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Examining the Linkages Between Organizational Resilience and Cognitive Style - an Exploratory, Multi-Method Study

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Johannes Lien and Henrik Eliassen

Abstract

This thesis aims to narrow a research gap by exploring the linkages between organizational resilience and cognitive diversity. More specifically, we wanted to investigate cognitive differences in problem-solving style between levels of power in organizations. Using the VIEW database, quantitatively analyzing the responses of 16,303 subjects working in for-profit organizations, we discovered a significant cognitive gap between upper management and clerical staff. In a bid to go deeper we conducted interviews to qualitatively assess if these differences existed in the real world and to identify potential challenges and opportunities connected to the gap.

We advocate the overarching importance of organizational resilience and how it can be connected to achieving resilient communities. We argue that cognitive gap can potentially have a negative impact on resilience capabilities. Thus, effectively managing the gap is key to increasing organizational resilience.

The inter-item correlation in the quantitative analysis indicated that most substantial differences could be found between Upper/Senior Management and Clerical/Other staff in the Orientation to Change dimension and Novelty and Structure – Authority sub-scales. While the Search Strategy sub-scale lacked statistical significance, the overall quantitative findings revealed the existence of a cognitive gap. These findings were supported in the interviews. The interviewees provided clear evidence of the gap, along with costs caused by the gap and approaches to close the gap.

Based on the quantitative and qualitative findings we found that leadership behavior and two-way-communication, which are interconnected, are vital to effectively managing the gap. We suggest that it would serve leaders well to be more aware of their own preferences and the preferences of others in the organization and use that understanding and knowledge to reduce potential personal tension and maximize collaboration and cooperation. Additionally, they must be provided with methods and tools on how to engage in effective communication. Implications for practice and future research is presented, along with limitations.

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List of Abbreviations

Abbreviation	Meaning
ANOVA	Analysis of Variance
CFA	Confirmatory Factor Analysis
CPSB	The Creative Problem Solving Group Inc.
EFA	Exploratory Factor Analysis
ICC	Intraclass Correlation Coefficient
IPA	Interpretive Phenomenological Analysis
KAI	Kirton Adaption-Innovation Inventory
MANOVA	Multivariate Analysis of Variance
NSD	Norwegian Centre for Research Data
NV	Novelty
OC	Orientation to Change
SPSS	Statistical Package for the Social Sciences
SS	Search Strategy
VIEW	VIEW: An Assessment of Problem Solving Style
WD	Ways of Deciding

List of symbols

Symbol	Meaning
α	Cronbach's Coefficient Alpha
df	Degrees of Freedom
N	Frequency
p	Level of Significance
η_p^2	Partial Eta-squared
F	Value of F-Test
t	Value of t-test
Λ	Wilk's Lambda

1 Introduction

In recent years, the study of resilience has intrigued researchers within multiple disciplines, and the concept has taken an important place in fields such as psychology, ecology, engineering, and organizational studies. Resilience is the ability to resist and respond to unexpected situations and recover once they have occurred (Carvalho et al., 2012; Lengnick-Hall et al., 2011; Rose, 2004). The surge in interest can be linked to people's increased awareness of natural and human-made disasters (Tukamuhabwa et al., 2015) and the exponential disruptive change caused by technologies (Pulakos et al., 2019), as well as rapid changes in economy and society (Horne, 1997). Organizations operate in an increasingly challenging environment and must account for threats from both inside and outside its boundaries (Annarelli & Nonino, 2016), such as natural disaster, terrorist attacks, human error or equipment failure, to ensure survival. While it is blatant that disasters and crises necessitate resilience from organizations, it is less obvious that unexpected events in day-to-day operations require similar responses (Mallak, 1998a). Organizations are interconnected both socially and technologically, and thus, seemingly insignificant uncertainties can end up having major consequences (Annarelli & Nonino, 2016).

In these turbulent and continuously evolving circumstances, only dynamic organizations that can showcase agility and flexibility will continue to thrive (Lengnick-Hall et al., 2011). This requires people who can respond promptly and effectively to change while enduring minimal stress (Mallak, 1998b). Resilient organizations are able to maintain positive adjustments under challenging circumstances (Sutcliffe & Vogus, 2003), however, the conditions for achieving this have never been more testing. Because of the unprecedented situation brought upon us by the COVID-19 pandemic, which has triggered a global recession, organizational resilience is maybe even more relevant than ever. In the US, the world's leading economy, consumer spending declined by 30% between January and April, 2020 (Chetty et al., 2020; Wang et al., 2020) and consumer spending habits have changed drastically because of the outbreak (JP Morgan Research, 2020). What is it that differentiates companies able to maintain their structure and function in the face of large disruptions, like a global pandemic, from those crumbling when unforeseen

challenges arrive? In the literature on Organizational Resilience a consensus regarding definitions and characteristics has more or less been reached, however, organizational capabilities that constitute resilience and implementation remain a conundrum (Annarelli & Nonino, 2016; Duchek, 2019). More knowledge in these areas is of increasing importance considering the situation.

An important aspect of withstanding various challenges is innovation. Schumpeter (1942), a pioneer in the field of economics, advocated the importance of innovation. Now, decades later, innovation is widely considered as the core of organizational growth and success (Zahra & Covin, 1994). Organizations must renew themselves at an increasing pace to meet the ever-changing customer demands while keeping up with technological changes, and take advantage of these, to maintain their relevance. As a result of the escalated interest in innovation, there are multiple definitions of the concept, many of them aligned with specific disciplines. However, Baregheh et al. (2009), propose that "*Innovation is the multi-stage process whereby organizations transform ideas into new/improved products, services or processes, in order to advance, compete and differentiate themselves successfully in their marketplace*" (p. 1334). Innovation enables continuous renewal of business organization, and thus, contributes towards organizational resilience (Carvalho et al., 2012; Mafabi et al., 2015). Furthermore, innovation is interrelated with creativity. Anderson, Potočnik and Zhou (2014) understand creativity and innovation at work as a two stage process where "*the creativity stage of this process refers to idea generation, and innovation refers to the subsequent stage of implementing ideas toward better procedures, practices, or products"* (p. 1298). This process has been identified as a determinant for organizational performance, and consequently pursued by organizations to ensure survival and success (Shin et al., 2012). Hence, it is increasingly important to establish diverse teams in terms of knowledge, expertise and information (Guillaume et al., 2013).

One way of assuring diversity is having employees with different cognitive styles. Cognitive style refers to how individuals perceive and process information and reach conclusions or judgements (e.g., Brigham et al., 2007; Cools et al., 2009). A person's

cognitive style is considered to be a relatively stable disposition which can result in different behaviors in the decision-making process (Riding & Rayner, 1998). Cognitive diversity can enrich the organization's capabilities of dealing with knowledge-based and creative tasks as it offers diversified perspectives and more cognitive resources (Martins et al., 2013). As previously mentioned, an important aspect of resilient organizations is the ability to constantly renew themselves, and thus, the requirements for problem solving will likely fluctuate (Kirton & McCarthy, 1988). This argument favors heterogeneity in the human resource pool, however, there are potential pitfalls related to diversity. Self-categorization theory (Tajfel & Turner, 1979), a widely recognized theory within social psychology, suggests that people categorize themselves to groups based on salient attributes, such as age, race, or religion, causing them to favor the in-group (Trepte, 2017) in a bid to maximize self-esteem. Building on these categorization processes, the similarity/attraction paradigm (Pfeffer, 1983) states that similarity induces individuals to value each other's positive attributes, while on the other hand, dissimilarity can provoke adverse treatment and hinder acceptance of others strengths (Shin et al., 2012). While these theories will have larger implications for demographic diversity, as demographic attributes are more salient (Tsui et al., 1992), cognitive diversity still has the potential to create tension. Chen et al. (2019) report of a double-edged-sword effect of cognitive diversity on innovative work behavior. As innovation is an important factor in organizational resilience it follows that cognitive diversity has the potential to be a key capability of organizational resilience when managed effectively.

According to research, only a tiny fraction of U.S. companies are likely to reach 40 years in business, probably less than 0,1 percent (Horvath et al., 2001). Even large established firms have limited lifespan, from 6 to 15 years on average, despite their resources and influence (Agarwal & Gort, 1996). Most high-performing firms are unable to sustain superior performance for a decade (Stubbart & Knight, 2006). Since these studies were published, advancement in technology has increased complexity in the business environment. Additionally, COVID-19 has created extreme uncertainty globally, which will have lasting effects. Furthermore, organizations are the cornerstone of communities, providing services while contributing to employment and

cash-flow. It can, therefore, be argued that there is an intrinsic relationship between organizational resilience and achieving more resilient communities (McManus et al., 2008). These are all arguments as to why organizational resilience should be a focus area for scholars and the organizations themselves. In the literature, there are several conceptualizations of organizational resilience, yet an overarching theoretical framework is still lacking (Duchek, 2019; Kendra & Wachtendorf, 2003). However, a number of studies focus on organizational capabilities associated with organizational resilience (e.g., Duchek, 2019; Lengnick-Hall et al., 2011; Lengnick-Hall & Beck, 2005). Previous research has linked diversity with organizational resilience (Blatt, 2009; Sutcliffe & Vogus, 2003), and it is believed that diversity can enhance an organization's resilience capabilities (Duchek et al., 2020). There are many ways to consider diversity, a construct overarching various dimensions of heterogeneity. Prevalent categorizations differentiate between surface-level (Jackson et al., 1995) and deep-level diversity (Harrison et al., 1998), or observable and non-observable diversity (Tsui et al., 1992). Cognitive diversity is an example of deep-level or non-observable diversity and brings, as previously mentioned, a number of benefits and challenges. One of these is the concept of cognitive gap. Most recent research on learning, thinking and cognition make the assumption that all humans solve problems and are creative (Kirton, 2003; R. Riding, 2001), however, there are large variations in level and style of creativity and problem solving from person-to-person, resulting in cognitive gaps. When these gaps are substantial it can lead to significant problems like poor communication, accusation, and even resignations (Jablokow & Booth, 2006; Kubes & Spillerova, 1992; Lindsay, 1985). The purpose of this study is to investigate the role cognitive gap in problem solving style plays in the development of organizational resilience. As a multi-method study, our thesis addresses this question by (1) quantitatively analyzing VIEW scores (N=16,303), an assessment of problem solving style(Selby et al., 2014a), to identify potential cognitive gaps, and (2) conduct semi-structured interviews with employees of a number of companies that have been identified to be of interest (e.g. because of their work description, industry etc.) based on the quantitative analysis, to qualitatively assess how cognitive gap can influence resilience capabilities in an organizational setting. More specifically, we will focus on

differences in power, by investigating whether a cognitive gap between organizational levels exists. Consequently, we have come up with five research questions that we seek to answer:

1. Is there a clear gap in problem-solving style across workers in different management levels?
2. Which dimensions of VIEW, if any, show the greatest variation in results regarding workers in different management levels?
3. In what way do workers in different management levels fill the gap in contrasting problem-solving styles?
4. Do enterprise level leaders see these gaps in the real world?
5. What are the more effective practical strategies that help close the gap?

2 Literature review

2.1 Previous research on organizational resilience

2.1.1 Definitions of organizational resilience

Even though there is a range of independent and ambiguous definitions regarding the concept of organizational resilience, we can derive three main perspectives from the research literature. The first group of scholars view resilience as the ability to rebound from stressful, adverse situations and recover after disturbances and return to status quo (e.g., Dutton et al., 2002; Home & Orr, 1997; Horne, 1997; Mallak, 1998b; Rudolph & Repenning, 2002). This view coincides with the definition in physical sciences in which a material is resilient if it can withstand strain and recover original form (Masten & Gewirtz, 2006). Limnios et al. (2014) point out how this can be desirable or undesirable depending on the system state. In an undesirable system state this conceptualization of resilience can cause system rigidity. If an organization continues to reinforce previously successful strategies, and fail to identify changing market conditions they will fall into the rigidity trap, a condition called routine rigidity (Gilbert, 2005).

A second perspective of organizational resilience looks beyond restoration of organizational functionality and believes that the change that is absorbed can be exploited, leaving the organization in a superior position compared to before (e.g., Coutu, 2002; Freeman et al., 2004; Kantur & Iseri-Say, 2012; Lengnick-Hall et al., 2011; Lengnick-Hall & Beck, 2005). In this view, resilient organizations are turning challenges into opportunities by leveraging their resources and capabilities. These capabilities allow them to quickly adapt, integrate and reconfigure both internal and external resources and competences to meet the demands of evolving conditions, and are referred to as dynamic capabilities by Teece (1997).

Additionally, some scholars incorporate the concept of anticipation in their description of organizational resilience (e.g., Duchek, 2019; McManus et al., 2008; Rerup, 2001). This is similar to resilience in engineering, where resilient systems are able to recognize signs of failure, and therefore anticipate the problem (Woods, 2012). Wildavsky (1988) understands anticipation and resilience as polar opposites. Furthermore, he proposes that organizations should strive to create a balance between resilience and anticipation in a strategic manner to reduce risk in uncertain conditions. To Wildavsky, anticipation meant predicting potential dangers by carefully assessing vulnerabilities and to prevent them before damage is done. Resilience, on the other hand, meant coping with manifested unanticipated dangers, showcasing capacity to bounce back from such events (1988). Because of substantial uncertainties, making anticipation difficult and costly in many cases, he understands resilience as a viable alternative to crisis prevention. Other authors have since challenged Wildavsky´s anticipation and resilience dichotomy. Kendra and Wachtendorf (2003) argue that preparation is a vital part of achieving organizational resilience. In their view, preparation does not refer to a particular event, but is beneficial in developing capabilities or functions that are necessary to withstand any kind of unexpected event. Similarly, Fiksel et al. (2015) urge organizations to identify vulnerabilities in their supply chains and develop capabilities to cope with disruptions, in a bid to cultivate resilience. Somers (2009) argues that resilience involves identifying potential risks, and thus, the element of anticipation.

In this thesis we will incorporate the second perspective of organizational resilience, defining it as the ability to resist and respond to unexpected situations, recover once they have occurred, and exploit opportunities absorbed from the situation, positioning them to move forward.

2.1.2 Conceptualizations of organizational resilience

There is little consensus in the research literature regarding a conceptualization of organizational resilience (Kendra & Wachtendorf, 2003; Linnenluecke, 2017), however, we can generally distinguish three conceptual categories: (1) scholars who treat organizational resilience as an outcome, (2) those who treat resilience as a process, and (3) those who focus on resilience capabilities or attributes. A majority of studies consider resilience as an outcome (Duchek, 2019). They study organizations that manage to uphold their performance level through a crisis or regain momentum after interruptions. Other studies point to attributes that constitute organizational resilience. These are often specific for a setting, yet, we can derive the most frequently mentioned attributes as adequate resources (Kendra & Wachtendorf, 2003), positive employee relationships (Gittell et al., 2006) and redundancies (Kendra & Wachtendorf, 2003). Furthermore, a more recent approach has developed where organizational resilience is explained by organizational strategies (Reinmoeller & Baardwijk, 2005) or processes (Alesi, 2008), providing useful insight into what is required to respond to a crisis. We understand organizational resilience as capabilities or attributes that enables resilient behavior and will view the thesis through that lens.

2.2 Cognitive diversity

2.2.1 Cognitive style and how it differentiates from cognitive level

Research on cognition has evolved over the last decades, from the “creative genius” theories of the past (Koestler, 1964; Rogers, 1954) to being based on an assumption that all living creatures are agents of change, as they rely on solving problems and must be creative to survive (Kirton, 2003). There is, however, great diversity in an individual´s problem solving and creativity as this will depend on factors that vary from

person-to-person (Jablokow & Booth, 2006). These factors include the cognitive style a person prefers or the cognitive level at which a person solves problems.

Cognitive style refers to how individuals prefer to process information and use this to solve problems (Jablokow & Booth, 2006). Kirton defines cognitive style as "*strategic, stable, characteristic, preferred manner in which people respond to and seek to bring about change, including the solution of problems"* (2003, s. 156). As demonstrated by Kirton (2003), cognitive style is independent from cognitive level. Often, successes and failures that are attributed to cognitive level, however, are actually caused by style (Sternberg & Grigorenko, 2001)**.** After examining managerial styles in decision making, Kirton (1976) introduced the adaptation-innovation continuum (Kozhevnikov, 2007)**,** a theory of cognitive style that has since undergone considerable development, by Kirton himself (e.g., Kirton, 2003) and others (e.g., Bagozzi & Foxall, 1995; Fischer & Freund, 2014; Foxall, 1994; Kubeš, 1998)**.** This theory is based on the assumption that individuals have characteristically different styles of creativity, decision making and problem-solving (Kirton & McCarthy, 1988). It then proposes two cognitive styles, namely adaptors and innovators. Through his cognitive style measure, the Kirton Adaption-Innovation inventory, or the KAI, respondents are located on a continuum related to a benchmark. This benchmark is made up by a few individuals, one's *significant others*. Subsequently, those who get KAI scores that are 10 or more points from the group's mean can be described as either innovator or adapter (Kirton, 2003). This means that changing groups or staying in a changing group can shift an individual's location on the continuum, which makes for an important point; the terms adaptive and innovative are comparative (Kirton, 2003), and reflects the divergence of problem solving groups in organizational contexts (Jablokow & Booth, 2006).

On the other hand, cognitive level refers to "*a combination of an individual's innate potential capacity and the individual´s accumulated manifest capacity*" (Jablokow & Booth, 2006, s. 321). This means that potential cognitive level defines the limit to an individual's problem-solving ability as it measures how much a person can potentially know. This is commonly measured in terms of intelligence and talent, along with other

means. Manifest cognitive level, however, refers to what a person already knows, learned through experience. By acquiring new knowledge, skills, or experience one enhances this personal resource pool used for problem solving. For the purpose of this study, and when examining cognitive gaps, it will only be related to cognitive style.

2.2.2 Cognitive style gap and ways of closing it

Organizations are frequently facing complex problems, and thus, require diversity in how they are approached (Jablokow & Booth, 2006). Additionally, an organization's goals are likely to change over time, favorizing a heterogenous team that can face the fluctuating requirements of problem-solving style (Kirton & McCarthy, 1988). Consequently, gaps in cognitive style will be present, however, to a varying extent. Cognitive style can be seen as a continuum and the size of the gap in cognitive style will rely on where people are located. In situations where there is only a small gap normal coping mechanisms should provide adequate balancing (Clapp & De Ciantis, 1989), and could even be beneficial as a certain level of healthy conflict might spark innovation and change in an organization (O'Toole, 1979). However, if the gap is substantial it can cause problems with communication, take its toll on relationships or end up in loss of employment (Jablokow & Booth, 2006; Kubes & Spillerova, 1992). It therefore remains a challenge for organizations to create the right balance where tolerance between team members with differing cognitive styles are in place (Kirton & McCarthy, 1988).

Kirton´s theory of Adaptation-Innovation cognitive style offers valuable contributions to the theoretical and practical perspectives on cognitive style gaps, as it has been thoroughly validated and continuously developed (e.g., Bagozzi & Foxall, 1995; Clapp, 1993; Clapp & De Ciantis, 1989; Kirton, 2003; Murdock et al., 1993). It predicts when a cognitive gap will become apparent based on KAI scores. A 10-point gap in the KAI has shown to be just noticeable (Clapp & De Ciantis, 1989; Hammerschmidt, 1996; Kirton & McCarthy, 1985), however, if the gap is doubled, to 20-points, difficulties in collaboration and mutual understanding becomes apparent (Kirton, 2003). From there on, difficulties seem to rise steeply.

Cognitive style gaps can appear as several variations; however, this study will focus on gaps in cognitive style between organizational levels. In focusing on differences in power, as opposed to the majority of research on cognitive style that focuses on occupational differences, we aim to make an important contribution to the research literature. According to research, groups that are specialized in function are likely to exhibit stable style contributions noticeably different to the general population and other groups (e.g., Buttner & Gryskiewicz, 1993; Jablokow & Booth, 2006; Pettigrew & King, 1993). Such skews occur because, at large, the requirements for problem solving in each group is biased towards a particular style preference, according to Kirton (2003). When a group has been functioning successfully for a substantial period of time, turnover will influence cognitive style distributions, as selection and self-selection will be geared towards styles closest to the majority of problems faced by the group (Hayward & Everett, 1983; Holland et al., 1991; Jablokow & Booth, 2006). Those possessing these styles will feel an attraction to the group, while those with significantly different styles will have a higher likelihood of leaving in favor of another group. An exception is, nonetheless, if someone has found or created a niche, accidentally or deliberatively, where they offer something positive to the group, and thus, is accepted (Kirton, 2003). These individuals play a vital role, as few large teams can afford to stay homogeneous when facing complex challenges (Jablokow & Booth, 2006). Cognitive gaps are, therefore, a challenge for organizations aspiring to become resilient, and how they deal with these gaps will be a determining factor for future success.

When a cognitive gap emerges it needs to be closed, one way or another (Kirton, 2003). As stated in Kirton´s (2003) definition of cognitive style, and as a foundation that his research rests on, an individual's cognitive style is stable. It seems largely unaffected by age, culture, job or training (e.g., Clapp, 1993; Tullett & Kirton, 1995). The only thing that is able to alter this is coping behavior, however, at a cost. The concept of coping has been researched in social sciences for decades, and a large proportion of publications can be traced back to the work of Lazarus (1966). Lazarus and Folkman defined coping as "*constantly changing cognitive and behavioral efforts*

to manage specific external and internal demands that are appraised as taxing or exceeding the resources of the person" (1984, s. 141), which remains the most widely accepted one (Tennen et al., 2000). Having to move away from one's preferred cognitive style to meet the requirements of changing circumstances serves as an example of a stressful situation that requires coping. Though, the level of coping behavior needed will rely on how far away the individual is from his or her preferred style, and for how long they will need to deviate from their preferences. Some coping behavior should be manageable and is necessary for everyone. However, if a person is to maintain a high level of coping behavior, the vision of reward, or fear of punishment, must exceed the personal cost of coping (Kirton, 2003). Furthermore, persistent coping should be avoided as it will lead to inefficiency.

2.2.3 VIEW as a measure of cognitive diversity

VIEW: An Assessment of Problem-Solving Style (VIEW)(Selby et al., 2014a) is a questionnaire that builds on extensive research on problem-solving style dating back to a stream of research initiated at the International Center for Studies in Creativity at the State University College in Buffalo, New York called the Cognitive Styles project (Isaksen, 2004). The researchers' work in understanding creativity and creative problem-solving, linked to basic psychology of the person, have served as the foundation for the VIEW model and led to its three-dimensional structure (see Figure 1). Problem solving-style was conceptualized in Treffinger et al., (2008, s. 393) as an integration of psychological type theory (e.g., Myers & McCaulley, 1985), learning style theory (Dunn & Dunn, 1992, 1993) and cognitive style theory (Kirton, 1976; Martinsen & Kaufmann, 1999) with theory, research and field experience centered on creativity, creative productivity and creative problem solving instruction and training (e.g., Guilford, 1986; Isaksen, 1987; Selby, 1997). In a bid to integrate these streams of research and to measure problem-solving style, the model and assessment was framed around three dimensions, namely Orientation to Change (OC), Manner of Processing (MP), and Ways of Deciding (WD). This separates VIEW from the KAI, as a multidimensional measure. In the next sections the three dimensions of problem-solving style will be described in more detail.

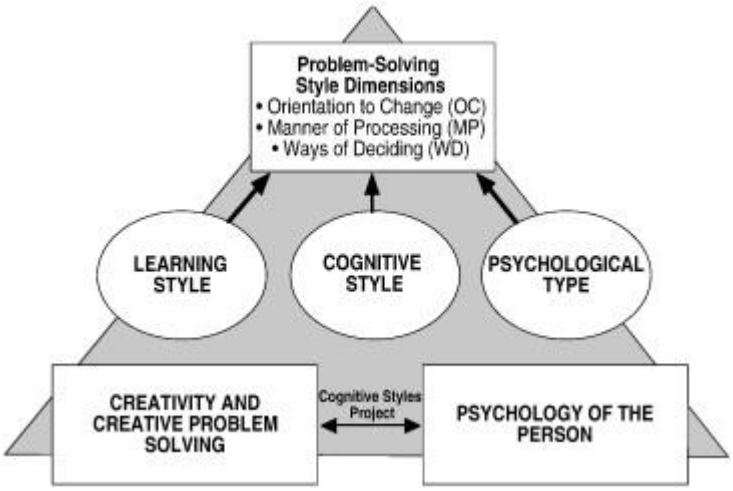

Figure 1: A model of problem-solving style (Treffinger et al., 2008; reproduced by permission)

2.2.3.1 Orientation to Change

As the OC dimension is a broad construct and the most complex of the three, the model has been expanded with three subscales that contribute to one's overall OC. The three subscales are called Preference for Novelty, Structure and Authority, and Search Strategy. Thus, the OC dimension refers to a person's perceived preferences and dispositions for reacting to and managing structure and authority, dealing with novelty and originality, and strategy when searching for data, options and understanding (Selby, Treffinger, & Isaksen, 2021a). The dimension has two general styles; Explorer and Developer, where everyone's personal style falls along a continuum from clear Explorer preference to clear Developer preference (Treffinger et al., 2008). In the ordinary sense of the word, an explorer thrives when leaping into uncharted territories. Similarly, the Explorer style emphasizes originality and uniqueness when solving problems. The well-defined Explorer view structure as limiting (Selby, Treffinger, & Isaksen, 2021a) and do not fear risk and uncertainty (Treffinger et al., 2008), allowing them to plunge right into novel situations. The Explorer style is associated with a more radical approach to problem-solving, and Explorers tend to look broadly when searching for solutions (Hossbach, 2019).

The Developer, on the other hand, is concerned with practicality and the reality of the task. In contrast to the Explorer, who prefers radical change, the Developer values incremental change, linking the two constructs directly to the Adaption-Innovation

theory of Kirton (1976) who makes the same distinction. In fact, the OC dimension strongly correlates with the KAI, suggesting a conceptual overlap (Isaksen et al., 2021). Furthermore, the Developer seeks guidance from authority, and prefers clear directions to ensure that what they produce will fit into the existing boundaries (Selby, Treffinger, & Isaksen, 2021a). They emphasize improvement and realistic framing of the problem in their problem-solving.

2.2.3.2 Manner of Processing

The MP dimension measures people's preferred level of interaction when solving problems, how they manage information, and when they prefer to share their thinking. This will be done through either an External or Internal style preference (Selby et al., 2014b). The MP dimension relates to the extraversion-introversion construct in other measures, however, VIEW does not characterize the respondents as a certain kind or type of personality, but rather focuses on the behavioral preference when solving problems and managing change (Treffinger et al., 2008). Individuals who exhibit an External preference draw energy from interacting with others when solving problems. They tend to share their ideas before they are fully developed (Selby et al., 2014a). Through discussion they can draw on each other's ideas and clarify their ideas and understanding. They prefer physical engagement with the environment and contribute with energy to a team.

Correspondingly, Internals draw energy from reflection, and first utilize their inner resources. They are typically more self-reliant and perfectionist, which is why they prefer to share their ideas at a later stage, when they are further developed, compared to the Externals. In analysis of a situation or of the data, Internals are careful and thoughtful. They prefer to reflect quietly at their own pace.

2.2.3.3 Ways of Deciding

The third dimension of problem-solving style measures individuals' preferred Ways of Deciding about options or possibilities. The dimension deals with how individuals

prefer to balance concerns for the task with concerns for people (Selby et al., 2021a). The two connected styles, Person and Task, tell us something about the person's primary focus when making decisions, and how they prefer to approach trade-offs. Those with a well-defined Person style will consider what impact the choices and decisions will have on people's feelings and support (Treffinger et al., 2008). They prioritize maintaining harmony and emphasize positive relationships. From other's point of view, they often appear warm, friendly, and caring. When Person people face challenges they see data and solutions in terms of personal impact (Treffinger et al., 2008), bringing the human element to the forefront of decision-making. Those with a Task style preference tend to emphasize logic and sensibility when looking at choices and decisions, while remaining objective.

Those with a preference for the task style, tend to emphasize logic and sensibility when looking at choices and decisions, while remaining objective. They seek the best solution or response by making impersonal decisions. They evaluate ideas as being separate from the person, strictly looking for possible improvement to raise quality (Selby et al., 2021a). When facing challenges and data analysis they tend to take a well-reasoned and impersonal approach. While they can be perceived as harsh for overlooking the human element, they bring much needed attention to end-results (Treffinger et al., 2008).

3 Method

This chapter provides an overview of the research design used to answer the guiding research questions of this thesis. The intended sample and data collection procedures are then described. Next, the psychometric properties of the VIEW are briefly described, followed by an explanation of the procedures used in the quantitative and qualitative analysis of the data.

3.1 Research Design

To answer the research questions, this thesis takes an exploratory, multi-method approach to examine the linkages between organizational resilience and cognitive style from a quantitative and qualitative point of view.

To address the lack of empirical research in the field of organizational resilience and cognitive style, it is necessary to conduct an empirical study as part of this thesis. An empirical study helps to increase the reliability of our findings, while allowing us to base how contrasting cognitive styles interact in a real-life workplace environment. It was therefore decided that we would analyze results from four different management levels in multiple organizations. The quantitative approach to assess the noticeable gap surfacing from different cognitive styles was selected to get a standardized analysis on how contrasting cognitive styles in a real-life workplace setting react to each other. This approach allows us to establish, whether, and by how much, the different types of cognitive styles across different levels impacts organizational resilience. We used quantitative analysis to broadly look and find these differences. Still, a pure quantitative design would only allow for a broad overview of the area, and not a deeper look into how and why contrasting styles impact organizational resilience in a real-life setting. To resolve this issue, a qualitative approach was necessary.

The quantitative results were supplemented by a qualitative report to see if these were significant differences that could be seen in the real world. We asked enterprise-level leaders if they ever noticed a cognitive gap between workers across different management levels during change and, from their experience, the most effective practical strategies used to help close this gap. Before starting our interviews, we sent out an information sheet giving some context about our research study. A pre-prepared participant information sheet have proven to be extremely helpful in reducing anxieties participants often have concerning the interview, such as sharing too much information or uncertainties connected to how the data will be used (Saunders et al., 2015). The interviews were semi-structured, meaning we created an agenda for the interview guide, the outline of planned topics, and questions to be addressed, arrayed in their tentative order (Adams, 2015). We conducted several interviews with individuals from a variety of different organizations and industries, asking the same questions. As the first few minutes of conversation have a significant impact on the outcome of the interview, we started out explaining our research to the participant. This was done to establish credibility and gain the participants confidence, so they could be more open with their answers during the interview (Saunders et al., 2015). To reduce researcher

bias and increase the reliability of the information obtained from the interviews, the way we approached questioning was with open-ended, neutral tone of voice and clearly phrased questions to help the interviewees understand the questions asked (ibid.). After transcribing each interview, a within and across narrative analysis was conducted with collective and individual open coding. We highlighted and analyzed critical phrases that related to the key questions in each interview, first individually, followed by an analysis across all interviews.

The impact of all variables will be examined, both quantitative- and qualitative, to find the most significant differences in cognitive style and organizational resilience. To explore how contrasting individual preferences for style impacts organizational resilience, participants were asked to reflect on past situations when the organization they worked in had to cope in uncertain times.

3.2 Sampling

As the objective of this study is to gain a deeper understanding of the factors surrounding the conceivable gap regarding opposing cognitive styles in different management levels, it would not be sufficient to only look at a single organization or industry. For that reason, we choose individuals with work experiences in different organizations to be included in this study. Additionally, considering the exploratory nature of this research study, no single industry but rather a variety of different industries were targeted. A necessary condition that had to be included was that all participants had experiences from for-profit organizations, as this is the underlying focal point for our research.

Both the qualitative and quantitative data are based on purposive sampling, a type of nonprobability sampling. Since the initial launch of the VIEW assessment, the authors and publisher/distributor have maintained a database on those who completed the measure and agreed to have their results included. The source of this data is derived by those who are qualified to use the assessment, so this is not a randomized sample, but rather a collection of numerous samples of convenience. It falls under the purposive sampling method of homogenous sampling (Etikan, 2016). All this data has been collected in conformance with the APA's ethical policies, as well as those of the Data

Protection regulations (Treffinger et al., 2020). To select participants for the semi-structured interviews, expert sampling was used as the purposive sampling method (Etikan, 2016). When approaching and selecting participants for the qualitative interviews, purposive sampling requires us to have knowledge for the purpose of our study in advance, as to select and approach participants we deemed appropriate to participate in our study. Since the interviewees are selected by the researcher, this method is susceptible to researcher bias.

As both authors are certified VIEW users, along with ample help from the Creative Problem Solving Group Inc. (CPSB), a database containing 64,880 total subjects, who have all completed the VIEW assessment, was acquired as participants in this research study. To delimit, and make our research more applicable, individuals that stated they did not work in a for-profit organization were ruled out. Furthermore, four targeted sub-samples were chosen, as to make our research more pertinent regarding the real-life nature of an organization's resilience. These sub-samples consist of people from all different levels in the hierarchy of an organization: "Senior/Upper Management, Middle Management, Supervisor, and Clerical/Other Staff." Our rationale for selecting the four different samples is the formal hierarchy to approach the purpose of the study. The database we now worked with held 16,303 subjects, from approximately 300 companies and a variety of industries, all well-suited for taking part in our study. We found, based on the 16 028 subjects who provided age data, that the mean age was 41,08 (SD = 10,19; range, 17 - 86). The database includes 11,012 male respondents (67.5%), 5,192 female respondents (31.8%), and 99 respondents (0.6%) who declined to state their gender.

As mentioned previously in chapter 2.3.1, there is great diversity in an individuals' problem solving and creativity as this will depend on factors that vary from person to person. Therefore, individuals in positions that are likely to be in contact with different workers all over the organization were selected to be included in this study. It was imperative to find individuals in leadership positions who would normally interact with multiple levels of hierarchy and multiple functions. Therefore, we approached three individuals in high-level positions that would fit our research study. In-depth semi-structured interviews followed - the first with an Executive Vice President in the oil and gas sector in Norway. Next, with a Chief Learning Officer of a global organization

in science and technology. And finally, with a CTO in a North American organization in the financial sector.

3.3 Data Collection

As both authors were certified to use VIEW as a tool for research, grants us access to the VIEW database and the number of responses we are working with are 16,303 (see chapter 3.2). The objective of the quantitative research was to select individuals across different levels of hierarchy and function.

Before we could conduct the interviews, our means for collecting and handling the data was accepted by the Norwegian Centre for Research Data (NSD). Interviewees were invited by e-mail in which they were asked to be participants in this research study. We informed the participants about the scope of relevance of the research for differing for-profit organizations, touching on different aspects of the cognitive gap regarding hierarchical differences in cognitive style. The participants were invited to take part in online interviews, using the Microsoft Teams platform, as Covid-19 still acted as a hindrance to interviews taking place face-to-face. It was notified in the e-mail that we would like to record the interview if we got the participants consent. This was to ensure that we got all the details, while still being able to carry on attentive conversation. We then transcribed the interviews and sent the transcription to the participant, as to make sure what we had written down correlated with the interviewee's beliefs and way of thinking.

3.4 VIEW: An assessment of Problem Solving Style

The measure of problem-solving style, VIEW, was used to achieve a genuine and reasonable assessment of the variables examined in this research study, and the psychometric properties of VIEW will be described in this chapter (see 2.3.3).

Problem-solving style is defined as consistent individual differences in the ways people prefer to plan and approach challenges or opportunities to gain clarity, produce ideas, and prepare for action (Treffinger & Selby, 2004). The construct of problem solving style is measured by using the VIEW assessment (Selby et al., 2014a). The VIEW assessment is a unique integration of three main constructs related to individual differences: learning style, cognitive style, and psychological type (Treffinger et al.,

2021). The purpose of this section is to give an overview of the psychometric properties and how the assessment works. VIEW is a short on-line questionnaire developed specifically for the purpose of helping individuals and teams efficiently and effectively solve problems, manage change, and promote innovation (Selby et al., 2014a). VIEW is based on the principle that people possess a variety of characteristics or qualities that form a person's character and propel them to think, feel, and behave in certain consistent ways (Selby et al., 2014b). This is very close to how the field of behavioral science defines personality (ibid.). Since there is no universally accepted theory of personality, a variety of different theories has emerged (Feist et al., 2018; Schultz & Schultz, 2009). After a participant has completed VIEW, the person will receive feedback explaining their problem-solving style.

VIEW measures individual preferences and preferred style for creativity, innovation, and change, and can be aggregated at the unit or organizational levels. VIEW is not an acronym, but the name of the model, and measure of three dimensions and six styles for change (Selby et al., 2007 as stated in Lofquist & Isaksen, 2019). Selby, Treffinger and Isaksen (2014) provided an overview of the development and construction of the VIEW assessment, in which the following summary is based upon. VIEW is an online questionnaire with 34 items, that are measured on a seven-point Likert response scale (Likert, 1932), ranging from 1 = "Strongly Agree" to 7 = "Strongly Disagree." Each item in the assessment has the same structure "When I am solving problems, I am a person who prefers…." Two opposing descriptions are then given to the respondent. Respondents indicate in each case on the seven-point Likert scale which of the two opposing descriptions better apply to their preferred approach in problem-solving. Both opposing descriptions are written in a positive way to help reduce response bias due to social desirability. The item scores, each ranging from one to seven, are added up after finishing the assessment to calculate the overall score in each of the three dimensions. The OC dimension consist of 18 items, of which fifteen items belong to the three subscales Novelty, Structure - Authority, and Search Strategy. The three remaining items are used to assess the general aspects of the OC dimension. Furthermore, the scores ranges from 18 to 126 with a theoretical mean of 72, which represents the full range of possible scores for the scale (Treffinger et al., 2021). An individual scoring under the mean indicates a preference for the explorer style, while

scoring over the mean indicates the individual leaning towards the developer style. In each of the three subscales, scores range from 5 to 35, all spanning the entire range of the scale. The theoretical mean is 20. Like the OC dimension, scoring under the mean indicates a preference for the explorer style, while scoring over the mean indicates a preference for the developer style (ibid.). The MP and WD dimensions both consist of eight items, respectively. Scores ranges from 8 to 56, with a theoretical mean of 32, and span the full range of possible scores on the scale. Scoring below the mean indicates a tendency for the external/person style and scoring below the mean indicates a preference for the internal/task style (ibid).

VIEW is based on clear and explicit conceptual foundations and demonstrates ample evidence of reliability and validity (Isaksen & Aerts, 2011), as well as stability over time, a coherent factor structure, sufficient degrees of internal consistency, and correlations with related constructs (summarized in Treffinger et al., 2020). An earlier version of VIEW's technical manual was submitted to the Buros Institute of Mental Measurements for review. Mark A. Staal (2007, p 835 as stated in Treffinger et al., 2020, p. 66) summarized his review by stating:

"*The developers of VIEW have taken a complex and dynamic construct (creative problem solving, problem-solving style) and attempted to dismantle it into three component dimensions (OC, MP, and WD). They have done an admirable job in refining the instrument over time, validating their structural model, and providing adequate validation support*."

Given the psychometric properties and the direct relationship the assessment has to both change and creative problem solving, VIEW was chosen as the measure for this research study. The VIEW assessment is proprietary, meaning its use requires certified training and that the items are not open in any publicly available source. However, as previously stated in 3.3, both authors being certified to use VIEW grants us permission to use the assessment for this research study.

3.5 Data Analysis

This chapter has provided an overview of the research design, sample method, the different approaches for data collection, and the VIEW assessment. The final section

in this chapter presents how the data will be analyzed from both a quantitative and qualitative point of view, as to answer the main research question of our thesis.

3.5.1 Quantitative Data Analysis

The statistic software Statistical Package for the Social Sciences version 27 (SPSS, Nie et al., 2020), was used to calculate descriptive statistics, factor analysis, and to fit multivariable regression models relating the scores of the three dimensions and the subscales. As the first step, we removed all the non-relevant information regarding our research study from the master spreadsheet to structure the data. This included PID, first- and last names, language, occupation, and individual item scores. Four sub-samples were chosen to delimit and make our research more applicable (see section 3.2). Then followed the descriptive statistics, which gave an overview of the distributions of the variables we examined (see section 4.1.2). Furthermore, as participants had varying backgrounds, the Cronbach's alpha and the intraclass correlation coefficient (ICC, see appendix 1) was calculated for all four sub-samples. This was to ensure that the samples in this study had a sufficient degree of interrater agreement in their scores on the VIEW assessment (Koo & Li, 2016; Tavakol & Dennick, 2011; Shrout & Fleiss, 1979). We used the Standard Error of measurement (SEm) to estimate how repeated measures of a person on the same instrument tend to be distributed around his or her "true" score (Bishop, 1996).

In the next step, a factor analysis (see appendix 2) on the dataset containing 16,303 participants was used to identify the common factors that explain the order and structure among measured variables (Newsom, 2017). Factor analytic studies provide valuable evidence regarding the extent to which an instrument actually measures what it purports to measure, and specifically regarding the extent to which items that purport to measure specific dimensions or scales are interrelated in ways that are consistent with those expectations (Treffinger et al., 2021). Exploratory factor analysis (EFA) showed that a six-factor structure best fit the data – the three dimensions and three sub-scales. Confirmatory factor analysis (CFA) forced with a three-factor structure was then conducted to test how well the measured variables represent the number of constructs (ibid.). CFA suggested that the three-factor solution was not the best "fit"

for the current data, as the OC dimension is complex and may involve other factors such as functions or level. Using a Scree plot, we obtained the clearest pattern of factor loadings (see appendix 3). This illustrated graphically the support for using a six-factor solution to interpret VIEW results. The results confirmed the selection of six interpretable factors, and the item structure and loadings compared favorably with the reported results.

An analysis of variance (ANOVA) was conducted to determine the extent of which the effect of an independent variable is a major component (Girden, 1992). ANOVA, in its simplest form, is a general procedure for isolating the sources of variability in a set of measurements (ibid.). Furthermore, a multivariate analysis of variance (MANOVA) was initially run on the SPSS program to investigate the overall impact of the individual differences in the VIEW assessment. A MANOVA is an analysis of variance that has two or more dependent variables, taking the interaction of several dependent variables into account (Fish, 1988; Stevens, 2002).. We used Wilk's Lambda (Λ), as it is noted by Myers et al. (2006) as the "most typically reported in the literature" (p. 399). Wilk's Lambda is an extension of the F-test statistic commonly used in ANOVA, as an indicator to interpret the quality of the MANOVA. This allows us to account for any possible correlation between the variables while computing and comparing their means (Shi, 2019). Given that the comprehensive tests are significant, the next step was to probe the data further as to interpret the nature of the differences between groups. As in the ANOVAs, this involves determining which of the four sub-samples are responsible for the significant test (Bray et al., 1985). Given the exploratory nature of this research study, subsequent ANOVAs were run to look deeper into the impact of the potential differences in individuals that completed the VIEW assessment. By calculating eta-squared coefficients (η^2), that gave an indication of the proportion of the variance in scores on the VIEW assessment that was explained by individual differences of the variance, we could examine the effect sizes of potential differences (Norouzian & Plonsky, 2018).

The multivariate- and analysis of variance assume a normal distribution of examined variables. To ensure that the assumption of homogeneity of covariance is met, Box's M test of equality of covariance was conducted for the MANOVA (Smith et al., 2020). Box's M tests the null hypothesis that the within-group

variance/covariance matrices are equal to the pooled matrix (ibid.). To test if the variance of the dependent variable was homogeneous in all groups of the independent variable, a Levene's test for equality of variances was conducted (Gastwirth et al., 2010). For the significant findings that were evaluated in this study, these tests revealed no anomalies.

3.5.2 Qualitative Data Analysis

Following the quantitative analysis, which provided a broad overview of the potential impact of various types of individual differences, the qualitative analysis will place these findings in a more relatable context and investigate some additional perceptual differences that were not revealed in the quantitative section. It is meant to be a supplement to the quantitative findings, as it helps to give a deeper understanding on how the qualitative results play out in a real-life workplace environment.

Before the interviews took place, we chose the use of Interpretive Phenomenological Analysis (IPA) as our qualitative data analysis method. The aim of IPA is to explore in detail how participants are making sense of their personal and social world, and the main currency for an IPA study is their understanding of particular experiences, events, or states (Smith & Osborn, 2007) The approach is phenomenological, in that it involves detailed examination of the participant's lifeworld. It attempts to explore personal experience and is concerned with an individual's personal perception or account of an object or event, and in this case the relationship between organizational resilience and problem-solving style (ibid.). IPA studies are conducted on small sample sizes. The detailed case-by-case analysis of individual transcripts takes a long time, and the aim of the study is to say something in detail about the perceptions and understandings of this particular group rather than prematurely making more general claims (Smith & Osborn, 2007). The qualitative interviews were divided into three parts. The first part was about organizational

resilience and how important it has been to the participants organization in the previous year. The next part revolved around validating the gap between upper/senior- and middle management, the potential cost, and benefits these have on the organization, and examples of the cognitive gap from the participants personal experience. The final part of the qualitative interview focused on tools and strategies for closing the potential gap, such as the best- and worst practices.

To analyze the textual content of the transcripts from the semi-structured interviews, we utilized the process of open coding. Open Coding includes labeling concepts, and developing categories based on their properties and dimensions (Khandkar, 2014). In the analysis phase, when going through the qualitative data, we marked important sections to add a descriptive name or "code" to it (ibid.). Next, we looked across the data to find potential corresponding answers and solutions to the questions we asked. A content analysis allowed us to determine the presence of certain words, and make sense of the (often unstructured) content of messages (Gheyle & Jacobs, 2017).

After this final chapter on the methodology of the research thesis introduced the approaches for the quantitative and qualitative analysis, the next chapter will focus on the results of said analyses.

4 Results

This chapter centers around analyzing the findings from the quantitative- and qualitative data. The quantitative results give a comprehensive summary of the potential impact contradictory problem-solving styles in the hierarchy has on organizational resilience. Next, to add a deeper understanding on the matter, we explore the qualitative findings by investigating, analyzing, and interpreting personal experiences on organizational resilience and problem-solving style. Finally, we compare the quantitative and qualitative findings to answer the leading research question of the study.

4.1 Quantitative results

The quantitative results are the focus in the first half of this chapter. A short summary of the intended sample is followed by descriptive results of the differences found in the hierarchy. Furthermore, the impact of these differences is examined by looking at correlations and the overall MANOVA. By using multiple one-on-one ANOVAS, we explain the specific significance across the different levels. We conclude this chapter by summarizing the most significant quantitative findings.

4.1.1 Sample

A total number of 16.303 people who has completed the VIEW assessment participated in this research study. These participants have backgrounds in a variety of different for-profit organizations and positions, such as senior/upper management, middle management, supervisor, and clerical/other staff. The database includes 11,012 male respondents (67.5%), 5,192 female respondents (31.8%), and 99 respondents (0.6%) who declined to state their gender (see appendix 9). Of the 16,028 participants who provided age data, the mean age was 41,08 with a standard deviation of 10,19 years, ranging from 17 to 86 (see appendix 10). The short summary of the sample's composition is now followed by a comprehensive look at descriptive results.

4.1.2 Descriptive Statistics

This part of the chapter provides an overview of the distribution of the descriptive results, scale reliability as well as inter-correlations among the differences between organizational/business level.

Tables 1 through 4 below, summarizes several important descriptive statistics for each of VIEW's three dimensions: Orientation to Change (OC), Manner of Processing (MP), Ways of Deciding (WD), and the three subscales of OC, Novelty (NV), Structure and Authority (SA), and Search Strategy (SS), based on 16,303 respondents. Means, standard deviations, range, skewness, Cronbach's alpha (α), the Standard Error of measurement (SEm) and the ICC for the quantitative research are all presented in Table 1. The different dimensions and subscales all indicate acceptable reliability estimates, with α values ranging from .842 to .881. These are acceptable values of internal

reliability, as they are all above .8 (Tavakol & Dennick, 2011). Just about the full range of possible scores was obtained for all dimensions and sub-samples, showing that the samples demonstrate diversity. The observed means vary across all four sub-samples, primarily between senior/upper management and clerical/other staff, giving grounds for notable differences in problem-solving style. Furthermore, all distributions are slightly skewed, indicating that they are not completely symmetric. A deviation with a magnitude of less than one concerning skewness is regarded as acceptable to assume an approximately normal distribution (West et al., 1995). The ICC values for OC, MP, WD and NV indicate that there is good reliability and variability among the samples, all scoring between .75 and .90 (Koo & Li, 2016). The ICC values for the SA and SS sub-scale indicate a moderate reliability, as they score between .50 and .75.

The distribution of scores is relatively the same and does not significantly deviate from the overall VIEW database. Furthermore, there is an interesting pattern across all dimensions and sub-scales when comparing the descriptive statistics we found, to the descriptive statistics of the overall database. The senior/upper management sample and clerical/other staff always score on the opposite side of the means in the overall database.

4.1.2.1 Distribution of scores from Orientation to Change (OC) and the three sub-scales

In the OC dimension, we see significant differences as we move further down the hierarchy. Table 1 on the following page, shows that the senior/upper management group had an observed mean of 69.45, slightly lower that the theoretical mean of 72. The SEm for the senior/upper management group is 5.520. Thus, given an observed score, there are two out of three (68.26%) chances that the individual's true score would fall between 63.93 and 74.97 (Bishop, 1996). The clerical/other staff group had an observed mean of 79.00, considerably higher than the theoretical mean. The SEm for the clerical/other staff is 5.794. Thus, given an observed score, there is a 68.26% probability that the person's true score would be 79.00 ±5.794. This indicates that senior/upper management prefer the explorer style, while clerical/other staff preferred the developer style when managing change.

Table 1: Descriptive statistics - Orientation to Change

Level/Job Role	Senior/Upper Management	Middle Management	Supervisor	Clerical/Other Staff
N	6029	7459	1345	1470
Mean	69,45	74,14	76,40	79,00
Std. Deviation	15,08	14,84	15,16	15,09
Range	18 - 126	18 - 122	26 - 117	21 - 124
Skewness	-0,119	-0,150	-0,218	-0,294
Cronbachs Alpha	0,866	0,862	0,849	0,853
SEM	5,520	5,508	5,891	5,794
ICC	0,866	0,866	0,863	0,863

In the NV and SA sub-scales we see significant differences across the observed means as we look at level, while SS shows little differences. In the NV sub-scale, the senior/upper management group had an observed mean of 17.17, slightly lower that the theoretical mean of 20. The clerical/other staff group had an observed mean of 20.83, slightly higher than the theoretical mean. In the SA sub-scale, we see similar differences in the means. An observed mean of 17.75 for the senior/upper management group and 21.15 for the clerical/other staff group. Again, showing a preference for explorer style in higher levels, while a preference for developer style in lower levels. On the contrary, the SS sub-scale shows little to no differences across the means (22.37 versus 22.98), and the SEm is close as well (2.013 versus 1.793). These results indicate that the differences we see in the OC dimension mainly comes from the NV and SA sub-scales.

Table 2: Descriptive statistics - Sub-scales

Novelty (NV)				
Level/Job Role	Senior/Upper Management	Middle Management	Supervisor	Clerical/Other Staff
N	6029	7459	1345	1470
Mean	17,17	18,65	19,84	20,83
Std. Deviation	5,38	5,38	5,38	5,37
Range	5 - 35	5 - 35	5 - 33	5 - 35
Skewness	0,245	0,097	-0,098	-0,148
Cronbach's Alpha	0,863	0,856	0,846	0,850
SEM	1,987	2,044	2,112	2,079
ICC	0,816	0,811	0,788	0,777

Structure - Authority (SA)				
Level/Job Role	Senior/Upper Management	Middle Management	Supervisor	Clerical/Other Staff
N	6029	7459	1345	1470
Mean	17,75	19,20	19,76	21,15
Std. Deviation	4,94	5,01	5,22	5,22
Range	5 - 35	5 - 35	5 - 35	5 - 35
Skewness	0,175	0,079	0,069	-0,148
Cronbach's Alpha	0,861	0,857	0,843	0,847
SEM	1,840	1,894	2,069	2,043
ICC	0,650	0,659	0,659	0,665
Search Strategy (SS)				
Level/Job Role	Senior/Upper Management	Middle Management	Supervisor	Clerical/Other Staff
N	6029	7459	1345	1470
Mean	22,37	23,25	23,31	22,98
Std. Deviation	5,43	5,13	5,37	5,19
Range	5 - 35	5 - 35	5 - 35	5 - 35
Skewness	-0,431	-0,530	-0,520	-0,395
Cronbach's Alpha	0,862	0,859	0,846	0,881
SEM	2,013	1,928	2,111	1,793
ICC	0,730	0,722	0,745	0,710

4.1.2.2 Distribution of scores from Manner of Processing (MP)

In the MP dimension, like OC, there is significant differences as we move further down the hierarchy. The senior/upper management group had an observed mean of 26.58, significantly lower that the theoretical mean of 32. The SEm for the senior/upper management group is 3.154. Therefore, given an observed score, there is a 68.26% probability that the person's true score would be that score ±3.154. The clerical/other staff group had an observed mean of 30.90, also slightly lower than the theoretical mean. The SEm for the clerical/other staff is 3.517. Given an observed score, there is a 68.26% probability that the person's true score would be that score ±3.157. This indicates that individuals in a higher-level position prefer to be more external than people in lower-level positions when processing information and interacting with others when solving problems or managing change.

Table 3: Descriptive statistics – Manner of Processing

Level/Job Role	Senior/Upper Management	Middle Management	Supervisor	Clerical/Other Staff
N	6029	7459	1345	1470
Mean	26,58	27,64	29,97	30,90
Std. Deviation	8,42	8,36	8,98	8,99
Range	8 - 56	8 - 56	8 - 56	8 - 56
Skewness	0,393	0,324	0,228	0,150
Cronbach's Alpha	0,860	0,862	0,842	0,847
SEM	3,154	3,103	3,567	3,517
ICC	0,850	0,848	0,853	0,857

4.1.2.3 Distribution of scores from Ways of Deciding (WD)

In contrast to the two other dimensions, we see less, although some, significant differences across the means in the WD dimension. The senior/upper management group had an observed mean of 38.04, considerably higher than the theoretical mean of 32. The SEm for the senior/upper management group is 2.781. Given an observed score, there are two out of three (68.26%) chances that the individual's true score would fall between 40.82 and 35.26 (Bishop, 1996). The clerical/other staff group had an observed mean of 34.94, also higher than the theoretical mean. The SEm for the clerical/other staff is 3.270. Thus, given an observed score, there is a 68.26% probability that the person's true score would be 34,94 ± 3.270. These results indicate that senior/upper management staff have a stronger preference for the task style than clerical/other staff, when making decisions.

Table 4: Descriptive statistics – Ways of Deciding

Level/Job Role	Senior/Upper Management	Middle Management	Supervisor	Clerical/Other Staff
N	6029	7459	1345	1470
Mean	38,04	37,84	37,49	34,94
Std. Deviation	7,43	7,36	7,69	8,34
Range	9 - 56	9 - 56	11 - 56	8 - 56
Skewness	-0,390	-0,313	-0,189	-0,228
Cronbach's Alpha	0,860	0,856	0,843	0,846
SEM	2,781	2,792	3,049	3,270
ICC	0,817	0,814	0,812	0,836

4.1.3 Inter-Item Correlation between VIEW participants

In Table 5, we see an interesting significant negative inter-item correlation between the WD dimension and gender,-0.201, (Piedmont, 2014) suggesting it was more likely that female participants preferred to focus on the person when making decisions. Additionally, we see a positive correlation between WD and the SS sub-scale, indicating that these participants also had a preference for the developer style regarding their search strategy. The OC dimension and the sub-scales all have highly positive correlations, emphasizing that the three additional sub-scales all make up an individual's Orientation to Change style (Selby et al., 2021). Our findings concerning VIEW and its dimensions seems to be consistent with the findings in VIEW's technical manual, that all correlations are significant at the 0.01 level (Treffinger et al., 2021).

Table 5: Inter-Item Correlation (N=16.303)

	Change	Process	Deciding	NV	SA	SS	Age	Gender
Change	1,00	0,13	0,11	**0,84**	**0,79**	**0,76**	-0,08	0,09
Process		1,00	0,13	**0,21**	0,04	0,06	-0,03	-0,02
Deciding			1,00	0,02	0,03	**0,21**	0,03	**-0,20**
NV				1,00	**0,52**	**0,49**	-0,04	0,05
SA					1,00	**0,42**	-0,11	0,11
SS						1,00	-0,02	0,03
Age							1,00	-0,14
Gender								1,00

4.1.3.1 Inter-Item Correlation between Senior/Upper management and Clerical/Other Staff

To research the most notable differences we have found from the descriptive statistics, an inter-item correlation analysis between Senior/Upper management and Clerical/Other Staff was ran.

As seen in Table 6, there is a significant correlation between Level/Job Role and the OC dimension (.24) and the two subscales NV (.26) and SA (.26). This emphasizes the pattern we have previously found in the descriptive statistics, suggesting that individuals higher up in the hierarchy have a stronger preference for the explorer style in how they prefer to manage change. We see little correlation between level and the SS sub-scale, as seen in the section 4.1.2.1, indicating no noteworthy differences between levels in how they prefer to engage in search strategy. Furthermore, we see a

clear correlation between level and the MP dimension, highlighting the trend found in section 4.1.2.2. Senior/upper management have preference for the external style, while clerical/other staff prefer the internal style in how they process information and when they choose to interact with others. Even though we do not see a strong link between level and the WD dimension, there is a small negative correlation (-.16), giving reason to believe that senior/upper management has a stronger preference for the task-oriented style than clerical/other staff. We also see a strong negative correlation between level and age, and a strong positive correlation in level and gender. This indicates that higher-level individuals are more often older males.

Table 6: Inter-Item Correlation - Senior/Upper management and Clerical/Other Staff

	Change	Process	Deciding	NV	SA	SS	Age	Gender	Level/Job Role
Change	1,00	0,15	0,10	**0,84**	**0,80**	**0,76**	-0,09	0,10	**0,24**
Process		1,00	0,10	0,22	0,06	0,07	-0,05	0,02	**0,20**
Deciding			1,00	0,01	0,02	**0,22**	0,04	**-0,20**	-0,16
NV				1,00	**0,53**	**0,48**	-0,06	0,08	**0,26**
SA					1,00	0,43	-0,13	0,13	**0,26**
SS						1,00	-0,03	0,03	0,04
Age							1,00	-0,17	**-0,33**
Gender								1,00	**0,28**
Level/Job Role									1

The inter-item correlational analysis was done as a first step to check for individual differences between different levels in the organization. In the next session, an overall multiple analysis of variance (MANOVA) was run in order to gain a deeper understanding of the impact of individual differences had on problem-solving style in the hierarchy.

4.1.4 Multiple Analysis of Variance (MANOVA)

A multiple analysis of variance (MANOVA) was conducted to reduce the possibility for type one error and showed that there were significant differences between various levels and problem-solving style (*Wilks' Λ* = .921, *F*= 151.784, *p*<.0001) (Smith et al., 2020). The results of the MANOVA can be seen in appendix 4.

We used the subset of data from the VIEW assessment to test the following null hypothesis:

H0 = There is no significant gap in how individuals within varying levels of the hierarchy prefer to manage change and how they prefer to process information when solving problems.

The dataset includes 16,303 individuals with 6,029 (37.0%) of them in Senior/Upper Management, 7,459 (45.7%) in Middle Management, 1,345 (8.3%) in Supervisor positions, and 1,470 (9.0%) as Clerical/Other Staff. The Wilks' lambda for these data is calculated to be 0.921 with an associated level of statistical significance, or p-value, of <0,0001, leading us to reject the null hypothesis of no difference between individuals in different hierarchical level.

After the MANOVA showed us that there were actual significant differences between the four targeted sub-samples, we ran several additional ANOVAs to find an explanation for the significance across varying levels.

4.1.5 Analysis of Variance (ANOVA)

Table 7, Overall ANOVA's, shows the trend previously found with the correlations. The most significant differences between different hierarchical levels are found in the Orientation to Change dimension and its subsequent sub-scales Novelty and Structure - Authority. Partial eta squared η_p^2 (.01 indicates a small effect, .06 and above is moderate effect size, and .12 is a strong effect) is effect size that expresses the amount of variance accounted for by one or more independent variables and is generally used in conjunction with ANOVA (Norouzian & Plonsky, 2018). In both OC (.04) and the sub-scales NV (.042) and SA (.04), η_p^2 show a close-to moderate effect size, indicating significant differences that could explain differences in hierarchical level. The results suggest that individuals in a higher-level position perceived a significantly higher preference for the explorer style in OC, NV, and SA than individuals in lower-level positions. We also see small effect sizes in MP (.024) and WD (.013), giving sufficient evidence that there are, in fact, significant differences in levels, and in how these individuals prefer to process information and what is focused on when making decisions. All these factors may clarify if and why there is a cognitive gap between differing hierarchical levels.

Table 7 – Overall ANOVA's

Dimension	Degrees of freedom	F-value	Significance (P-value)	Partial Eta Squared ($\eta_p 2$)
Orientation to Change	3	228,931	< .001	0,04043
Novelty	3	242,202	< .001	0,04268
Structure - Authority	3	226,213	< .001	0,03997
Search Strategy	3	34,182	< .001	0,00625
Manner of Processing	3	136,391	< .001	0,02449
Ways of Deciding	3	71,036	< .001	0,01291

4.1.5.1 Independent ANOVAs to explain difference between varying levels

To explain specific differences across the levels, additional one-on-one ANOVAs were conducted. In Table 8, the differences between individuals in Senior/Upper Management and Clerical/Other staff are investigated. We see large F-values across the board (except SS), meaning that the variation among group means is more than we could expect to see by chance (Zar, 2010). Again, OC and the sub-scales NV and SA clearly stands out. The η_p^2 are giving scores above moderate, indicating that this is where the common denominators of differences are found. Furthermore, MP and WD also give a closer to moderate η_p^2 value. We see the exact same tendencies between Senior/Upper Management and Middle Management (see appendix 6), and with Senior/Upper Management and Supervisors (see appendix 7), only on a smaller scale. This could imply that the further up an individual is in the hierarchy, a stronger preference for the explorer-, external-, and task-style is more common.

Table 8 – ANOVA Senior/Upper Management vs Clerical/Other Staff

		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Change	Between Groups	107845,920	1	107845,920	474,279	0,000	0,05950
	Within Groups	1704736,411	7497	227,389			
	Total	1812582,331	7498				
Process	Between Groups	22008,127	1	22008,127	302,409	0,000	0,03877
	Within Groups	545601,798	7497	72,776			
	Total	567609,925	7498				
Deciding	Between Groups	11380,025	1	11380,025	196,039	0,000	0,02548
	Within Groups	435199,563	7497	58,050			
	Total	446579,588	7498				
NV	Between Groups	15810,125	1	15810,125	547,356	0,000	0,06804
	Within Groups	216547,529	7497	28,885			
	Total	232357,654	7498				
SA	Between Groups	13681,419	1	13681,419	548,582	0,000	0,06818
	Within Groups	186972,382	7497	24,940			
	Total	200653,801	7498				
SS	Between Groups	435,937	1	435,937	15,053	0,000	0,00200
	Within Groups	217115,949	7497	28,960			
	Total	217551,886	7498				

4.1.6 Summary of Quantitative Results

The different findings in the quantitative results revealed that there were clear and statistically significant differences in the formal hierarchy, most notably between Senior/Upper Management and Clerical/Other Staff. Most of the differences can be seen linked to the OC dimension together with the NV and SA sub-scale. MP and WD also had an impact on differences, although less significant. The SS sub-scale did not demonstrate any impact regarding hierarchy. These results are clear, looking at the correlations (Table 6), and the one-on-one ANOVA (Table 8). Therefore, we can assume that the quantitative results tend to support the existence of a cognitive gap.

In the second part of this chapter, the results of the qualitative analysis will be presented to see how the cognitive gap between levels can be seen in a real-life workplace setting.

4.2 Qualitative results

The interviews were designed to answer three major questions: (1) Does the gap exist according to the interviewees experience? (2) Are there costs or challenges associated with the gap? (3) Do they have any practical strategies for closing the gap and which are the most effective? Themes that emerged across interviews related to these questions will be presented in that order. Moreover, we will present additional themes that we found interesting and relevant to what this thesis tries to investigate.

4.2.1 Do they see the gap?

4.2.1.1 Clear evidence of the gap

We found clear evidence of cognitive gap between upper management and clerical staff across all interviews. All respondents confirmed that they had experienced hierarchical differences in problem-solving style when asked directly.

"Yes. I have for example worked a lot with recruiting and tools where you are categorizing people, and some of the categorizations are based on decision-style, introvert-extrovert, so I have definitely seen a lot of that" – Interviewee 1.

Furthermore, we found several examples of situations where the gap became evident through the interviewees' stories. For instance, one of the respondents described how their employees were left coping when the COVID-19 pandemic forced them to move from a highly structured work environment, where they could raise their hand at any time and ask for help, to home offices. Similarly, one of the other interviewees described how a change in office layout, going from traditional offices to open space seating, made a number of subordinates raise their concerns. Eventually, this resulted in further adjustments. Both situations exemplify how changes forced clerical staff to deviate from their preferences, making the cognitive gap evident.

4.2.1.2 Support for the quantitative results

The interviewees differed in how they experienced problem-solving style preferences for upper management and clerical staff. When presented with our quantitative results, indicating that upper management have preference for an Explorer, External and Task style and clerical staff have preference for a Developer, Internal and Person style, the answers differed. One of them agreed completely. When confronted with our findings and asked whether she saw these differences in reality she answered:

"*Can I put exclamation point after that*?", followed by "*Yeah, exclamation point for sure*!" – Interviewee 2.

Another interviewee said that he agreed with the differences in MP and WD, however, in his experience upper management were characterized by a Developer style, while clerical staff, on the other hand, were Explorers.

"Now in my world, where I start is, as people became officers of the company. Their bonuses were massive. I mean millions of dollars. Yeah. I found they didn´t want to put too much of an avoidance on getting their 2 million [dollar] bonus. Yeah. However, younger employees brand new to the company, they´ll try anything" – Interviewee 3.

In other words, he felt that the role possessed by an individual influenced their behavior, making upper management more risk averse, translating to a behavior more aligned with a Developer style. Similarly, the last interviewee agreed that upper management behaved in ways aligned with the styles we presented, however, she ascribed this to the role and not preference. Though, she added:

"And then, perhaps, people who are drawn to these roles are people who thinks like this" – Interviewee 1.

Overall, across all interviews, we found convincing support for our quantitative results, suggesting that these differenced are to be found in organizations.

4.2.1.3 Leadership role is key to closing the gap

Across all interviews the leadership role was brought up several times. Because of the power and responsibility that comes with the leadership role leaders play an essential part in closing the gap. They have the most influence when problem-solving processes are designed and the authority to make final decisions. The importance of having leaders that are able to look past their own preference and their ways of doing things, and value different approaches, were pointed out across interviews.

"*Half the time with leaders, as they point their fingers around, I asked them; why don't you look in the mirror and see whether or not you are the problem?*" – Interviewee 3.

All interviewees felt that leaders should strive to adjust their subordinates' work situation according to their preferences, within reasonable boundaries, to make room for cognitive diversity. One of them also put special emphasize on how leaders act as role models for their subordinates and should act accordingly. If the organization are to be resilient its leaders should showcase resilient behavior. If they want their employees to thrive in a diverse environment than the leader must show that he or she values differences and encourages it.

That is very different than the type of flexibility that we're talking about as an employer today and going forward, the type of flexibility is a very personalized, right? – Interviewee 2.

4.2.1.4 Cognitive gap leads to tension

We found several examples of situations where there was tension as a result of the cognitive gap. Supervisors that were used to having their subordinates within range of vision suddenly found themselves worrying whether they were working or playing videogames when home office became mandatory. Subordinates who were unhappy with their leader for ignoring their ideas and suggestions, and instead choose a direction that only he or she agreed with. Employees who complained about the new office

layout because they felt it was too open and too loud. These are all examples situations that were disruptive for their organizations, and that originated from tension.

"*That people are different, that I have seen a lot of. And that we struggle to be around or deal with people that have a preference that is different to our own*" – Interviewee 1.

4.2.2 Cost and challenges associated with the gap

4.2.2.1 Increased turnover

When we asked whether the interviewees saw any costs or challenges associated with the gap turnover was mentioned by two of them. They made it clear that they had experienced how the gap can make employees leave, accumulating substantial HR ramifications and financial liabilities for the organization. Additionally, the third interviewee mentioned how cognitive difference can make employees "break way", which can be interpreted as them leaving, or at least increase the likelihood of them leaving.

"The cost has been turnover. Our turnover in our production employees has spiked to an all-time high and it continues to remain there even though we are offering fully remote work, fully remote training, right. We are at over a hundred percent. I'm embarrassed to tell you this because I take a lot of pride in our organization, and right now, as we're sitting on this call, I have over a hundred percent turnover in my frontline employees. And that has never occurred before. So, there is a huge cost in that. It is in the millions of dollars annually for [company name]" – Interviewee 2.

4.2.2.2 Diminishing engagement

Another challenge associated with the gap that emerged from the interviews were connected to employees' engagement. If cognitive gaps are not managed sufficiently, and the only way to close it is by consistent coping, it can make the employees more reserved, according to the respondents. If employees lose commitment and engagement it will damage the organization, and the costs are potentially huge. Thus, cognitive gap can potentially hinder organizations from effectively utilizing their human resources, decreasing innovation and productivity.

"What does an organization lose when employees don´t want to share their best ideas because of either fear of failure, impact of psychological safety from a manger that is going to roll their eyes, and beat them up, and say, that was a stupid idea?" – Interviewee 3.

4.2.3 Practical strategies for closing the gap

4.2.3.1 Equipping leaders with a sufficient toolbox to manage the gap

A majority of approaches to closing the gap that were mentioned in the interviews evolved around leaders and how to enable them to be flexible and agile. One interviewee said that his company gave mandatory training programs for all managers to help them become resilient leaders. Another told us that her company just recently accelerated a program called Organizational Change Management where leaders are given tools for effective change management. Before they had around 20 certified change leaders in the company, which consists of thousands of employees. With the accelerated rollout of the initiative alle leaders will get certified, embedding change leaders in every business unit to increase flexibility and adaptability. The last interviewee reported of an unstructured and practical approach to closing the gap. As a fast-moving organization where changes are implemented continuously issues will arise as a result of cognitive gap. Their approach is to judge these problems individually and try to work out a solution that will fit the employee, if it does not affect quality negatively. Once again, the ability to be successful in closing the gap comes down to the leaders and their ability to be flexible and adjustable when approaching their subordinates. Moreover, it was suggested that leaders should be aware of their own preferences, along with their subordinates´, and that training focused on problem-solving preferences together with the intact team would be an effective way of achieving this.

"I think that leadership behavior through the crisis is like the secret ingredient" – Interviewee 2.

4.2.3.2 Two-way-communication

As we have mentioned alle interviewees points to the leadership role as essential for closing the gap and how flexibility and adjustability is critical to a leader's skillset.

This implies that they are reliant on getting input from employees on their preferences, concerns, and wishes, in order to take advantage of their skillset. That is also why two-way-communication was mentioned across interviews to be an effective approach to managing the gap. One organization implemented pulse surveys to be taken every 90 days, in addition to their annual engagement survey, to foster a more frequent dialogue. Counselling sessions with mental health counselors was also mentioned as an initiative that was used to give employees an arena to talk about how they *really* felt, and a chance for the organization to go beyond superficial interaction and really get to the bottom of how their employees were doing and understand their needs. In one organization leaders were instructed to have check-in meetings with their employees, one-on-one and in plenary, where they did not talk about business. Instead, they asked how they were doing, and how their family were doing, showing a genuine interest in the employees´ wellbeing. In addition to these formal approaches the informal conversation was mentioned as important. Those brief talks with the coffee machine or other social encounters were deemed valuable. In general, all interviewees felt that having an open dialogue with employees is important when managing the gap.

"The two-way-communication with the employees has been absolutely critical during this time" – Interviewee 2.

4.2.3.3 Maintaining a common vision

It was a reoccurring theme throughout the interviews that having a sense of common vision is important. If an organization wants their employees to showcase resilient behavior, being flexible and having the ability to adjust, there must be common consensus of what that involves, specifically. It was also mentioned how it is particularly influential when senior management, like the CEO, are consistent in their approach to cognitive diversity and shows commitment. This creates a better foundation for the success of other measures. The signaling effect can be reassuring for the employees as it shows how important this is for the organization and that their preferences and needs are taken seriously. Furthermore, the employees must be aligned with the organization´s vision to make sure that everyone moves in the same direction.

"When I was the chief learning officer and we were embarking on some kind of leadership initiative, right. I would go up to people and say, here's a blank sheet of

paper. Can you write down for me; what do you think is the organization's definition of the word resiliency? And I would ask 10 people to do that throughout the week. And then I would review their answers and I'd get really scared because all 10 were dramatically different. And it made me realize for me to be effective as the chief learning officer, I have to have everyone have a commonly agreed upon definition of what terms even mean" – Interviewee 3.

4.2.4 Additional themes that emerged across interviews

4.2.4.1 Acknowledgment of the need for diversity

There was clear consensus among the interviewees about the overall importance of diversity. They all acknowledged the value of having differences in their human resource pool, as they can potentially complement each other and provide broader perspective. In addition to acknowledging it, the interviewees presented us with examples of direct measures the organizations had initiated to manage and support diversity, which shows that this is something they take seriously. One of the organizations choose to accelerate their diversity, equity and inclusion efforts during the pandemic, demonstrating how diversity remained a priority even in extremely challenging times.

"I used to say it as an expression when the team was all the same people. Team of same is team of lame" – Interviewee 3.

However, they were also aware of the challenges that follows with diversity. One of the interviewees referred to the bias that makes us prefer those who we are similar to and explained how it sometimes can be difficult to relate to such differences. Eventually, it can result in arguments or disagreements.

"You have to live in that zone of discomfort, because without that discomfort, you're not really addressing the issues…" – Interviewee 2.

4.2.4.2 Steering through the pandemic

While organizations around the world have struggled to keep their head above water through the pandemic, one of the interviewees told us how her organization had a

double-digit increase in revenue in the fiscal year 2020. Clearly, the organization had demonstrated organizational resilience.

«I think we would have survived without the level of resiliency that we have, but I do not believe that we would have thrived, and we have thrived through the pandemic, which is almost shocking» - Interviewee 2.

To learn how they achieved this was intriguing. She told us that they had reinvented the role they have as an employer and taken an unapologetic approach to holistic wellbeing of their employees. Essentially, the organization took the role as a social services provider, going above and beyond to meet the needs of their employees. They provided extra financial support, including unexpected care bonuses, childcare stipends, covering internet costs and office furniture, and paid extra if you were required to come into the office. In coalition with other initiatives that has been described in earlier paragraphs it resulted in a substantial increase in their engagement scores. To get a significant increase in engagement in a period where people have been more isolated than ever is astonishing. Thus, we wanted to know if she thought that their ability to adapt to their employee's preferences in how they would like to work and approach problem-solving could be connected to their success in which she answered:

"Absolutely. Yeah. I don't even have to hesitate to answer that question affirmatively. Yes" – Interviewee 2

5 Discussion

When we first embarked on the final chapter of our master's degree, a process that resulted in this thesis, we were still quite unsure what we wanted to research. We started out broadly with a common interest in how social interactions across levels in an organization could impact internal cooperation and competition. After further inquiry our interest area was refined, and our focus turned to cognitive diversity related to cognitive style. This coincided with our introduction to organizational resilience, a research area that immediately caught our interest. To understand what enables some organizations to resist and respond to unexpected situations, go beyond restoration, and

position themselves to move forward, while others dissolve under pressure, should be characterized as one of the most critical organizational insights, in our opinion. Thus, we decided to examine the linkages between organizational resilience and cognitive diversity. Previous research has given preliminary indications that diversity can play an important role in enhancing organizational resilience, however, the connection between the two constructs remains largely unexplored (Duchek et al., 2020). By focusing on hierarchical differences in cognitive style, as opposed to occupational differences, and the effects on organizational resilience, this thesis aims to narrow a research gap, and provide practical insights for organizational practitioners. This was all initiated prior to the COVID-19 pandemic, which has challenged the global population in unprecedented ways and left lasting impacts. It is clear that as a result of the pandemic digital transformation has been accelerated and the world of work has changed permanently. Moreover, from an organizational resilience perspective, the pandemic has only reinforced the importance of further investigating how organizational resilience can be developed. This is only strengthened by our personal perspective, having lived through the pandemic and being forced to adjust, and experienced how vital resilience is.

When we advocate the importance of organizational resilience it is with a broader perspective in mind. Organizational resilience brings positive effects to much more than the organizations themselves. Organizations are the cornerstone of communities, which is why resilient organizations are thought to contribute significantly to resilient communities (McManus et al., 2008). As private citizens we are heavily dependent on organizations, and their reliability. We interact with organizations in almost everything we do, as they provide us with their products and services. Organizations contribute with employment and cash-flow to communities. Essentially, they are the heart of the economy, and the pandemic have showed how important it is for governments and communities to keep that heartbeat beating. In Norway, economic measures in response to COVID-19 were estimated to weaken the budget balance in 2020 by NOK 245 billion (Ministry of Finance, 2020). A majority of these measures were aimed at helping organizations, to stimulate the economic situation. Consequently, organizational resilience affects us all, directly or indirectly. Going back to our definition, organizational resilience is needed when dealing with unexpected situations.

Subsequently, organizational resilience should not be considered to be a crisis or emergency management issue, which makes for an important point. In an environment where organizational complexity is increasing, driven by radical technological advancements, organizations must be prepared to operate in times of adversity. That is why we believe it is imperative that resilience is incorporated into day-to-day operations.

An important aspect of organizational resilience is being able to cooperate and collaborate across levels in an organization. Therefore, we were interested in finding out whether there exists a cognitive gap in problem-solving style across hierarchical levels that can impact this ability. We approached this question in two ways. Firstly, we did quantitative analysis to inquire, and found that there were differences across all levels, with the most profound differences showing from the very top to the very bottom of the organization. Diversity have been described as a double-edged sword, presenting both a challenge and an opportunity, and cognitive diversity is no exception from that. In other words, how this cognitive gap is managed will be key to whether the organization can reap the rewards of having a cognitive diverse talent pool or struggle because of it. Secondly, we were interested in seeing beyond the quantitative findings to see if we could find support in the real-world lives of people who work across levels of hierarchy and across functions. Supplementing our quantitative findings with interviews allowed us to get a deeper understanding of the dynamics related to cognitive diversity in problem-solving style.

The following chapter will present the interpretation of the key quantitative and qualitative results, implications for practice, and limitations and implications for future research.

5.1 Interpretation of results.

This part will focus on drawing a connection between the main findings back to the theoretical foundations of the constructs examined in this research study. The discussion will start with the observed impact VIEW's three dimensions and three sub-scales had on the four sub-samples and continue with the observed differences found in the results.

5.1.1 OC: Preference for managing change

Of the main quantitative findings in our study, the OC dimension and NV and SA sub-scale had the most pronounced impact on different hierarchical levels, while the SS sub-scale showed little impact. The overall MANOVA revealed that there was a significant gap in how individuals within varying levels of the hierarchy prefer to manage change and how they prefer to process information when solving problems. The subsequent ANOVAs suggested that the most substantial impact was between senior/upper management and clerical/other staff, and it is these differences that we want to highlight. The results of this study implied that individuals higher up in the hierarchy have a stronger preference for the explorer style in how they prefer to manage change. A possible explanation to higher-leveled individuals preference for the explorer style could be that explorers are generally good at seeing unusual possibilities, patterns, and relationships, which may be difficult for others to understand or embrace initially (Treffinger & Selby, 2004). Different situations in the workplace often generate recognizable cues, and being able to see unusual possibilities and patterns could trigger typical action responses that might affect the situation (Klein, 2007). The definition of an explorer is "*a person who travels in search of geographical or scientific information." (*Merriam-Webster). The results in this thesis implies that senior/upper management will more often find external plans, procedures, and structures confining and limiting to their imagination and energy. They tend to "plunge" into a situation, feed on risk and uncertainty, and improvise their planning as the situation unfolds, which could be important factors when seeking promotions (Treffinger & Selby, 2004). As the role of being in the senior/upper management involves further responsibility, and additional, more diverse tasks, there is a possibility that the preference for the explorer style might be a result of the position itself. On the other hand, our findings showed that clerical/other staff had a stronger preference for the developer style. In ordinary use, a "developer" is an individual who brings tasks (which might be ideas, problem statements, action plans, products, or programs) to fulfillment, who begins with the basic elements or ingredients and then organizes, synthesizes, refines, and enhances them, forming or shaping them into a more complete, functional, useful condition or outcome (Treffinger & Selby, 2004). Furthermore, there was some qualitative support that there was evidence of these differences in practice. One

interviewee stated that there was a preference for the explorer, external, and task style was found to be more common among senior/upper management. Another interviewee agreed with the differences in MP and WD, but his experience was that higher leveled individuals were often characterized by the developer style. Clerical/other staff was more in explorer category, as they would try anything to land a promotion. Further research should investigate whether individuals in differing managerial levels are in that position because of their preferred problem-solving style, or that the position itself influences individuals to get these preferences for style.

5.1.1.1 Preferences for dealing with novelty and originality

In terms of the NV sub-scale, the results from the different analyses in the study indicated that individuals in higher-level positions, as explorers, preferred to find or construct options that are highly unusual or original. They find new, uncharted, directions appealing, while seeking to generate many, unique, and varied ideas (Selby et al., 2014b). Individuals in lower-level positions, as developers, preferred to identify or construct improvements based on precedent or experience, working carefully to improve on the familiar. They enjoy identifying "just enough" new ideas to meet the challenge (ibid.).

5.1.1.2 Preferences for and reactions to structure and authority

Regarding the SA sub-scale, the results showed that senior/upper management prefer self-derived efforts, working in their own way to enable structure to emerge. They prefer to hold authority at a distance, limiting imposed control while preferring autonomy in their approach – defining their own approach and assuming approval (Selby et al., 2014b). If they experience an increase in structure and authority, they will see it as constrictive. clerical/other staff seek the guidance of existing structure, with authority close at hand offering guidance and direction – to ensure that what they produce will fit into the existing boundaries. They find the presence of Structure and Authority enabling as they work to meet a challenge. Developers have a desire for both structure and authority and if it is absent the gap may be a strong factor in their performance (ibid.).

5.1.1.3 Preferred strategy for searching for data, options, and understanding

The results in this research study indicated that the SS sub-scale had little impact on hierarchical level, as the mean scores were roughly the same (22,37 versus 22,98). We

found that both sub-samples showed a preference for the developer style. Across the different levels in the hierarchy, there was a preference to follow a Search Strategy that is focused, well-planned, and deep. Therefore indicating that individuals across levels tend to seek practical, relevant data, and results that are workable, realistic, and efficient (Selby et al., 2014b). This suggest that the main differences between hierarchical level in the OC dimension, according to our data, stems from the NV and SA sub-scales.

5.1.2 MP: Processing information and interaction with others

Regarding the Manner of Processing dimension, we found that individuals in higher-level positions had a clearer preference for the external style. This might be explained by the popular belief that individuals in leadership positions should have the ability to work well with their subordinates, effective and informative communications with the company's stakeholders, being able to participate in and lead meetings, and often speak publicly in front of people (Farrell, 2017). If individual gets promoted within the company, expectations normally follow suit. Examples of this could be engagement with other employees or spending more time with colleagues and stakeholders to help advance the organization. These expectations often favor external individuals in leadership positions (ibid). Based on the qualitative analyses, we found support in how flexibility and adjustability is critical to a leader's skillset when closing the cognitive gap. We see support, especially in communication with subordinates, in the notion of two-way communication. One interviewee could explain how leaders in their organization were instructed to have check-in meetings with their employees, where they should refrain from talking about business. Instead, they asked were instructed to ask questions about more personal stuff, how their employees and family were doing, showing a genuine interest in the employees´ well-being.

Individuals in lower-level positions had a stronger preference for the internal style when managing information and interacting with others. Internals often share their ideas with others after having time to reflect and polish them. An explanation for this can be the self-confidence in the role, as clerical/other staff had a lower mean average age, making them less experienced. As the expectations to leadership often tends to favor externals in leadership roles, there is the possibility of organizations overlooking

the strengths of introverts as leaders, thus losing out on the potential for other effective management (Farrell, 2017). Farrel found that an understanding of the strengths and weaknesses of personality types could help individuals, as well as organizations, to develop their leadership and to more effectively achieve organizational goals (2017).

5.1.3 WD: Preference when making decisions

In the Ways of Deciding dimension, we found some significant differences based on the quantitative results. The quantitative analyses indicated that senior/upper management staff have a stronger preference for the task style than clerical/other staff when making decisions. Although individuals in higher positions had a stronger preference, we found a consensus across levels preferring the task style (means score of 38,04 vs. 34,94). Based on our results, we clearly saw that the higher an individual rises in the organization, the greater the focus is on tasks when decisions are made. As we have chosen to focus this research study on business or for-profit organizations, it could be interesting to see if these preferences vary when looking at other occupational sectors.

VIEW Dimensions - Implications for Organizational Resilience

As a result of senior/upper management preference for the explorer style, there could be certain implications for an organization's resilience. Previously, we mentioned how explorers are far more comfortable considering and dealing with the radical step-out, sort of change. This could lead to specific problems for organizations seeking resilience, as explorers might favor decisions that fit their own preferences. For an organization to be resilient, there is a requirement to keep everyone in the company, across levels, engaged. Also, it is a necessity to have people that can respond to change quickly without enduring high levels of stress (Mallak, 1998b). Therefore, as senior/upper management could be more likely to implement changes that are harder for others to accept, it could affect organizational resilience. We see this in how explorers generally are more inclined to consider novelty that is more fundamental and not so easy to understand (Selby et al., 2021). They are less likely to provide detail, structure, and guidance for others, as they do not see the value. There is also the notion when considering authority for others, which may be overlooked by senior/upper management as their preference often tend to find authority constricting (ibid). We

found support for this in the qualitative results. The importance of having leaders who can look past their own preferences and value different approaches was pointed out across all the semi-structured interviews. There could also be specific implications in how leaders often preferred the external style. Farrel (2017) saw how organizations often overlooked individuals with a preference for the internal style in leadership positions, thereby missing out on the potential opportunities that lie here. Individuals with a preference for the internal style identify challenges, solutions, and possible plans of action through careful, quiet reflection and analysis balanced with an open exchange of ideas early in the process. They may work on their own to seek and use data but readily share sources and the direction that their search is taking (Selby et al., 2014b).

5.1.4 Interpretation of qualitative results

The interviews provided us with several key insights. Most importantly, they provided further support for the quantitative results, confirming that a cognitive gap exists between upper management and those at the bottom of the organizational hierarchy. However, in addition to supporting the dimensional differences in problem-solving style, they offered new perspectives to consider. For instance, it was suggested that when leaders reach a certain level in the hierarchy, they become more risk averse, which is embodied through developer behavior, as opposed to the quantitative results. Problem-solving style preferences assessed by VIEW have shown to be stable over time (Isaksen et al., 2021). Thus, a change in behavior does not correspond to a change in preferences, which suggests that there is coping involved. Instead, a change in behavior could be connected to role expectations, which we did not adjust for. If so, the impact of role expectations could vary from industry to industry and with the circumstances surrounding the leaders. For instance, a leader functioning as a caretaker might be less inclined to take risks compared to a leader brought in as a change agent. If it is in fact role expectation that forces a leader to deviate from their preferred problem-solving style and they have to cope, another concern presents itself. If a leader is attending more to their coping it could influence their ability to communicate and engage with others, which represents a negative trade-off for the organization. The dynamics of role expectation and coping could also apply to other levels in the hierarchy, like clerical staff.

After confirming that they did experience the existence of the gap we were eager to find out whether the interviewees and their organizations had experienced any costs as a result. It was also essential that the interviewees provided us with some practical approaches to closing the gap. This addresses the notion that cognitive diversity provides both challenges and opportunities. Turnover, which is mentioned in the research literature as a potential result (Jablokow & Booth, 2006), was the clearest and most substantial cost associated with the gap. When an individual makes such a drastic decision, quitting their job, it implies that there has been a substantial amount of coping and tension involved prior to the resignation. Thus, we suggest that it remains a struggle for organizations to recognize and deal with tension in due time. On the other hand, interviewees mentioned several useful approaches to manage and close the gap. After analysis we concluded that they all boiled down to two major themes: leadership and two-way-communication. Leaders are at the center when it comes to managing the gap, and it is important that they possess a certain skillset, along with methods and tools, that enables them to become more explicitly aware of their own preferences and their employees. ´The ability to adapt and be flexible did emerge as critical skillsets. Because leaders have the overall responsibility for their employees´ wellbeing, and power to influence tasks and problem-solving processes for others, they are required to adapt more often and to a wider range of preferences than subordinates. Furthermore, the importance of leadership behavior is well documented in the research literature (see e.g., Detert & Burris, 2007; Neubert et al., 2009; Skogstad et al., 2007; Tsai, 2011; Tyagi, 1985; van Dierendonck et al., 2004). In that sense, it comes as no surprise that leaders are the most influential when it comes to closing the gap. Secondly, leaders must engage in effective communication with the employees, and must be provided with sufficient tools and methods to do this. In order to be able to adapt to their employees, leaders need information and insights into their needs and preferences. Consequently, leadership behavior and two-way-communication are interconnected when it comes to successfully managing the gap. One does not work without the other. The organization and the leader must strive to have an ongoing dialogue with subordinates through organized initiatives to foster engagement and commitment.

5.2 Implications for Practice

This thesis aims to narrow what we have identified as a research gap, but just as importantly, it aims to provide practical and tangible approaches for organizations on how to effectively manage the cognitive gap. These approaches must be transferable to the real world so that organizations can implement and utilize them. This will give them an opportunity to integrate resilience into day-to-day operations. Consequently, we have come up with some recommendations, originating from the quantitative and qualitative findings and supported in the research literature.

Firstly, organizations should take notice of the existence of a cognitive gap in problem-solving style between levels in the hierarchy. By being aware of this, and the challenges and opportunities that follows, they are positioning themselves to deal with the gap. Secondly, leaders need to become aware of their own preferences and the preferences of those they work with. This can be achieved through sessions with the intact team where problem-solving style preferences are explored, learned and discussed. Here, the VIEW assessment can be used as a tool to discover these preferences. In combination with this learned knowledge, leaders must possess a skillset which enables them to use leadership behavior aimed at effectively managing the gap. Adaptability is central, as leaders that are able to be flexible and adjust to subordinates´ preferences have the best possibilities to close the gap. That leadership behavior is important (see e.g., Detert & Burris, 2007; Neubert et al., 2009; Skogstad et al., 2007; Tsai, 2011; Tyagi, 1985; van Dierendonck et al., 2004) and that leadership is essential when managing change (see e.g., Gill, 2003; Graetz, 2000; Herold et al., 2008; Stouten et al., 2018) is broadly supported in the research literature. Thus, the organization must ensure that leaders understand what is demanded by them and that they are given the opportunity to acquire the required capabilities. This is why organizations invest in leadership development programs, which is supported by scholars (see e.g., Collins & Holton, 2004; Darling-Hammond et al., 2007; Day, 2000), but it is important that those programs include the building of a toolbox that helps leaders understand themselves and where the differences might occur, and how to react and adjust to those differences. Additionally, they should have methods and tools to engage in effective communication and be aware of their engagement, which is

connected with our final approach. Two-way-communication must be initiated and sustained by leaders to establish understanding of subordinates needs and preferences. Engaging in supportive behaviors, which includes showing concern for subordinates needs, can promote team potency (Schaubroeck et al., 2007). Effective communication can foster relationships, which impacts both engagement and commitment. The importance of leader communication, its impact on commitment and engagement, and the need for communication strategies are reinforced in the research literature (see e.g., Chaurasia & Shukla, 2013; Mayfield & Mayfield, 2002; Vogelgesang et al., 2013). Supplementing traditional business meeting with social interactions solely focused on the employees and their well-being is therefore recommended and supported by favorable results reported in the interviews. This will contribute to positive employee relationships which is considered an attribute that constitute organizational resilience (Gittell et al., 2006).

5.3 Limitations and implications for future research

Although this exploratory multi-method study added some further insight into the relationship between organizational resilience and problem-solving style, it also had various limitations. The first one is that this study focused solely on the impact of problem-solving style, which showed moderate power. Therefore, other factors might be involved in understanding the differences between hierarchical levels. As mentioned previously, role expectations and role requirements, along with type of industry, can potentially influence problem-solving behavior and is worth investigating further. Additionally, we did not consider other individual differences such as age, gender, and years in a position, however, we suggest that including such factors could provide deeper insights into the domain of hierarchical differences. Cultural variations in power-distance could also be considered, as there are differences in how power is perceived, operationalized and conceived across different cultures. We did not explicitly examine these differences, but for further research it would be useful to understand how these differences play out in cultures that have different power-distance. In general, more studies that includes other variables are needed to further validate the existence of a cognitive gap between hierarchical levels in organizations.

Secondly, because this was a descriptive study, meaning that we were only looking at a snapshot in time, we did not look at dynamics that occur within the hierarchy. Thus, because of the natural limitations of a descriptive study, we did not look at the day-to-day dynamics within the hierarchy, like when people move from the staff level to management position. However, for further research, it would be valuable to provide further insights into how movement within the hierarchy affects cognitive style.

Another limitation lies in the qualitative research in this study. Research quality is heavily dependent on the individual skills of the researcher and more easily influenced by the researcher's personal biases and idiosyncrasies (Anderson, 2010). There is also the notion of the researcher's presence during data gathering, which is often unavoidable in qualitative research, and can affect the subjects' responses based on how the questions is asked.

Finally, there is certain limitations to the sample size. In the quantitative part, there is a distinct variation in sample size between the four sub-samples, ranging from 7,459 to 1,345 participants, which could have affected the robustness of the equal variance assumption. As partial eta squared (η_p^2) has shown to be sensitive to the properties of the participants, varying sample sizes, there is also limitations to η_p^2 as measure of effect size (Richardson, 2010). In the qualitative part, even though we interviewed highly qualified and knowledgeable individuals, the sample size was relatively small. This could have reduced the power of the overall qualitative data. A more comprehensive sample would have been preferred, but since the qualitative data was meant to be a supplement to the quantitative data, this limitation was accepted for the purposes of this exploratory study. The method we used, purposive sampling, can be highly prone to researcher bias, as it is based on the judgement of the researcher. However, as the judgement of selecting participants have been based on a clear criterion, expert elicitation, this sampling method is not a major limitation. Nevertheless, further investigation is necessary to examine if the results of this research study is generally applicable to a real-life work environment.

6 Conclusion

For organizations wanting to cope with the challenges of new technology, environment crises, or even world-wide pandemics, it is crucial to develop strategies that exert influence on the organizations resilience and managing the cognitive gap. Using the ongoing pandemic as an example, the need to research this relationship can be elucidated. Both the quantitative and qualitative research in this master thesis indicated that individuals in different hierarchical level do have opposing problem-solving styles for managing change, processing information, and making decisions. These differences can be seen to a great degree concerning the OC dimension, and the NV and SA sub-scale, as these factors demonstrated a significant impact on the hierarchical level. There was also evidence that the MP and WD dimension demonstrated an impact, though less significant. There is an interesting asymmetry when it comes to the SS sub-scale, as no such impact was recorded. In addition to the findings in the quantitative analyses, the qualitative results revealed several different effective strategies that addressed the difference in problem-solving styles within the hierarchical level. Consequently, it would serve leaders well to be more aware of their own preferences and the preferences of others in the organization and use that understanding and knowledge to reduce potential personal tension and maximize collaboration and cooperation. Furthermore, two-way-communication based on methods and tools for effective communication must be used to foster commitment and engagement.

When the organization did not pay attention to the cognitive gap, costs such as diminishing engagement and turnover emerged. Therefore, organizations aspiring to be resilient, the development of strategies aimed at managing the cognitive gap was found to be a predominant factor, and represents an opportunity to integrate resilience into daily operations.

This descriptive study provides initial support for the role cognitive gap plays in organizational resilience. Yet, the learnings promote additional questions in terms of generalizability. Thus, further investigation is needed, as suggested in a previous section, to validate the general applicability to a real-life work environment and to provide further insights into hierarchical differences.

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8 Appendix

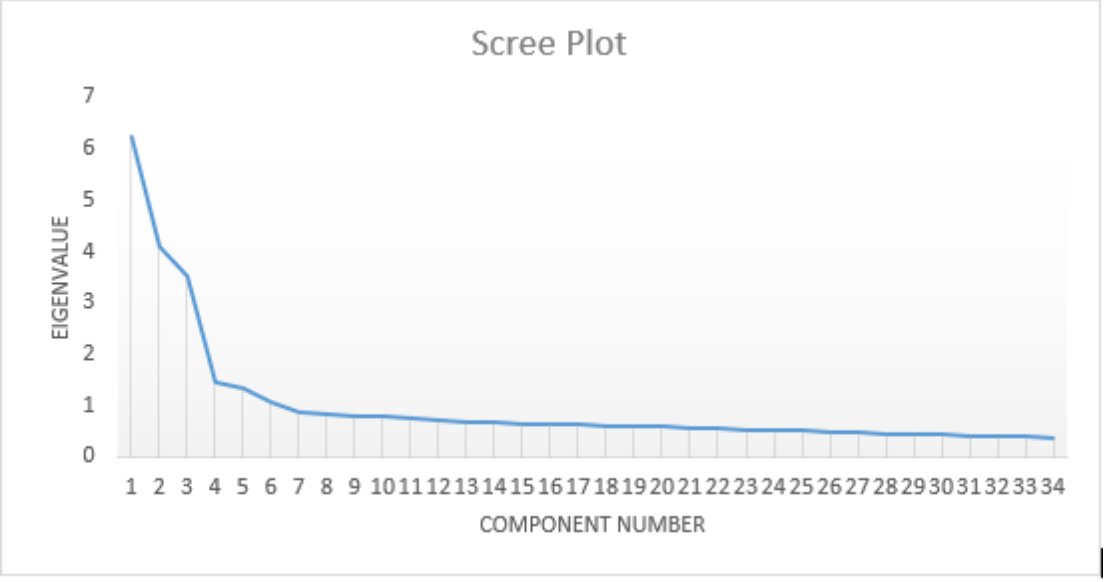
Appendix 1: Intraclass Correlation Coefficient of all dimensions (ICC)

Intraclass Correlation Coefficient (ICC)						
Dimension	OC	MP	WD	NV	SA	SS
Senior/Upper Management	,866[c]	,850[c]	,817[c]	,816[c]	,650[c]	,730[c]
Middle Management	,866[c]	,848[c]	,814[c]	,811[c]	,659[c]	,722[c]
Supervisor	,863[c]	,853[c]	,812[c]	,788[c]	,659[c]	,745[c]
Clerical/Other staff	,863[c]	,857[c]	,836[c]	,777[c]	,665[c]	,710[c]

Appendix 2: Factor analysis

Factor Analysis				
Dimension	Item Nr.	Component		
		1	2	3
OC	Item 1	0,607		
OCSS	Item 2	0,390		
OCSS	Item 3	0,511		
MP	Item 4	0,345	0,551	
MP	Item 5		0,578	
WD	Item 6			0,529
WD	Item 7			0,458
OCNV	Item 8	0,565		
OCSA	Item 9	0,467		
OCNV	Item 10	0,656		
MP	Item 11		0,566	
MP	Item 12		0,496	
WD	Item 13			0,426
OCSA	Item 14	0,531		
OCSA	Item 15	0,434		
MP	Item 16		0,372	
WD	Item 17			0,499
WD	Item 18			0,461
OCNV	Item 19	0,615		
OC	Item 20	0,677		
OCNV	Item 21	0,683		
OCNV	Item 22	0,685		
MP	Item 23		0,540	
WD	Item 24			0,589
OCSS	Item 25	0,482		
OCSS	Item 26	0,527		
OCSS	Item 27	0,544		
OCSA	Item 28	0,534	-0,315	
MP	Item 29		0,556	
WD	Item 30			0,571
OC	Item 31			
OCSA	Item 32	0,370		
MP	Item 33		0,505	
WD	Item 34			0,522
Extraction Method: Principal Component Analysis.				
a. 3 components extracted.				

Appendix 3: Scree plot of factor analysis



Appendix 4: MANOVA results

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[d]
Intercept	Pillai's Trace	0,966	52248,082[b]	3,000	16297,000	0,000	0,966	456744,247	1,000
	Wilks' Lambda	0,034	52248,082[b]	3,000	16297,000	0,000	0,966	456744,247	1,000
	Hotelling's Trace	28,026	52248,082[b]	3,000	16297,000	0,000	0,966	456744,247	1,000
	Roy's Largest Root	28,026	52248,082[b]	3,000	16297,000	0,000	0,966	456744,247	1,000
LevelJobRole	Pillai's Trace	0,080	148,0979	9,000	48897,000	0,000	0,027	1332,881	1,000
	Wilks' Lambda	**0,921**	**151,784**	9,000	39662,766	**0,000**	0,027	1104,656	1,000
	Hotelling's Trace	0,085	154,5553	9,000	48887,000	0,000	0,028	1390,998	1,000
	Roy's Largest Root	0,079	426,826[c]	3,000	16299,000	0,000	0,073	1280,478	1,000

Appendix 5: Overall ANOVA

		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Change	Between Groups	154035,841	3	51345,280	228,931	0,000	0,04043
	Within Groups	3655588,262	16299	224,283			
	Total	3809624,102	16302				
Process	Between Groups	29498,618	3	9832,873	136,391	0,000	0,02449
	Within Groups	1175049,556	16299	72,093			
	Total	1204548,174	16302				
Deciding	Between Groups	12017,755	3	4005,918	71,036	0,000	0,01291
	Within Groups	919152,186	16299	56,393			
	Total	931169,941	16302				
NV	Between Groups	21027,537	3	7009,179	242,202	0,000	0,04268
	Within Groups	471682,505	16299	28,939			
	Total	492710,043	16302				
SA	Between Groups	17112,938	3	5704,313	226,213	0,000	0,03997
	Within Groups	411004,397	16299	25,217			
	Total	428117,335	16302				
SS	Between Groups	2844,928	3	948,309	34,182	0,000	0,00625
	Within Groups	452186,413	16299	27,743			
	Total	455031,341	16302				

Appendix 6: ANOVA - Senior/Upper management vs Middle Management

		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Change	Between Groups	73113,921	1	73113,921	327,346	0,000	0,02370
	Within Groups	3012144,495	13486	223,353			
	Total	3085258,416	13487				
Process	Between Groups	3737,030	1	3737,030	53,153	0,000	0,00393
	Within Groups	948165,530	13486	70,307			
	Total	951902,560	13487				
Deciding	Between Groups	137,894	1	137,894	2,522	0,112	0,00019
	Within Groups	737464,902	13486	54,684			
	Total	737602,796	13487				
NV	Between Groups	7291,155	1	7291,155	251,842	0,000	0,01833
	Within Groups	390437,728	13486	28,951			
	Total	397728,882	13487				
SA	Between Groups	7036,955	1	7036,955	283,808	0,000	0,02061
	Within Groups	334382,258	13486	24,795			
	Total	341419,213	13487				
SS	Between Groups	2590,333	1	2590,333	93,448	0,000	0,00688
	Within Groups	373824,357	13486	27,719			
	Total	376414,690	13487				

Appendix 7: ANOVA - Senior/Upper management vs Supervisor

		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Change	Between Groups	53084,234	1	53084,234	233,099	0,000	0,03065
	Within Groups	1678842,245	7372	227,732			
	Total	1731926,479	7373				
Process	Between Groups	12620,708	1	12620,708	173,812	0,000	0,02303
	Within Groups	535291,625	7372	72,611			
	Total	547912,333	7373				
Deciding	Between Groups	329,772	1	329,772	5,895	0,015	0,00080
	Within Groups	412376,614	7372	55,938			
	Total	412706,386	7373				
NV	Between Groups	7829,133	1	7829,133	270,735	0,000	0,03542
	Within Groups	213184,084	7372	28,918			
	Total	221013,217	7373				
SA	Between Groups	4453,721	1	4453,721	178,864	0,000	0,02369
	Within Groups	183563,179	7372	24,900			
	Total	188016,901	7373				
SS	Between Groups	963,646	1	963,646	32,839	0,000	0,00443
	Within Groups	216329,486	7372	29,345			
	Total	217293,132	7373				

Appendix 8: ANOVA - Senior/Upper management vs Clerical/Other staff

		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Change	Between Groups	107845,920	1	107845,920	474,279	0,000	0,05950
	Within Groups	1704736,411	7497	227,389			
	Total	1812582,331	7498				
Process	Between Groups	22008,127	1	22008,127	302,409	0,000	0,03877
	Within Groups	545601,798	7497	72,776			
	Total	567609,925	7498				
Deciding	Between Groups	11380,025	1	11380,025	196,039	0,000	0,02548
	Within Groups	435199,563	7497	58,050			
	Total	446579,588	7498				
NV	Between Groups	15810,125	1	15810,125	547,356	0,000	0,06804
	Within Groups	216547,529	7497	28,885			
	Total	232357,654	7498				
SA	Between Groups	13681,419	1	13681,419	548,582	0,000	0,06818
	Within Groups	186972,382	7497	24,940			
	Total	200653,801	7498				
SS	Between Groups	435,937	1	435,937	15,053	0,000	0,00200
	Within Groups	217115,949	7497	28,960			
	Total	217551,886	7498				

Appendix 9: Gender Statistics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	11012	67,5	68,0	68,0
	2	5192	31,8	32,0	100,0
	Total	16204	99,4	100,0	-
Missing	System	99	0,6	-	-
Total		16303	100,0		

Appendix 10: Age Statistics of the four sub-samples

Level/Job Role	Mean	N	Std. Deviation	Range
Senior/Upper Management	44,45	5918	9,775	69
Middle Management	40,00	7339	9,440	65
Supervisor	38,01	1331	9,847	67
Clerical/Other Staff	35,61	1440	11,412	59
Total	41,08	16028	10,199	69