate probable outcomes in the future. Greater self-reflection supports highly adaptive leaders to develop self-awareness from beliefs, meanings, thoughts, feeling and motivations, social norms and values which affect their authentic behaviour positively during adverse events. They exhibit high levels of self-reflection and this can improve their ability to remain focused, self-aware and avoid staying in their comfort zones. When dealing with uncertain contexts and rapidly changing situations, a high level of self-reflection is important for highly adaptive leaders to create values, goals, strategies, and beliefs with the purpose of showing relational transparency as authentic leaders.

Conscientiousness and motivation are closely related to goal-setting and achieving task demands. Highly adaptive leaders, who demonstrate considerable high levels of

conscientiousness are in a better position to effectively persist even during adversity. They can improve their level of psychological capital which can have a positive impact on their authentic leadership behaviour and reduce counterproductive leadership patterns. Leaders with high levels of conscientiousness usually spend more time attempting to achieve the goal they have set for their tasks and express more effort and motivation to meet the demands.

Highly adaptive leaders show high levels of both authentic leadership and psychological capital. Their high level of psychological capital enhances their ability to be authentic and simultaneously increases their task adaptive performance. Highly adaptive leaders are more optimistic, look towards the future with hope, are resilient to adversity and adapt to it by the application of a high level of self-efficacy. Thereby, highly adaptive leaders are authentic by understanding their purpose, practicing ethical standards and solid values, establishing good relationships with others and demonstrating self-discipline. They reflect on themselves and the adverse situation with the aim of preventing a biased mentality and respecting the different points of view of others. Highly authentic leaders communicate in an open and honest way, build trust, and express their own thoughts, beliefs, motives and feelings, whether positive or negative.

Overall, a high level of psychological capital and high level of authentic leadership enables highly adaptive leaders to act reasonably in dangerous situations, to handle frustration and pressure by remaining calm, to solve VUCA problems creatively and to deal with unpredictable situations by shifting the focus to the right things and learning skills needed for adaptation to adversity.

6.4.2 A leaders' negative adaptation to adversity

Less adaptive leaders respond differently in times of adversity based on distinct levels of mechanisms and conditions. The adaptive response of less adaptive leaders during adversity can be characterised by high level of burnout and greater impact of adversity, but low levels of sense-making of adversity, psychological capital, authentic leadership, self-reflection and conscientiousness.

Less adaptive leaders experience a high level of impact of adversity, especially under volatile, uncertain, complex, and ambiguous business conditions. They seem to be more strained by adversity than highly adaptive leaders which can result in a higher level of burnout. The task adaptive performance of less adaptive leaders can be directly decreased by a high level of the impact of adversity. This might be because they cannot make positive sense of the adverse event or they are unable to see adversity as an opportunity to learn and grow.

Moreover, less adaptive leaders might perceive adversity as a kind of struggle or obstacle accompanied by negative feelings of anger, fear and self-doubt. Another consequence of a negative sense-making of adversity might be that less adaptive leaders are hindered by organising ambiguity in dangerous situations and therefore their ability to anticipate necessary adaptive responses fails with the result of a high level of burnout. Also, a low level of sense-making of adversity can decrease the leaders' resilience, especially in times of personal criticism and it might reduce their self-confidence in dealing well with future adversity. Moreover, a low level of sense-making of adversity of less adaptive leaders can reduce their levels of hope, optimism and self-efficacy. They might mean they feel unable to take responsibility for their decisions and actions based on their perception determined by external factors or they cannot expect anything positive to come out of the near future.

A low level of self-reflection can also reduce leaders' opportunities to increase their psychological capital, for example, self-efficacy. In such cases, leaders have a feeling of less self-efficacy and might lack motivation to reach necessary adaptive goals. Less adaptive leaders can be influenced by a low level of self-reflection and not be aware of their own thoughts, feelings, motivations, and values with the possible result of a biased perception and failure to make good decisions. A low level of conscientiousness as one condition of negative adaptation to adversity means that conscientiousness is classified in this study as a personal trait which is less trainable. Therefore, a possible low level of conscientiousness should be perceived by a leader, but it should not lead to any negative judgement of their own personality. Research also shows that leaders with a lower level of conscientiousness make better decisions after an unexpected change by being careful, responsible, and organised. It can therefore be argued that leaders with a lower level of conscientiousness should be more careful in their evaluation of an adverse event as expected or unexpected. They should use this

information to analyse whether they need to be more achievement-orientated or more dependability-orientated. The necessity of being more achievement-orientated means they can use other opportunities to support their goal-orientation.

Less adaptive leaders might suffer from low levels of psychological capital and authentic leadership. A low level of psychological capital can make it more difficult for them to apply authentic leadership behavioural patterns and moreover, it can result in a lower level of task adaptive performance. Less adaptive leaders might be unable to develop an optimistic and hopeful perspective of their future or to show resilience-oriented behavioural patterns to deal with adversity. Their possible inability for self-reflection and sense-making of adversity can negatively affect their opportunity to be authentic even if they want to be. Such a situation can lead less adaptive leaders to increasingly negative tendencies by being overwhelmed by their own expectations, overreaction by trying to adapt to adversity or exaggeration of their own strengths.

6.5 Discussion of the Convergence of the Qualitative and Quantitative Model

The selected convergent research design aimed to triangulate the findings of the two distinct and separately applied research strands and later merge the results into one comprehensive picture of leaders' adaptation to adversity (Creswell & Plano Clark, 2007; Fetters, Curry, & Creswell, 2013; Teddlie & Tashakkori, 2009). The scope and depth of understanding of leaders' adaptation to adversity was extended by the qualitative and quantitative research strands. These applied the same model of adaptation to adversity (see figure 5) and integrated the same influencing factors (see figure 9) to develop particular conceptual frameworks with their specific aims. The qualitative research strand aimed to explain the process of leaders' adaptation to adversity by capturing specific characteristics of stressors, strain, resources, adaptive responses and sense-making of adversity (see figure 10) and by sense-making of it. The quantitative research strand empirically tested the proposed hypotheses and assessed the model fit of the entire quantitative conceptual framework (see figure 11).

The results of both research strands were combined and merged to create a structure of the critical realist process of causation regarding leaders' adaptation to adversity (see figure 13). Two processes of causation were created by the data findings to give

a comprehensive explanation of leaders' adaptation to adversity. Figure 26 shows the process of adversity (burnout) occurring within the given context of VUCA conditions and adverse workplaces and figure 27 presents the process of leaders' adaptation to adversity, including the process of adversity. Therefore, it can be argued that converging the results of both research strands and the underlying conceptual frameworks demonstrates a more comprehensive picture of the leaders' adaptation to adversity than each conceptual framework alone.

In particular, all elements (categories) of the qualitative conceptual framework (see figure 10) can be identified regarding their individual attributes within the results of the qualitative and quantitative data analysis. In particular, the role of sense-making of adversity as a stressor and as resource (see the feedback loop in figure 10) is confirmed by the quantitative data analysis. This quantitative data analysis regarding the structural equation model shows that there are various interrelations between the independent variables. The results confirm that the independent variables of the quantitative conceptual framework also represent various attributes of the categories of the qualitative conceptual framework, e.g. VUCA conditions, burnout, psychological capital, conscientiousness, authentic leadership, self-reflection and sense-making of adversity. The test of the SEM model fit confirms the multiple interplay (feedback and feedforward loops) proposed in the qualitative conceptual framework (see figure 10).

Moreover, both research strands identified burnout as the main strain factor. Psychological capital and the personality trait of conscientiousness were also identified as personal resources by qualitative and quantitative data analysis. Both data analyses revealed that authentic leadership and self-reflection are behavioural components of adaptive responses.

In summary, the independent application of both research strands and separate data gathering and data analysis revealed similar results regarding the explanation and better understanding of leaders' adaptation to adversity. Therefore, the findings from the qualitative and quantitative research strands were merged into one comprehensive process of causation of leaders' adaptation to adversity (see figure 27). The merged data provides a more comprehensive picture about the underlying structure, culture and conditions which activate the specific mechanisms for leaders' adaptation to

adversity to occur. The qualitative findings offer a colourful perspective of various organizational, environmental and workplace aspects that can be categorized as stressors. The findings also reveal burnout to be the main strain factor, that a specific combination of resources impacts the leaders' ability to adapt to adversity and that leaders can make sense of adverse events during and after their occurrence. The quantitative research strand offers a precise picture of the significance of the selected independent variables and their role and impact within the tested hypotheses and the structure of the SEM model.

The following chapter 7 presents the contribution to theory and managerial implications.

Chapter 7: Contribution to Theory and Managerial Implications

This study sets out to explore leaders' adaptation to adversity and its influencing factors and also to define the nature of adversity. It aims to answer the following research questions:

RQ1: What is the nature of adversity in the context of leadership in VUCA conditions?

RQ2: How can leaders adapt to adversity?

RQ3: What are the influencing factors of leaders' task adaptive performance to adversity?

Primary data collection for the study was conducted by the convergent mixed-methods research design of retroduction (Downward & Mearman, 2007; Sayer, 2000) grounded in a critical-realists' philosophical foundation (Bhaskar, 1975b). A quantitative and qualitative conceptual framework was developed, based on the results of a narrative literature review. The quantitative data was gathered by a structured survey which generated 143 valid responses. This represents a diverse socio-demographic coverage of leaders in Germany and the quantitative data analysis used structural equation modelling as the analysis method. Qualitative data gathering was conducted with a qualitative interview study of 6 interviews and an analysis process of retroduction was applied for the qualitative data analysis (Danermark, 2002a).

This section gives new theoretical and managerial insights into the topic of leaders' adaptation to adversity with the addition of factors which alter the understanding of the nature of adversity and explain the process of leaders' adaptation.

7.1 Contribution to the Theory of the Nature of Adversity

The existing literature shows that there is no established theory of adversity which explains the main structure, conditions and mechanisms that let adversity emerge in the context of leadership in VUCA conditions. The mainstream of adversity literature investigates the relation between negative situations such as crises, setbacks, struggles, and obstacles, (DuBrin, 2013; Jackson et al., 2007; Schein, 2010; Snyder, 2013) and negative consequences (Dohrenwend, 1998; Jackson et al., 2007; Rutter, 1985). Negative consequences include pain and struggle (Howard & Irving, 2012, p. 435), distress (Zaccaro et al., 2002), or a feeling of helplessness (Seligman, 2015)

and negative emotions (Tugade & Fredrickson, 2004). More current research, especially in the field of leadership, extends the perspective to an examination of the relation between negative events and a positive view of the negative consequences (Elkington & Breen, 2015; Kouzes & Posner, 2014; Snyder, 2013), but it does not recognise that burnout, as a type of adversity, is increasingly relevant to leadership (Cisik, 2012; Sedlacek, 2011; Zimber, 2018; Zimber et al., 2015; Zimber et al., 2018). Adversity has not been specified sufficiently and the structure, conditions and mechanisms of its occurrence are still undefined. This study closes this gap.

This study provides a novel process for the occurrence of the phenomena of adversity characterised as burnout in the VUCA leadership context (see figure 26). This process is probably one of the first to offer a comprehensive perspective of how burnout can become real. It reveals that burnout can emerge from the interdependence between the impact of adversity and sense-making of adversity as two central mechanisms accompanied by experienced negative VUCA conditions, leaders' role conflicts and the unmet expectations of others. Furthermore, positive conditions, such as career development, can also produce role conflicts and expectation dilemma. Hence, this study generates the new knowledge that the lower the level of the impact of adversity and the higher the level of sense-making of adversity, the lesser the burnout.

The central contribution of this study is the assumption that the mechanism of the impact of adversity clarifies the possible impact (magnitude, probability and relevance) of particular adverse conditions on the leader herself/himself with the aim of reducing failure of decision-making due to inadequate information (Terlizzi et al., 2003; Vakil, 1997). The mechanism of sense-making of adversity organises ambiguity, provides a learning opportunity and helps to solve complex problems (Baran & Scott, 2010; Bartone, 2015; Weis, 2012; Zaccaro et al., 2009). The findings of this study advance the understanding of the structural elements of burnout and their role in its development. It contributes to extant burnout research in the field of leadership by identifying that the company in which the leader works and an understanding of the leaders' role with specific expectations can have an impact on the emergence of burnout by framing the context in which the leader acts.

The company is a social structure and can also be affected by the VUCA conditions e.g. financial crisis. Hence, the leader herself/himself can be identified as the second necessary structural element. The dichotomy between social structures/conditions and

personality/human agency is central because burnout cannot be explained without its combination. This is particularly evident with regard to the assumption of human agency.

Assuming that these factors are prerequisites of burnout, leaders are also able to change the structures and conditions with the aim of reducing the level of burnout (Archer, 2000). This conclusion was strengthened by the finding that burnout can affect psychological capital and psychological capital is related to human agency (Bandura & Locke, 2003). The empirical data of this study shows that the lower the level of burnout the higher the level of psychological capital. This finding contributes to the current gap within adversity research and endorses the possibility of a positive view of the negative consequences of adversity (Elkington & Breen, 2015; Kouzes & Posner, 2014; Snyder, 2013).

7.2 Contribution to Theory of How Leaders Can Adapt to Adversity

There is currently a wide range of fragmented and unrelated research results regarding adaptation (Ohly et al., 2006), taxonomies of adaptation (Pulakos et al., 2000) and adaptive leadership models (Bennis et al., 2015; Heifetz et al., 2009b). These neither provide a comprehensive picture of leaders' adaptation to adversity nor explain which structures, conditions and mechanisms make adaptation to adversity possible. Also, a precise taxonomy to measure leaders' adaptation to adversity has not yet been fully developed. This study closes these gaps.

Based on the methodological underpinning of retroductive reasoning, this study contributes to the understanding of how leaders can adapt to adversity by identifying a new process of its occurrence (see figure 27). This contribution highlights impact of adversity, psychological capital and authentic leadership as the three central mechanisms affected by conditions of burnout, sense-making of adversity, self-reflection, and conscientiousness which enable leaders' adaptation to adversity. Another important contribution of this study is to show that leaders' adaptation to adversity can be precisely measured through task adaptive performance because this describes behavioural pattern of leaders' adaptation regarding various adverse situations (Kröger & Staufienbiel, 2012).

Psychological capital and authentic leadership are the most significant factors to positively affect task adaptive performance. This discovery provides a contribution to the expanding field of positive psychology (Avolio & Gardner, 2005) within complex leadership context. In line with the suggestion of Livingston and Lusin (2009), it uncovers the need to integrate them into complex leadership research, especially in the field of adaptation in extreme contexts (Hannah et al., 2009; Uhl-Bien & Arena, 2017). This study reveals that leaders can use psychological capital to improve their intrinsic motivation and perseverance to adapt to adversity by activating self-efficacy, optimism, hope, and resilience (Luthans, Avolio, et al., 2007; Sweetman, 2010) and it shows, in line with Walumbwa et al. (2011), that authentic leaders can apply balanced processing, internalised moral perspective, relational transparency and self-awareness to increase their task adaptive performance in adverse situations.

This study reveals the need to include intrapersonal conditions such as burnout as well as external VUCA condition quantified by the mechanism of the impact of adversity when considering the process of leaders' adaptation to adversity. The results suggest, in line with Matthews et al. (2008); Pomeroy (2013), that both can affect leaders as they have to leave their comfort zone of acceptable stress level based on their decreasing capacity of psychological adjustment with the possible result of adaptation failure. Hereby, a high level of burnout can negatively affect psychological capital and a high level of impact of adversity can affect task adaptive performance in a twofold negative way; firstly, directly and secondly by increasing burnout.

7.3 Contribution to Theory of the Influencing Factors of Leaders' Task Adaptive Performance

There is existing research into influencing factors of adaptive performance (Beuing, 2009; Jundt et al., 2015) but it neither uncover the factors that can affect task adaptive performance within adverse situations nor gives a precise understanding of the impact of these factors and its interdependences. This study fills these gaps.

This study provides one of the first comprehensive pictures of the process of leaders' adaptation to adversity, its influencing factors and their interdependences (see figure 27). It also clarifies the impact of each influencing factor on a positive or negative task adaptive performance (see table 24).

Overall, the findings of this study advance the understanding of the elements of the process of leaders' adaptation to adversity and their role in its development.

Direct influencing factors with significant relations are: impact of adversity, psychological capital and authentic leadership. Indirect factors affecting these factors are: sense-making of adversity, burnout, self-reflection and conscientiousness. This study contributes to extant leadership research in the field of adverse events by identifying that the process of leaders' adaptation to adversity is complex and various conditions affect the central mechanisms of psychological capital and authentic leadership. All factors and their interdependences have to be taken into consideration to explain leaders' adaptation to adversity. As mentioned above, this study contributes to burnout research in the field of leadership, but closely in line with Schaufeli (2015), it also contributes to the field of interdisciplinary research between burnout research and leadership research. The identified process of adversity (see figure 26) explains the separate occurrences of adversity, characterised as burnout in this study. Furthermore burnout is classified as a particular condition within the explanation of the process of leaders' adaptation to adversity. This assumption supports the necessity of interdisciplinarity of adversity/stress research and leadership research, in particular adaptive leadership.

The process of leaders' adaptation to adversity is illustrated in figure 27. Some of the influencing factors, such as burnout, impact of adversity, psychological capital and authentic leadership have already been addressed in the other two research questions. Therefore, the subsequent discussion focusses on the other selected influencing factors of the conceptual framework: sense-making of adversity, self-reflection and conscientiousness.

This study contributes to knowledge in leadership research, in particular how leaders' sense-making of adversity and self-reflection can have a positive effect on the direct influencing factors of task adaptive performance. A high level of sense-making of adversity can reduce burnout and simultaneously it can increase psychological capital. In line with Bandura and Locke (2003); Luthans, Youssef, et al. (2007b), a high level of self-reflection can have a positive impact on psychological capital and authentic leadership. This study contributes new knowledge of the necessity to take both the intrapersonal conditions of sense-making of adversity and self-reflection into consideration when exploring the process of leaders' adaptation to adversity. Another

contribution of this study is in line with Ashley and Reiter-Palmon (2012); Masui and Corte (2005); Olivares (2008), intrapersonal conditions can be developed to support the human agency of a leader with positive effects on adaptation to adversity. In contrast, the personality trait of conscientiousness is relatively stable and difficult to change, but in line with Choi and Lee (2014); Coomer (2016); Luthans, Avolio, et al. (2007), it is significantly related to psychological capital and therefore can indirectly affect task adaptive performance. This study also contributes to the discussion of the direct relation between conscientiousness and task adaptive performance, whereby divergent research hypothesizes both that there is a significant relation (Christiansen & Tett, 2013; Penney et al., 2011; Strang & Kuhnert, 2009) and that there is no significant relation (Huang et al., 2014). This study supports the argument of Huang et al. (2014) that there is no significant direct relation to task adaptive performance.

The next section summarises the results of the study and outlines the meaning in terms of leaders' change in experience of and adaptation to adversity. The following managerial implications relate the results to the current leadership action standards and makes suggestions for what action should be taken by leaders to successfully adapt to adversity.

7.4 Managerial Implications about the Nature of Adversity

Recent studies and publications (2010 – 2018) have shown that a significant number of leaders are not able to adapt to adversity (Berman, 2010; Langley, 2013; Sinar et al., 2018; Sinar, Ray, Abel, Neal, 2014; Zimber, Hentrich, & Meyer-Lindenberg, 2018). Despite an increasing amount of past leadership resilience training (Algoe & Fredrickson, 2011; Carr et al., 2013; Robertson et al., 2015) and although many relevant stress factors for German leaders seem to be recognised, around 25% of all German leaders are candidates for burnout syndrome, and 24% seem to be highly exhausted (Cisik, 2012). Burnout among leaders is increasing and a higher than average risk of depression among leaders can be identified (Cisik, 2012; Sedlacek, 2011; Zimber, 2018; Zimber et al., 2015; Zimber et al., 2018).

This study informs leaders that adversity is a manageable process. It offers an explanation for leaders of the kind of conditions and mechanisms that can lead to a low or high level of burnout and how these factors can be influenced. The study

suggests that the better the development of mechanisms of impact of adversity and sense-making of adversity, the better leaders can manage adversity such as burnout. Specific training programmes should be developed and applied to improve these mechanisms. These should aim to reduce leaders' failure of decision making due to inadequate information about VUCA conditions and to help leaders organise ambiguity and solve complex problems by giving good and bad situations a valuable meaning. This study also informs leaders about the possibility for the organisational structure of their companies to frame the emergence of burnout by derived role expectations with possible outcomes of role conflicts and dilemma situations. Hence, leaders can learn from this study that positive conditions such as career development can also lead to higher level of burnout by increasing intrapersonal role and value conflicts. Knowing these facts helps leaders to recognise such situations early on and therefore to develop strategies to deal with them before burnout becomes dangerous.

This study concludes that leaders can change structures and conditions by human agency to minimise burnout. Therefore, leaders should be aware of both, social structures/conditions and their own personality, current mental states and their level of human agency. Without this they cannot explain a specific adverse event such as burnout and they are unable to develop a successful adaptation strategy. Moreover, the results of this study inform leaders about the significant role of sense-making of adversity because it can reduce burnout despite a higher level of impact of adversity and it can have a positive effect on psychological capital. Furthermore, psychological capital can be negatively affected by burnout. This knowledge enables leaders to avoid reactions like struggling with how to best lead during a particular adverse event (Horney et al., 2010) and also to get support to be better prepared for adversity (Bernstein, 2014).

7.5 Managerial Implications of Leaders' Adaptation to Adversity

Currently, the main action standards in leadership practice to deal with adversity are models of resilience (Everly et al., 2013; Fredrickson et al., 2003; Stoltz, 1997) and the adaptive leadership related to the complexity leadership framework (Hazy, 2013; Heifetz et al., 2009b; Lichtenstein et al., 2006; Uhl-Bien & Marion, 2009). Nevertheless, today, more than 50% of German leaders suffer from exhaustion and risk of burnout (Cisik, 2012) with increasing negative tendencies (Zimber, 2015; Zimber et al., 2018).

The results of this study inform leaders that the more they increase their psychological capital and improve their authentic leadership, the greater their task adaptive performance can be. It recommends that specific development programmes should be applied to improve these mechanisms to increase leaders' task adaptive performance. In this way, leaders can be supported to get a higher level of self-efficacy, optimism, hope, and resilience with the purpose of identifying their intrinsic motivation and perseverance to adapt to adversity (Luthans, Avolio, et al., 2007; Sweetman, 2010). These training programmes should also focus on leaders' experiences with balanced processing, internalized moral perspectives, relational transparency and self-awareness (Walumbwa et al., 2011) with the goal of learning how to improve their task adaptive performance (Avolio et al., 2004; Leroy et al., 2012). This study suggests leaders should develop their psychological capital instead of only developing their resilience and they should apply authentic leadership behavioural patterns before the usage of adaptive leadership. This is because psychological capital includes resilience and enlarges the resource basis of the leader with self-efficacy, hope and optimism.

This study also shows that authentic leadership is a mechanism that enables adaptation to adversity and can support the adaptive leadership style with a complexity leadership framework (Livingston & Lusin, 2009). Leaders can learn from this study that the mechanisms of psychological capital and authentic leadership are affected by a condition of burnout. Knowing that a high level of impact of adversity can directly decrease task adaptive performance and directly increase burnout, leaders can anticipate this double negative impact and develop strategies to reduce the impact of VUCA conditions.

7.6 Managerial Implications of the Influencing Factors of Task Adaptive Performance

Current research into the influencing factors of adaptive performance (Beuing, 2009; Jundt et al., 2015) lacks a comprehensive overview and does not provide practical implications for leaders' adaptation to adversity.

This study provides leaders with a comprehensive view of the process of adaptation to adversity (see figure 27), together with the main influencing factors and their interdependences. Leaders should know how adaptation to adversity works, which

influencing factors are relevant and how they are interrelated. They can use this knowledge to evaluate past and current adverse events to identify successful strategies or to prevent or prepare for future adverse events. The managerial implications of the direct influencing factors as well as burnout are discussed in the previous section, therefore the focus of this section is on the other indirect influencing factors: sense-making of adversity, self-reflection and conscientiousness.

This study enhances leaders' knowledge that sense-making of adversity, self-reflection and conscientiousness are conditions which can affect the central mechanisms of their adaptation to adversity. Two of the three conditions, sense-making of adversity and self-reflection can be developed by training and experience, but conscientiousness is trait-like which means that it is more stable and less changeable. If leaders know their own level of conscientiousness they can use this resource as a strength to support psychological capital. The results of this study show that specific training programmes should be developed and applied to improve leaders' sense-making of adversity and self-reflection with the aim of increasing their self-efficacy and self-awareness as well as to train them in anticipating future opportunities and enabling them to be more focussed when leaving their comfort zone.

The following chapter outlines the research limitations, the implications for future research and provides reflection on the researchers' role and a critical reflection on the study journey.

Chapter 8: Research Limitations, Implications for Future Research and Reflection

This study provides a better understanding of the nature of adversity, explains how leaders can adapt to it and identifies the main factors influencing leaders' task adaptive performance. However, in line with all research approaches, this chapter also acknowledges various limitations, outlines future research considerations and finalise with a reflection on the researchers' role and a critical reflection on the study journey.

8.1 Research Limitations

The data and results derived from the respondents' reports refer to a certain point in time rather than multi-rated and longitudinal data sets. This may not include changes in the environment, situation, relation to others, or individual psychological states over time. The data regarding adversity may be biased by the leaders' past experiences of adversity, their perceptions of current adversity, or their mental states at the date of the interview or survey application.

To avoid missing underlying structures, conditions and mechanisms of the phenomena, the study used a convergent mixed method approach which was based on the same research questions as the conceptual framework. The quantitative and qualitative data analysis procedures were based on the same retroductive inference procedure to ensure multiple inferences that were consistent with each other. The literature review showed that the results were consistent with existing knowledge in the field and that the inferences were more plausible than other explanations. Nevertheless, other explanations should not be fully excluded even if the existing literature and the gathered data did not uncover them. The specific context of the study addresses the boundaries and the possible limitations of transferability or generalisability. The data were only gathered from business-oriented leaders from Germany. The traditional hierarchical and more structured German culture might have influenced the gathered data from the respondents (Hofstede, 1994; Uhl-Bien & Marion, 2009). This may limit the transferability or generalisability of the data to other cultures and countries even though the survey data was based on leaders who work at various international companies.

There are also concerns regarding how the results of this study might be transferred to other organisational contexts, such as non-profit organizations or governmental areas where leadership is also important. However, the study provides evidence that the results can be transferred to the context of VUCA leadership environments. The study also offers valid knowledge about the explanation of the phenomenon under study, by applying SEM model estimation, evaluation of the model fit, reduction of measurement errors by a rigorous research process and the use of existing research results to support the hypotheses about the mechanisms and underlying explanation for the events of leaders' adaptation to adversity. Nevertheless, the results of the study might be biased by the researcher's subjectivity and role clarity. The selected mixed-method approach requires the direct interaction between the researcher and the interviewees and is based on subjective interpretation of the final results of the study. Therefore, this might be another limitation of the results of the study. For this reason, the researcher's reflection was a constitutive part of the research process based on careful interpretation of the data, reflection on the answers of the participants and on the researcher's understanding of them and review of the results by other field experts.

The data was collected from leaders who can be labelled as "survivors", meaning that these leaders were able to overcome adverse events in the past. Regarding the qualitative research, no data was gathered from leaders who outlined total failure when dealing with adversity. The data gathered from the quantitative research may include such persons but this condition was not exclusively identified.

The sample size of both the qualitative and quantitative research was adequate enough for this research. The problem faced by most researchers of low participant recruitment might have also influenced this study because out of 199 participants, 143 completed the questionnaire and this final sample size of the quantitative research may limit the statistical power for hypotheses testing. Nevertheless, the study achieved the required amount of 100 complete data sets, based on comparative sampling data from other leadership research.

The data of the dependent variables were gathered from the leaders themselves to identify significant relations between task adaptive performance and various influencing factors. This may increase the risk of common method bias and same source bias.

The study was limited in two ways by its research design restriction (parsimony). Firstly, only the one personality dimension of conscientiousness was selected when existing leadership research offered more than one possible influencing factor, such as neuroticism. However, conscientiousness was identified as the most important personal trait influencing performance in the field of leadership. Secondly, a case study approach might have been more effective than the selected qualitative data gathering via semi-structured interviews with the possible results, to gather missing data from the environment of each interviewee. However, the data gathered from the semi-structured interviews, especially the verbal expressions of how the interviewees adapt to adversity, did provide the data required to answer all the research questions.

This study provides a new perspective on the process of leaders' adaptation to adversity in a VUCA condition. However, these assumptions might be limited by their novelty. As with all innovations and novel research findings, there is less evidence available about their practical benefits. Future research could provide these important answers.

In view of these limitations, future research possibilities will be presented in the following section.

8.2 Implications for Future Research

Any future study should use a more complex design for data gathering including a longitudinal approach. This should aim to get data regarding the same variables from various times as well as integrating several data sources, e.g., assessment from followers, peers, and other stakeholders. It should also use internal sources for task adaptive performance data. Moreover, the process model of leaders' adaptation to adversity should be developed from the intrapersonal perspective of the leader himself/herself, as applied in this study with a leader-follower exchange perspective. It should aim to find out how leaders can support their followers' adaption to adversity and how a high or low level of leaders' task adaptive performance influences the leader-follower adaptations process.

A follow-up study should also integrate a wider range of dependent variables, especially environmental, work situational, and leader-follower relational factors as possible stressors, various strain factors, and resources, such as further personality

dimensions and different leadership styles. This should aim to test different cause-effect models of leaders' adaptation to adversity within a comparative test of different structural equation models. This parsimonious approach could reduce causal complexity and could improve the model fit. Therefore, the sample size should be extended to a minimum of 200 complete data sets to gain better statistical evidence and reduce same source biases. The study design would be more comprehensive if the sample included leaders from different cultural backgrounds and from international organisations settled in various countries. The differentiation regarding various cultures could be used to compare and contrast the results. Also, the sample should be extended to leaders who have failed to adapt to adversity with the aim of evaluating the effects and consequences of their failures and to investigate what they needed to succeed.

The findings of this study show there is potential for future research into the process of leaders' adaptation to adversity. Further empirical confirmation of the findings that psychological capital and authentic leadership are central mechanisms of leaders' adaptation to adversity could support theoretical and managerial implications.

A critical reflection on the study journey will be presented in the following section.

8.4 Critical Reflection on the Study Journey

During the 2008 global financial crisis I worked as an executive coach and many leaders reported feelings of helplessness, panic, shock, anger, fear, and doubt. Sometimes, leaders talked about their feelings of being out of control and being overwhelmed by the need to adapt. This experience, and the observations at the time, sparked the interest in this topic, and I decided to pursue the topic as part of my PhD Study. Today, ten years later, the impact of the past crisis is still noticeable. However, other VUCA conditions as well as the aftershocks of the crisis have materialized. Globalization, digitalization, climate change and mutual geopolitical issues have made the business world increasingly "flat" (Friedman, 2005). Past issues have been overlapped by new waves of disruptive changes which dramatically impact leaders. Leaders' adaptation to adversity is increasingly important and leaders should be more aware of this and of its impact.

Recently, a growing amount of press and academic articles have identified burnout as one of the most relevant risks for leaders dealing with “flat” business. My experience reflects the findings of Michel and Lyon (2015) that in their eagerness to overcome adverse events exhausted and depersonalised leaders tend to have feelings of uncertainty and high pressure which can result in decision failures and wrong conclusions. Michel and Lyon (2015, p. 15) ask: “...why do so many good and well-trained leaders fall short of their potential or lack integrity and compromise their values?”. One answer derived from this study is, that conflicts can emerge from the expectations of the leader role or by dealing with dilemma situations.

Nevertheless, the central mechanisms of adaptation to adversity are psychological capital and authentic leadership. Both mechanisms can reduce lack of integrity and compromise of own values. This knowledge can be used to ask the right questions and to draw attention to the relevant topics within coaching, training or consulting in the field of leadership development. Furthermore, it seems that recent leadership training programmes do not address the relevant issues or provide the right methods and tools for leaders. In conclusion, it is necessary to review existing leadership development programmes regarding these assumptions and to integrate this new knowledge within the conceptualisation of future leadership training.

The journey of this PhD study included various challenges. The most difficult was reducing the data from the available literature for the specific focus of this study. Different research fields such as stress and adversity, psychology, leadership and VUCA conditions offer a wide range of differentiated perspectives with a vast amount of material. This challenge was addressed with a narrative approach to writing with permanent assessment of the findings regarding the topic under study including phases of excluding irrelevant studies and including relevant ones. A cyclical research process helped me to get to the essence of the issue and increased my ability to select relevant information from a flood of information.

This skill development also helped me with the challenge within literature research of integrating all divergent aspects of the phenomena of adversity when the problem emerged on different levels. At an ontological level, research suggests that adversity can be described from a positivist, non-positivist or a critical realist worldview. Others

argue from an epistemological level that adversity can be described as a phenomenon or a process and can be explained as relations between negative conditions and negative outcomes, negative conditions and positive outcomes, or positive conditions and negative outcomes. For example, Cameron and Spreitzer (2011, p. 897) argue that "...adversity is a subjective experience; an event itself only becomes a stressor if it is perceived as such". In contrast, Stoltz (1997) develops a three-level model of adversity: societal adversity affects workplace adversity and this can affect individual level of adversity. The first is a strongly non-positivist explanation and the second can be categorized as a positivist explanation of the same phenomena.

An analysis of the different research paradigms and their implications for the understanding of reality shows that both social structures such as companies and external conditions and human agency are necessary prerequisites of adversity. The impact of social structure or external conditions and the leader as a person (human agency) alone are not exclusively responsible for the occurrence of adversity. This result reflected my own experience as an executive coach. Sometimes the leaders explained adaptation failures by concluding that they were the victims of the adverse conditions and that they could not do anything to change it. In some cases, it could be hypothesised that the leaders tried to attribute some inner conflict or weakness to the outside condition.

Experience, analysis and reflection show that the critical realist paradigm best explains the underlying mechanisms of observable adverse events. It offers the idea that social structures and conditions and human beings are distinct but related entities. My work as an executive coach can be developed with a systemic view of adverse events. Firstly, it is necessary to differentiate the structures, conditions and mechanisms that let an adverse event happen and secondly it is necessary to analyse the relation and interdependences of the factors to provide a comprehensive explanation for the leaders. Based on these explanations, leaders may be better able to understand what happens, why it happens and what can be done to adapt adversity. Finally, the most important conclusion for me to take into my daily business is, that regarding human agency, everyone is responsible for her/his actions. It is in anyones' power to both change social structures and conditions to reduce adversity or to take it as an opportunity to learn and grow.

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Appendix

APPENDIX A

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Authentic Leadership Questionnaire
English: Instrument and Scoring Guide
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by Bruce J. Avolio, William L. Gardner, & Fred O. Walumbwa

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APPENDIX B

Estimation report from SEM (R)

Number of observations	Used 143	Total 199	
Estimator	ML	Robust	
Model Fit Test Statistic	12.859	13.284	
Degrees of freedom	10	10	
P-value (Chi-square)	0.232	0.208	fin
Scaling correction factor for the Yuan-Bentler correction		0.968	
Model test baseline model:			
Minimum Function Test Statistic	173.596	88.588	
Degrees of freedom	22	22	
P-value	0.000	0.000	
User model versus baseline model:			
Comparative Fit Index (CFI)	0.981	0.951	
Tucker-Lewis Index (TLI)	0.959	0.891	
Robust Comparative Fit Index (CFI)		0.976	
Robust Tucker-Lewis Index (TLI)		0.946	
Loglikelihood and Information Criteria:			
Loglikelihood user model (H0)	-808.169	-808.169	
Scaling correction factor for the MLR correction		1.071	
Loglikelihood unrestricted model (H1)	-801.739	-801.739	
Scaling correction factor for the MLR correction		1.048	
Number of free parameters	34	34	
Akaike (AIC)	1684.337	1684.337	
Bayesian (BIC)	1785.074	1785.074	
Sample-size adjusted Bayesian (BIC)	1677.492	1677.492	
Root Mean Square Error of Approximation:			
RMSEA	0.045	0.048	
90 Percent Confidence Interval	0.000 0.107	0.000 0.110	
P-value RMSEA <= 0.05	0.494	0.463	
Robust RMSEA		0.047	
90 Percent Confidence Interval		0.000 0.107	
Standardized Root Mean Square Residual:			
SRMR	0.040	0.040	
Parameter Estimates:			
Information	Observed		
Observed information based on	Hessian		
Standard Errors	Robust.huber.white		

Regressions:

	Estimate	Std.Err	z-value	P(> z)	Std.lv	Std.all
AufgabeAdPerf ~						
Gwssnhftgk (k)	0.188	0.103	1.826	0.068	0.188	0.191
PsyCaptotl (i)	0.446	0.107	4.159	0.000	0.446	0.359
AthntcLdrT (j)	0.414	0.201	2.059	0.039	0.414	0.225
taxadvrsty	-0.146	0.067	-2.184	0.029	-0.146	-0.180
BurnOut ~						
SenseMakng (b)	-0.497	0.121	-4.120	0.000	-0.497	-0.388
taxadvrsty (a)	0.236	0.094	2.507	0.012	0.236	0.254
PsyCaptotal ~						
BurnOut (f)	-0.232	0.061	-3.800	0.000	-0.232	-0.329
SenseMakng (c)	0.297	0.071	4.204	0.000	0.297	0.329
Gwssnhftgk (e)	0.185	0.054	3.435	0.001	0.185	0.233
slbstrflkt (d)	0.127	0.045	2.811	0.005	0.127	0.218
AuthenticLeaderTotal ~						
slbstrflkt (g)	0.135	0.034	3.933	0.000	0.135	0.343
PsyCaptotl (h)	0.178	0.063	2.830	0.005	0.178	0.264

Covariances:

	Estimate	Std.Err	z-value	P(> z)	Std.lv	Std.all
Gewissenhaftigkeit ~~						
taxadversity	-0.002	0.052	-0.033	0.974	-0.002	-0.003
SenseMaking	0.062	0.032	1.913	0.056	0.062	0.165
selbstreflektn	0.018	0.063	0.286	0.775	0.018	0.031
taxadversity ~~						
SenseMaking	-0.052	0.042	-1.256	0.209	-0.052	-0.115
selbstreflektn	0.057	0.075	0.756	0.450	0.057	0.081
SenseMaking ~~						
selbstreflektn	-0.008	0.050	-0.160	0.873	-0.008	-0.016

Intercepts:

	Estimate	Std.Err	z-value	P(> z)	Std.lv	Std.all
.AufgabeAdPerf	1.437	0.741	1.938	0.053	1.437	2.235
.BurnOut	4.172	0.749	5.574	0.000	4.172	5.675
.PsyCaptotal	2.430	0.529	4.597	0.000	2.430	4.691
.AuthenticLdrTtl	2.432	0.338	7.204	0.000	2.432	6.947
Gewissenhftgkt	4.088	0.061	67.084	0.000	4.088	6.284
taxadversity	3.585	0.071	50.785	0.000	3.585	4.538
SenseMaking	5.097	0.052	97.941	0.000	5.097	8.876
selbstreflektn	5.739	0.084	68.060	0.000	5.739	6.467

Variances:

	Estimate	Std.Err	z-value	P(> z)	Std.lv	Std.all
.AufgabeAdPerf	0.260	0.047	5.485	0.000	0.260	0.630
.BurnOut	0.412	0.047	8.708	0.000	0.412	0.762
.PsyCaptotal	0.150	0.020	7.679	0.000	0.150	0.559
.AuthenticLdrTtl	0.095	0.011	8.408	0.000	0.095	0.774
Gewissenhftgkt	0.423	0.045	9.300	0.000	0.423	1.000
taxadversity	0.624	0.076	8.193	0.000	0.624	1.000
SenseMaking	0.330	0.044	7.413	0.000	0.330	1.000
selbstreflektn	0.788	0.107	7.345	0.000	0.788	1.000

R-Square:

	Estimate
AufgabeAdPerf	0.370
BurnOut	0.238
PsyCaptotal	0.441
AuthenticLdrTtl	0.226

Defined Parameters:

	Estimate	Std.Err	z-value	P(> z)	Std.lv	Std.all
PsyCap.AL.TAP	0.074	0.042	1.766	0.077	0.074	0.060
Con.PsyCap.TAP	0.083	0.030	2.791	0.005	0.083	0.084
Self.PsyCap.AL	0.023	0.011	1.995	0.046	0.023	0.058
Sense.BO.PsyCp	0.115	0.038	3.058	0.002	0.115	0.128
Cn.PsyC.AL.TAP	0.014	0.009	1.453	0.146	0.014	0.014
Con.total	0.285	0.101	2.814	0.005	0.285	0.288

APPENDIX C

Interview 1

Managing director Interviewee 1 is working for a textile company based in Germany with European competitors.

Psychological stressors

As person-independent external influences could be identified a kind of VUCA and change in the market environment of the company as well as a further perception of a VUCA conditions.

Code: job related conditions of burnout - VUCA

Interviewee 1 outlined that the overall market conditions of the company with a continual drop in demand has the effect that the company has to restructure its organisation.

Another condition that influences the adversity of the environment was the increased VUCA perception that leads to negative feelings of the employees e.g. insecurity, disappointment and frustration of the employees.

Psychological Strain

Based on the psychological stressors of VUCA and a VUCA environment Interviewee 1's depiction of his perceived adversity could be described as a kind of struggle.

Code: leaders' personality and job attitudes of burnout - a feeling of unmet expectations, job related conditions of burnout - leaders' role conflicts

Interviewee 1 outlined: "Every time it was and is a great challenge for me personally". His personal conflict was the tension between rational decision to restructure and the necessity of various consequences e.g. close departments and social responsibility regarding the employees. Especially the connection between social responsibility and justice might lead to adversity: "...the social responsibility that one bears and which one cannot really do justice to in such situations as one would like to do."

Available resource repertoire

The available resources for Interviewee 1 were the support of his team and the attitude of solution orientation, his social responsibility as well as his skill of self-reflection.

Especially his feeling of social responsibility and justice lead to his perceived adversity.

Code: social responsibility and justice

Interviewee 1: "...the social responsibility that one bears and which one cannot really do justice to in such situations as one would like to do."

Furthermore Interviewee 1 reported about three connected resources which he used to deal with his feeling of struggle. Firstly, he valued that the communication within his team was not always about the "why" of the necessity of restructure the organisation (stable problem orientation) but far more about the solution how to handle the situation and how they want to communicate the facts to the employees.

Code: Solution orientation

Interviewee 1: "... what I valued a lot with my leadership team at that time was that one did not so much carry out discussions about the necessity in itself, but that one recognised and accepted the goals and the necessity in the group relatively quickly and that this was followed by a more fruitful discussion on the question of how we can implement it, how we want to communicate it?"

Secondly, he regularly applied a process of team – and self-reflection with the aim to find the best solutions and ways of communication.

Code: Team- and Self-reflection to find the best solutions

Interviewee 1: "... reflect on one's own thoughts,... we call that - because we're an American company - "challenge process", I mean, we scrutinize one another and question each other mutually on whether a) all the conditions have been met, whether there might be alternatives that were better, um, that one discusses in the group how we want to communicate and in what manner, ... and that is certainly helpful when one discusses how and not whether such a drastic measure is really necessary."

Task Adaptive performance (responses)

Regarding adaptive behaviour Interviewee 1 reported that he and his team responds fast and directly to the employee during the adverse situation about the facts and what's going on. They anticipated the next steps regarding the restructure project plan and anticipated the possible scenarios by applying team reflection named "Challenge Process".

Interviewee 1 empathized with the feeling of the employees and communicated in such a way that he “really get through to them” with the aim to show the own values and morality in such a situation. Furthermore, he built trust on fast transparency and clarity about the situation, what happens next and what is the future goal.

Code: valuable and empathical communication with the employees

Interviewee 1: “... but, naturally, of course, to address the disappointment and frustration of the workforce and, as far as possible, to make things as transparent as one can and to communicate it all as the company would perhaps do and, of course, to describe all that in simple language and with as many pictures as possible so that the employees can understand what on is doing and...”

Code: Sensemaking, give a forward perspective, conscientiousness

Interviewee 1: “(communicate) ...why and why one is of the opinion that these are the right steps and what one is trying to achieve for the future. I think that was the turning point in this whole story.”

During and after the process of restructuring Interviewee 1. expressed thanks for the commitment for all participants as kind of positive feeling.

Code: Appreciation for the commitment off all participants

Interviewee 1:“... Absolutely, that was something that I tried to do afterwards and to regularly communicate it, of course, to present it as something positive and to thank the workforce for their commitment.”

Positive or negative consequences/results

The adverse event of restructuring the organisation results in two positive outcomes regarding Interviewee 1. Firstly, he could improve his self-awareness about dealing with people in adversity and the remaining employees regain hope and were more motivated.

Code: Sensemaking and Self-Awareness of Interviewee 1

Interviewee 1: “In my opinion, it is absolutely vital to be transparent, to communicate frequently and not to leave people in uncertainty if you want to have success in such difficult situations.”

Code: Hopeful and motivated remaining employees

Interviewee 1: "Although we had to cut back as far as personnel is concerned, the remaining employees were much more concentrated and motivated and we could really see on key performance indicators such as claims, quality and productivity, that a real jolt went through the team and people started to regain hope in terms of future perspectives."

Interview 2

Interviewee 2 is CEO of a regional banking institute in Germany.

Psychological stressors

At first glance the person-independent external conditions and conditions which Interviewee 2 perceived could be seen as positives ones, because he became CEO of the organisation.

Code: Positive Assumption of a CEO Position

Regarding the retirement of the former CEO, Interviewee 2 was chosen as his successor.

There was an invisible problem. The former CEO has had a patriarchal leadership style and Interviewee 2's leadership style is more collegial, team and delegation-oriented.

Code: Different leadership styles

Interviewee 2: "...as I became CEO, as I was on the Board of Directors and became chairman, ... there was my ancestor who also had a social vein but who ran things in a somewhat patriarchal way. I am someone who has a more collegial style of leadership and is more team-oriented and - eh - I don't have to deal with everything but work very strongly through delegation."

Despite the long-term experience with the patriarchal style of the former CEO the board members have had trust in Interviewee 2, but they showed a feeling of uncertainty regarding the new situation.

Code: Trust, despite a feeling of uncertainty regarding the new situation

Interviewee 2:“ (Board colleagues) has had much confidence in me, I have always felt that, namely, that the trust was very, very high, that there was insecurity about a certain destabilising but there was always a feeling of trust.”

Furthermore, Interviewee 2 reported that in his point of view his young age supports him to break the taboos of the old cultural pattern established by the former CEO.

Code: Young age, allowed to break the rules

Interviewee 2:“ I was much younger at that time as I become a CEO as usual, so in the past, many CEO came much later in this role. ... it was a new area ... (The situation has had positive and negative effects); positive that it change many things in the other direction, that it breaks taboos, which for years, if not were even decades taboos were also broken, but also for others who have said "we have it here yet so well, we sit in our comfortable armchairs, and back and forth and we do not know what really comes with the new situation."

Furthermore, the board member colleagues expected a different kind of leadership, regarding their long-term experience with the former CEO, as Interviewee 2 applied. Interviewee 2 perceived a kind of wired struggle.

Code: job related conditions of burnout - leaders' role conflicts, leaders' personality and job attitudes of burnout - a feeling of unmet expectations

Interviewee 2: “...a very difficult situation for me was to feel that the way that I am undertaking my leadership is not what the people expect at the moment.”

Psychological strain

Nevertheless, the psychological stressors such as different leadership styles and a young age CEO leads within the board to a kind of uncertainty. Furthermore, the board member colleagues expected a different kind of leadership, regarding their long-term experience with the former CEO, as Interviewee 2 applied. Interviewee 2 perceived a kind of wired struggle.

Code: Emotional exhaustion – own bad feelings, leaders' personality and job attitudes of burnout - a feeling of unmet expectations

Interviewee 2: “...a very difficult situation for me was to feel that the way that I am undertaking my leadership is not what the people expect at the moment.”

Interviewee 2 felt that he was not allowed to be authentic and he felt withstand tensions between the expectations of others and one's own.

Code: job related conditions of burnout - leaders' role conflicts

Interviewee 2: "I knew that it wasn't my way because I would have had to completely bend backwards in my view of how I imagine leadership to be."

His main struggle was to be able to manage his own doubts and fears in this perceived adversity.

Code: Emotional exhaustion - emotionally overextended, decreased feeling of self-efficacy

Interviewee 2: "... and to manage to cope with that, to cope with that process, up to the management, and then again afterwards,... also with doubts, with fears, with nights where I thought about how I can manage it now, should I do it differently...(but) I don't find that I am authentic, but more imposed."

Available resource repertoire

Available resources Interviewee 2 used were mainly self-centered resources such as value orientation, emotion regulation, self-esteem, basic feeling of trust, emotion regulation and reflection. Nevertheless he used team training and workshops for team building and qualifying his board members.

Interviewee 2 reported that after perceiving the very difficult situation at the beginning of his role as a CEO he focused on authenticity. To make the other board members aware of their strengths and weaknesses he applied training and workshops.

Code: Identity, self-concept - value orientation

Interviewee 2: "And that is why I said I stand up for my weakness, that and that and that are not my strengths, that it is not my topic..."

Code: Strengths based Workshops

Interviewee 2: "... and then I prepared strengths workshops with the Board of Directors. Yes, did value workshops and we did strengths workshops and, as a third step, we did relationship workshops, based on the values and strengths, with the topic of

authenticity. That is, who is where and when authentic, what does authenticity mean in the first place and so on. The process was like that.”

During this process Interviewee 2 used emotion regulation, self-esteem and social identity to show his board members in an authentic way that they have not to always be “a superman”.

Code: Not having to be a superman (emotion regulation, self-esteem and social identity)

Interviewee 2: “... that feels now like this and that. And in that through this process I, um, these weaknesses, in the form of grief, also openly, also in front of the employees, the management, let the tears flow, well, yes, that they have seen me once like that, not always just super gloss, Superman, yes, Super Mario. ... it is important to allow vulnerability, partly because it makes one human, and the employees don't want a perfect top manager who is highly polished and varnished. My experience.”

Nevertheless Interviewee 2 has had different kind of feelings during this process and he tried to be aware of it with the aim to regulate them.

Code: Emotion regulation - be aware of one's feelings

Interviewee 2: “... Um, well, in that phase everything was there, anger, trouble, err, extreme sorrow, sadness, and also feelings such as powerlessness, feelings like emptiness, fear and that was now a mixture of them all, it was easier for me to find out what was what in that was.”

He reported that his childhood might have an impact on this situation, because it was a great challenge for him to talk about emotions.

Interviewee 2: “I also stem from a family that did not talk about emotions, there was no room for emotions, for that reason it was a great challenge for me to find that out, well, now not to answer that with my head but to get a feeling for it, and just to say, what is that then?”

Furthermore Interviewee 2 described the process of simultaneously switching back and forth between basic trust feeling and doubts

Code: Simultaneously switch back and forth between basic trust feeling and doubts

Interviewee 2: “Well, these aspects were essential for me because it, um, that the basic trust, that's what I say, was always there, but, naturally it had wobbled through such

situations, yes, well then, um, when doubt was added, is it really right? Are you on the right path?"

Interviewee 2 also participated in Seminars to learn self-reflection with the aim to improve his authentic being

Code: Self-Reflection to be authentic

"Interviewee 2: "...reflection seminars helped me much more because authenticity can only start when you integrate your shady parts"

Task Adaptive performance (responses)

Regarding his description Interviewee 2 used an adaptive response to the adverse situation both external support such as coaching and training as well as personal aspects such as demonstrating emotions and own feelings.

Code: Usage of external Coaching

Interviewee 2: " I had super help and support externally because, first of all, I was coached over a longer period of time, that means, over more than two years, regularly, and, on top of that, I can openly say, worked with systematic work."

Code: Allow and show emotions/communication

Interviewee 2: "Well, a differentiation, first of all to allow emotions, secondly, to be very distinctive, in expressing feelings and that is a process that lasts years which I have now learnt."

Code: Usage of workshops and trainings/conscientiousness

Interviewee 2: "I prepared strengths workshop with the Board of Directors."

Positive or negative consequences/results

The result of the adaptive process was twofold. Firstly, Interviewee 2 got positive Feedback at the end whereby the feedback at the starting point was critical.

Code: Feedback changed to positive ones

Interviewee 2: "Feedback at the starting point "we are below the ice lake and you are standing at the top of the mountain" - Connectivity?"

Interviewee 2: “today, I receive a lot of positive feedback, that is really the interview, yes, that’s right, we have to do that, that is the new path”.

Secondly, Interviewee 2 enlarged his self-awareness about his and others strengths and that sometimes he was a victim of his own expectations.

Code: Self-Awareness

Interviewee 2: “I have learnt that we really have no idea what potential is really hidden inside of us. ... really feel inner vitality as, oh, at some stage be the victim of your own management job with all the frills. I know a lot, a very large number that are stuck inside and are searching for a way of escape.”

Interview 3

During the conditions of a take over of his company (transportation of ready mix concrete) by another Interviewee 3 was a middle line manager.

Psychological stressors

As reported by Interviewee 3 the overall person-independent external influences that had a psychological impact on himself were VUCA, decreased corporate climate and employee satisfaction as well as conflicts and negative emotions.

Code: job related conditions of burnout - VUCA conditions

Interviewee 3 outlined that the duration of the takeover process took at least 2 years. In this time the conditions have had different levels of VUCA phenomenon such as VUCA, complexity, volatility and uncertainty.

More in-depth he pointed out that: “Yes, and also to convince employees who have been with the company for donkey's years to go to a different company. That a small company does not have the same security as a larger one that has been in the market for a long time.”

Asking for the duration of this conflict he answered: “...that took at least two years.”

Interviewee 3: “ Yes, sure, at the beginning it was quite easy, until the period we had to talk with the employees. At this time it was really difficult. Later on, during the phase of settlement it was easier.”

Interviewee 3: “At the beginning, no one thought that it is such a difficult and complex topic.”

Code: Decrease corporate climate and employee satisfaction

Interviewee 3 perceived a high level of decreased corporate climate and less employee satisfaction.

Interviewee 3 reported: “Yes, the corporate climate has deteriorated, satisfaction has dropped a lot as well.”

Code: job related conditions of burnout - role ambiguity (lack of information)

Decision-making failures concerning communication and transparency

Beside other external factors failure in decision-making based on false assumptions especially an open and transparent communication about the situation led to negative basic mood.

Interviewee 3: “Yes. Wrong decisions were taken. Yes, and not everything was communicated and informed. At the beginning, no one thought that it is such a difficult and complex topic.”

Code: job related conditions of burnout - absence of job resources (social support, feedback)

As perceived by Interviewee 3 another condition was a strong conflict between the works council that did not want any changes and the board that wanted the takeover.

Interviewee 3.: “There was a strong conflict with the partner, with the works council. There was distruction and there was a confrontation. They wanted desperately to stop it from being done and we wanted to implement it.”

Code: job related conditions of burnout - absence of job resources (social support, feedback)

Meanwhile the employees showed negative emotions such as anger.

Interviewee 3: “That was anger that was expressed.”

Psychological strain

Based on the previously mentioned psychological stressors Interviewee 3 described his adversity as a kind of struggle. His intention was to try to solve the situation in a

rational and reasonable way. The situation became very emotional on the part of the employees within a meeting with the board and the consequence was, that they had to interrupt the meeting.

Code: leaders' personality and job attitudes of burnout - perceiving a lower level of self-efficacy, emotional exhaustion - emotionally overextended

Interviewee 3: "The most difficult situation arose as I had brought the parties together (new leadership) with the employees and when it became very emotional on the part of the employees and where we once had to interrupt a meeting."

Available resource repertoire

The repertoire of available resources Interviewee 3 applied in these conditions were positive attitude, value orientation, self-esteem and reflection.

Code: Positive attitude

Interviewee 3 reported: "Well then, my attitude? In the long run that gave me the backing. When I knew what I had to enforce."

Code: Value orientation

As reported by Interviewee 3 a high level of value orientation during the entire process was important for him.

Interviewee 3: "That, yes, well, one had, I held them for myself high ... and, ..., it was always a topic in my head."

Code: Self-Esteem

A increasing level of self-esteem during the process was reported by Interviewee 3 based on the different levels of tensions regarding specific conditions.

Interviewee 3: "... Yes, the tension tightened depending upon the situation one found oneself in but got better towards the end."

Code: Reflection

Regarding an increasing level of pressure Interviewee 3 outlined that his thoughts and behaviour changed from neutral one at the beginning towards a questioning of one's own behaviour.

Interviewee 3: "Yes, that is, I was neutral in the beginning, then I started to feel a lot of pressure, is, of course, a difference as to whether I discuss it, then, one always questions oneself about one's own behaviour."

Task Adaptive performance (responses)

Regarding the difficult situation Interviewee 3 reported that in his role as a manager he tried to calm down emotional situations, to offer a moderation role and to reach a consensus between all stakeholders. Later on he applied reflection with other leaders to discuss the situation.

Code: Be calm and consensus oriented/conscientiousness

Interviewee 3 reported about a specific situation: "Yes, when we once again presented what we have in mind, when it was a matter of individual aspects, then, it could often get very loud."

Researcher: And how did you react, then?

Interviewee 3: "Yes, continuously try to calm things down, provide more information and communicate what one wants to enforce."

Code: Moderator role/communication/conscientiousness

Regarding the goal to reach a consensus Interviewee 3 tried to take on the role as a moderator again and again.

Interviewee 3: "Yes, exactly, that we manage to get that over. As personnel manager, one always remains very calm and always tries to reach a consensus. I have tried again and again to take on the role of moderator..."

Code: Self-Esteem

Sometimes Interviewee 3 reflects on his own thoughts and feelings during the process with the aim to show that he is also a human and a participant in the entire process.

Interviewee 3: "I am just a human.. yes, I should once more appear somewhat more aggressive. Yes, that the others might have seen that I also have emotions ..."

Code: Reflection with leaders

During the process Interviewee 3 used reflection sessions together with his colleagues with the purpose to understand what happened and learn from it.

Interviewee 3: "... after the meeting with the works council we sat together and talked about why things escalated a bit at one point and how such a thing might be prevented another time. Learning by doing, the whole thing was strategically improved during the process."

Positive or negative consequences/results

On the one hand the result of the process was that at the end " ... the settlement was also once again easier." And on the other hand side Interviewee 3 summarised various learnings.

Code: permanent communication

He recognised that permanent communication with all stakeholders is important.

Interviewee 3: "Yes, talk again and again and give your opposite number time. Well, I have realized that is a process that the management has been thinking about for a long time."

Code: Be empathic

He also learned that it is important that the participants have time to come to terms with the situation and not stubbornly insist on his own opinion.

Interviewee 3: "Yes, that, in the framework of such a dispute, one is willing to reach a compromise that is acceptable for both sides. And does not just obstinately persist on one's own opinion."

Code: Missing strategy

He saw the red light in the condition that a strategy was missing.

Interviewee 3: "No, that was missing at the beginning and that was then negative."

Code: External Coach as a sparring partner

Interviewee 3 also outlined that "An external coach would have been good in order to reflect on the topic in a protected space."

Interview 4

During the reported timetable Interviewee 4 worked as an interim manager (leader of branch store) in a German banking organisation.

Psychological stressors

The person-independent external influencing factors reported by Interviewee 4 could be described as complex and multifaceted. Regarding the conditions to be an interim manager for around 10 months with less knowledge about the history, the culture and the employees of the specific branch store, the adverse situations consist of two distinct conflicts between different people. The expectations of the conflict participants regarding Interviewee 4 as the branch store leader were to solve the problem in their specific intention.

Code: (Leadership) Interim management

Interviewee 4: "I had greater responsibility for personnel matters. Yes, I have, it was in the year ..., I had taken over a branch, because the branch manager had had a baby and I managed the branch for ten months during the absence of the colleague. And that started in the middle of January/February and went on until the end of October."

Branch management with a number of team leaders

Code: job related conditions of burnout – leaders' role conflicts

Interviewee 4 had to lead a team of team leaders of this branch store. One of his team-leaders has had difficult challenges, a conflict between him and an employee regarding his/her performance.

Interviewee 4: "... one of these leaders (team leader under my management) had a, yes, very messy personal situation. A member of staff who was not a performer, I mean someone who performed below average, on whom immense pressure was exerted in ... already, yes, to improve performance, otherwise well, that means a very, very gridlocked situation in which this team leader was also caught considerably. Well, that means, one comment was enough or a contact or a result that wasn't clear, which, ..., then was very, very sensitive in the reaction. ... Yes, completely different positions, the

one thought I am going to lose my job, and the other one thought that it doesn't work like that ...”

Code: job related conditions of burnout – leaders’ role conflicts

The second conflict was based on a female employee that had a problem with a colleague that was always sick and she has to substitute the sick colleague always.

Interviewee 4: “ ...at the same time, there was another member of the team who, ..., was a performer but a completely different personal situation with her female colleague who suffered from migraine attacks, usually after the weekend. And because of this, it was relatively difficult, to take over the customer appointments or to cancel them, to put them off. In the meantime, it had a sensitive effect upon the topic of customer loyalty.”

Code: leaders’ personality and job attitudes of burnout - a feeling of unmet expectations

The expectations of the conflict participants regarding Interviewee 4 as the branch store leader were to solve the problem in their specific intention.

Interviewee 4: “... he was then standing near to me with his documents, which clearly made clear that there is a real offense, and then he demanded that I draw personal consequences to this team leader.”

Psychological strain

The reported adversity perceived by Interviewee 4 could be categorised as struggling within the perspective to see adversity as a chance to learn and grow. Interviewee 4 has outlined that on the one hand he had to struggle with it: “Well, that was a really challenging situation...”, because the employee who had a conflict with the team leader showed him some facts that gave evidence that the team leader did something wrong and the she/he expected from him fast and direct decisions against his/her team leader. On the other hand he felt emotions like curiosity and motivation, because he thought: “ ...you haven't had such an exciting situation so far now see how you can deal with it best.”

Code: Struggle

Interviewee 4: “that was a really challenging situation...” (but)you haven't had such an exciting situation so far now see how you can deal with it best.”

Available resource repertoire

To deal with the struggling situation Interviewee 4 applied positive emotions such as curiosity, general positive motivation, a feeling of responsiveness and morality, trust, self-esteem, self-reflection and role clarity.

Code: Positive emotion

Interviewee 4 reported that there were no negative feelings. Specifically he felt curiosity.

Interviewee 4: “I have a very good reputation in my area of responsibility, and,...., this reputation also says that I work in a very responsible way”

Code: Motivation

Interviewee 4 outlined that he had not had such an exciting situation and so far his motivation was to see how he can deal with it best.

Interviewee 4: “Well, I take situations that I do not know already, first of all, I see them as a challenge or a possibility to learn from them and to further develop myself.”

Code: Responsiveness and Morality

Based on his principle to “...always to see the human being.” He learned „...not to react immediately or to say things that I have to live up to afterwards, but, first of all to take note of things, view them quietly and then to take a decision on how I want to go on.”

Furthermore Interviewee 4 pointed out: “I work pro-active, and that when I make decisions, that, I can take responsibility for them over a longer period of time. As I took on that task in the branch I stipulated that I take on 100% responsibility for the branch, i.e. for all the decisions that I take, that I can take.”

Code: Sense of belonging

One important resource for Interviewee 4 he talked about was a sense of belonging: “For me, the sense of belonging ... is one of the prerequisites to really be able to do

good work. Then, without that nothing will worm, no, um, I mean, if I do not feel that I belong to the organisation then I cannot work there.”

Code: Trust

Another resource Interviewee 4 needs to deal with adversity is trust, it “...is for me indispensable”

Code: Self-Esteem and values

Regarding the understanding of Interviewee 4 for his self-esteem, values and self-reflection belong together. He applied all three factors within the adverse situation.

Interviewee 4: “Self-Esteem, yes, belongs to it, absolutely. Self-reflection is extremely important, one's own learning process..., Self-Esteem, that can be divided up into three words, well, to know oneself and one's own strengths, is very important, I believe, yes, and then, um, to develop a good value system...., well then, I think, no the other way round, I desire that my staff go around with a high level of Self-Esteem and self-esteem.”

Code: Self-reflection

In relation to self-esteem and value orientation Interviewee 4 applied self-reflection in difficult situations and “...I ask myself first of all whether it is my fault, have I missed something? Have I failed to pass on information, have I forgotten an appointment, or, whatever.”

Code: Role clarity

Interviewee 4 reported that for him role and task clarity is very important to have “...a boundary between the various tasks, they have an effect of the different functions on the staff, it is very, very important to know where the boundary is and where there are interfaces. Well then, I think that is very important. ..., what I find to be very important in that context is that it remains relatively stable and solid over a longer period of time”.

Task Adaptive performance (responses)

The adaptive responses of Interviewee 4 seem to be mainly proactive ones, in the sense that he communicated with his supervisor to get support. Further on he

communicated the facts in a rational way with the aim to give the participants free choice to make their own decisions about what they wanted to do.

Code: Communicating the facts

Interviewee 4: "I took the documents and took note of it and, um, told them exactly that, I've taken note of it and will have a look to see what I can do with it. And the meeting was very short, and I can remember the moment when he expected something different, yes. he did, but, he had handed over the documents and, um, of course, he did not have any promises about further actions."

Code: Communication with supervisor

For me Interviewee 4 the communication with his supervisor "...was more valuable than anything else", because "...well, my benefit was that he supported me 100% in my approach."

Code: Free choice offer

Interviewee 4 reported that in making their decision to find a solution, the employees were able to choose freely for themselves, I (researcher) asked him "... can this approach lead to failure?" and Interviewee 4 outlined "... honestly, no, because I kept this approach, the further approach,...., so that the employees could really freely choose which path they wanted to take?"

Interviewee 4: "...And, I believe, I managed to pack it into a very good communicative context."

Positive or negative consequences/results

At the end of the solution process two employees left the company with a settlement. To clarify the solution path Interviewee 4 remarked "if I had not had a budget for this settlement job, I would not have managed it." Nevertheless, Interviewee 4 reported that after the two employee has left the company one positive aspect was, that a third employee could benefit from this situation in a way that she/he got the customer portfolio from the others and out performed with it.

Code: Two employees left the company

Interviewee 4 "Both employees have left the bank with a settlement."

Code: Third party benefit

Interviewee 4: “third colleague with no customer portfolio got the open portfolios from the other and later on performed very well.”

Interview 5

As a supply chain manager of an paper industry company in germany Interviewee 5 dealt with a merger situation regarding a part of another organisation.

Psychological stressors

Two kinds of person-independent external influences had a psychological impact on Interviewee 5. Firstly there was an unbalanced merger situation with another organisation and the proportion of employees from both organisations within the new team didn't work. Secondly, both companies had two different cultures and operating philosophies.

Code: job related conditions of burnout - VUCA conditions

The perceived VUCA Interviewee 5 reported was based on the merger situation itself and furthermore on the misproportion of the teammembers from both organisations that didn't work.

Interviewee 5: “... the way I see it, in the area in which I mainly work, we had the misfortune that the proportion didn't really function.”

Code: Cultural differences

Interviewee 5 perceived two kinds of very different operating philosophies in the organisations. He reported that his company is more pragmatic and the other company is very, centrally organised and it results in the problem that “...very different cultures met each other and if you speak not the same language. ... one finds it easier if one tends simply to have a common basis and when one relatively simply goes on. If it is really very different, then, a new company culture has to be developed.”

Psychological strain

The perceived adversity of Interviewee 5 could be described as a feeling of crisis: "... not downcast but somewhat groggy ..." and feeling somewhat irritated, because he thought that he had been dazzled by the situation. Hence, he outlined: "The fuse has perhaps become a little shorter."

Code: emotional exhaustion - emotionally overextended, physical fatigue

Interviewee 5: "for a moment certainly a bit, well, yes, not depressed but certainly a bit, ..., groggy...Well, if you take the time to look at this in detail, the statements that were made from the others had no substance. We allowed ourselves to be dazzled by the situation a bit. Naturally, this means for us that we needed the first months to recognise that good, one had to spend valuable time..."

Available resource repertoire

The resources that Interviewee 5 reported were twofold. On the one hand trust as the basis for communication was important for him and on the other hand self-reflection with future and change orientation, because somehow reflection only on the past might lead to change resistance.

Code: Trust

Interviewee 5 pointed out that "After all, we are all new colleagues and trust, I think, is incredibly important, then you can talk in a quiet minute about a different topic which has been a centre of concern for some time but one has not found a suitable occasion so far or just didn't have the time to deal with that problem. Then, you can provide support, um, through better contact to the suppliers, then, something will happen."

Code: Self-reflection

Interviewee 5 outlined that: "...it is certainly good positive to reflect on them, when you look to see where you came from and where we want to go."

Nevertheless he criticized that: "Continuously reflecting, the past becomes more and more rosier and that is, of course, the reason why change is sometime difficult. When people want to stick to the established."

Furthermore Interviewee 5 pointed out: "...for some things it can be more of an obstacle. If they are too far back in the past, because it is a human characteristic, yes, one forgets much too quickly the bad things and remembers the good."

Task Adaptive performance (responses)

The resources Interviewee 5 reported about could be divided on the one hand into a reactive one such as situational adopted behaviour of confrontation and “wait and see” and on the other hand into proactive more anticipated responses such as “get to know each other” and showing empathy.

Code: Mixture of confrontation and biding one's time

Interviewee 5: “In principle, I recognised that would be problematical but, after all, it did not make sense to adopt a course of confrontation any earlier.”

Code: Get to know each other/conscientiousness

Interviewee 5: “Yes, what really makes sense at the beginning are joint meetings in a personal, um, environment. One arranged meetings at different locations so that the new employees were able to become acquainted with the old locations and the old colleagues were able to get to know the new locations.”

Code: Empathy/communication

Interviewee 5: “Now, we are almost finished. And it helps when one can develop a certain amount of appreciation for the environment of the other production sites and, then, also gets to know the people at a personal level.”

Positive or negative consequences/results

Hence, Interviewee 5 reported personal learning from his feeling of crisis. Active listening, taking others seriously, conscientiousness and being empathic as well as asking what the real problems are are important to deal well with such adverse events.

Code: Active listening, no prejudices

Interviewee 5: “...one should not react to the situation too quickly, but, first of all, open both ears and listen to what the people say and don't think that you know everything after the first sentence, but listen to them because they had to solve their past problems themselves.”

Code: Take others seriously

Interviewee 5: “Take their opinions, in a business context, seriously One learns how to maintain distance with time.”

Code: conscientiousness and being empathic

Interviewee 5: reported that: “Not to tell some people straightaway what you really think. Or come out with what you know only in the second or third sentence.... first of all, you have to take the time to question something.”

Code: Ask what the problems are

Interviewee 5: recommended: “One should take the time at the very beginning to find out where the real problems lie.”

Interview 6

Interviewee 6 is a managing director of a social work company for education in Germany.

Psychological stressors

The person-independent external influences that have had a psychological impact on Interviewee 6 were based on the conditions that the company she worked for is not profit-oriented but has to do fundraising regarding public investments. The particular situation at that time was that the requirements for application for public investments change again and again, depending on new political goals and the current investment programme based on legal conditions no longer applied after 31.12. of that year without there being any perspectives afterwards.

Code: job related conditions of burnout - VUCA conditions

Mr F. outlined that: “(my company is) ...non-profit society, working for qualification partners, we have been in the market for a long time, since 1977, ... again and again in the situation of having to deal with new political goals and, at the moment, there is the instrument of active citizenship in German politics, and, within this framework a very large number of jobs have been created where people pay social security, these are for three years and they disappear this year on 31.12. without any subsequent perspective.”

Code: leaders' personality and job attitudes of burnout - a feeling of unmet expectations.

Interviewee 6:“ Yes, of course it happens, that many colleagues who know that, that they ask what the personal perspectives are like. That is certainly a topic for the management that can be found to be emotionally moving, and, where it is important to keep cool in order to be able to fight for follow-up solutions but, despite that, to be able to express one's sympathy.”

Psychological strain

Based on the described psychological stressor of a VUCA environment Interviewee 6 pointed out that the immediate impact on her psyche leads to a feeling of struggle, grounded in negative feelings on the one hand and the desire to be rational on the other hand.

Code: Emotional exhaustion - emotionally overextended, a sense of feeling of psychological breakdown

Interviewee 6:“ Yes, of course it happens, that many colleagues who know that, that they ask what the personal perspectives are like. That is certainly a topic for the management that can be found to be emotionally moving, and, where it is important to keep cool in order to be able to fight for follow-up solutions but, despite that, to be able to express one's sympathy.”

Furthermore, Interviewee 6 talked about a specific psychological stress: “Well, there will have to be a reorganisation but that is not only bad. That is the one thing, but the restructuring will also mean a reduction in the structure and, naturally, that cuts right into the heart, that it is real people that are going to lose their jobs.”

Available resource repertoire

Interviewee 6 reported several resources she used to handle the obstacles such as responsiveness and fairness and also self-esteem, trust and reflection.

Code: Responsiveness and Fairness

Interviewee 6: “Yes, naturally responsibility, um, and there are such topics - at least partially - such as employee representation, which look at things together with the management, and so on. Also justice, too...”

Code: Self-Esteem

Interviewee 6 pointed out that: “Well, I think,..., Self-Esteem, self-assurance, that is a step that one has to take when you take office, that's what I think. And, ..., its not that I attribute it to myself that it is a political situation and that I have affected it or even did not have it in focus on time.”

Code: Self-doubt

And further on she outlined that: “...certainly also partially self-doubt whether one has thought about everything, that does exist. Now to basically say that it is chipping away at my self-esteem, or my feeling that what I do, I do correctly,...”

Code: Trust

Interviewee 6 said: “Well, yes, everything that you have mentioned, of course, trust, mine is at least partially trust in God, we are used to such situations ...”

Further on she pointed out that: “What did I hope for at the beginning of the year, what has really occurred and what not, I had my share in it in the same way as my share in leadership behaviour. For that reason, trust is necessary, sense of belonging...”

Code: Reflection

Interviewee 6 reported: “...we have a QM system that is strongly oriented around content, well, we work with EPROM and not with ISO, and even there, there are certain structures and, ah, hindsight and, ah, specifications in there again, like, how does leadership work with you, we've got that as one of the next topics at the management level, ah, in our guidelines there is something about a cooperative leadership style,

what is the significance of that now, why is it there and how are we going to experience it. They are all, um, there are always reflective approaches also inside.”

Task Adaptive performance (responses)

As a kind of anticipative response Interviewee 6 tried to involve all stakeholders inside and outside the company by applying transparency and communication about all facts. Furthermore the inside communication with the employees was based on active listening to the concerns of others.

Code: Transparency and Communication

Interviewee 6 stated, “Well, I look to see what contacts there are in politics, in the environment of what we are doing here, we have an administrative board, and I can try to involve some of those responsible. And to campaign for support, and to make political demands, to pass it on, um, in order to deal with it.”

Code: Talking about risk management/conscientiousness

Interviewee 6: pointed out that “... there is a level of management here in the company where this is a topic every week because it concerns us all and it is also a degree of risk management.”

Code: Active Listening

Interviewee 6 pointed out that: “Regular talks take place. And, where they take place - there are various nuances - it is useful when such comments occasionally fall like “will the company still exist next year”, naturally, that is not very helpful but, on the other hand, we are trying to intercept these and to address them.”

Positive or negative consequences/results

Interviewee 6 reported two main learnings, firstly, to recognise such adverse situations needs teamwork to be manageable and secondly to be aware that the responsibility to overcome the adversity was not based on her alone.

Code: Teamwork

Furthermore she reported: "... that (it) has been confirmed, that we will only achieve success as a team. ...that we need a good team; that we have to adapt our structure to the new reality."

Code: Self-Esteem

Interviewee 6: "It is good that overcoming this, does not depend on me alone and cannot depend on me..."

A final step in stage 2 is to summarise the explored codings within the given coding scheme.

APPENDIX D

Overview of the expert invitation and the introduction and background description of the self-administered structured expert interview questionnaire in 2018.

I would like to invite you to share your expertise within a 10 minute expert review questionnaire on leaders' adaptation to adversity in a volatile, uncertain, complex, and ambiguous business environment. This study forms part of my PhD at the University of Gloucestershire, UK.

This research is being conducted under the guidelines of the University of Gloucestershire's Handbook of Research Ethics. The research plan has been approved by the University, but the contents and opinions expressed in this research instrument are those of the researcher and in no way represent those of the University of Gloucestershire. Your answers will not be released to anyone and will remain anonymous. All responses you provide for this study will remain confidential.

Access to the questionnaire is at:

<https://www.umfrageonline.com/s/304ec47>

I would very much appreciate your participation.

Yours faithfully, Joerg Krauter



Page 1

Thank you very much for your participation.

In order to continuously improve leaders' adaptation to adversity, this expert review questionnaire has been developed to gather feedback regarding how well your experiences and expertise regarding this topic is consistent with the developed hypotheses based on a literature review within my PhD Study. I value your honest and detailed responses.

The questionnaire should take approximately 10 minutes to complete. Your responses are completely anonymous.

Kind regards

Joerg Krauter

Background

Organisations and their leaders face adversity due to a number of factors, including economic crises, globally-networked competition, and shareholder-driven expectations (Haddon, Loughlin, & McNally, 2015; Heifetz, Grashow, & Linsky, 2009a; Knights & McCabe, 2015; Pillai & Dubrin, 2013; Uhl-Bien & Arena, 2017). According to Lawrence (2014, p. 3), the term "VUCA" has been used by leaders to explain the perceived "...chaotic, turbulent, and rapidly-changing business environment that has become the new normal."

One of the most striking problems affecting leaders dealing with the VUCA-environment seems to be that old behavioural patterns of linear top-down leadership and decision-making, which are still predominant in many companies, no longer reflect the conditions of a VUCA-world (Friedman, 2005; Johansen, Johansen, & Ryan, 2011). These conditions often cause crises, setbacks, struggles, and obstacles which cause leaders to perceive adversity as a threat rather than an opportunity (DuBrin, 2013; Jackson, Firtko, & Edenborough, 2007; Schein, 2010; Snyder, 2013). This can prevent them from adapting to adversity and consequently, they are unable to maintain a stable and balanced work life (Bonanno, 2004; Jackson et al., 2007; Luthar, Cicchetti, & Becker, 2000; Rutter, 1985, 1999).

Alternatively, it can result in leaders having to deal with obstacles that they view as a form of "... pain, difficulty, and struggle" (Howard & Irving, 2012, p. 435) and the resultant distress (Zaccaro, Rittman, & Marks, 2002). They are unable to act effectively (Bandura, 1977, 1994), feel helpless (Seligman, 2015), or they may perceive negative emotions (Tugade & Fredrickson, 2004). These negative impacts on the leaders' mental state can result in a situation in which, according to Johansen and Johansen (2011, p. 1), "...many of their responses are not constructive....". Consequently, some leaders over-simplify the situation and make decisions too soon, others make no decisions at all, and some seem to be overwhelmed by a feeling of helplessness and react with cynicism or anger. In a worst-case scenario, perceived adversity might create a situation in which a leader behaves intentionally in a destructive or toxic manner, creating a negative impact on the organisation as a whole (Bourdoux & Delabelle, 2013; Padilla, Hogan, & Kaiser, 2007).

Overall, adversity can have negative effects on the adaptive performance of a leader whereby he/she is unable to cope with stress and uncertainty, unable to deal well with the complexity or to learn new skills and behavioural patterns (Kröger & Staufienbiel, 2012; Pulakos, Arad, Donovan, & Plamondon, 2000). McKee, Boyatzis, and Johnston (2008) disagree with this and argue that "very few" leaders set out with the intention of harming those below them in rank. However, Michel and Lyon (2015, p. 15) state: "The question is then why do so many good and well-trained leaders fall short of their potential or lack integrity and compromise their values?" They conclude that when leaders are faced with adversity, they have feelings of uncertainty, pressure rises, and as a result, they have a tendency to make decisions too quickly and jump to the wrong conclusions in their eagerness to exit the negative situation (Michel & Lyon, 2015).

Another reason why leaders fail can be a specific kind of overconfidence affected by exaggerated self-efficacy (Ho, Huang, Lin, & Yen, 2016; Loeb, 2016; Moores & Chang, 2009). This over-optimism can lead to unrealistic expectations which create a spiralling effect of increasing bad feelings and less adaptability (Shepperd, Pogge, & Howell, 2016). Although these issues have been documented in business practice and organisations, they have received limited scholarly attention to date as they are often perceived as difficult, impossible to capture, or of an individual-specific nature.

APPENDIX E

List of leadership experts participated the expert review in 2018.

Name	Function	Role	Expertise
Dr. Latrissa Lee Neitworth	Assistant Professor & Interim Business Dean, Warner Pacific University; Adjunct at Grand Canyon, PSU & Pepperdine	Professor and Researcher	From adversity to leadership: US women who pursued leadership development despite the odds
Prof. Dr. John Latham	Professor of Management, University of Fredericton	Professor and Reseacher	Systems Thinking and Organizational Design, Governance, Strategy, and Structure, Leadership, Leadership Values and Ethics
Prof. Dr. Monika Burg	Professor at ISM International School of Management, Westfälische Wilhelms-Universität Münster	Professor and Researcher	VUCA Management and Leadership
Dr. Jummy Okoya	Principal Lecturer, chair of women's network, Imperial	Researcher and Lecturer	Organisational & leadership Development, Career Development,

	College Business school, University of East London		Diversity & inclusion and positive psychology intervention coaching
Dr. Michael Cox	Professor Emeritus in Leadership, University of Guelph, The Royal Society of Art	Professor and Researcher	Leadership and Strategy
Prof. Dr. Dave Ulrich	HR, Leadership, and Organization, University of California, Los Angeles	Professor and Researcher	Leadership and Human Resource Management
2 anonymous		Researcher	Leadership
Dr. Oliver Grimm	Lean Leadership Consultant	Leadership consultant	Leadership in Lean Management Environment
Dr. Elena Hutter	Consultant Leadership & HR-Development	Leadership Consultant	Leadership and Psychology
Dr. Bernd Blessin	Chief of Human Resources and Organisation, Insurance Company	Senior Leader Role	Leadership and Organisation
2 anonymous		Senior Leader Role	Leadership