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ELEVATING EMPATHY: A TRAINING INTERVENTION ANALYSIS OF ITS IMPACT ON EMOTIONAL INTELLIGENCE AND CRISIS LEADERSHIP

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Abstract

In today's crisis-affected world, soft skills like empathy are increasingly important for effective leadership. While prior research shows that empathy can be trained, existing publications are focused mostly on healthcare settings. This quasi-experimental study examines whether empathy training can enhance emotional intelligence (EI) and crisis leadership abilities among business school students through a 90-minute face-to-face training. Although no significant impact on the respective constructs was found, participants demonstrated strong knowledge retention and high satisfaction with the intervention. This work thus provides a practical, replicable toolkit for integrating empathy training into business education and serves as a basis for future research.

Keywords

Empathy, Emotional Intelligence, Crisis Management, Soft Skills, Leadership, Training, Training Design, Empathy Training

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C1	Control group baseline questionnaire
C2	Control group follow-up questionnaire
C-LEAD	Hadley et al. (2011) Assessing and Deciding Scale
EI	Emotional Intelligence
ELT	Experiential Learning Theory
I1	Pre-intervention questionnaire
I2	Post-intervention questionnaires
I3	Intervention group follow-up questionnaire
OEA	Others' Emotional Awareness
RCT	Randomized Controlled Trial
ROE	Regulation of Emotion
SEA	Self-Emotional Awareness
UOE	Use of Emotion
WLEIS	Wong and Law (2017) Emotional Intelligence Scale

1. Introduction (Group Part)

"Hello Marriott associates…because of the profound impact COVID-19 is having on so many of us around the world, this is the most difficult video message we have ever pulled together[…]."

… is how Arne Sorenson, Marriott's former CEO, begins his video message addressing the catastrophic consequences of 2020's global pandemic (Ricardo P 2020). He is standing in front of the camera with a bald head, openly admitting the medical treatment of his pancreatic cancer. A disease, that will cost his life one year later. Speaking with a broken voice close to tears and without sugarcoating the situation, he shows emotions and empathic leadership and thereby gets his employees on board to steer Marriott through the first COVID months.

The COVID pandemic has been a very prominent and by far not the only example of crisis situations in the past years. Their impact is immense, as crises can destabilize entire ecosystems and threaten the continuation of organizations (Buhagiar and Anand 2023; Morgeson, Mitchell, and Liu 2015). This necessitates organizational leaders to adapt to changing circumstances quickly, not only with hard but especially with soft skills. Martins et al. (2020) highlight social and emotional components of crisis-relevant soft skills – including emotional intelligence and empathy. Research has shown that emotional intelligence and its sub-component empathy positively impact several areas of organizations, such as performance (Rahim and Malik 2010) and employee well-being (Scott et al. 2010). Empathy is a key enabler both in day-to-day operations and in crisis situations: it fosters more reliable organizations (Su and Junge 2023), affects crisis management skills (König et al. 2020) and post-crisis recovery (Riggio and Newstead 2023; Ndone and Park 2022). Several researchers and instructors examined how empathy can be trained, with most interventions focusing on skills such as communication,

interpersonal relationship building, and emotional resilience (Lajante et al. 2023), indicating that especially cognitive and behavioral empathy could be interesting components for training.

However, nearly all existing studies on empathy training focus on the healthcare sector – for example, on nurses, doctors, or dentists (Lajante et al. 2023). This leaves a large gap in research on the effectiveness of such training for other sectors and areas, especially more business-oriented organizations. Therefore, business school students are a promising target group for empathy research, as they are likely to step up to leadership roles in later life and are very likely to have to navigate crisis situations. Even more, business students show lower empathy levels and higher narcissism than other students (Detert, Treviño, and Sweitzer 2008; Bergman et al. 2014) and value empathy the least among leadership abilities (Holt and Marques 2012). Also, how actively training empathy affects the ability to manage crisis situations is barely looked at. There is broad research on the importance of empathy as such, but there is a lack of research on how changing empathy levels can impact crisis leadership capabilities.

To fill these research gaps, this work aims to answer the following research question:

How does empathy training for business school students impact their emotional intelligence levels and ability to effectively manage crisis situations?

Therefore, this work's objectives are to:

- Review and organize relevant literature on the topics of empathy, emotional intelligence, and crisis management,
- Design and deliver an empathy training intervention tailored to business school students and
- Assess the impact of the empathy training on students' emotional intelligence, empathy, and crisis management levels with appropriate measures.

Scientifically, this work contributes to increasing the understanding of how empathy can be trained in contexts other than healthcare and how it might influence capabilities to manage crisis situations. Practically, it will provide and test a structure for empathy training that can be replicated by instructors in business and other contexts.

To this end, this work begins with an in-depth review of scientific literature on crisis situations, empathy, and emotional intelligence. It then outlines the methodology of the study and details the intervention design. The results are presented and discussed in regard to their practical implications and potential shortcomings. Lastly, future directions for other researchers are proposed.

2. Literature Review (Group Part)

This chapter provides an overview of how existing literature contributes to the understanding of what crisis situations, emotional intelligence, and empathy are. Afterwards, the influence of these constructs on leadership and crisis management is outlined to then present research on the development and training of empathy.

2.1 Crisis Situations (Group Part)

Nowadays, the word crisis seems to be in everyone's mouth: the 21st century's world population faces countless crises like natural disasters (2019-20's Australian bushfire "Black Summer", 2021's hundred-year flood in Germany, and 2024's recent flood in Valencia, Spain) or pandemics (2020's COVID-19). The term's origin lies in the ancient Greek *krisis*, meaning judgment, choice, or decision (Paraskevas 2006), indicating the ancients already understood that the focus is not only on the crisis itself but also on how one reacts to it.

With the understanding of the topic varying broadly in research across different disciplines, a "Tower of Babel" effect occurred with academics differing in their language, issues, and

audiences (Shrivastava 1993). Similarly, in crisis management theory, silos and fragmented research appeared in the different disciplinary fields (Bundy et al. 2017). For example, the terms disaster, crisis, and emergency are often used interchangeably, regardless of their semantic differences, as outlined in Figure 1 (Al-Dahash, Thayaparan, and Kulatunga 2016). Although they all have the sudden nature and damage caused by these events in common, a crisis additionally comes with public attention and lacks clear solutions.

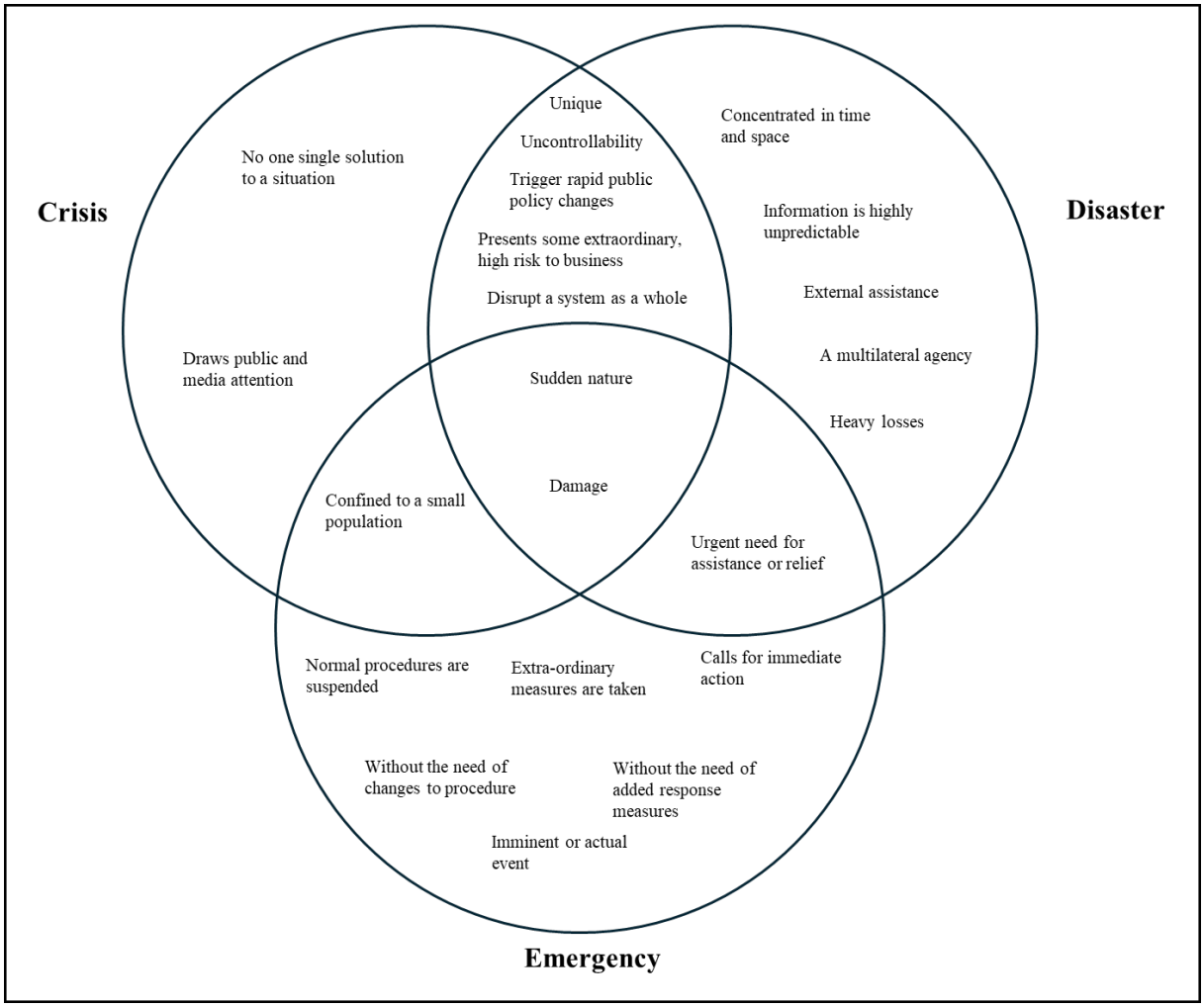

Figure 1: *Crisis, Disaster, and Emergency – Term Clarification (adapted from Al-Dahash, Thayaparan, and Kulatunga (2016))*

Due to terminological inconsistencies in the literature, this work will use the term crisis as an equivalent for all three categories.

As this work's scope is specific institutions (and their leaders) in crisis situations, it is essential to take a deeper look at organizational crises. Pearson and Clair (1998, 60) define it as a "low-probability, high-impact event that threatens the viability of the organization and is characterized by ambiguity of cause, effect, and means of resolution, as well as by a belief that decisions must be made swiftly." It is characterized as highly salient, unexpected, and potentially disruptive (Bundy et al. 2017).

Crises are on the rise, and they bring increasingly prevalent instability to organizational ecosystems (Buhagiar and Anand 2023): they can create conflicts between business units, failures of essential production equipment, missed project deadlines, or reputation decline (Morgeson, Mitchell, and Liu 2015). Threatening an organization's continuity, goals, and relationships with stakeholders, crises can permanently impair its earning power (Bundy et al. 2017; Dorasamy, Raman, and Kaliannan 2013; Buhagiar and Anand 2023). With the increased interconnectivity of the modern world, the potential damage of a crisis can even cascade across wide areas (Burnard, Bhamra, and Tsinopoulos 2018), one example being the domino effect of the Lehman Brothers bankruptcy in 2008.

When looking at crisis management, this work draws from Bundy et al.'s (2017) framework, describing two major perspectives on the perception of crisis situations:

The *internal perspective* considers crisis dynamics within an organization, such as managing risk, technology, and complexity. In that sense, crisis management is seen as the coordination of complex technical and relational systems and the design of reliant organizational structures.

The *external perspective* takes interactions of organizations and external stakeholders into account, seeing crisis management as the coordination of stakeholders and the shaping of how they see crises.

Crises and their management can be conceptualized along three different phases (Buhagiar and Anand 2023; Bundy et al. 2017): pre-crisis prevention, crisis management, and post-crisis outcome. Figure 2 gives an overview of the phases and perspectives.

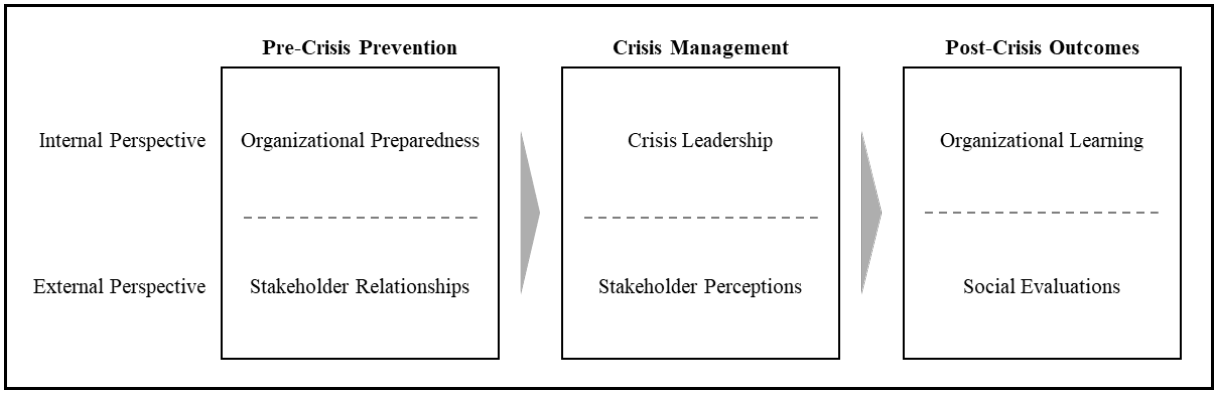

Figure 2: *Internal and External Phases of the Crisis Process (adapted from Bundy et al. (2017))*

2.2 Empathy and Emotional Intelligence (Group Part)

The following chapters provide an overview of the concept of emotional intelligence and, at its core, empathy to then describe their impact on the successful navigation of crisis situations based on Bundy et al.'s (2017) crisis process.

2.2.1 Conceptual Roots and Definitions (Group Part)

When looking at organizational performance and leadership, interpersonal competencies are becoming a construct of increasing importance (Skinner and Spurgeon 2005; Gates 1995). Working in the modern age requires individuals to share knowledge, meaning that people achieve goals by collaborating and communicating with each other (Holt and Jones 2005). This brings attention to a key, often overlooked, factor enabling successful collaboration: the ability to manage one's own emotions as well as those of others (Cox 2011; Barczak, Lassk, and Mulki 2010). This observation raises the discussion of what emotions are and how they are conceptualized.

The nature of emotions has been a topic of philosophical concern since Socrates. Thinkers like Aristotle, Descartes, Spinoza, and Kant viewed emotions as obstacles or hurdles to rational decision-making (Solomon 1993). Over time, other philosophers, including Hume, Nietzsche, and Sartre, began to recognize the significance of emotions in human experience and that emotions are integral to human life (Gawai 2016).

By the early 20th century, the understanding of human intelligence expanded beyond purely cognitive abilities. Psychologists began to investigate the broader elements of intelligence and recognized the role emotions play in decision-making and problem-solving (E. Thorndike 1920). By introducing the concept of social intelligence as the ability to understand humans and act wisely in relationships, E. Thorndike (1920) thus laid the foundation for the development of emotional intelligence. His son, R. L. Thorndike and Stein (1937), further developed the concept of social intelligence by outlining the importance of emotions. Gardner (1993) then expanded this idea with his "Theory of Multiple Intelligences" (1993), which proposed that cognitive ability encompasses several distinct forms of intelligence.

Emotional intelligence (EI) was first seen as completely separate from general intelligence by Salovey and Mayer (1990) and defined as the "ability to monitor one's own and others' emotions, to discriminate between different emotions, and to use this information to guide thinking and actions" (Salovey and Mayer 1990, 189), which is seen as the first-ever formal definition of emotional intelligence (Lee and Ok 2012; Wolfe and Kim 2013).

Historically, there have been discussions about whether EI can be learned and developed or whether it is an immutable trait like IQ, which led to uncertainty and confusion about what constitutes EI (Mayer, Salovey, and Caruso 2008). Building upon this discussion, mixed models of EI (models incorporating personality traits and abilities), like the more theoretical Bar-On

model (Bar-On 1997) and the rather practically oriented Goleman Model (Goleman 2021), appeared.

Daniel Goleman was also the person popularizing the concept with his book "Emotional Intelligence" (Goleman 1995), where he described emotional intelligence as a representation of all the personal characteristics that are not covered in the concept of cognitive intelligence. He was also the first person to apply the concept of EI to the business world with his famous HBR article "What makes a leader?" (Goleman 1998).

Goleman's model of EI can be seen as a mixed model, as it includes personal attributes, such as managing relationships and motivating oneself, apart from pure abilities (Livingstone and Day 2005). After having reworked his framework several times, he finally conceptualized emotional intelligence with four domains compromising twelve underlying competencies, as displayed in Figure 3 (Goleman 2021).

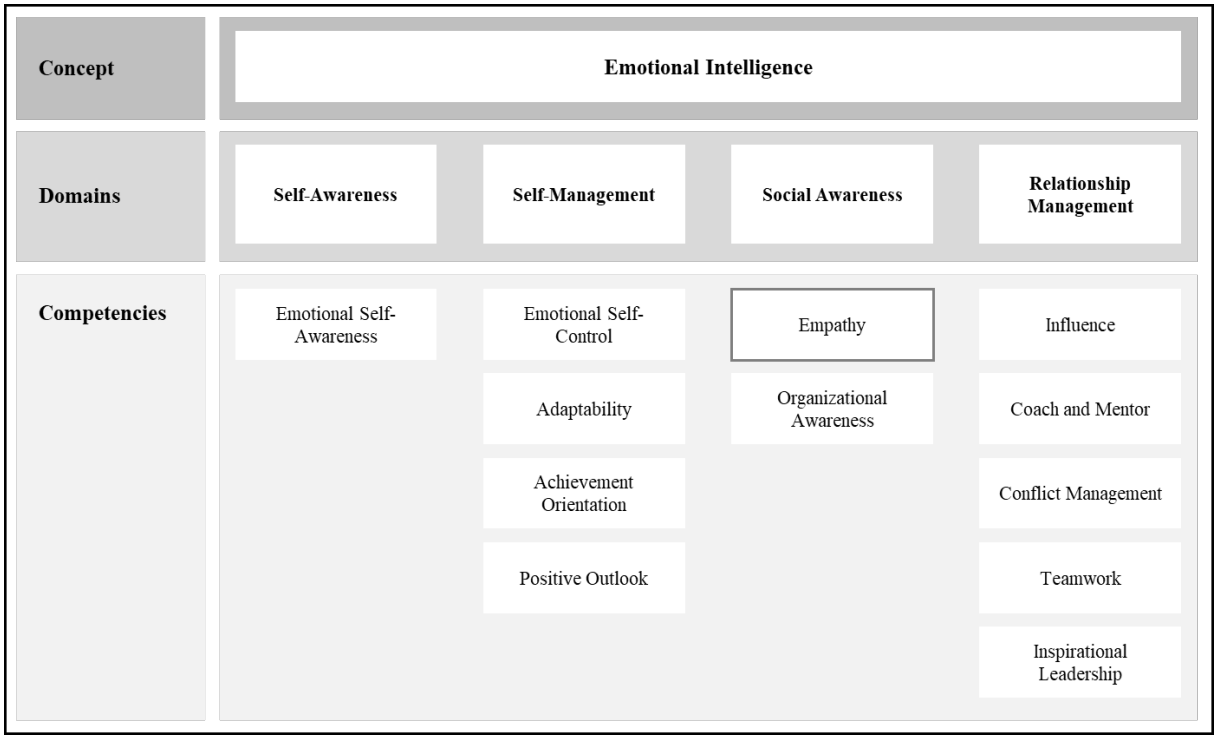

Figure 3: *Goleman Model of Emotional Intelligence (adapted from Goleman 2021)*

With the historically increasing acceptance of concepts like emotions and emotional intelligence, individual affects and abilities (e.g., trust, organizational commitment, loyalty, and empathy) have been taken into scope by both research and public discourse (Skinner and Spurgeon 2005). Specifically empathy - an essential component of human social life (Harmsen 2019) and part of Goleman's "Social Awareness" domain - has risen as one of the most discussed competencies outlined in Goleman's emotional intelligence model (Goleman 2021) for multiple reasons:

While empathy's importance has long been highlighted in literature like social psychology and counseling (Skinner and Spurgeon 2005), it is also practically considered core for leaders to perceive and understand the relationships and tasks suiting their teams (Skinner and Spurgeon 2005; Wolff, Pescosolido, and Druskat 2002). It can be seen as one of the most important characteristics in emotionally intelligent behavior (Salovey and Mayer 1990), evidentially supported by the significant correlations between empathy and EI seen in different contexts (Xing, Deng, and Ho 2023; Pongrac, Mohorić, and Anić 2019; Gómez-Leal et al. 2021; Hajibabaee et al. 2018; Fernández-Abascal and Martín-Díaz 2019).

Empathy is a relatively new concept coined by the psychologist Edward Titchener in 1909. He built on the German word "Einfühlung" (meaning feeling into) (Wispé 1986), which, itself, was organized by the German Theodor Lipps, who understood it as perceivers projecting themselves into the objects of perception (Wispé 1986).

Titchener then translated it with the ancient Greek word *empátheia* (εμπάθεια, "physical affection, passion, partiality") to take over Lipps' idea of projection into another object, while differing by seeing empathy more as an imitation "in the mind's muscle" (Wispé 1986, 316) of another's consciousness, than an analogical reasoning based on the own behavior.

Ever since the concept has been widely adopted but also interpreted widely inconsistently. For example, there has been confusion regarding the distinction between the concept of sympathy, although being crucial to distinguish both for clinical education and practice (Cuff et al. 2016).

Empathy, on the one hand, refers to one's attempt to comprehend the other's experiences and emotions, regardless of them being positive or negative (Wispé 1986; Wolff, Pescosolido, and Druskat 2002). Sympathy, on the other hand, is the heightened awareness of another person's suffering, usually coming with the urge to mitigate it.

To put it simply – The empathizer is someone who "reaches out" and might say, "I understand how you feel," whereas the sympathizer is "moved by" the other person in the sense of "I feel sorry for you" (Wispé 1986; Cuff et al. 2016).

However, analog to conceptualizations of emotional intelligence, there is no generally valid or universal definition of empathy (Bas-Sarmiento et al. 2020). The scientific debate, amongst others, evolves on the questions of (a) whether empathy involves recognizing emotions or experiencing them and (b) whether it is appropriate to include behavioral responses in the definition (Reniers et al. 2011). This work takes in all three aspects and understands empathy as a multidimensional construct with three components: cognitive, affective, and behavioral empathy.

Cognitive empathy comprises the comprehension (understanding) of other people's experiences or internal states (Clark, Robertson, and Young 2019). It draws from the *theory of mind* field (Wellman 2014) and is often used synonymously with perspective-taking, the "imagining of oneself in another's shoes" (Galinsky, Ku, and Wang 2005, 110). Perspective-taking, though, could be seen more as a process, with cognitive empathy being the result (Clark, Robertson, and Young 2019).

The affective dimension describes the experience of other people's emotional experiences, i.e., feeling the same affective state as another person (Clark, Robertson, and Young 2019). Sometimes, other authors also refer to it as emotional empathy (e.g., Pongrac, Mohorić, and Anić 2019).

Behavioral empathy as the third component is sometimes excluded by scholars for its external nature (e.g., Cuff et al. 2016; Reniers et al. 2011), although it often is crucial for empathy to also communicate that one has perceived the other person's message (Kagan and Schneider 1987). It comprises two components: behavioral mirroring as the mimicking of another's non-verbal expression, and empathic communication as intentional behavior demonstrating affective and cognitive behavior (Clark, Robertson, and Young 2019). This nonverbal or verbal communication indicates the understanding of an emotional resonance with another person (Lam, Kolomitro, and Alamparambil 2011), which can also mean showing reactions like sympathy (Reniers et al. 2011; Cuff et al. 2016).

Another discourse is centered on the question of whether empathy can be seen as an ability or context-dependent. Meta-analyses, therefore, indicate that empathy occurs both at the trait level (across situations) and the state level (within situations) and can be seen as a result of the interaction of these two (Clark, Robertson, and Young 2019; Cuff et al. 2016).

2.2.2 Empathy in Navigating Crisis Situations (Group Part)

After conceptualizing empathy as a construct, it is worthwhile to clarify its impact in workplace and crisis contexts.

Broad research in different areas has shown that soft skills, i.e. competencies that are not related to a specific task (Cimatti 2016) are key to higher productivity, innovation, levels of trust, better health outcomes as well as quality of life in both workplaces and society (Martins et al. 2020).

Looking at organizational settings, emotional intelligence and specifically empathy have showcased beneficial impacts on several areas in the workplace:

Emotional intelligence, though not a standalone cure, works as a catalyst in organizations to improve performance and goal achievement (Rahim and Malik 2010). Beyond that, empathy is a critical predictor of prosocial behavior, effectiveness, and performance in the workplace (Clark, Robertson, and Young 2019; Gentry, Weber, and Sadri 2007). For leaders, it enhances their leadership effectiveness by increasing their self-awareness levels, communication skills, and relationship quality (Zivkovic 2022). The teams of empathic leaders benefit from reduced stress and physical symptoms, improved well-being, empowerment, inclusion as well as higher engagement, positive affect and higher goal progress (Scott et al. 2010; Zivkovic 2022).

However, given the unexpected and disruptive nature of crisis situations, the impact of soft skills such as EI and empathy has to be examined in a different context than only in 'business as usual'.

A good overview of crisis-relevant soft skill sets is provided by the *Preparedness for Overcoming Crises Events Soft Skills* (PrOCESS) model by Martins et al. (2020), which organizes such skills into three categories: the foundation component (skills to adapt and react to changes), the transversal cognitive and meta-cognitive component (information processing for decision-making), and the social and emotional component (dealing with the emotions of oneself and others'). This last component comprises the soft skill of emotional intelligence and with it empathy.

To provide a structured overview of how empathy and EI impact dealing with crises, this work will review existing scientific literature based on Bundy et al.'s (2017) three stages of the crisis process, as already summarized in Figure 2.

Pre-Crisis Prevention. According to Ian Mitroff, the 'father of crisis management', the best strategy to manage a crisis is preparation. This means anticipating all possible disasters and adopting a mindset that bad things will likely happen (Riggio and Newstead 2023). Still, it is impossible to plan and prepare for every possible crisis, which puts individual and collective leadership capacities on the spot to adapt and respond (Riggio and Newstead 2023; Pearson and Mitroff 2019). One key preventive factor is organizing for reliability, which can strengthen preparedness for crises by preventing system breakdowns, for which managers' cognitive and emotional capabilities are crucial enablers (Kahn, Barton, and Fellows 2013). Empathy levels are also shown to be a significant predictor of organizational resilience (Su and Junge 2023).

Next to that, another means to reduce the likelihood of a crisis is fostering positive relationships with stakeholders (Coombs 2007) for which empathy is seen to be one of the most important factors (Kent and Taylor 2002).

Crisis Management. If all preventive mechanisms have failed and a crisis actually occurs, leaders are of critical importance to navigate the process effectively (Bundy et al. 2017; Hadley et al. 2011). To tackle organizational crises, the leadership is generally responsible for motivating employees, establishing a shared vision and managing tensions (Buhagiar and Anand 2023), which is why it is worthwhile to look deeper into the interaction between empathy, leadership, and crisis management. Jiménez (2018) highlighted that leaders need to specifically consider the affective responses of employees to mitigate negative organizational outcomes. This sheds light, particularly, on transformational leadership types showing emotional intelligence skills such as adapting emotions, thoughts, and behaviors, as higher EI levels are associated with the ability to better manage and mitigate stress and adopt resilience and control strategies (Drigas and Papoutsi 2020).

Crises call not only for transformational but also charismatic leaders – Weber's (2009) charismatic leadership theory indicates that they tend to be more effective in their roles and in gathering the team behind them in crisis situations (Pillai and Meindl 1998; Riggio and Newstead 2023). Charisma, with its characteristics such as passionate commitment, trust, and likability, is preceded by empathy and emotional intelligence (Riggio and Newstead 2023; Rahman 2016; Du Plessis 1994; Moreno-Jiménez et al. 2023).

But it is not always 'the more the better': König et al. (2020, 130) described a CEO's empathy as a "blessing and a curse" with a U-shaped relationship to organizational crisis management. This implies that very empathic CEOs show quick recognition of warning signs, better access to crisis-related information, larger stakeholder appreciation through compassion displays, and more commitment to healing the organization's relational system. However, they are also more vulnerable to false alarms as well as biased information processing and are less committed to repairing the organization's operational system (König et al. 2020).

Apart from emotion-related constructs, perceived self-efficacy, meaning an individual's belief of how well one can deal with a situation (Bandura 1982), is a strong driver of performance. Crisis leader self-efficacy is shown to be a predictor of the motivation to lead and crisis performance, meaning crisis leader role-taking and decision-making (Hadley et al. 2011).

Post-Crisis Outcomes. Crises bring vulnerabilities and weak spots to daylight but can also be a source of organizational learning by identifying new ways of working better after the crisis (Riggio and Newstead 2023). Such internal learning effects can be enhanced with organizational empathy and increased attention to emotional dynamics (Murat Eminoğlu and Elçi 2023; Vince 2002). On the external side, both affective and cognitive empathy impact an organization's post-crisis reputation and the degree to which the public forgives an organization's crises (Ndone and Park 2022; Schoofs et al. 2018).

2.3 Developing Empathy (Group Part)

After having established the multifaceted ways in which empathy and related constructs enable leaders to act in crisis situations, it is crucial to examine the factors fostering the development of empathy or how this skill can be specifically trained in an intervention.

Research demonstrates that empathic actions and reactions can already be observed in young children and that empathy, rather than being a purely static trait or characteristic, can be developed to a large extent (Decety 2015; Allemand, Steiger, and Fend 2015). The following chapters, therefore outline the antecedents, predispositions and additional factors that influence the development of empathy (Chapter 2.3.1) and examine the current state of research on whether and how empathy can be effectively trained through interventions (Chapter 2.3.2).

2.3.1 Predispositions and Influences on Empathy Development (Group Part)

Several researchers highlight that individual differences in empathy levels and empathy development are partly due to genetic predisposition and are, to a certain degree, dependent on stable personality traits (Carlozzi et al. 1995; M. H. Davis 1996; Grynberg et al. 2010). Consequently, the likelihood of engaging in empathy-related processes also depends on the different genetically determined personality traits (M. H. Davis 1996). Research on affective empathy, for example, revealed a correlation with one of the "Big Five" personality traits, namely neuroticism (Neumann et al. 2016), and that affective empathy is more heritable than cognitive empathy (Abramson et al. 2020). Furthermore, cognitive empathy tends to correlate with extraversion, meaning extraverted people are more likely to have the ability to take the other person's perspective (Richendoller and Weaver 1994).

An additional genetic predisposition influencing the development of empathy is gender. Empirical evidence shows gender-based variation in empathy levels, which could be attributed to a combination of cultural expectations and inherent gender roles (Christov-Moore et al.

2014). In the course of this, Hodges and Myers (2007) present findings indicating that men tend to score lower on self-report measures of empathy than women. However, more objective measures provide less evidence of these differences. Moreover, a longitudinal study by Allemand, Steiger, and Fend (2015), which measured empathy over a 23-year period, confirms existing research by showing that empathy levels significantly increased over time and demonstrated that girls exhibited higher empathy scores than boys.

Apart from predispositions, the development of empathy is influenced by environmental factors (Abramson et al. 2020). Especially socialization and the values taught by parents have a major influence on empathy development (Davis 1996; Decety 2015). These contextual factors are particularly influential during adolescence, as in this stage, both empathy and personality develop significantly (Allemand, Steiger, and Fend 2015).

Lastly, empathy development is influenced by a variety of additional aspects. For example, two studies investigated the correlation between empathy and individuals who read fictional literature, and both found that reading fictional books facilitates the development of empathy (Mar, Oatley, and Peterson 2009; Djikic, Oatley, and Moldoveanu 2013).

Recent studies furthermore revealed that even social media usage, perhaps counterintuitively, can potentially increase cognitive and affective empathy in adolescents. After one year, the ability to understand and share feelings improved (Vossen and Valkenburg 2016).

2.3.2 Developing Empathy Through Training Interventions (Group Part)

Current literature suggests several factors that influence the development of empathy. As this work investigates the changeability of empathy through organized and supervised interventions, the following section provides an overview of meta-studies investigating whether empathy can be effectively trained through targeted interventions. The chapter additionally outlines the specific abilities that should be trained in order to develop empathy. Notably, most existing

research focuses on empathy training for healthcare professionals and students, confirming the research gap addressed in this work and highlighting the need for studies in business and management contexts.

Although empathic behavior cannot be forced to happen (C. M. Davis 1990), there is a broad consensus that empathy can be effectively trained. A comprehensive meta-analysis from 2011 found that 93% of the studies examined showed an increase in empathy levels after training, especially in the cognitive component (Lam, Kolomitro, and Alamparambil 2011).

Additionally, Teding van Berkhout and Malouff (2016), who analyzed 18 randomized controlled trials involving over 1,000 participants, revealed significant positive effects of training programs on empathy development.

These findings have been confirmed by subsequent meta-studies, which consistently demonstrated improvements in empathy levels among participants of empathy training programs (Bas-Sarmiento et al. 2020; Paulus and Meinken 2022).

However, there is currently limited evidence that participants actually changed how they express empathy in their real-world behaviors, raising questions about the sustainability of empathy training effects (Lam, Kolomitro, and Alamparambil 2011; Kataoka et al. 2019). Furthermore, it seems that the specific training content and methods used in some of the trainings did not significantly influence the effectiveness of the training (Paulus and Meinken 2022).

Beyond the fact that empathy can be effectively trained through interventions, there is still no consensus on the exact behaviors that should be trained to achieve the effect of increased empathy levels (Patel et al. 2019). As some authors, such as M. H. Davis (1996), argue that empathy can only be cultivated indirectly through upstream skills and promoting attitudes, the

following section will explore which specific skills or abilities must be targeted in order to enhance cognitive, affective, and behavioral empathy, drawing from current literature.

Training cognitive empathy. One crucial skill for developing cognitive empathy is self-awareness (Gallup and Platek 2002; Williams et al. 2016; Ratka 2018). Studies demonstrate a correlation between deficiencies in self-awareness abilities and poor cognitive empathy, underlining the importance of teaching and practicing self-awareness (Williams et al. 2016; Ratka 2018). Consequently, the ability to recognize and understand one's own emotions (self-awareness) could be an important prerequisite for properly being able to understand another person's emotions and feelings.

In addition to self-awareness, regularly practicing and training perspective-taking is essential for empathy development and is even often used as a synonym for cognitive empathy (Decety 2005; Galinsky, Ku, and Wang 2005). Similarly, M. H. Davis (1996) highlights perspective-taking as a key antecedent of empathy. The ability to step into another person's shoes not only enhances empathy but furthermore decreases stereotyping, thus improving social relationships (Galinsky, Ku, and Wang 2005).

Training affective empathy. In contrast to cognitive empathy, there is limited literature on how to specifically train the affective, also sometimes called the emotional part of empathy (Lam, Kolomitro, and Alamparambil 2011). This might be due to the fact that affective empathy is not associated with one distinct skill or ability. Instead, a variety of factors lead to the development of empathy, affective being one component of it.

Furthermore, affective empathy is often linked to personality and is inherited rather than actively trained (Abramson et al. 2020). Emotional empathy also tends to remain relatively consistent over time and with increasing age, which may explain the difficulty in actively training emotional empathy (Abramson et al. 2020).

Nevertheless, closely related concepts such as compassion – defined as the ability to recognize another person's suffering and having the motivation to help them (Gilbert 2005) – provide literature that offers insights into potential methods of training emotional empathy. For instance, mindfulness and meditation practices have been identified as skills that increase participant's compassion, which might also be an approach to train affective empathy (Kemeny et al. 2012; Patel et al. 2019; Luberto et al. 2018).

Training behavioral empathy. As previously defined, behavioral empathy involves emotional resonance with another person, expressed through both verbal and non-verbal communication (Lam, Kolomitro, and Alamparambil 2011). On the one hand, essential non-verbal skills that increase the behavioral levels of empathy are good listening skills, the ability to keep eye contact, and having an appropriate body language (C. M. Davis 1990; Patel et al. 2019).

On the other hand, verbal communication skills are a fundamental ability to enhance behavioral empathy. There is profound evidence supporting the link between communication skills and empathy. Firstly, several researchers highlight that (empathic) communication is a teachable and learnable skill with measurable benefits (Ioannidou and Konstantikaki 2008; Kataoka et al. 2019; D'souza et al. 2020). Secondly, training programs that focused on communication skills significantly enhanced empathy levels (Kataoka et al. 2019). A training intervention tailored for medical students, for instance, demonstrated that even a single session of communication skills training significantly improved empathy levels using the Jefferson Scale of Empathy (D'souza et al. 2020). Another meta-study points out that communicating support and acknowledgment resulted in higher empathy levels (Patel et al. 2019).

3. Methodology & Training Intervention (Excluded)

3.1 Sample and Procedures (Excluded)

3.2 Measures and Questionnaire (Excluded)

3.3 Intervention Design (Excluded)

4. Results (Individual Part)

This chapter is structured in two different sections – First, it will report the data from the empirical evaluation of the different constructs measured with the two groups at different time points for the two groups (Chapter 4.1). Second, it will present the satisfaction ratings (Chapter 4.2.1) and qualitative feedback gathered (Chapter 4.2.2) at the end of the training intervention.

4.1 Empirical Evaluation (Individual Part)

The results of the empirical evaluation present the descriptive statistics of the sample, a baseline comparison of the measured constructs between the control and intervention group and a comparison of those measures over time for the control group, the intervention group as well as between both groups. Lastly, the development of participants' knowledge is illustrated.

4.1.1 Descriptive Statistics (Individual Part)

The following provides an overview of the demographic characteristics of the sample, followed by descriptive statistics of the main constructs used in this study. Additionally, reliability and validity measures are reported to establish the robustness of the constructs used in subsequent analyses.

The sample comprises participants from both the control and intervention groups. The control group consisted of 22 participants with a mean age of 23.1 years (SD=4.29; min=18; max=36), while the intervention group included 11 participants with a mean age of 22.6 years (SD=2.42; min=18; max=25).

The gender distribution is predominantly female, with 68.2% in the control and 63.6% in the intervention group. The participants' nationalities are diverse, although German and Portuguese each made up more than a third of the groups. The samples comprised Bachelor's and Master's

students, some of whom work part-time or as working students, with 72.2% and 68.2% in the intervention and control group being currently in their Master's.

Both the data manipulation as well as the analysis were conducted with R using RStudio. The detailed R-script can be found in Appendix A.

Before conducting further analyses, 23 data rows (i.e., participant responses) were removed in a listwise deletion because the respective participants did not complete all required questionnaires. The missing data points were too broad to be covered with imputation methods. Additionally, a single missing value in the third knowledge question was filled via a single imputation via the mean, which, despite its negative side effects on variability (Patrician 2002), was chosen for its simplicity in this single case.

Descriptive statistics were calculated for the key constructs: Crisis Leadership (C-LEAD), Self-Emotional Awareness (SEA), Others' Emotional Awareness (OEA), Use of Emotion (UOE), Regulation of Emotion (ROE), and overall Emotional Intelligence (EI) as the mean of the four latter constructs. Table 1 provides the mean, standard deviation, Cronbach's α, and Correlations for each construct, aggregated across the entire sample. A detailed breakdown per group and time point can be found in Appendix B.

Construct	Mean	SD	Cronbach's α	C-LEAD	SEA	OEA	UOE	ROE
C-LEAD	3.68	0.45	0.70	1.00				
SEA	3.68	0.63	0.86	0.30	1.00			
OEA	3.94	0.63	0.87	0.30	0.31	1.00		
UOE	3.77	0.75	0.88	0.45	0.29	0.11	1.00	
ROE	3.39	0.89	0.95	0.46	0.24	0.12	0.55	1.00
EI	3.69	0.49	0.89	0.57	0.63	0.51	0.76	0.77

Table 1*: Descriptive Statistics per Construct*

The reliability scores calculated with Cronbach's α are in the acceptable range of 0.70 or more, especially with the EI-related constructs showing a high internal consistency (Streiner 2003), which supports convergent validity.

Low to moderate correlations between the different constructs (except for EI as an overarching measure) suggest discriminant validity, meaning the constructs capture distinct but related concepts. The observed stronger correlations between the emotional intelligence components (SEA, OEA, UOE, ROE) and their overarching EI construct support the aggregation of these variables into a single measure.

4.1.2 Between-Group Baseline Comparison (Individual Part)

To evaluate whether the control and intervention groups were comparable at baseline, a between-group analysis was conducted on a 95%-confidence level. Establishing comparability at baseline ensures that any observed changes over time are more likely to be attributed to the intervention rather than pre-existing group differences.

Prior to the main analysis, Shapiro-Wilk tests were used to assess the normality of each construct within both groups, and Levene's test was applied to check for homogeneity of variances. Results indicated that the assumptions were generally satisfied for most constructs, with only a few deviations, particularly in OEA intervention group for normality and C-LEAD for homogeneity (detailed results can be seen in Appendix C). To account for the smaller sample as well as partly unmet assumptions, and to ensure comparability of the measures, the non-parametric Mann-Whitney U test was used across all constructs (McKnight and Najab 2010; Fagerland 2012). The test statistics are reported below in Table 2.

Construct	W-Statistic	*p*-Value	Significance
C-LEAD	132.5	0.6734	Non-significant
SEA	113.5	0.7872	Non-significant
OEA	139.0	0.4996	Non-significant
UOE	131.5	0.7003	Non-significant
ROE	171.5	0.0546	Non-significant
EI	151.0	0.2589	Non-significant

Table 2: *Mann-Whitney U Test Statistics on Baseline*

Its results were non-significant at a 0.05-significance level for all measurements, establishing that the baseline of the control and intervention group can be seen as comparable with little or no inter-group differences. This is supported by the comparable demographic composition outlined in Chapter 4.1.1.

4.1.3 Within-Group Comparison Over Time (Individual Part)

To investigate how participants' scores evolved throughout the study, within-group comparisons over time were conducted for both the control and intervention groups. Once again, a Shapiro-Wilk normality test was applied and yielded significant results indicating non-normal distributions for four constructs during different time points (Appendix D). Because of this, the non-parametric Wilcoxon Signed-Rank test was used instead of a repeated-measures ANOVA to maintain consistency, account for the smaller sample, and as a feasible tool for inconsistent normality distributions.

The results, as reported in Table 3 below, indicated no statistically significant changes in any of the constructs. For the control group, it was expected to show no significant changes from baseline (C1) to follow-up (C2) questionnaires as there was no measures-related intervention the authors are aware of between the two time points.

However, there were no significant changes for the intervention group as well – for none of the three time spans: pre- to post-intervention (I1 – I2), pre-intervention to follow-up (I1 – I3), and post-intervention to follow-up (I2 – I3).

Construct	Measure	C1 - C2	I1 - I2	I1 - I3	I2 - I3
C-LEAD	V-Statistic	59.5	17.5	19	25
	p-Value	0.0923	0.5936	0.2296	0.5042
	Effect Size (r)	-0.464	-0.416	-0.375	-0.214
SEA	V-Statistic	119	21	16	23
	p-Value	0.8193	0.5349	0.2597	0.3931
	Effect Size (r)	-0.052	-0.322	-0.456	-0.268
OEA	V-Statistic	114.5	21	23.5	35
	p-Value	0.7345	0.5376	0.4220	0.8933
	Effect Size (r)	-0.083	-0.322	-0.255	0.054
UOE	V-Statistic	88	21.5	19	32
	p-Value	0.5366	0.5658	0.7216	0.9643
	Effect Size (r)	-0.266	-0.308	-0.375	-0.027
ROE	V-Statistic	113	24.5	15.5	30.5
	p-Value	0.7789	0.4754	0.4393	0.8587
	Effect Size (r)	-0.093	-0.228	-0.469	-0.067
EI	V-Statistic	122.5	17.5	23	31
	p-Value	0.9095	0.3326	0.3974	0.8984
	Effect Size (r)	-0.028	-0.416	-0.268	-0.054

Table 3: *Wilcoxon Signed-Rank Test Including Effect Sizes*

These results suggest that the intervention implemented in this study was insufficient in producing detectable improvements in the constructs measured. Similarly, Wilcoxon Signed-Rank test performed on an item level indicated no significant changes as well, meaning that there was also no observable improvement in specific questions within the constructs.

To understand whether there were still intervention effects observable beyond statistically significant levels, the effect size for each construct and time span was estimated and also reported in Table 3. These results, although to be treated with care for the smaller sample size

(Funder and Ozer 2019), paint a more differentiated picture: for the intervention group, the changes from pre-intervention to post-intervention and follow-up show medium to mostly very large effect sizes and an increase in average values (Appendix B). The control group and the intervention measurement between I2 and I3, instead, show medium to very small effect sizes, with one exception: the C-LEAD scale shows a very large effect size for the changes in the control group (-0.464) (Funder and Ozer 2019).

One key observation in this context is that the OEA construct, which is the one resembling empathy, does not show clear differences in its effect sizes compared to the other constructs – although it is the focus of the training intervention.

4.1.4 Between-Group Comparison Over Time (Individual Part)

Supporting the (lack of) evidence from the within-group analysis, the follow-up questionnaire results of control (C2) and intervention group (I3) were compared. The Shapiro-Wilk test (results to be found in Appendix C) indicates non-normality in three constructs of the control group (SEA, UOE, EI) and Levene's test (observable in Appendix C as well) shows non-homogenous variances for EI in the control group, a Mann-Whitney U Test was once again applied to test the two groups for significant differences after the intervention. The Mann-Whitney U test results for the constructs are reported in Table 4.

Construct	W-Statistic	*p*-Value	Significance
C-LEAD	128.0	0.8030	Non-significant
SEA	75.0	0.0772	Non-significant
OEA	111.0	0.7138	Non-significant
UOE	122.5	0.9692	Non-significant
ROE	138.5	0.5135	Non-significant
EI	109.0	0.6592	Non-significant

Table 4: *Mann-Whitney U Test Statistics over Time*

Similarly to the baseline comparison and, in logical consequence of the non-significant within-group repeated measures testing, all constructs show non-significant results, i.e., there were no observable differences in the levels of EI and crisis leadership between the control group and the intervention group post-training.

4.1.5 Knowledge Question Analysis (Individual Part)

Besides the measured constructs, the questionnaires contained four knowledge questions measuring to which extent participants could recall topics related to emotional intelligence, empathy, and crisis leadership, also discussed in the training intervention.

The control group performed relatively stable in answering these questions correctly (percentage of correct answers: C1=61.4%, C2=65.9%). The intervention group scored slightly lower in the baseline (50.0% correct for I1) but showed improvements in the post-intervention (I2=86.4%) and follow-up questionnaires (I3=90.9%).

Testing these knowledge items empirically, a similar approach as with the main constructs was applied. The non-parametric Mann-Whitney U test was used to measure differences between the control and intervention groups at baseline and follow-up, Wilcoxon Signed-Rank test to evaluate within-group differences over time.

Group	Time points	Test statistic (V)	*p*-Value
Control	C1 vs C2	81	0.5716
Intervention	I1 vs I2	0	0.0077
Intervention	I1 vs I3	0	0.0047
Intervention	I2 vs I3	1.5	0.5862

Table 5: *Wilcoxon Signed-Rank Test for Knowledge Questions*

In the baseline between-group comparison (C1 vs. I1), no significant difference was found (W=151, p=0.2371), which is in line with preliminary findings regarding the initial comparability of the two groups.

Within-group comparisons painted a clear picture with highly significant improvements (p<0.01) in knowledge being found for the intervention group from the baseline to the following measurements, as reported in Table 5.

These findings are supported by Mann Whitney-U test comparing the follow-up questionnaires, which found a statistically significant (W=48, p=0.0036) difference between control and intervention group. Overall, this suggests that, while the groups started with comparable knowledge scores, a significant difference emerged after the intervention. This finding supports the idea that the training has improved specific topic-related knowledge over the time span of a week.

4.2 Participant Satisfaction and Feedback (Individual Part)

After the training intervention, participant feedback was gathered both on a 5-point satisfaction scale (1=”Strongly disagree” to 5=”Strongly agree”) as well as qualitatively with the *five-finger-feedback* method.

4.2.1 Satisfaction Analysis (Individual Part)

The satisfaction items, as reported in Table 6 below, reflect high satisfaction scores across all items with a relatively low standard deviation.

Item	Satisfaction dimension	Mean	SD
S-Overall	I am satisfied with the overall experience of the training session.	4.73	0.467
S-Materials	The training materials were well-designed and easy to follow.	4.73	0.467

Item	Satisfaction dimension	Mean	SD
S-Org	The structure of the training was well-organized and flowed logically.	4.91	0.302
S-Expert	The instructors demonstrated strong knowledge and expertise on the topic of empathy.	4.64	0.505
S-Infra	The infrastructure and environment (e.g., classroom, technology) were adequate for the training.	4.73	0.467
S-Use	The training was useful and applicable to my professional or personal development.	4.55	0.688

Table 6: *Satisfaction Scores*

Especially well-rated was the organization of the training intervention (Mean=4.91), whereas the usefulness was scored as lowest (Mean=4.55), although the relatively high standard deviation (SD=0.688) indicates varying responses. Unsurprisingly, this data is in line with the qualitative feedback gathered at the end of the intervention, which will be outlined in the following chapter.

4.2.2 Qualitative Feedback (Individual Part)

To gain a deeper understanding of participants' experiences, qualitative feedback was gathered with the online feedback tool “Padlet”. Responses were grouped into five categories: "What I found great", "This could be done better", "These are my take-aways", "This is what I did not like", and "This fell short for me." Each category was then analyzed for recurring themes, a detailed breakdown of which as can be found in Appendix E. The most important take-aways were the following:

“What I found great”. In line with the high satisfaction score for training organization, participants highlighted especially the interactive design of the intervention, and an increased understanding of the topic through theoretical contents.

"This could be done better". Similarly to the satisfaction scale, participants asked for more actionable advice and real-world examples. Another area identified area of improvement were clearer explanations of the exercises including visualization to enhance understanding.

"These are my take-aways". Participants highlighted the three-step framework, and especially the act of perspective-taking as a key learning.

"This is what I did not like". There was no feedback received for this question.

"This fell short for me". Analogous to the improvement points mentioned, participants missed more practicable tips on the topic and asked for a more differentiated view on the topic, such as 'positive' emotions and strategies to deal with over-empathizing.

5. Discussion (Individual Part)

The following chapter interprets the above-presented findings (Chapter 5.1) and outlines the theoretical contributions and practical implications of this work (Chapter 5.2). Finally, limitations of the study in terms of the methodological approach are discussed and directions for future research are outlined (Chapter 5.3).

5.1 Interpretation of the Results (Individual Part)

Empirically, the analysis found no significant effects of the training on the constructs examined. This means that the training did not seem to yield observable improvements in participants' emotional intelligence, empathy, and crisis leadership levels. However, worthwhile to mention is, that the effect sizes partly showed strong variations, particularly for EI-related constructs in the intervention group, and there was an increase in average values in the constructs. This can point to minor improvements in a statistically non-significant range. Still, these results seem to be in contrast to existing research, which generally agrees that empathy can indeed be trained, with varying effects in the different dimensions. Ambivalent is which exact behaviors need to

be trained (Patel et al. 2019), which also raises the question of whether this training struck the right chord for elevating empathy levels. The authors propose four complementary explanations for why this training did not show significant effects in the measurements:

First, it could simply be the case that the intervention design was ineffective. The setting of a rather short duration combined with only a single session could have inhibited the depth of impact on participants. Additionally, the contents of the training, including the information shared and the exercises applied, may not have been optimal for achieving the training goals. This, however, would oppose research underlining the effective use of more interactive and experiential approaches (Lam, Kolomitro, and Alamparambil 2011; Teding van Berkhout and Malouff 2016). The emphasis on empathy-related communication skills is also in line with most comparable training (Lajante et al. 2023). Nonetheless, one or several components of the intervention contents and facilitation could have limited its effectiveness.

The second reason for non-significant results could be on the measurement. The questionnaires used to estimate the effects, WLEIS and C-LEAD, might not have captured changes that other measures, eventually ones that are longer, could have. WLEIS, for example, does include a specific empathy measurement, but solely a comparable dimension, 'OEA', which was considered as equivalent. The limiting influence of this is discussed in more detail in the limitations chapter (Chapter 5.3).

The third potential explanation revisits the trait versus ability discussion, especially for EI and empathy conceptualizations. (Clark, Robertson, and Young 2019; Mayer, Salovey, and Caruso 2008). The more these constructs are seen as traits and, thus, relatively stable, the harder it would be to change them and the more logical non-significant differences are in the results. This, again, would depend on how strongly the questionnaire items are trait or ability-directed.

Lastly, training empathy might not have such strong effects on emotional intelligence and crisis leadership efficacy as expected. The training design was specifically aimed at empathy. Even if it could have led to higher levels of this construct, it does not necessarily have to imply improvements in EI and crisis leadership. The concept could be more distinct than originally expected.

However, the considerably high satisfaction with the training indicates that it was able to add value to participants. Especially the interactivity and coherent structure were highlighted in feedback and could thus be seen as important aspects of the training design. Participants showed attentive contributions and discussed the topics actively. This most likely was enhanced by the facilitators' ambition to foster psychological safety by kicking off the training with icebreakers and providing personal examples, thus showing vulnerability. The significant improvements in knowledge scores showcase theoretical learning effects, implying the contents could be recalled even later on.

The results also point towards potential improvements for future adaptations of the training. Training effects could be increased by taking more time to properly, and visually, explain the different interactive exercises to ensure everyone's understanding, especially for the "Three chair" roleplay. Another remark included the applicability of the contents, which is why the discussions could include more practical examples and explanations of where and how the frameworks could be used.

To sum it up, the non-significant results in this training can have manifold reasons, ranging from simply an ineffective intervention design to 'deeper' inconsistencies on the construct level. Nonetheless, very positive participant feedback indicates that the training can indeed be also qualitatively justified with the value added for participants. Moreover, this work provides relevant insights both theoretically and practically, which will be outlined in the next chapter.

5.2 Contributions and Practical Implications (Excluded)

5.3 Limitations and Future Directions (Excluded)

6. Conclusion (Group Part)

COVID-19, Flooding, Heat waves, economic downturns: crises are in everyone's mouth and are of growing importance for organizational leaders to manage them effectively (Buhagiar and Anand 2023). With empathy being a core soft skill for crisis management, this study investigated the impact of an empathy training on emotional intelligence, empathy, and crisis leadership efficacy levels. As most comparable studies were conducted in healthcare environments (Lajante et al. 2023), this work focused on training interventions amongst business school students for their potentially high future needs as leaders with crisis-relevant soft skills.

The training intervention design focused on a combination of theoretical knowledge-sharing and interactive exercises to elevate participants' empathy, specifically in terms of perspective-taking (mainly cognitive empathy) and empathic communication (mainly behavioral empathy). The quasi-experimental study design incorporated three questionnaires for the intervention group, one being each immediately before and after the intervention, one being a follow-up measurement one week after. In parallel, the control group had two time points over the span of one week. As key measures, Wong and Law's (2017) emotional intelligence scale (WLEIS) and Hadley et al.'s (2011) Assessing and Deciding (C-Lead) scale were used for their satisfactory validity scores and moderate item number.

Subsequent empirical analyses yielded no significant impact of the intervention on respondents' levels of empathy, emotional intelligence, and crisis leader efficacy, although effect sizes in these dimensions were notably medium-high or high. Moreover, significant gains in knowledge

retention of the discussed concepts together with high levels of participant satisfaction, indicate that there still was a value added for the participants by the intervention.

Despite this study's limitations related to, for example, self-reported measures, duration of the training, and sample size, this work provides a toolkit of empathy training interventions as a valuable approach to leadership development in business education. The outlined training design contributes a foundational blueprint that can be used both for scientific research as well as interventions in practice. The authors specifically recommend focusing on enhancing psychological safety, including interactive and experiential learning methods and continually bridging to reality by providing real-world examples.

Future studies in this field could focus on expanding on the study design by applying randomized controlled designs, aiming for higher sample sizes, or exploring multiple as well as longer intervention sessions.

While the immediate impact of empathy training on the observed constructs was inconclusive, this work reinforces empathy's broader values in business education for its high importance in multiple contexts and settings. As the literature suggests, soft skills like empathy contribute to more adaptive, emotionally intelligent teams capable of navigating complex crises. Expanding empathy training across business and professional contexts will be crucial for developing leaders who can guide organizations through the challenges of tomorrow.

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Appendices

Appendix A – R Script

```
######################################## Data preparation ########################################


########## Set-up ##########

# Set working directory
setwd("/Users/nicol/Desktop/Data Analysis")


# Install packages if they are not already installed
packages <- c("readxl", "dplyr", "tidyr")
install.packages(setdiff(packages, rownames(installed.packages())))

# Load necessary libraries
library(readxl)
library(dplyr)
library(tidyr)


# Load the Excel file
file_path <- '/Users/nicol/Desktop/Data Analysis/Results Compiled.xlsx'
data_C1 <- read_excel(file_path, sheet = "C1")
data_C2 <- read_excel(file_path, sheet = "C2")
data_I1 <- read_excel(file_path, sheet = "I1")
data_I2 <- read_excel(file_path, sheet = "I2")
data_I3 <- read_excel(file_path, sheet = "I3")


# View the first few rows of each sheet
head(data_C1)
head(data_C2)
head(data_I1)
head(data_I2)
head(data_I3)


# Add a column to each dataset to identify the source
data_C1 <- data_C1 %>% mutate(Group = "Control", Time = "C1")
data_C2 <- data_C2 %>% mutate(Group = "Control", Time = "C2")
data_I1 <- data_I1 %>% mutate(Group = "Intervention", Time = "I1")
data_I2 <- data_I2 %>% mutate(Group = "Intervention", Time = "I2")
data_I3 <- data_I3 %>% mutate(Group = "Intervention", Time = "I3")

# Combine all datasets into one
combined_data <- bind_rows(data_C1, data_C2, data_I1, data_I2, data_I3)

# Define the renaming map
rename_map <- c(
    SEA1 = "Please indicate to what extent you agree or disagree with the following statements:.I have a good sense of why I have certain feelings most of the time.",
    SEA2 = "Please indicate to what extent you agree or disagree with the following statements:.I have good understanding of my own emotions.",
    SEA3 = "Please indicate to what extent you agree or disagree with the following statements:.I really understand what I feel.",
    SEA4 = "Please indicate to what extent you agree or disagree with the following statements:.I always know whether or not I am happy.",

    OEA1 = "Please indicate to what extent you agree or disagree with the following statements:.I always know my friends' emotions from their behavior.",
    OEA2 = "Please indicate to what extent you agree or disagree with the following statements:.I am a good observer of others' emotions.",
    OEA3 = "Please indicate to what extent you agree or disagree with the following statements:.I am sensitive to the feelings and emotions of others.",
    OEA4 = "Please indicate to what extent you agree or disagree with the following statements:.I have good understanding of the emotions of people around me.",

    UOE1 = "Please indicate to what extent you agree or disagree with the following statements:.I always set goals for myself and then try my best to achieve them.",
    UOE2 = "Please indicate to what extent you agree or disagree with the following statements:.I always tell myself I am a competent person.",
    UOE3 = "Please indicate to what extent you agree or disagree with the following statements:.I am a self-motivating person.",
    UOE4 = "Please indicate to what extent you agree or disagree with the following statements:.I would always encourage myself to try my best.",

    ROE1 = "Please indicate to what extent you agree or disagree with the following statements:.I am able to control my temper so that I can handle difficulties rationally.",
    ROE2 = "Please indicate to what extent you agree or disagree with the following statements:.I am quite capable of controlling my own emotions.",
    ROE3 = "Please indicate to what extent you agree or disagree with the following statements:.I can always calm down quickly when I am very angry.",
    ROE4 = "Please indicate to what extent you agree or disagree with the following statements:.I have good control of my own emotions.",

    `C-LEAD1` = "Please indicate to what extent you agree or disagree with the following statements:.I can anticipate the political and interpersonal ramifications (=consequences) of my decisions and actions.",
    `C-LEAD2` = "Please indicate to what extent you agree or disagree with the following statements:.I can summarize the key issues involved in a situation to others regardless of how much data I have.",
    `C-LEAD3` = "Please indicate to what extent you agree or disagree with the following statements:.I can make decisions and recommendations even when I don't have as much information as I would like.",
    `C-LEAD4` = "Please indicate to what extent you agree or disagree with the following statements:.I can assess how the members of the general public are being impacted by my unit's actions or inactions during times",
    `C-LEAD5` = "Please indicate to what extent you agree or disagree with the following statements:.I can determine which information is critical to relay to other units in advance of them requesting it.",
    `C-LEAD6` = "Please indicate to what extent you agree or disagree with the following statements:.I can keep others abreast of my work activities without over-informing or under-informing them.",
```

```
    `C-LEAD7` = "Please indicate to what extent you agree or disagree with the following statements:.I can make decisions
and recommendations even under extreme time pressure.",
    `C-LEAD8` = "Please indicate to what extent you agree or disagree with the following statements:.I can estimate the
potential deaths and injuries that may occur as the result of my decisions or recommendations at",
    `C-LEAD9` = "Please indicate to what extent you agree or disagree with the following statements:.I can modify my regular
work activities instantly to respond to an urgent need.",

    K1 = "What is the key difference between emotional intelligence and empathy, according to Goleman's model?",
    K2 = "Empathy is a multidimensional construct with the following components: ",
    K3 = "Which answer regarding the correlation of empathy in leadership and crisis management is correct?",
    K4 = "Which key components does empathy involve?",

    Gender = "Gender",
    Age = "My age is...",
    Employment = "Current employment status",
    Education = "Current level of education enrolled in",
    Nationality = "Nationality",

    `S-Overall` = "Please indicate to what extent you agree or disagree with the following statements:.I am satisfied with
the overall experience of the training session.",
    `S-Materials` = "Please indicate to what extent you agree or disagree with the following statements:.The training
materials were well-designed and easy to follow.",
    `S-Org` = "Please indicate to what extent you agree or disagree with the following statements:.The structure of the
training was well-organized and flowed logically.",
    `S-Expert` = "Please indicate to what extent you agree or disagree with the following statements:.The instructors
demonstrated strong knowledge and expertise on the topic of empathy.",
    `S-Infra` = "Please indicate to what extent you agree or disagree with the following statements:.The infrastructure and
environment (e.g., classroom, technology) were adequate for the training.",
    `S-Use` = "Please indicate to what extent you agree or disagree with the following statements:.The training was useful
and applicable to my professional or personal development."
)

combined_data <- combined_data %>% rename(any_of(rename_map))

# Rename K3 manually as it did not work
combined_data <- combined_data %>%
  rename_with(~ "K2", contains("Empathy is a multidimensional construct with the following components"))


colnames(combined_data)


# Create a new dataset for the next steps
recoded_data <- combined_data


########## Likert scale recoding ##########


# Define the levels in the correct order
likert_levels <- c("Strongly disagree", "Disagree", "Neither disagree nor agree", "Agree", "Strongly agree")

# Create a function to recode Likert-scale responses
recode_likert <- function(data) {
  data %>%
    mutate(
      across(
        c("SEA1", "SEA2", "SEA3", "SEA4",        # Self-Emotional Awareness
          "OEA1", "OEA2", "OEA3", "OEA4",        # Others' Emotional Awareness
          "UOE1", "UOE2", "UOE3", "UOE4",        # Use of Emotion
          "ROE1", "ROE2", "ROE3", "ROE4",        # Regulation of Emotion
          "C-LEAD1", "C-LEAD2", "C-LEAD3",       # Crisis Leadership
          "C-LEAD4", "C-LEAD5", "C-LEAD6",
          "C-LEAD7", "C-LEAD8", "C-LEAD9",
          "S-Overall", "S-Materials", "S-Org",   # Satisfaction
          "S-Expert", "S-Infra", "S-Use"),
        ~ as.numeric(factor(., levels = likert_levels))
      )
    )
}

# Apply the function to each dataset
recoded_data <- recode_likert(combined_data)


########## Knowledge questions recoding ##########

# Recode each knowledge question based on the correct answer
recoded_data <- recoded_data %>%
  mutate(
    K1 = if_else(K1 == "Emotional intelligence is the ability to manage both, personal and others' emotions, while empathy
focuses solely on understanding others' emotions", 1, 0),
    K2 = if_else(K2 == "Cognitive, affective, behavioral", 1, 0),
    K3 = if_else(K3 == "Both very low and very high levels of CEO empathy are associated with lower crisis management
effectiveness, with moderately high empathy being most effective.", 1, 0),
    K4 = if_else(K4 == "Attentive listening, perspective taking, expressing empathy", 1, 0)
  )



# Calculate and display average values per knowledge question and per Time
recoded_data %>%
  group_by(Time) %>%
  summarize(
    avg_K1 = mean(K1, na.rm = TRUE),
    avg_K2 = mean(K2, na.rm = TRUE),
    avg_K3 = mean(K3, na.rm = TRUE),
    avg_K4 = mean(K4, na.rm = TRUE)
  )
```

```
########## Select relevant columns ##########

# Define relevant columns based on the new column names
relevant_columns <- c("Email address",
                      "Group", "Time",                    # Group and time data
                      "SEA1", "SEA2", "SEA3", "SEA4",   # Self-Emotional Awareness items
                      "OEA1", "OEA2", "OEA3", "OEA4",   # Others' Emotional Awareness items
                      "UOE1", "UOE2", "UOE3", "UOE4",   # Use of Emotion items
                      "ROE1", "ROE2", "ROE3", "ROE4",   # Regulation of Emotion items
                      "C-LEAD1", "C-LEAD2", "C-LEAD3", "C-LEAD4", "C-LEAD5", "C-LEAD6", "C-LEAD7", "C-LEAD8", "C-LEAD9",  #
Crisis Leadership items
                      "K1", "K2", "K3", "K4",           # Knowledge items
                      "S-Overall", "S-Materials", "S-Org", "S-Expert", "S-Infra", "S-Use",  # Satisfaction items
                      "Gender", "Age", "Employment", "Education", "Nationality"  # Demographic items
)


# Select relevant columns for each dataset and add Group and Time columns
recoded_data <- recoded_data %>%
  select(any_of(relevant_columns))


########## Secure progress ##########

# Install and load the writexl package

install.packages("writexl")
library(writexl)

# Save the files as an Excel
write_xlsx(combined_data, "combined_data.xlsx")
write_xlsx(recoded_data, "recoded_data.xlsx")


######################################## Data cleaning ########################################

# Basis dataset: recoded_data

########## Data check ##########

# Summarize missing data for each column
summary(recoded_data)

# Count missing values in each column
sapply(recoded_data, function(x) sum(is.na(x))) # there is one missing item for K3

########## Imputing missing data ##########

# Use mean imputation for the missing row in K3
recoded_data$K3[is.na(recoded_data$K3)] <- mean(recoded_data$K3, na.rm = TRUE)


########## Email correction ##########

# Correct the typos in email addresses
cleaned_data <- recoded_data %>%
  mutate(`Email address` = case_when(
    `Email address` == "58992@novasbe.pt" ~ "58492@novasbe.pt",
    `Email address` == "60198@novasb.pt" ~ "60198@novasbe.pt",
    `Email address` == "Edoardo.pelli5@gmail.com" ~ "edoardo.pelli5@gmail.com",
    `Email address` == "S-mheseler@ucp.pt" ~ "s-mheseler@ucp.pt",
    `Email address` == "58718@novabsbe.pt" ~ "58718@novasbe.pt",
    TRUE ~ `Email address`
  ))


########## Delete non-respondents ##########

# Basis database: cleaned_data

# Filter participants who meet the survey completion criteria
cleaned_data <- cleaned_data %>%
  group_by(`Email address`, Group) %>%
  filter((Group == "Control" & all(c("C1", "C2") %in% Time)) |
           (Group == "Intervention" & all(c("I1", "I2", "I3") %in% Time))) %>%
  ungroup()

# Count participants per group directly from the filtered data
participant_counts <- cleaned_data %>%
  group_by(Group) %>%
  summarize(Count = n_distinct(`Email address`))

# View the result
print(participant_counts)


########## Add an Emotional Intelligence Column ##########

# Calculate the average of SEA, OEA, UOE, and ROE for each row to create the EI column
cleaned_data <- cleaned_data %>%
  mutate(
    EI = rowMeans(select(., starts_with("SEA"), starts_with("OEA"), starts_with("UOE"), starts_with("ROE")), na.rm = TRUE)
  )

# Check the first few rows to confirm the new column
head(cleaned_data)



######################################## Descriptive Statistics ########################################

########## Descriptive Statistics per variable and time ##########
```

```
# Add mean columns for each variable
data_analysis <- cleaned_data %>%
  mutate(
    C_LEAD = rowMeans(select(., starts_with("C-LEAD")), na.rm = TRUE),
    SEA = rowMeans(select(., starts_with("SEA")), na.rm = TRUE),
    OEA = rowMeans(select(., starts_with("OEA")), na.rm = TRUE),
    UOE = rowMeans(select(., starts_with("UOE")), na.rm = TRUE),
    ROE = rowMeans(select(., starts_with("ROE")), na.rm = TRUE),
    Knowledge = rowMeans(select(., starts_with("K")), na.rm = TRUE)
  )

# Calculate descriptive statistics for each variable by Time
descriptive_stats <- data_analysis %>%
  group_by(Time) %>%
  summarize(
    mean_C_LEAD = mean(C_LEAD, na.rm = TRUE), sd_C_LEAD = sd(C_LEAD, na.rm = TRUE),
    mean_EI = mean(EI, na.rm = TRUE), sd_EI = sd(EI, na.rm = TRUE),
    mean_SEA = mean(SEA, na.rm = TRUE), sd_SEA = sd(SEA, na.rm = TRUE),
    mean_OEA = mean(OEA, na.rm = TRUE), sd_OEA = sd(OEA, na.rm = TRUE),
    mean_UOE = mean(UOE, na.rm = TRUE), sd_UOE = sd(UOE, na.rm = TRUE),
    mean_ROE = mean(ROE, na.rm = TRUE), sd_ROE = sd(ROE, na.rm = TRUE),
    mean_Knowledge = mean(Knowledge, na.rm = TRUE), sd_Knowledge = sd(Knowledge, na.rm = TRUE)
  )

# View the summary table
print(descriptive_stats)


# Install and load knitr if not already installed
install.packages("knitr")
library(knitr)

# Create a table output using kable
descriptive_stats %>%
  kable(digits = 2, caption = "Descriptive Statistics by Time for Each Construct")


########## Create a descriptives table along all dimensions ##########

# Descriptive Statistics: Mean and SD for each construct
descriptive_stats <- data_analysis %>%
  summarize(
    mean_C_LEAD = mean(C_LEAD, na.rm = TRUE), sd_C_LEAD = sd(C_LEAD, na.rm = TRUE),
    mean_EI = mean(EI, na.rm = TRUE), sd_EI = sd(EI, na.rm = TRUE),
    mean_SEA = mean(SEA, na.rm = TRUE), sd_SEA = sd(SEA, na.rm = TRUE),
    mean_OEA = mean(OEA, na.rm = TRUE), sd_OEA = sd(OEA, na.rm = TRUE),
    mean_UOE = mean(UOE, na.rm = TRUE), sd_UOE = sd(UOE, na.rm = TRUE),
    mean_ROE = mean(ROE, na.rm = TRUE), sd_ROE = sd(ROE, na.rm = TRUE)
  )

# Reliability: Cronbach's Alpha for each construct
alpha_C_LEAD <- psych::alpha(data_analysis %>% select(starts_with("C-LEAD")))$total$raw_alpha
alpha_SEA <- psych::alpha(data_analysis %>% select(starts_with("SEA")))$total$raw_alpha
alpha_OEA <- psych::alpha(data_analysis %>% select(starts_with("OEA")))$total$raw_alpha
alpha_UOE <- psych::alpha(data_analysis %>% select(starts_with("UOE")))$total$raw_alpha
alpha_ROE <- psych::alpha(data_analysis %>% select(starts_with("ROE")))$total$raw_alpha
alpha_EI   <-   psych::alpha(data_analysis   %>%   select(starts_with("SEA"),   starts_with("OEA"),   starts_with("UOE"),
starts_with("ROE")))$total$raw_alpha

# Combine the mean, SD, and Alpha into a single data frame
reliability_stats <- tibble(
  Construct = c("C-LEAD", "EI", "SEA", "OEA", "UOE", "ROE"),
  Mean = c(descriptive_stats$mean_C_LEAD, descriptive_stats$mean_EI, descriptive_stats$mean_SEA, descriptive_stats$mean_OEA,
descriptive_stats$mean_UOE, descriptive_stats$mean_ROE),
  SD   =   c(descriptive_stats$sd_C_LEAD,   descriptive_stats$sd_EI,   descriptive_stats$sd_SEA,   descriptive_stats$sd_OEA,
descriptive_stats$sd_UOE, descriptive_stats$sd_ROE),
  Cronbach_Alpha = c(alpha_C_LEAD, alpha_EI, alpha_SEA, alpha_OEA, alpha_UOE, alpha_ROE)
)

# Correlation Matrix for Constructs
correlation_matrix <- data_analysis %>%
  select(C_LEAD, EI, SEA, OEA, UOE, ROE) %>%
  cor(use = "pairwise.complete.obs")

# Display the correlation matrix as a formatted table
correlation_table <- as.data.frame(correlation_matrix)
correlation_table <- round(correlation_table, 2)  # Round to 2 decimal places

# Combine reliability statistics with the correlation matrix
# Add correlations as separate columns to the reliability_stats table
reliability_stats <- reliability_stats %>%
  bind_cols(correlation_table %>% select(-EI))  # Exclude EI to avoid duplicating it in the table

# Use knitr::kable to print the final table
reliability_stats %>%
  kable(digits = 2, caption = "Descriptive Statistics, Cronbach's Alpha, and Correlations for Constructs")



########## Demographic data ##########

# Filter data to include only rows from C1 and I1, and select only the relevant columns
demographic_data <- data_analysis %>%
  filter(Time %in% c("C1", "I1")) %>%
  select(`Email address`, Group, Time, Gender, Age, Employment, Education, Nationality)

# Preview the demographic_data to confirm the structure
print(demographic_data)
summary(demographic_data)
```

```
# Calculate count, average age, and gender distribution in percentage by Group
group_summary <- demographic_data %>%
  group_by(Group) %>%
  summarize(
    N = n_distinct(`Email address`),
    Average_Age = round(mean(Age, na.rm = TRUE), 2),
    Female_Percentage = round(mean(Gender == "Female", na.rm = TRUE) * 100, 1),
    Male_Percentage = round(mean(Gender == "Male", na.rm = TRUE) * 100, 1)
  )

# Calculate employment distribution by group in percentage
employment_summary <- demographic_data %>%
  distinct(`Email address`, Group, Employment) %>%
  group_by(Group, Employment) %>%
  tally() %>%
  group_by(Group) %>%
  mutate(Percentage = round(n / sum(n) * 100, 1)) %>%
  summarize(Employment_Distribution = paste0(Percentage, "% ", Employment, collapse = ", "))

# Calculate education distribution by group in percentage
education_summary <- demographic_data %>%
  distinct(`Email address`, Group, Education) %>%
  group_by(Group, Education) %>%
  tally() %>%
  group_by(Group) %>%
  mutate(Percentage = round(n / sum(n) * 100, 1)) %>%
  summarize(Education_Distribution = paste0(Percentage, "% ", Education, collapse = ", "))

# Calculate nationality distribution by group in percentage
nationality_summary <- demographic_data %>%
  distinct(`Email address`, Group, Nationality) %>%
  group_by(Group, Nationality) %>%
  tally() %>%
  group_by(Group) %>%
  mutate(Percentage = round(n / sum(n) * 100, 1)) %>%
  summarize(Nationality_Distribution = paste0(Percentage, "% ", Nationality, collapse = ", "))

# Combine all summaries into a single table
demographic_summary <- group_summary %>%
  left_join(employment_summary, by = "Group") %>%
  left_join(education_summary, by = "Group") %>%
  left_join(nationality_summary, by = "Group")

# View the combined summary table
print(demographic_summary)

# Static table with knitr
demographic_summary %>%
  kable(caption = "Demographic Summary by Group")



######################################## Between-Group Differences Baseline ########################################


########## Normality and homogeneity of variances test ##########


# Load necessary library for Levene's test
if(!require(car)) install.packages("car")
library(car)

# Filter dataset for baseline (C1 and I1 only)
baseline_data <- data_analysis %>%
  filter(Time %in% c("C1", "I1"))

# List of variables to test
variables <- c("C_LEAD", "SEA", "OEA", "UOE", "ROE", "EI")

# Initialize lists to store results
shapiro_results <- list()
levene_results <- list()

# Loop through each variable and perform Shapiro-Wilk and Levene's test
for (var in variables) {
  # Shapiro-Wilk Test for normality within each group
  shapiro_control <- shapiro.test(baseline_data[[var]][baseline_data$Group == "Control"])
  shapiro_intervention <- shapiro.test(baseline_data[[var]][baseline_data$Group == "Intervention"])

  # Store Shapiro-Wilk results
  shapiro_results[[var]] <- list(
    Control_p_value = shapiro_control$p.value,
    Intervention_p_value = shapiro_intervention$p.value
  )

  # Levene's Test for homogeneity of variance
  levene_test <- leveneTest(as.formula(paste(var, "~ Group")), data = baseline_data)

  # Store Levene's test result
  levene_results[[var]] <- levene_test$`Pr(>F)`[1]  # Extracting p-value for Levene's test
}

# Display the Shapiro-Wilk test results
cat("Shapiro-Wilk Test Results for Normality:\n")
for (var in variables) {
  cat("\nVariable:", var)
  cat("\n  Control Group p-value:", shapiro_results[[var]]$Control_p_value)
  cat("\n  Intervention Group p-value:", shapiro_results[[var]]$Intervention_p_value)
}

# Display the Levene's test results
```

```
cat("\n\nLevene's Test Results for Homogeneity of Variance:\n")
for (var in variables) {
  cat("\nVariable:", var)
  cat("\n  Levene's Test p-value:", levene_results[[var]])
}


# Results indicate Welch Test for C-LEAD and Mann-Whitney-U Test for EI constructs, but Mann-Whitney-U will be used for all
for reasons of consistency

########## Mann-Whitney U Test for All Constructs ##########

# Load necessary packages
if (!require("dplyr")) install.packages("dplyr")
if (!require("knitr")) install.packages("knitr")
library(dplyr)
library(knitr)

# Filter the data to include only Time points C1 and I1 (baseline comparison)
baseline_data <- data_analysis %>%
  filter(Time %in% c("C1", "I1"))

# Define all constructs (EI constructs + C_LEAD)
all_constructs <- c("C_LEAD", "SEA", "OEA", "UOE", "ROE", "EI")

# Initialize a list to store the results
mann_whitney_results <- list()

# Loop through each construct and perform the Mann-Whitney U test
for (construct in all_constructs) {
  test_result <- wilcox.test(
    formula = as.formula(paste(construct, "~ Group")),
    data = baseline_data,
    exact = FALSE  # Set exact = FALSE due to ties
  )
  # Store the results in a list for each construct
  mann_whitney_results[[construct]] <- list(
    W = test_result$statistic,
    p_value = test_result$p.value
  )
}

# Create a summary data frame for display
mann_whitney_summary <- data.frame(
  Construct = all_constructs,
  W_Statistic = sapply(mann_whitney_results, function(x) x$W),
  P_Value = sapply(mann_whitney_results, function(x) x$p_value)
)

# Display the summary table in a formatted table
mann_whitney_summary %>%
  kable(digits = 4, caption = "Mann-Whitney U Test Results for All Constructs (Baseline Comparison)")


######################################## Within-Group Changes Over Time ########################################


########## Shapiro-Wilk test for all time points ##########

# Define the constructs to test
constructs <- c("C_LEAD", "SEA", "OEA", "UOE", "ROE", "EI")

# Initialize a list to store the Shapiro-Wilk test results
shapiro_results <- list()

# Loop through each construct and time point to perform the Shapiro-Wilk test
for (construct in constructs) {
  shapiro_results[[construct]] <- list()  # Initialize list for each construct

  # Loop through each time point
  for (time_point in unique(data_analysis$Time)) {
    # Filter data for the current time point and perform Shapiro-Wilk test
    data_subset <- data_analysis %>% filter(Time == time_point)
    test_result <- shapiro.test(data_subset[[construct]])

    # Store the result in the list
    shapiro_results[[construct]][[time_point]] <- list(
      W = test_result$statistic,
      p_value = test_result$p.value
    )
  }
}

# Display results in a table format using knitr
library(knitr)

# Convert the results to a data frame for easier viewing
shapiro_summary <- do.call(rbind, lapply(constructs, function(construct) {
  do.call(rbind, lapply(names(shapiro_results[[construct]]), function(time_point) {
    data.frame(
      Construct = construct,
      Time = time_point,
      W_Statistic = shapiro_results[[construct]][[time_point]]$W,
      P_Value = shapiro_results[[construct]][[time_point]]$p_value
    )
  }))
}))

# Print the Shapiro-Wilk results table
shapiro_summary %>%
  kable(digits = 4, caption = "Shapiro-Wilk Test Results for Normality by Time and Construct")
```

```
########## Wilcoxon Signed-Rank test ##########

# Define the constructs to test
constructs <- c("C_LEAD", "SEA", "OEA", "UOE", "ROE", "EI")

# Initialize a list to store the results
wilcoxon_results <- list()

# Loop over constructs
for (construct in constructs) {

  # Initialize a temporary list for each construct's results
  wilcoxon_results[[construct]] <- list()

  # Control Group Comparisons
  control_data <- data_analysis %>% filter(Group == "Control")
  wilcoxon_results[[construct]]$Control <- list(
    C1_vs_C2 = wilcox.test(control_data[[construct]][control_data$Time == "C1"],
                           control_data[[construct]][control_data$Time == "C2"], paired = TRUE)
  )

  # Intervention Group Comparisons
  intervention_data <- data_analysis %>% filter(Group == "Intervention")
  wilcoxon_results[[construct]]$Intervention <- list(
    I1_vs_I2 = wilcox.test(intervention_data[[construct]][intervention_data$Time == "I1"],
                           intervention_data[[construct]][intervention_data$Time == "I2"], paired = TRUE),
    I1_vs_I3 = wilcox.test(intervention_data[[construct]][intervention_data$Time == "I1"],
                           intervention_data[[construct]][intervention_data$Time == "I3"], paired = TRUE),
    I2_vs_I3 = wilcox.test(intervention_data[[construct]][intervention_data$Time == "I2"],
                           intervention_data[[construct]][intervention_data$Time == "I3"], paired = TRUE)
  )
}

# Display results in a readable format
for (construct in constructs) {
  cat("\nConstruct:", construct, "\n")

  # Control Group Results
  cat("Control Group C1 vs C2:\n")
  print(wilcoxon_results[[construct]]$Control$C1_vs_C2)

  # Intervention Group Results
  cat("Intervention Group I1 vs I2:\n")
  print(wilcoxon_results[[construct]]$Intervention$I1_vs_I2)
  cat("Intervention Group I1 vs I3:\n")
  print(wilcoxon_results[[construct]]$Intervention$I1_vs_I3)
  cat("Intervention Group I2 vs I3:\n")
  print(wilcoxon_results[[construct]]$Intervention$I2_vs_I3)
}



########## Effect Sizes ##########

# List of constructs to calculate effect sizes for
constructs <- c("C_LEAD", "SEA", "OEA", "UOE", "ROE", "EI")

# Initialize a list to store results
effect_sizes <- list()

# Define function to calculate effect size r for Wilcoxon Signed-Rank test
calculate_effect_size <- function(wilcox_result, N) {
  V <- wilcox_result$statistic
  expected_V <- N * (N + 1) / 4
  sd_V <- sqrt(N * (N + 1) * (2 * N + 1) / 24)
  Z <- (V - expected_V) / sd_V
  r <- Z / sqrt(N)
  return(r)
}

# Perform the Wilcoxon Signed-Rank test and calculate effect sizes
for (construct in constructs) {
  cat("\nConstruct:", construct, "\n")

  # Control Group: C1 vs C2
  control_C1 <- control_data %>% filter(Time == "C1") %>% pull(construct)
  control_C2 <- control_data %>% filter(Time == "C2") %>% pull(construct)

  control_test <- wilcox.test(control_C1, control_C2, paired = TRUE, exact = FALSE)
  N_control <- length(control_C1[!is.na(control_C1) & !is.na(control_C2)])  # Count non-missing pairs
  r_control <- calculate_effect_size(control_test, N_control)

  cat("Control Group (C1 vs C2) Effect Size (r):", round(r_control, 3), "\n")

  # Intervention Group: I1 vs I2
  intervention_I1 <- intervention_data %>% filter(Time == "I1") %>% pull(construct)
  intervention_I2 <- intervention_data %>% filter(Time == "I2") %>% pull(construct)

  intervention_test_I1_I2 <- wilcox.test(intervention_I1, intervention_I2, paired = TRUE, exact = FALSE)
  N_intervention_I1_I2 <- length(intervention_I1[!is.na(intervention_I1) & !is.na(intervention_I2)])  # Count non-missing
pairs
  r_intervention_I1_I2 <- calculate_effect_size(intervention_test_I1_I2, N_intervention_I1_I2)

  cat("Intervention Group (I1 vs I2) Effect Size (r):", round(r_intervention_I1_I2, 3), "\n")

  # Intervention Group: I1 vs I3
  intervention_I3 <- intervention_data %>% filter(Time == "I3") %>% pull(construct)

  intervention_test_I1_I3 <- wilcox.test(intervention_I1, intervention_I3, paired = TRUE, exact = FALSE)
```

```
  N_intervention_I1_I3 <- length(intervention_I1[!is.na(intervention_I1) & !is.na(intervention_I3)])  # Count non-missing
pairs
  r_intervention_I1_I3 <- calculate_effect_size(intervention_test_I1_I3, N_intervention_I1_I3)

  cat("Intervention Group (I1 vs I3) Effect Size (r):", round(r_intervention_I1_I3, 3), "\n")

  # Intervention Group: I2 vs I3
  intervention_test_I2_I3 <- wilcox.test(intervention_I2, intervention_I3, paired = TRUE, exact = FALSE)
  N_intervention_I2_I3 <- length(intervention_I2[!is.na(intervention_I2) & !is.na(intervention_I3)])  # Count non-missing
pairs
  r_intervention_I2_I3 <- calculate_effect_size(intervention_test_I2_I3, N_intervention_I2_I3)

  cat("Intervention Group (I2 vs I3) Effect Size (r):", round(r_intervention_I2_I3, 3), "\n")

  # Store results in the list
  effect_sizes[[construct]] <- list(
    Control_C1_C2 = r_control,
    Intervention_I1_I2 = r_intervention_I1_I2,
    Intervention_I1_I3 = r_intervention_I1_I3,
    Intervention_I2_I3 = r_intervention_I2_I3
  )
}

# Display the effect sizes in a table format
library(knitr)
effect_sizes_summary <- do.call(rbind, lapply(effect_sizes, as.data.frame))
rownames(effect_sizes_summary) <- constructs
colnames(effect_sizes_summary)      <-      c("Control_C1_vs_C2",      "Intervention_I1_vs_I2",      "Intervention_I1_vs_I3",
"Intervention_I2_vs_I3")

# Print the effect sizes table
effect_sizes_summary %>%
  kable(digits = 3, caption = "Effect Sizes (r) for Within-Group Changes Over Time")



########## Wilcoxon Signed-Rank test on Item Level ##########

# Define the items to test (updated with the correct column names)
items <- c("SEA1", "SEA2", "SEA3", "SEA4",
           "OEA1", "OEA2", "OEA3", "OEA4",
           "UOE1", "UOE2", "UOE3", "UOE4",
           "ROE1", "ROE2", "ROE3", "ROE4",
           "C-LEAD1", "C-LEAD2", "C-LEAD3", "C-LEAD4", "C-LEAD5", "C-LEAD6", "C-LEAD7", "C-LEAD8", "C-LEAD9")

# Ensure all item columns are numeric
data_analysis[items] <- lapply(data_analysis[items], as.numeric)

# Initialize a list to store the results for each item
wilcoxon_results <- list()

# Loop over items
for (item in items) {

  # Initialize a temporary list for each item's results
  wilcoxon_results[[item]] <- list()

  # Control Group Comparisons
  control_data <- data_analysis %>% filter(Group == "Control")
  wilcoxon_results[[item]]$Control <- list(
    C1_vs_C2 = wilcox.test(control_data[[item]][control_data$Time == "C1"],
                           control_data[[item]][control_data$Time == "C2"], paired = TRUE)
  )

  # Intervention Group Comparisons
  intervention_data <- data_analysis %>% filter(Group == "Intervention")
  wilcoxon_results[[item]]$Intervention <- list(
    I1_vs_I2 = wilcox.test(intervention_data[[item]][intervention_data$Time == "I1"],
                           intervention_data[[item]][intervention_data$Time == "I2"], paired = TRUE),
    I1_vs_I3 = wilcox.test(intervention_data[[item]][intervention_data$Time == "I1"],
                           intervention_data[[item]][intervention_data$Time == "I3"], paired = TRUE),
    I2_vs_I3 = wilcox.test(intervention_data[[item]][intervention_data$Time == "I2"],
                           intervention_data[[item]][intervention_data$Time == "I3"], paired = TRUE)
  )
}

# Display results in a readable format
for (item in items) {
  cat("\nItem:", item, "\n")

  # Control Group Results
  cat("Control Group C1 vs C2:\n")
  print(wilcoxon_results[[item]]$Control$C1_vs_C2)

  # Intervention Group Results
  cat("Intervention Group I1 vs I2:\n")
  print(wilcoxon_results[[item]]$Intervention$I1_vs_I2)
  cat("Intervention Group I1 vs I3:\n")
  print(wilcoxon_results[[item]]$Intervention$I1_vs_I3)
  cat("Intervention Group I2 vs I3:\n")
  print(wilcoxon_results[[item]]$Intervention$I2_vs_I3)
}




######################################## Between-Group Differences Over Time ########################################

########## Normality and homogeneity of variances test ##########
```

```
# Load necessary library for Levene's test
library(car)

# Filter dataset for time points C2 and I3 only
comparison_data <- data_analysis %>%
  filter(Time %in% c("C2", "I3"))

# List of variables to test
variables <- c("C_LEAD", "SEA", "OEA", "UOE", "ROE", "EI")

# Initialize lists to store results
shapiro_results <- list()
levene_results <- list()

# Loop through each variable and perform Shapiro-Wilk and Levene's test
for (var in variables) {
  # Shapiro-Wilk Test for normality within each group
  shapiro_control <- shapiro.test(comparison_data[[var]][comparison_data$Group == "Control"])
  shapiro_intervention <- shapiro.test(comparison_data[[var]][comparison_data$Group == "Intervention"])

  # Store Shapiro-Wilk results
  shapiro_results[[var]] <- list(
    Control_p_value = shapiro_control$p.value,
    Intervention_p_value = shapiro_intervention$p.value
  )

  # Levene's Test for homogeneity of variance
  levene_test <- leveneTest(as.formula(paste(var, "~ Group")), data = comparison_data)

  # Store Levene's test result
  levene_results[[var]] <- levene_test$`Pr(>F)`[1]  # Extracting p-value for Levene's test
}

# Display the Shapiro-Wilk test results
cat("Shapiro-Wilk Test Results for Normality:\n")
for (var in variables) {
  cat("\nVariable:", var)
  cat("\n  Control Group p-value:", shapiro_results[[var]]$Control_p_value)
  cat("\n  Intervention Group p-value:", shapiro_results[[var]]$Intervention_p_value)
}

# Display the Levene's test results
cat("\n\nLevene's Test Results for Homogeneity of Variance:\n")
for (var in variables) {
  cat("\nVariable:", var)
  cat("\n  Levene's Test p-value:", levene_results[[var]])
}


########## Mann-Whitney U Test ##########


# Define the constructs to test
constructs <- c("C_LEAD", "SEA", "OEA", "UOE", "ROE", "EI")

# Filter data for the relevant time points (C2 and I3)
comparison_data <- data_analysis %>%
  filter(Time %in% c("C2", "I3"))

# Initialize an empty list to store the Mann-Whitney U test results
mw_test_results <- list()

# Run the Mann-Whitney U test for each construct between Control and Intervention groups
for (construct in constructs) {
  mw_test_results[[construct]] <- wilcox.test(
    as.formula(paste(construct, "~ Group")),
    data = comparison_data,
    exact = FALSE # Disable exact p-value calculation due to small sample sizes and potential ties
  )
}

# Create a summary table to display the results
mw_results_summary <- data.frame(
  Construct = constructs,
  W_Statistic = sapply(mw_test_results, function(x) x$statistic),
  P_Value = sapply(mw_test_results, function(x) x$p.value)
)

# Add significance markers based on p-value thresholds
mw_results_summary$Significance <- ifelse(
  mw_results_summary$P_Value < 0.001, "***",
  ifelse(mw_results_summary$P_Value < 0.01, "**",
         ifelse(mw_results_summary$P_Value < 0.05, "*", "ns"))
)

# Display the summary table
library(knitr)
mw_results_summary %>%
  kable(digits = 4, caption = "Mann-Whitney U Test Results for Comparison Between Control (C2) and Intervention (I3)")


######################################## Knowledge score analysis ########################################

# Make sure there is a Knowledge column summarizing the 4 knowledge questions

# Load necessary libraries
library(dplyr)


########## Within-group: Wilcoxon Signed-Rank test ##########

# Load necessary package
```

```
if (!require("dplyr")) install.packages("dplyr")
library(dplyr)

# Filter data for each group
control_data <- data_analysis %>% filter(Group == "Control", Time %in% c("C1", "C2"))
intervention_data <- data_analysis %>% filter(Group == "Intervention", Time %in% c("I1", "I2", "I3"))

# Perform Wilcoxon Signed-Rank Tests

# Control Group: C1 vs C2
control_wilcox <- wilcox.test(
  control_data$Knowledge[control_data$Time == "C1"],
  control_data$Knowledge[control_data$Time == "C2"],
  paired = TRUE
)
cat("\nControl Group (C1 vs C2):\n")
print(control_wilcox)

# Intervention Group: I1 vs I2
intervention_wilcox_I1_I2 <- wilcox.test(
  intervention_data$Knowledge[intervention_data$Time == "I1"],
  intervention_data$Knowledge[intervention_data$Time == "I2"],
  paired = TRUE
)
cat("\nIntervention Group (I1 vs I2):\n")
print(intervention_wilcox_I1_I2)

# Intervention Group: I1 vs I3
intervention_wilcox_I1_I3 <- wilcox.test(
  intervention_data$Knowledge[intervention_data$Time == "I1"],
  intervention_data$Knowledge[intervention_data$Time == "I3"],
  paired = TRUE
)
cat("\nIntervention Group (I1 vs I3):\n")
print(intervention_wilcox_I1_I3)

# Intervention Group: I2 vs I3
intervention_wilcox_I2_I3 <- wilcox.test(
  intervention_data$Knowledge[intervention_data$Time == "I2"],
  intervention_data$Knowledge[intervention_data$Time == "I3"],
  paired = TRUE
)
cat("\nIntervention Group (I2 vs I3):\n")
print(intervention_wilcox_I2_I3)


########## Between-group: Mann-Whitney U test ##########

# Baseline Comparison: Control (C1) vs Intervention (I1)
baseline_data <- data_analysis %>%
  filter((Group == "Control" & Time == "C1") | (Group == "Intervention" & Time == "I1"))

baseline_mann_whitney <- wilcox.test(
  Knowledge ~ Group,
  data = baseline_data,
  exact = FALSE
)

cat("Baseline Comparison (C1 vs I1):\n")
print(baseline_mann_whitney)

# Follow-Up Comparison: Control (C2) vs Intervention (I3)
followup_data <- data_analysis %>%
  filter((Group == "Control" & Time == "C2") | (Group == "Intervention" & Time == "I3"))

followup_mann_whitney <- wilcox.test(
  Knowledge ~ Group,
  data = followup_data,
  exact = FALSE
)

cat("\nFollow-Up Comparison (C2 vs I3):\n")
print(followup_mann_whitney)


########## Additional Descriptive Analysis ##########

# Proportion of correct answers per knowledge question by group and time
knowledge_proportions <- data_analysis %>%
  group_by(Group, Time) %>%
  summarize(
    K1_Correct = mean(K1, na.rm = TRUE) * 100,
    K2_Correct = mean(K2, na.rm = TRUE) * 100,
    K3_Correct = mean(K3, na.rm = TRUE) * 100,
    K4_Correct = mean(K4, na.rm = TRUE) * 100,
    K_overall_Correct = mean(Knowledge, na.rm = TRUE) * 100,

  ) %>%
  ungroup()

cat("\nProportion of Correct Answers by Group and Time:\n")
print(knowledge_proportions)



######################################## Satisfaction score analysis ########################################

########## Descriptive statistics ##########


# Filter for the intervention group only
satisfaction_data <- data_analysis %>%
```

```
  filter(Group == "Intervention")

# Calculate descriptive statistics for satisfaction items
satisfaction_descriptives <- satisfaction_data %>%
  summarize(
    mean_S_Overall = mean(`S-Overall`, na.rm = TRUE),
    sd_S_Overall = sd(`S-Overall`, na.rm = TRUE),
    mean_S_Materials = mean(`S-Materials`, na.rm = TRUE),
    sd_S_Materials = sd(`S-Materials`, na.rm = TRUE),
    mean_S_Org = mean(`S-Org`, na.rm = TRUE),
    sd_S_Org = sd(`S-Org`, na.rm = TRUE),
    mean_S_Expert = mean(`S-Expert`, na.rm = TRUE),
    sd_S_Expert = sd(`S-Expert`, na.rm = TRUE),
    mean_S_Infra = mean(`S-Infra`, na.rm = TRUE),
    sd_S_Infra = sd(`S-Infra`, na.rm = TRUE),
    mean_S_Use = mean(`S-Use`, na.rm = TRUE),
    sd_S_Use = sd(`S-Use`, na.rm = TRUE)
  )

# Display results
print(satisfaction_descriptives)
```

Appendix B – Descriptive Statistics per Time Point

	C1		C2		I1		I2		I3	
Construct	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
C-LEAD	3.62	0.35	3.81	0.35	3.51	0.54	3.61	0.67	3.77	0.44
EI	3.70	0.45	3.72	0.43	3.53	0.45	3.68	0.56	3.81	0.69
SEA	3.57	0.70	3.59	0.57	3.66	0.62	3.77	0.56	4.02	0.62
OEA	3.92	0.60	3.90	0.65	3.86	0.49	3.95	0.86	4.09	0.60
UOE	3.72	0.81	3.84	0.79	3.64	0.66	3.80	0.69	3.82	0.81
ROE	3.59	0.95	3.56	0.81	2.95	0.77	3.18	0.78	3.32	1.04
Knowledge	0.61	0.25	0.66	0.23	0.50	0.19	0.86	0.21	0.91	0.17

Appendix C – Between-Group Analysis

Baseline comparison:

Construct	Group	Shapiro-Wilk *p*-Value	Normality	Levene's Test *p*-Value	Homogeneity of Variance
C-LEAD	Control	0.348	Normal	0.047	Not homogeneous
	Intervention	0.179	Normal		
SEA	Control	0.226	Normal	0.585	Homogeneous
	Intervention	0.410	Normal		
OEA	Control	0.261	Normal	0.599	Homogeneous
	Intervention	0.041	Not normal		
UOE	Control	0.495	Normal	0.493	Homogeneous
	Intervention	0.673	Normal		
ROE	Control	0.257	Normal	0.829	Homogeneous
	Intervention	0.070	Normal		
EI	Control	0.064	Normal	1.000	Homogeneous
	Intervention	0.487	Normal		

Construct	W Statistic	*p*-Value	Significance
C-LEAD	132.5	0.6734	Not significant
SEA	113.5	0.7872	Not significant
OEA	139.0	0.4996	Not significant
UOE	131.5	0.7003	Not significant
ROE	171.5	0.0546	Not significant
EI	151.0	0.2589	Not significant

Over time comparison:

Construct	Group	Shapiro-Wilk *p*-Value	Normality	Levene's Test *p*-Value	Homogeneity of Variance
C-LEAD	Control	0.351	Normal	0.685	Homogeneous
	Intervention	0.773	Normal		
SEA	Control	0.035	Not normal	0.874	Homogeneous
	Intervention	0.082	Normal		

Construct	Group	Shapiro-Wilk *p*-Value	Normality	Levene's Test *p*-Value	Homogeneity of Variance
OEA	Control	0.106	Normal	0.944	Homogeneous
	Intervention	0.292	Normal		
UOE	Control	0.025	Not normal	0.590	Homogeneous
	Intervention	0.379	Normal		
ROE	Control	0.065	Normal	0.190	Homogeneous
	Intervention	0.183	Normal		
EI	Control	0.030	Not normal	0.020	Not homogeneous
	Intervention	0.379	Normal		

Construct	W Statistic	*p*-Value	Significance
C-LEAD	128.0	0.8030	Not significant
SEA	75.0	0.0772	Not significant
OEA	111.0	0.7138	Not significant
UOE	122.5	0.9692	Not significant
ROE	138.5	0.5135	Not significant
EI	109.0	0.6592	Not significant

Appendix D – Within-Group Analysis

Construct	Time	W Statistic	*p*-Value	Normality
C-LEAD	C1	0.9522	0.3483	Normal
	C2	0.9523	0.3506	Normal
	I1	0.8988	0.1786	Normal
	I2	0.9600	0.7719	Normal
	I3	0.9601	0.7732	Normal
SEA	C1	0.9428	0.2263	Normal
	C2	0.9034	0.0348	Not normal
	I1	0.9299	0.4102	Normal
	I2	0.9513	0.6601	Normal
	I3	0.8720	0.0823	Normal
OEA	C1	0.9459	0.2613	Normal
	C2	0.9269	0.1058	Normal
	I1	0.8488	0.0412	Not normal
	I2	0.9056	0.2161	Normal
	I3	0.9167	0.2920	Normal
UOE	C1	0.9603	0.4947	Normal
	C2	0.8960	0.0247	Not normal
	I1	0.9523	0.6733	Normal
	I2	0.9759	0.9394	Normal
	I3	0.9267	0.3787	Normal
ROE	C1	0.9455	0.2566	Normal
	C2	0.9166	0.0648	Normal
	I1	0.8668	0.0705	Normal
	I2	0.8563	0.0515	Normal
	I3	0.8996	0.1828	Normal
EI	C1	0.9163	0.0639	Normal
	C2	0.9001	0.0299	Not normal
	I1	0.9371	0.4875	Normal
	I2	0.9484	0.6232	Normal
	I3	0.9267	0.3785	Normal

Appendix E – Five-Finger Feedback and Clustering

This is what I found great

- How interactive it was
- I feel like I understand more about the topic
- The interactive final part with another person
- The interactive exercise to put in practice the theory
- How it is very proactive and how I get to share point of views with others
- Meet new people
- Not only learning about the topic in question but also putting it in practice
- I figured out I didn't know the topic that well actually
- Practical application with a theoretical foundation. Gave us a tool for empathy (3 stages) for application into the real world
- I found everything really great, especially the interactive exercise
- Deeper understanding and hearing from others
- The scenarios at the end were quite nice to put the theory into practice
- That it was interactive and that you shared the most important insights on empathy
- Knowing more about the topic
- The interaction with the audience and including own personal stories
- Very well structured with a good timeline

This could be done better

- More tips on how to be more empathetic
- Give a demonstration for the 3-chair exercise. I think we only got it in the 2nd try
- More practical examples in professional settings
- Improvement points: more tips and make it more energetic with examples of chair roles, etc.
- Being more thorough explaining the approach we should take as listeners
- Some more examples in the work environment
- How to be more empathetic
- More examples of real situations and how to apply empathy to them
- More insights on how to deal with situations
- More tips for self-improvement or empathy understanding
- Maybe more visual elements to explain certain concepts (videos from thought leaders)

These are my take-aways

- To put myself into the other's perspective
- Listen to the person carefully, feel what they feel, and give great feedback
- Takeaways: how different people have different levels of empathy and how that affects your point of view on why and how you or someone else is feeling
- How CEO empathy in crisis situations impacts the 3-step tool
- Understand other people's stories and feelings
- The 3 steps framework & I think it's interesting to understand that empathy is different from emotional intelligence as the latter also takes into account our own feelings
- To really make an effort to truly understand others' situations and points of view on the context they are in, not facing the situation as if it was in my day-to-day
- How it's important to be empathetic if we want to have a good relationship with someone
- The correlation between CEO empathy and crisis management
- Always try to understand the other person before reacting to the situation

This is what I did not like

- n/a

This fell short for me

- How can we actually be more empathetic: tips and tricks
- How to deal with different situations
- I feel that we looked more to the negative side of emotions and maybe could also work the other way
- How to apply the framework to different situations
- How do you teach empathy? Perhaps expanding on the idea of how to actually get people to practice empathy in their daily lives
- Tips on how to deal with it when we are too empathetic
- Tips on how to let people know that they are not empathetic
- Tips on how to lead with less empathetic people

Clustering of the responses:

Category	Theme	Summary of Responses	Example Quotes
What I Found Great	Interactivity	Participants appreciated the interactive and engaging format, which made the session lively and enjoyable.	"How interactive it was," "The interactive final part with another person," "Meet new people"
	Practical Application	Exercises provided opportunities to apply empathy concepts in real-world scenarios, reinforcing learning through practice.	"Practical application with a theoretical foundation," "Scenarios at the end to practice"
	Increased Understanding	Many felt they gained a deeper understanding of empathy and emotional intelligence, including the difference between the two.	"I feel like I understand more about the topic," "Knowing more about the topic," "Deeper understanding"
This Could Be Done Better	Practical Tips and Examples	Participants wanted more actionable advice and professional examples to better implement empathy in various situations.	"More tips on how to be more empathetic," "More examples in the work environment," "More insights on empathy"
	Exercise Guidance	Suggestions to provide clearer instructions, particularly for the three-chair exercise, to enhance participants' understanding.	"Give a demonstration for the 3-chair exercise," "Explain the approach we should take as listeners"
	Visual Aids	Some felt that additional visual aids or videos from thought leaders would clarify complex concepts.	"Maybe more visual elements to explain certain concepts"
These Are My Take-Aways	Perspective-Taking	The concept of understanding and truly seeing others' perspectives resonated strongly, encouraging participants to listen more.	"To put myself into the other's perspective," "Listen to the person carefully," "Always try to understand others"

Category	Theme	Summary of Responses	Example Quotes
	Empathy Framework	The three-step framework for empathy was noted as a helpful tool, especially in understanding empathy's role in crisis settings.	"The 3 steps framework," "The correlation between CEO empathy and crisis management"
This Is What I Did Not Like	n/a	No negative comments were provided	n/a
This Fell Short for Me	Practical Implementation	Participants expressed a need for more tips on practicing empathy and dealing with both empathetic and non-empathetic individuals.	"How can we actually be more empathetic: tips and tricks," "Tips on how to lead with less empathetic people"
	Broader Scope	Some suggested the training could cover positive emotions or how to balance empathy in diverse situations.	"Could also work the other way (positive side of emotions)," "Tips on dealing when we are too empathetic"