Team leader behaviour during crisis

Bringing together literature on stress and crisis management to unravel team leader behaviour further: A pilot study

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Acknowledgments

The completion of this master thesis is the final milestone of the Msc. Learning & Development in Organisations. Over the last year I have had the opportunity to grow professionally and personally. Firstly, through the courses of this master program, I have learned a great deal of the value of leaning and development in the workplace. Secondly, writing this master's thesis has taught me to collaborate with inspiring and different stakeholders. Next to that, I was able to improve my research skills, academic writing skills and academic reasoning ability. It was a challenging and exciting experience that I will benefit from throughout my future.

A special thanks to my thesis supervisor Corinna Rott. I would like to thank you for your continued trust and support in my ability to complete this master's thesis. I am very grateful for your guidance, continuous feedback, flexibility, quick responses and loving words. Next to that I would like to express my appreciation to Mien Segers in advance for grading my thesis and defence.

Finally, I would like to thank my beloved family and friends for their continuous support and positivity during this challenging enriching year.

Maxime Nelissen

Maastricht, June 2022

Abstract

Stress has been identified as a key factor in determining team leader behaviour. However, previous research has primarily focused on the concepts of stress, leadership and crisis in isolation. Consequently, this pilot study aims to integrate the concepts of stress and crisis to examine team leader behaviour. The purpose of this study's findings is to raise awareness of crisis leaders' stress process. The insights also seek to improve crisis leaders' trainability in coping mechanisms to build and maintain resilience in the future.

A mixed method approach was followed. First, eight semi-structured interviews with crisis leaders were conducted to gather qualitative data. These interviews included audio vignettes that were designed to manipulate crisis leaders' stress levels and to elicit team leader behaviours. Additionally, the State- Trait anxiety inventory has been employed to investigate fluctuations in crisis leaders' stress levels.

The results demonstrate that this study's manipulation through audio vignettes was unable to prompt a significant increase in crisis leaders' stress level. Nevertheless, this study was successful in eliciting crisis leaders distinct team leader behaviours across three crisis phases. Moreover, the findings reveal that crisis leaders team leader behaviour can be explained by their affected emotions; the sense of responsibility and the need to support others. During an acute crisis phase, crisis leaders are primarily directed by task-oriented behaviour. However, in a post-crisis phase, this shifts to emotionally focused behaviour. The interviews revealed that crisis leaders' emotions during the post-crisis phase resemble a significant stressor as crisis leaders are challenged to cope with their emotions and especially the high degree of responsibility towards their team members' well-being. As a result, this thesis concludes by outlining action recommendations and training guidelines that focus on supporting crisis leaders coping strategies to allow them to control their emotions across the discrete crisis phases. In addition, these recommendations aimed at increasing resilience may improve both, crisis leaders' performance as team leaders and the functioning of the entire team.

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1. Introduction

The coronavirus made its first appearance on the globe in 2019, with the first cases being documented in the Chinese city of Wuhan (Khan et al., 2020). The virus spread at breakneck speed, prompting the World Health Organization to declare the Covid-19 virus as a global pandemic on March 11, 2020 (World Health Organization, 2020). With over 5 million deaths worldwide, this pandemic is one of the biggest global health crises in history (WHO Coronavirus Dashboard, 2022; Peeri et al., 2020). Furthermore, the Covid-19 pandemic has become a global economic and social crisis due to its widespread influence on society (Romagosa, 2020). This example of the current Covid-19 crisis is just one of the many crises crisis teams face.

Crises come in a variety of sizes and forms (Sagun, Bouchlaghem & Anumba, 2009). They include natural crises caused by natural disasters such as earthquakes and tsunamis, as well as human-induced disasters such as terrorist acts like the Brussels bombing in 2016. Nevertheless, these sorts of crises have one thing in common; they are all unexpected events that cause substantial damage and loss of control and require immediate action to ensure the safety, health and efficient functioning of society (Shaluf et al., 2003). Due to the significant negative impact that crisis occurrences might have on the society, it is necessary that crisis teams take immediate action to minimize harm. However, because of the unpredictable nature of crises, information is frequently inadequate to make educated decisions. Consequently, this calls for effective crisis management, in which the role of the crisis leader is extremely important and dominant for the teams' ability to successfully respond to the crisis.

The concept of leadership is a widely researched topic, which is referred to "as the process of practising social influence and fulfilling a need for supervision and coordination from its team members" (Bal et al., 2020 p. 6). However, crisis leadership is characterized by a high degree of uncertainty, and high stakes as lives may be at risk. Additionally, the highly complex situations complicate the development of intensifying the crisis leaders' pressure to perform. In general, a crisis leader is expected to provide "stability, reassurance, confidence and a sense of control in the event of a crisis" (Lussier & Achua, 2004, p. 382). Previous research shows that this enormous pressure, in which crisis leaders face chaos, uncertainty and a strong feeling of responsibility towards team members, may be overwhelming. As a result, this might generate significant levels of stress among crisis leaders (Rott, Segers & Van den Bossche, 2021). Investigators asserted that stress might be beneficial to enhance performance, at least up to a certain degree. But once stress hits a critical point or an allostatic load, it becomes

debilitating (distress) and might impair crisis leaders' performance (Kozusnik et al., 2012; Tery et al., 1993). In this manner, the work-related stress among crisis leaders can significantly impact their well-being, potentially affecting their behaviour and performance in the long run (Dahlgren et al., 2005). According to Arnsten (1998), high levels of stress were associated with decreased cognitive functioning. This could suggest that crisis leaders who experience high levels of stress are may less able to make adequate decisions. Moreover, the findings of Tennant (2001), suggest that enduring adverse 'structural' occupational factors, such as a high workload, may contribute to developing psychological disorders. Consequently, crisis leaders need proper guidance, support, and training to deal with their exceptional work strain.

While previous research has established what successful crisis leadership should involve (Anwar, 2017; DuBrin, 2013; Forster et al., 2020; Owens & Hekman, 2012), little research has been conducted on the leader's perspective to fulfil those leadership maxims. Furthermore, despite the widely researched topics of stress, leadership and crisis, former research has failed to explore the concepts interaction in an all- encompassing manner. The lack of research on how these three concepts interact in the scientific literature demonstrates that little attention has been paid to the crisis leaders' stress process, and how stress influences their distinct team leader behaviour. Hence, this is where the gap prevails. Therefore, this current study aims to contribute to the existing literature by answering the following research question.

RQ: *"How and why do crisis leaders change their team leader behaviours across the discrete crisis phases?"*

First, this study aims to examine team leader behaviours temporally (i.e., before, during, and after a crisis occurrence) by using audio vignettes. Crisis leaders' responses to these audio recordings were collected during semi-structured interviews. Moreover, the audio vignettes were intended to stimulate crisis leaders' stress levels. Second, this study aims to uncover the leader's reasoning behind the application of their distinct team leader behaviours. The findings of this research will aid crisis organizations in better understanding the complex leadership context in which crisis leaders operate. Collectively, the study's deeper understanding of the multifaceted leadership environment will improve crisis leaders' trainability, since crisis training organizations can adapt their training syllabus to the crisis leaders' needs. Ultimately, this project aims to improve the support and guidance for crisis leaders in advising them in

coping with the complex tactical and emotional demands. Casually speaking, this thesis will provide tailored leadership guidance for crisis leaders.

The remainder of this paper is organized as follows: a literature review of stress, leadership and crisis will be provided in chapter two, followed by the method section. Within chapter four the results of this study will be discussed, and finally, the discussion and conclusion will be presented.

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2. Literature Review

This study aims to unravel team leader behaviour during crisis management by considering the literature on stress. Therefore, this chapter will elaborate the concepts of crisis, leadership and stress.

2.1 Crisis

2.1.1 Definition of crisis

The concept of crisis is a widely researched topic that has been defined by scholars in a variety of ways. According to Anwar (2017), a crisis can be defined as "a situation in which the basic structures, values and norms are affected negatively due to an unexpected situation" (p. 328). Moreover, Sapriel (2003), defines a crisis as "an event, allegation or set of circumstances which threatens the integrity, reputation, or survival of an individual or organization (p. 348). In addition, Jaques (2012), stated that a crisis involves a degree of risk and uncertainty. Considering the previous studies within this realm of research it can be concluded that the authors concentrated on crisis within a corporate or organizational context (Anwar, 2017; Jaques, 2012; Sapriel, 2003). Despite the context variance, a crisis event can be described as a sudden and unforeseen event which emerges as a surprise, there is a widespread sense of threat that calls for urgency, indicating a short decision time to act under conditions of pervasive uncertainty (Boin & Renaud, 2013).

2.1.2 The discrete crisis phases

Three phases, defined as the discrete crisis phases, can be distinguished in the context of crisis management: the pre-crisis phase, the acute crisis phase, and the post-crisis phase. As this study aims to investigate team leader behaviour across the discrete crisis phases, it is essential to create a common understanding of each crisis phase. Therefore, this section will briefly address each phase separately.

The *pre-crisis phase* is characterized as the stage in which a crisis team anticipates and prepares for future crisis scenarios. In this pre-phase, careful planning of resources and training activities that stimulate effective decision-making and seamless collaboration within the crisis teams are performed to ensure a rapid mobilisation of all forces during an acute crisis phase (Tokakis et al., 2019). In addition, crisis teams are led by process protocols during this pre-

crisis phase as they attempt to anticipate prospective crises by drawing on their prior knowledge.

The *acute crisis phase* is known as the phase in which an actual crisis occurrence takes place. To minimize any potential harm a crisis might cause, this acute crisis phase calls for crisis recognition and action by the crisis teams. Due to the distinctive traits of a crisis occurrence, crisis teams are forced to take upon non-routine activities (Tokakis et al., 2019).

The *post-crisis phase* is defined as the stage in which the emergency phase ends, leaving room for retrospective debriefing and eventually recovery. Casually speaking crisis teams should return to their routine tasks or the "normal". Interestingly, this phase is characterized by reflection and learning to use the experiences as "lessons learned" in preparation of the next crisis (Tokakis et al., 2019).

This study, which intends to examine team leader behaviour throughout these three discrete crisis phases, is considered highly relevant since limited research has been conducted investigating the full cycle of crisis.

2.2 Leadership

2.2.1 Leadership in general

Leadership is probably one of the most researched concepts in the literature of management and organization. However, it is not easy to find one universally accepted definition since the concept of leadership is context-dependent. According to Rost (1991), leadership can be defined as "an influence relationship among leaders and followers who intend real changes that reflect their mutual purposes" (p. 102). In addition, Silva (2016), stated that "leadership is the process of interactive influence that occurs when, in a given context, people accept someone as their leader to achieve common goals" (p.3). Although the concept of leadership has been conceptualized in a variety of ways, most definitions utilize a typology that categorizes different types of leaders. These are frequently referred to as "leadership styles" (Anwar, 2017). The notion of leadership plays an important role since the application of a certain leadership style influences the operation of the entire team or company. For example, Turner and Müller (2005) identified in their research that leadership and competence are key variables in an organization's success. Despite the vast literature on leadership and the various leadership styles, it is still unclear what constitutes effective leadership. As "good leadership is not a one size fits- all proposition", this intriguing issue is rational (Snowden & Boone, 2007,

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p.1). Applying a leadership style can be useful in a specific context. However, applying the same leadership style across contexts can be ineffective. For instance, autocratic leadership, in which one individual makes decisions without consulting others to guarantee that the team accomplishes a common objective, is generally seen as a successful leadership style in defence since decisions can be made rapidly, which can be crucial in this context. However, in the business world, this leadership style is rarely regarded as effective since it discourages cooperation and innovation (Kaleem et al., 2013). Hence, understanding leadership per specific context is essential (Osborn & Marion, 2009). Consequently, this research will concentrate on leadership in the context of a crisis.

2.2.2 The unique leadership context of crises

Crisis leadership can be defined as the process of guiding a group of people through a sudden and mostly unforeseen, extremely unpleasant, and emotionally exhausting situation (DuBrin, 2013). Moreover, crisis leadership may be defined as the process through which leaders act to prepare for unforeseen crisis events. Preparing for a crisis circumscribes training for the hypothetical implications that may arise due to a crisis event and learning from the crisis scenarios' disruptive experiences (Wu et al., 2021). This implies that the notion of crisis leadership refers to a flexible leadership style that has to adapt to the unique crisis at hand. However, the discrete crisis phases are universal to each crisis, despite the variety of incidents. Due to the exceptional characteristics of a crisis event, crisis leadership differs significantly from leadership in ordinary everyday situations. Leadership during a crisis can be a challenging task, as leaders are confronted with uncertainty and are asked to undertake non-routine activities that require them to leave their comfort zone. In a crisis context, non-routine tasks entail that a leader must make decisions under uncertainty and without guiding protocols while being equally required to engage in creative problem-solving. Due to the limited information, judgments are frequently taken based on intuition since operations must be carried out fast and in the absence of protocols. Contrary, routine activities are guided by process protocols that are based on previous experience circumscribing highly valid (i.e., predictable) procedures (Lillrank, 2003). As crises are rare one-of-a-kind occurrences, leaders are barely unable to rely on their previous leadership experiences. Thus, crisis leaders are forced to adapt their leadership style to the situation at hand (Bal et al., 2020).

Furthermore, the team's composition within the crisis is challenging. Due to the complexities of a crisis, it is expected to collaborate with multi-professional teams to ensure a

greater range of expertise (DeChurch & Marks, 2006). Exemplary that a coordinated effort from firefighters, police officers, and surgery teams can be needed in a large-scale accident. Such collaboration across different professions is referred to as Multi-team systems (MTS). MTS's are defined as "two or more teams that interface directly and interdependently in response to environmental contingencies toward the accomplishment of collective goals" (DeChurch & Marks, 2006, p. 311). The team composition is the most difficult aspect of guiding MTS's. The multiple teams are made up of various individuals, each with a unique background and set of skills. It is the leader's responsibility to ensure that everyone is pulling in the same direction, which refers to the process of teaming (Edmonson et al., 2017). Lenz (2019), defined teaming as "the art and skill of creating several small focused working groups to concentrate on very defined deliverables while working as a part of the whole project as one cohesive unit (p.36). Effective teaming can be extremely challenging within the context of crisis management due to the lack of a stable team structure. For instance, research has demonstrated that professional sports teams succeed because of their high degree of practice. Yet, practice can only take place if a team has a stable team structure that allows for regular training opportunities. However, in the event of a crisis, this stable team composition does not exist. As a result, multi-team systems are forced to work together without prior training. Consequently, this challenging team composition empathizes the importance of developing tailored action recommendations for crisis leaders on how to deal with this complex leadership context.

2.2.3 Effective leadership during crisis

As Snowden and Boone stated in 2007, "good leadership is not a one-size-fits-all approach" (p.1). This statement is also valid within crises as they occur in different sizes and forms. However, several academics have shared their perspectives on effective crisis leadership, which will be critically examined in this section.

First, according to the research findings of Mulder et al. (1971), strong autocratic leadership is required during a crisis event, as responsibilities for decisions cannot be shared equally. Their research results suggest that there is a clear dividing line between crisis leadership and non-crisis leadership. They argue that in times of crisis authoritarian leadership is necessary due to the limited time to share responsibilities. In non-crisis situations, however, where open communication and negotiation are possible, a softer, more personal relationship between the leader and his followers is desirable and appropriate. Second, DuBrin (2013)

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argued that during a crisis, leaders must act decisively to resolve the situation. These decisive actions are highly desirable as in most crisis situations there is little time for consulting and deliberating with individuals. Consequently, crisis demand for a decisive leader who clearly communicates concrete actions to rapidly synchronize forces to address the incident (DuBrin, 2013). In line with the leadership characteristics described by DuBrin, Mulder et al. (1971) and Dubrin (2013) recommend team leader behaviours that correspond to directive leadership as appropriate during a crisis. According to Kahai et al. (2004), "directive leadership aims to guide followers" participation and is defined as providing and seeking compliance with directions for accomplishing a problem-solving task" (p.71). Directive leadership is extremely authoritarian, with one person wielding a great deal of authority and little space for consultation (Muenjohn et al. 2018). However, despite the authoritarian team leader behaviours research has shown that followers tend to prefer this type of leadership during a crisis event. Exemplary, previous research by Dubrin confirmed that followers prefer an assertive leader at times of extreme threat and time pressure (2013). Moreover, the results of the qualitative research by Owens & Hekman (2012) demonstrate that there must be someone who dares to take the lead and who takes control of the decision-making process. Additionally, research by Yukl (2002) indicates that leaders who take immediate action and control in problem-solving are considered highly competent by their followers.

On the contrary, research showed that leaders should avoid precisely this form of top-down leadership during crises but rather apply a more bottom-up approach. According to Foster et al. (2020), effective leadership during crisis involves promoting open discussion with team members to exchange creative ideas to come to the most effective solution. This corresponds to Alkharabsheh's et al. (2013) perspective as they suggest that relationship-oriented leadership will function effectively. Relationship-oriented leadership was found to be accompanied by loyal followers during a crisis event. This indicates that followers are willing to support and obey their leaders during harsh circumstances. Leaders who focus on the relationship with their followers tend to be participative, open and encourage their followers to address issues in novel ways. Both Foster et al. (2020) and Alkharabsheh et al. (2013) describe a style of team leader behaviour that corresponds to transformational leadership. Transformational leadership is characterized by the ability of a leader to influence the values, beliefs and behaviour of followers by working together towards achieving the common goal and mission (Roueche et al., 1989). Additionally, McCall (1986) stated in his study that transformational leaders are able to transform followers to succeed beyond their expectations. This indicates that if transformational leadership is applied in its ideal form, it will foster a meaningful and positive

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transformation in the followers, with the final aim of transforming followers into leaders. Due to the qualities of a transformational leader such as the idealized influence, the inspirational motivation, the individualized consideration and the intellectual stimulation, followers are willing to work harder than originally anticipated, which will ensure that followers will succeed beyond their expectations (Avolio et al. 1991; McCall, 1986). Hence, it is hypothesized that during a crisis event in which there is a widespread threat and in which non-routine tasks have to be carried out, applying transformational leadership will be effective. This might be explained by the fact that transformational leaders can motivate followers to a large degree to think creatively and innovatively in order to come up with new solutions that will lead to opportunities to overcome the crisis (Harwati, 2013). The consideration of transformational leadership as a promising leadership style during a crisis is reasonable since non-routine decisions are frequently made based on only 70% of the information available. As a result, creativity and innovation are in high demand, which can be stimulated by applying a transformational style of leadership.

To summarize this literature review on current leadership model demonstrates, that there are many different perspectives on what constitutes effective crisis leadership. However, these leadership models lack practical recommendations and provide utopic guidelines that lack applicability during an extreme (stressful) event. Providing crisis leaders with such utopic leadership models might be discouraging as crises leave little room to engage in complex leadership practices (e.g., to find time to foster each team member's individual growth as advocated in the transformational leadership model). Hence, crisis leaders lack suitable leadership models that apply in a stressful "worst-case scenario," namely, during crises. As a result, this study will also focus on the stress process of crisis leaders. It is likely possible to obtain a greater understanding of the team leader behaviours of crisis leaders by raising awareness of the stress process. This will allow future research to establish leadership models that entail practical recommendations for crisis leaders.

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2.3 Stress

2.3.1 What is stress and what does it to our cognition?

The question of what constitutes stress has occupied many researchers. First, Lazarus (1990) stated that psychological stress refers to a relationship between an individual and the environment. This stress may arise if a persons' recourses are taxed or exceeded. The stress coping theory suggests a two-way relationship between the environment and the individual. This relationship implies that a stressor is subjectively perceived by the individual and prompts a coping response. The individuals subjective stress responses are based on two cognitive appraisals. The primary appraisals and the secondary appraisals. Within the primary appraisal, the individual evaluates a situation or stressor as a threat or a challenge. In addition, within the secondary appraisal, the individual will search for coping opportunities and inhering resources to cope with the stressor (Avcıoğlu et al., 2019). Second, Colligan and Higgings (2006), defined stress "as the change in one's physical or mental state in response to situations (stressors) that pose challenge or threat" (Colligan & Higgings, 2006, p. 90). Lastly, the definition of Colligan and Higgings (2006), ties in nicely with the stress perspective of Staal (2004). He conceptualizes the concept of stress as an interaction between three elements: "perceived demand, perceived ability to cope, and the perception of the importance of being able to cope with the demand" (Staal, 2004, p. 2). Although stress is often associated with something negative and harmful, previous studies demonstrated that a reasonable amount of stress can be beneficial to an individual's performance (Teigen, 1994). This phenomenon of stress as performance enhancing can be explained by the Yerkes-Dodson Law. This law, which is often portrayed in the shape of an inverted U, argues that there is a relationship between the amount of stress and performance. The Yerkes- Dodson law illustrated that an optimum level of stress, rather described as excitement or arousal level, might contribute to increased performance. Nevertheless, the model exemplifies that a further rise in stress, above this optimal arousal level, will lead to a drop-in performance (Teigen, 1994).

In the literature, this basic distinction of stress as performance impairing or performance enhancing is progressed as concepts of eustress and distress (Colligan & Higgings, 2006). Eustress also referred to as "the good stress" is often a result of a favourable perception towards stressors (i.e., a challenge perception in the primary appraisal). Moreover, in the case of eustress the stressor has been acknowledged as a challenge, and can be taxed with adequate resources (i.e., secondary appraisal stage). Distress, on the other hand, is mostly acknowledged

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as "the bad stress". Distress is accompanied by negative effects prompted by a threat perception during the primary appraisal stage and accompanied by a perceived inability to cope with the stressor (i.e., a lack of resources in the secondary appraisal stage) (Le Fevre et al., 2003). Whether an individual experiences eustress or distress is determined by the perceived demand and its magnitude, as well as the individual's perception towards the demand (Le Fevre et al., 2003). According to the existing literature, a stressor can be classified based on its timing, its desirability and its favourable for the individual. Moreover, a stressor can be assessed to who imposed the demand. A distinction can be made between an internally imposed demand and an externally imposed demand. In case of an externally imposed demand, the source may also play an important role (Le Fevre et al., 2003). For instance, if you set a goal for yourself to improve your performance to achieve a promotion, you may see it as a challenge that causes eustress. On the other hand, if you receive an externally imposed demand from your manager to improve your performance in order not to be fired, you may experience this as a threat that can cause distress. Colligan and Higgings (2006), suggest, that both eustress and distress, might lead to emotional, cognitive, physical, and behavioural reactions of individuals. The interaction between the individual characteristics and the characteristics of the stressors determines how an individual deals with stress. In general, since eustress is considered positive and challenging, it is more likely that eustress generates a positive effect on our cognition, indicating better performance. In contrast, individuals who experience distress are frequently unable to cope effectively with stressors, which will have negative effects on their cognition and mental health. For example, individuals who experiencing distress are generally less able to make adequate decisions since they might experience a drop in their working memory (Arnsten, 1998; Colligan & Higging, 2006). In the context of crisis management, this could have major consequences.

In the realm of research discussing stress, it is crucial to mention the concept of resilience. Resilience can be defined as "the ability of an individual to adjust to adversity, maintain equilibrium, retain a sense of control over their environment and continue to move on in a positive manner" (Jackson et al., 2007, p.3). Casually speaking, resilience circumscribes the process of the individual coping with a stressor and learning of the incident. Individuals that cope adequately, master the challenge and might experience growth. The concepts of Lazarus and colleagues, focus on the individuals' appraisal and resources to cope with a stressor. Thus, this research investigated crisis leaders' stress process in a longitudinal manner, dissecting the crisis leaders' underlying reasoning (i.e., appraisal) and their mobilisation of team leader instructions (i.e., coping) to navigate their teams. An all-encompassing understanding of the

distinct perceptions and motives of crisis leaders across the discrete crisis phases is believed to foster a better understanding of the internal motives and effects of crisis leaders. Such insights can be used to foster crisis leaders stress awareness and help organisations to provide the necessary resources for crisis leaders to navigate a stressful crisis adequately.

2.3.2 Work-related stress

As this study seeks to address the stress level of crisis leaders during a crisis scenario to elicit the behaviour of team leaders, this research focuses on work-related stress. Work-related stress can be defined as a physical and emotional reaction to hazardous working conditions. For instance, a worker may experience work-related stress if their abilities and resources are insufficient for the task at hand (Colligan & Higgings, 2006). In the context of crisis management, crisis leaders may, for example, experience work-related stress if they lack the knowledge or resources to make an adequate decision under a time constraint.

Work-related stress can be caused by numerous stressors, such as changing work environments, role ambiguity and extreme performance or time pressure (Bakker & Demerouti, 2007; Colligan & Higgings, 2006). Both factors are present within the complex working environment of crisis leaders, increasing the likelihood that crisis leaders will experience work-related stress. Additionally, work-related stress is likely to arise among crisis leaders due to the fact that they feel obligated to maintain an exemplary reputation so that others have faith in their decision-making. Baer et al. (2015), argued that the feeling of having to meet others' expectations might cause employees experiencing greater work pressure, which is likely to increase emotional exhaustion. Over time, this significant strain on leader's psychological resources may accumulate and have detrimental effects (Baer et al., 2015; Dalhgren et al., 2005) For instance, Dalhgren et al. (2005) found in their study that high levels of work stress made it challenging for employees to unwind in their spare time. Hence, stressed employees may have difficulties falling asleep, causing sleep disturbances. Subsequently, the findings of Dalhgren et al. (2005) demonstrated that long-term work-related stress is associated with fatigue. As a result, fatigued staff were more likely to perform poorly, which may reduce their productivity and increase their error rates (Dalhgren et al., 2005). In the case of crisis leaders, this could have far-reaching consequences not only for themselves but also for the functioning of the team in a crisis. Crisis leaders operate in a highly cognitive setting requiring them to make accurate decisions and command and control their teams from a meta-perspective. Hence, well thought

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trough commands are crucial to minimize harm for their action teams navigating the incident on the scene.

Moreover, the findings of Tennant (2001), suggest that enduring 'structural' occupational factors, such as high workloads, can contribute to developing psychological disorders. These pathological effects of high-stress levels demonstrate the importance of paying attention to crisis leaders' stress process to ensure their long-term health and well-being. Ultimately, strengthen their resilience. Furthermore, previous research documented a negative impact of stress on positive and empathic team leader behaviours risking contagious stress effects for their followers (Dahlgren et al., 2005). In the long run, ineffective leadership can negatively affect the entire team's effectiveness.

2.3.3 The importance of investigating the stress process of crisis leaders regarding follower's well-being and functioning, placing the individual crisis leader in a team context

Harm et al. (2017), stated in their research that work-related stress among leaders was associated with lower levels of positive team leader behaviour. In addition, the findings of Sprague et al. (2011) reveal that high levels of stress were linked to aggressive and abusive behaviour towards followers. Expressing aggressive and abusive behaviour can have long-term negative effects on the well-being of subordinates. Previous research showed that destructive team leader behaviour, resulting from ongoing stress in leaders, can be linked to higher levels of stress and burnout among followers (Harms et al., 2017; Skakon et al., 2010). The association between abusive team leader behaviours and follower strain demonstrates how leadership stress may affect the health of the entire team. Consequently, this association supports the urgency to address leadership stress in order to provide a basis for health-oriented leadership towards followers. Health-oriented leadership highlights that leaders can influence followers' health in three ways; "(1) directly through their communication and behaviour; (2) indirectly by influencing task and working conditions, and (3) as role models" (Klebe, Felfe & Klug, 2021, p.1203). The concept of this team leader behaviour consists of three components, each of which contributes to the health of followers. "*Leaders' Self Care* (reducing stressors and using resources), *Leaders' Staff Care* (comprising health-promoting attitudes and behaviour towards employees), *Followers Self Care*" (Klebe, Felfe & Klug, 2021, p. 1205). In order to ensure health-oriented team leader behaviour, leaders' Self Care, is considered as a relevant condition. This implies that leaders must value both their physical and mental well-being. Additionally, leaders should be conscious of their health at all times and take care of it as needed (Dannheim

et al., 2021). Crisis leaders training organisations, for instance, could encourage Leaders' Self Care by offering training opportunities that are aimed at raising perceptions of the importance of health conditions among crisis leaders. Additionally, the training should increase crisis leaders' health awareness and stimulate stress-coping strategies. Consequently, this may enable crisis leaders to build and maintain resilience in the future, which may result in health-oriented team leader behaviour.

Klebe, Felfe and Klug (2021) investigated the effects of health-oriented team leader behaviour on follower health during a crisis. The results of their study show a positive relationship between health-oriented team leader behaviour and follower health within a crisis context. This indicates that applying health-oriented team leader behaviour can promote the well-being of followers in a positive way. In addition, the research demonstrates that health-oriented team leader behaviour might be an effective way of improving followers' performance (Klebe, Felfe & Klug, 2021). Enhancing followers' performance in a crisis situation is considered highly relevant as it can help to minimize adverse effects.

In conclusion, since crisis leaders are considered role models, implying that their behaviour can have an impact on the health of followers, it is essential to analyse and manage the stress processes of crisis leaders.

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2.4 Problem statement and significance

In this theoretical framework, the concepts of crisis, leadership and stress have been analysed. However, a review of the existing literature revealed a gap as previous studies investigated the concept of crisis, leadership and stress in isolation. Therefore, the following research question will be examined:

"How and why do crisis leaders change their leader behaviour across the discreet crisis phases?"

By investigating the concepts of team leader behaviour before, during and after a crisis the integrated study design aims to uncover crisis leaders' stress process in an all-encompassing manner. The findings of this research will provide a deeper awareness of this complex leadership environment, which will improve the trainability of crisis leaders. Casually speaking, the studies analysis aims to uncover the distinct stressors during the crisis phases. Potentially revealing fluctuations in the crisis leaders' stress level that explain the corresponding alterations in team leader behaviour of crisis leaders. Ultimately, this project aims to improve the trainability of crisis leaders by providing practical action recommendations in dealing with the complex team leader requirements per crisis phase. Suggesting that crisis leaders enhance their stress awareness and gain a deeper understanding of their underlying driving forces that stand to determine their team leader behaviours. Overall, it is hypothesized that such an enriched stress awareness will assist organizations in developing suitable and realistic training opportunities

To answer the main research question, three sub-questions have been formulated;

(1) "Can an audio scenario elicit team leader behaviours during a semi-structured interview?"

(2) *"What kind of team leader behaviours do crisis leaders describe during the discreet crisis phases and why do they display this specific kind of behaviour?*

(3) "Can an audio scenario manipulate the stress level of crisis leaders?"

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3. Methodology

This chapter will provide an overview of the methodology used to address the thesis' research question. The following chapter designates the method, the procedure of data collection, the strategy of data analysis and the sample.

3.1 Method

The research question of this thesis *"How and why do crisis leaders change their team leader behaviours across the discreet crises phases?"* has been addressed by performing a pilot study using a mixed method approach. This indicates that both quantitative and qualitative research has been used to answer the same phenomenon. This multi-modal research method is also referred to as triangulation (Hussein, 2009). Triangulation was the preferred method since it allows qualitative research findings to be validated with quantitative research (Hussein, 2009). Casually speaking, the survey was employed within this study to observe whether conducting semi-structured interviews and the use of scenarios in the form of fictitious sound recordings, proved to be an effective technique in manipulating crisis leaders' stress level. In the next section, both research methodologies are discussed in greater depth.

3.2 Qualitative Research

3.2.1 Semi-structured interviews

For the qualitative research, semi-structured in-depth interviews have been conducted to unravel recurrent themes and patterns within and between subjects. The use of semi-structured interviews was the preferred method since it allows room for probing and unexpected turns in the interviews (Kallio et al., 2016). First, in case the subject requires further attention, this interview technique allows the researcher to ask follow-up questions. Subsequently, those follow-up questions may lead to new insights (Kallio et al, 2016)

Second, an individual in-depth interview focusses on social and personal experiences and knowledge, which will be highly relevant as this study aims to elicit team leader behaviours of crisis leaders (DiCicco-Bloom & Crabtree, 2006). The interviews within this pilot study were conducted to investigate what behaviour team leaders would apply in each discreet crisis phases (i.e., pre, acute, post). As a result, audio vignettes were used to simulate subsequent phases of a crisis situation in order to elicit team leader behaviours. In addition, the vignettes were used to investigate if an audio recording can manipulate crisis leaders' stress level.

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Finally, the use of semi-structured interviews was particularly beneficial for this study, as this approach will make it possible to identify the underlying motives and justifications for the described behaviours of the team leaders.

3.2.2 Vignette studies

As previously stated, vignettes were utilized during the semi-structured interviews. Vignettes, are a common approach in psychological research. (Jenkens et al., 2010). A vignette is defined as "a carefully written description of a person or situation designed to simulate key features of a real-world scenario" (Evans et al., 2015, p. 162). The use of scenarios in qualitative research allows the researcher to elicit thoughts, feelings, behaviours and decisions from individuals. Furthermore, employing scenarios has the benefit of providing a realistic insight into contexts that are generally difficult to observe (Evans et al., 2015). This emphasizes the relevance of using scenarios within this research, since crisis management is in generally considered as a challenging context to investigate and analyse.

3.2.2.1 Audio vignettes

The vignettes were presented to the participants in the form of an audio recording. For this pilot study, a total of two different audio vignettes have been developed. Both scenarios are intended to influence crisis leaders' stress level and elicit team leader behaviour. The vignettes were developed throughout multi-professional evaluation rounds. The development of the scenarios included contributions from experienced crisis leaders of OTO Limburg and the MUMC's chief of trauma care, ensuring that the scenarios replicate realistic crisis scenarios. Additionally, the audio vignettes are based on a former qualitative study by Rott, Segers & Van den Bossche (2021). This former study was successful in identifying the stressors that affect crisis leaders the most. In order to manipulate the stress level of crisis leaders and elicit team leader behaviours, the extracted stressors from Rott's et al. study (2021), were incorporated into the audio vignettes (see appendix 1). The first audio vignette aimed to simulate an acute crisis. The second audio vignette simulated a post-crisis phase. All interviews were conducted in Dutch, thus the audio vignettes were Dutch. However, a translation of the textual transcript of both audio vignettes can be found in Appendix 2.

3.3 Quantitative Research

3.3.1 The State- and Trait Anxiety Questionnaire

For the quantitative section of this study, a longitudinal approach has been conducted by using the State- Trait Anxiety Inventory questionnaire to measure crisis leaders' stress amplitudes during the interview. To measure anxiety this questionnaire makes a difference between the temporary emotional condition of State anxiety (A-state scale; Y1) and the more general long-term quality of Trait anxiety (T-trait scale; Y2) (Donzuso et al., 2014). To be more specific, State anxiety is defined as "a subjective, consciously perceived feeling of fear and tension that is accompanied by the activation or agitation of the autonomous nervous system"(Donzuso et al., 2014, p. 504). On the other hand, Trait anxiety is defined as "a motif or acquired behavioural disposition that makes an individual susceptible to perceiving a wide range of objectively harmless situations as threatening and to react to them with the anxiety stress" (Donzuso et al., 2014, p.504).

Due to its high reliability, and the ability to distinguish between high-low stress circumstances, the State- Trait Anxiety Inventory is a common and valid used self-report assessment instrument in psychological research to measure anxiety (Bielding et al., 1998; Metzger, 1976). Both the State and Trait part of the questionnaire consists of twenty questions, which allows participants to indicate their stress level on a four- point Likert scale. The Trait-version of the questionnaire represents how the respondent perceives himself/herself in general (E.g. I feel nervous and restless). Within the State-version of the questionnaire, the respondent needs to indicate how they perceive themselves in the current moment (E.g. I feel calm). Scores for both scales can vary from a minimum score of 20 to a maximum score of 80. The score indicates the level of anxiety, implying the higher the score the higher the level of anxiety of the respondent (Fountoulakis et al., 2006).

3.3.2 Application

For the context of this study, the State-Trait Anxiety Inventory was employed to investigate whether the replication of crisis scenarios in the form of audio recordings during the semi-structured interviews, proved to be an effective technique in manipulating crisis leaders' stress level. To measure the stress level of crisis leaders on a day-to-day basis participants were asked to fill in the pre-questionnaire before the interview. This pre-questionnaire consisted of a consent form, demographic questions, questions related to the research as well as the Trait version of the STAI questionnaire. Subsequently, during the interview, participants were asked

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to fill out the online follow-up questionnaire consisting of demographic questions as well as the State version of the STAI questionnaire. Both, the pre-questionnaire and the follow-up questionnaire can be found in Appendix 3.

3.4 Procedure of data collection

In order to gather data on crisis leaders' team leader behaviours and stress fluctuations, eight interviews were conducted. OTO Limburg, an organization in the acute care in Limburg who provides training and education to crisis leaders, started the solicitation process (Nazl, 2021). OTO Limburg approached potential participants through a solicitation email, containing an explanatory flyer illustrating the study's aim and purpose (See Appendix 4). Based on this general information provided by mail, potential participants could decide to be interviewed. Once an individual expressed interest in participating in this study, she/he received the cover letter via email. Participants were then able to schedule their interviews. In addition, the email entailed the study's pre-questionnaire. The pre- questionnaire was administered via the online platform Qualtrics. After completing this online pre- questionnaire, the participants received a thank-you email containing details concerning their scheduled interview and the according zoom link.

The interviews were conducted either online or in person. The interviewee ensured that the participants were aware that they could stop the interview recording at any given time and could step back from their participation in this study without further explanation why they would like to drop out. After completing the initial rapport phase and the first half of the interview procedure, participants were invited to fill on a second, follow up questionnaire. The follow-up questionnaire was administered during the interview, directly after listening to the second audio vignette.

All interviews were scheduled for approximately 30 minutes. However, the semi-structured interview scope allowed for a longer interview duration if needed. As a result, the conducted interviews lasted 40 minutes on average. The data collection was completed between 28th of April and the 9th of May 2022. A detailed overview of the interview guideline can be found in paragraph 3.5.

All interviewees agreed to the interview recording, which was substantial for the subsequent analysis. After completing the qualitative interview, the interviews were transcribed. A visualization of the data collection procedure can be found in figure 1.
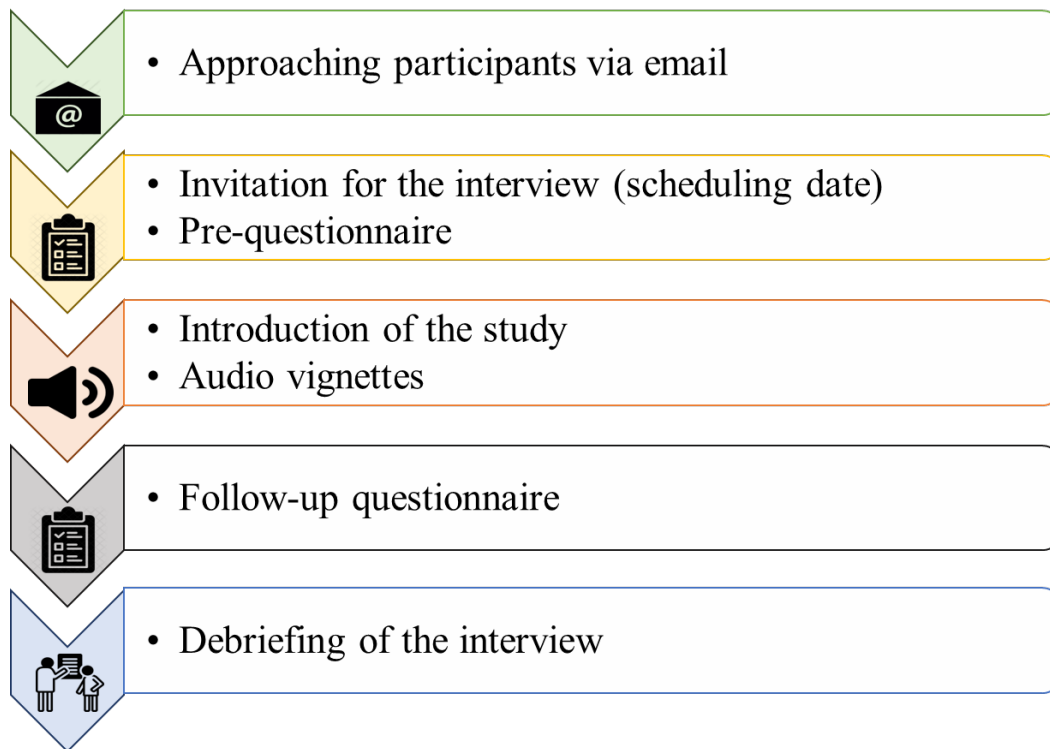
- Approaching participants via email

- Invitation for the interview (scheduling date)
- Pre-questionnaire

- Introduction of the study
- Audio vignettes

- Follow-up questionnaire

- Debriefing of the interview

Figure 1: Procedure of data collection

3.5 Interview Guideline

The interview guideline has been developed through recurrent review rounds and consists of three main parts: an introduction, core and a conclusion. See Appendix 5 for a complete overview of the interview guideline and a descriptive visualisation.

The introduction within the interview guideline consists of introducing the research topic, the researcher, and the research procedure which includes asking for permission to record the interview. Moreover, building rapport during the introduction section was accompanied by asking for demographic information about the interviewee. Furthermore, collecting this demographic data was important to enable comparison and matching of each participant's pre-questionnaire to the questionnaire during the interview (i.e., matching the Trait to the State questionnaire).

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The core of the interview starts with questions that are mainly focused on eliciting team leader behaviours during the pre-crisis phase. Following this, participants were instructed to close their eyes and imagine receiving a phone call in the middle of the night. Subsequently, the first audio vignette was played. This first audio vignette aimed to manipulate crisis leaders stress levels by exposing them to a crisis scenario in a hospital. This indicated that a power failure of an intensive care unit was the theme of the first crisis simulation. To put further pressure on the crisis leaders, it was also stated that the emergency power supply had collapsed.

The first audio vignette was followed by open questions addressing the crisis leaders' emotions that stand to guide their behaviours. Moreover, prompts were used to gain insights into crisis leaders' decision-making process. For instance, one question concerned; *"what steps would you take now and why?"*. Ultimately, the goal was to elicit crisis leaders' distinct reasoning behind those team leader behaviours.

Afterwards, participants were instructed to close their eyes again and imagine receiving a phone call in the aftermath of an acute crisis phase. Promptly, the second audio vignette was played. This second audio vignette simulated a post-crisis phase in which the crisis leader was challenged to deal with an emotional colleague who could not let go the crisis situation. This was explained by the fact that a few patients had passed away because of the power outage. As a result, the emotionally distressed colleague received threats from the patients' relatives. Subsequently, the audio vignette was followed by a second set of questions investigating crisis leaders' underlying emotions, intended team leader behaviours and their decision-making process. This second set of questions aimed to elicit the behaviour of team leaders during the aftermath of an acute crisis. Immediately after answering these questions, participants were asked to fill out an online follow-up questionnaire. Finally, upon formal termination of the interview, participants were invited to provide feedback on the audio vignettes, the interview procedure and the quantitate questionnaires.

In this concluding section, the participant was kindly thanked for his/her participation.

3.6 Sample

A total of eight interviews were conducted for this pilot study. Participants were all experienced crisis leaders who have been trained by OTO Limburg. Six of the interviewees were male (75%) and two were female (25%). All of them hold the position of a crisis leader in either a strategic, tactical or operational matter. A detailed overview of the demographic data of the participants can be found in Appendix 6.

3.7 Analysis

3.7.1 The Qualitative analysis

3.7.1.1 The Transcription method

To allow a qualitative analysis the study investigator transcribed all interviews. It is crucial to mention that all unedited citations have been translated into English and have passed a filter when formulating them in the results section. However, the transcripts were analysed in Dutch. All original quotes can be assessed upon request. The transcription process indicates that spoken words from the audio recordings have been reproduced in written text (Halcomb & Davidson, 2006). More specifically, within this research a verbatim transcript method was used. This method implies that the verbal data is transcribed word- for- word, resulting in a transcript that is "an exact replication of the audio recorded words" (Halcomb & Davidson, 2006, p. 38). The transcripts were reviewed until a data saturation was reached and no new codes emerged. After the final coding scheme was developed the transcripts were re-analysed to ensure a coherent and all-encompassing coding across all transcripts.

3.7.1.2 Coding approach

The software program Atlas.ti was used to code the transcripts. A conventional content approach has been employed to analyse and code the data. This is a commonly applied and appropriate analytical strategy when existing literature and research on a phenomenon is scarce (Hsieh & Shannon, 2005). Consequently, utilizing a conventional content analysis is considered the most interesting and appropriate way to analyse the collected qualitative data. Applying this approach utilizes inductive codes and code categories from the data rather than employing predefined classifications which usually have emerged from the literature (i.e., the bottom up approach). Using this type of coding technique is also referred to as inductive coding (Hsieh & Shannon, 2005). Utilizing this technique has the advantage that a thorough the examination of the data fresh insights can generate new codes, that enrich the coding scheme (Hsieh & Shannon, 2005)

3.7.1.3 Process of developing coding scheme

As previously stated, the inductive coding technique has been employed, which indicates that codes have emerged from the collected data rather than from the literature. Going into detail, the level of analysis within this pilot study was "multiple chunks". This implies that

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codes were connected to specific responses from participants. Allowing to code one word up to more sentences. As a result, the initial coding process produced a number of different codes.

To ensure objectivity and the reliability of all codes, they were reviewed in multi-professional evaluation rounds and adjusted where necessary. The re-evaluation of the coding scheme resulted in two main code categories.

First, the individual temporal crisis phases (before, during, after) and second the affected emotions of crisis leaders that emerged in the study. Each crisis phase is defined as its own main category and contains a variety of codes that circumscribe the distinct team leader behaviours per crisis phase. The category of affected emotions comprises a collection of sub codes reflecting the various emotions of crisis leader across the discreet crisis phases. Apart the 4 main categories, several categories have been established in addition to these four main categories. However, these categories were subsequently deemed irrelevant to answering the research question of the study and were therefore not included in the results section.

The consideration of the inclusion or exclusion of codes within the analysis was based on the frequency of the codes and their occurrence across interviews. In order to be included in the analysis, the code had to be mentioned by at least three independent participants and at least 10 times in total. All codes are provided in the hierarchical coding scheme (Appendix 7). Additionally, the hierarchical coding scheme provides example quotations for each code. Finally, the coding scheme lists all excluded codes that were not taken into account for the study's results.

To answer the first sub-question; "*Can an audio scenario elicit team leader behaviours during a semi-structured interview?",* the total frequencies of team leader behaviours were considered (i.e., the first level of analysis). The second sub-question; "*What kind of team leader behaviour do crisis leaders describe during the discreet crisis phases and why do they display this specific kind of behaviour?",* required an in-depth analysis utilized by a co-occurrence analysis (i.e., second level analysis). Finally, in order to answer the last sub-question; "*Can an audio scenario manipulate the stress level of crisis leaders?", a* quantitative analysis was conducted. The analysis of the quantitative data will be examined in section 3.7.2.

3.7.1.4 Inter-coder reliability test

An inter-coder reliability test was performed to verify the reliability of the coding procedure. This implies that a second coder has been arranged to code 10% of the total data independently, to verify and assess the research's reproducibility (O'Connor & Joffe, 2020). As a result, within this study, one of the eight interviews was assessed by a second coder.

However, the transcript was first translated into English, before an inter-coder reliability test could be conducted. Subsequently, the second coder was given access to the translated transcript and the coding scheme. The Krippendorff's cAlpha Binary index was calculated to compare and evaluate the reliability of the final coding scheme. This will allow the researcher to demonstrate if the second coder identified identical sections for a given code. Ultimately, this may ensure establishing an agreement on the coding process (Atlas.ti, 2019). The coefficient ranges between 0 to 1. Total agreement is represented with a score of 1, while total disagreement is represented by a score of 0. An inter-coder agreement is considered as acceptable in case of α = 0.667 (Atlas.ti, 2019). As the inter-coder agreement analyses generated a Krippendorff's cAlpha binary coefficient of 0.18. It can be stated that the inter-agreement between the two coders was not satisfactory. Consequently, the two coders have examined the disagreements. It could be proven that a conflict in interpretation was mostly caused by the translation of the transcript. As a result, it was determined to continue with the original coding scheme. However, the results of this inter-reliability test will be considered as a limitation of this study, and a recommendation for further research will be provided in chapter 5.

3.7.2 The Quantitative analysis

The State-Trait anxiety inventory questionnaire gathered quantitative data that has been analysed using the SPSS software program. The State-Trait anxiety inventory questionnaire consists of two parts. Within the SPSS programme, the State and Trait part of the questionnaire was compared to determine whether it was possible to manipulate the stress levels of crisis leaders. This approach refers to a pre-test and post-test experimental design and has been conducted by utilizing a paired-sample t-test (Pallant, 2020). This statistical test allows comparing data of one group on two different occasions, which is the case with the State and Trait anxiety questionnaire (Pallant, 2020).

This study includes ***one categorical independent variable***; time, with two different levels; Time 1 (pre-questionnaire) and Time 2 (follow-up questionnaire). In addition, this study includes ***one continuous dependent variable***; the scores of the State-Trait anxiety inventory, which were assessed on two different occasions. The exploratory hypothesis that was tested within this study was formulated as follows; **H0;** *The anxiety level of crisis leaders will increase in the period between time 1 and time 2.*

The results of the performed paired samples t-test have discovered whether the mean scores for Time 1 and Time 2 differ statistically significant. In addition to this statistical test, the average anxiety level scores of crisis leaders were compared with the average anxiety level scores of working male adults (M = 35,72, SD = 10,40). This data was extracted directly from the State and Trait instruction manual (Spielberger, 2020). Lastly, it should be noted that due to technical problems the survey response of participant 1 has not been recorded. As a result, only seven out of eight participants have been included in the quantitative analysis.

3.8 Fair principles

This pilot study worked according to the fair principles of research. This indicated that after completing this project the materials will be submitted to an open scientific data. In addition, a hierarchical coding scheme is included as an appendix to ensure the reproducibility of the results.

4. Results

The results of this study will be presented in this chapter, starting with the qualitative data. First, the team leader behaviour during the discreet crisis phases will be presented. Second, the most prevalent affected emotions of crisis leaders navigating the crisis scenarios will be outlined. Subsequently, a co-occurrence analysis revealed the associations between crisis leaders' affected emotions and their team leader behaviours across the discrete crisis phases. The statements presented in the results section have been translated into English. However, all original quotations can be assessed upon request. Lastly, this chapter finishes by presenting the quantitative results.

4.1 Qualitative data

In this section, all reported behaviours of crisis team leaders are presented per crisis phase in order to answer the first sub-question: *"Can an audio scenario elicit team leader behaviours during a semi-structured interview?"*

4.1.1 Team leader behaviour before an acute crisis phase (pre-crisis)

Table 1. Descriptive overview of team leader behaviour before an acute crisis phase also denoted as pre-crisis phase

Code	N (participants)	% (participants)	N1 (statements)	% (statements)
Effort to gather information	2	25%	3	12%
Effort to implement structure	1	13%	2	8%
Effort to maintain network relationships	2	25%	7	27%
Effort to make a concrete action plans	3	38%	4	15%
Efforts to engage in training to prepare team members	6	75%	10	38%

N=8, N1=26

4.1.1.1 Efforts to engage in training to prepare team members

When discussing team leader behaviour during the pre-crisis phase, pieces of training to prepare team members was the most frequently reported team leader behaviour across interviews. For instance, one interviewee said:

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"*We truly prepare the team by means of training sessions and simulations*" *(Interviewee 7).*

In addition, interviewee one mentioned: "

Within the organisation, we are connected to all developments around OTO. Hence, we train our crisis team chairmen" *(Participant 1).*

Both quotations emphasize the value of thorough planning via training exercises in the pre-crisis phase. Crisis teams will benefit from making these preparations if an acute crisis phase arises.

4.1.2 Team leader behaviour during an acute crisis phase

Table 2. Descriptive overview of team leader behaviour during an acute crisis phase

Code	N (participants)	% (participants)	N1 (statements)	% (statements)
Addressing emotions and foster task-oriented coping				
Aim to stay calm	**6**	**75%**	**13**	**15%**
Helping team members to get emotions out of the way	1	13%	1	1%
Providing an overview and gathering information				
Ability to put things into perspective	4	50%	7	8%
Creating a clear overview of the situation	8	100%	28	32%
Elaborate on different scenario's	2	25%	3	3%
Guiding behaviour	4	50%	4	5%
Taking responsibility	3	38%	8	9%
MTS related team leader behaviours				
Aim to provide clear communication	3	38%	3	3%
Challenging people to think creatively	2	25%	3	3%
Encouraging people to be critical	2	25%	3	3%
Foster collaboration within the crisis team	4	50%	10	11%
Promote cooperating among all stakeholders	6	75%	10	11%

N=8, N1=87

4.1.2.1 Creating a clear overview

The first and most commonly observed team leaders' behaviour during an acute crisis phase is "creating a clear overview." This specific behaviour of team leaders was reflected in all eight interviews. The following comment demonstrates that the team leader wants to dispose a full understanding of the situation at hand before developing an action plan.

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"My first intention would be to calm down the person calling me so that he can give me a clear picture of what exactly is going on. What risks are there? Based on this picture, we can look at what further steps we need to take" (Interviewee 4).

The importance of "creating a clear overview" during an acute crisis phase was also highlighted in the following statement.

"First, I try to swiftly distinguish between the significant concerns and the minor issues. So, what's going on here? What have you checked thus far? It is just a matter of pulling things away. So, let's name it image building, and let's do it properly" (Interviewee 4)

Chaos and uncertainty are characteristics of a crisis event. Interviewee number four stated that it is critical to distinguish between key concerns and the miner ones to paint a clear picture of the situation at hand.

4.1.2.2 Aim to stay calm

Second, due to the exceptional characteristics, team leaders aimed to appear calm to be able to think and perform effectively. For instance, one interviewee mentioned:

"Just the fact that someone tells you: 'only peace can save you'. And after that I noticed that in every stressful situation I found myself in. I would step back a bit, step back from the operating room or operating table, just to get back into the swing of things and continue. And that's how I act as a director too" (Interviewee 7).

In a time-constrained, stressful circumstance, interviewee number seven illustrated how crucial it is to take a break to stay focused. Acting in a controlled and accurate manner is aided by this.

4.1.2.3 Foster collaboration within the crisis team

Third, a frequent course of behaviour for team leaders during an acute crisis phase was to encourage collaboration within the crisis team. This team leader behaviour indicates that team leaders recognize the value of collaboration. One interviewee explained:

"I would just call the crisis team together. In our rooms, which are separate from our nursing ward, to start the meeting there" (Interviewee 6).

Interviewee six highlighted that if an acute crisis occurred, the entire crisis team would be called together to assess the situation to come up with a suitable solution together.

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4.1.2.4 Promote cooperation among all stakeholders

Lastly, due to the magnitude and complexity of a crisis event, a common displayed team leader behaviour during the acute crisis phase was to promote cooperation among all stakeholders. This involved both internal and external stakeholders. Stakeholders who are internal to an organisation are called internal stakeholders. External stakeholders, often known as third parties, are stakeholders who are not part of the organization.

For instance, one interviewee highlighted the importance of cooperation with external stakeholders: "

"Look, this is a crisis in a functional chain as we call it in the white sector. The question is, do you want to keep it within the white sector or do you want to scale up with a number of partners such as the police or ambulance service in order to ensure central control" *(Interviewee 4).*

To summarize, interviewee four indicated that in the case of a significant crisis, it is occasionally essential to scale up and gather expertise from different external parties to ensure central control of the situation.

In addition, interviewee one highlighted the importance of cooperation with internal stakeholders:

"I would first say, we have a crisis room here, then I would go there. Actually, within 20 minutes, everyone should be there, the most relevant people, by which I mean the line management of the ICU, the people of the power supply, the people of the equipment. I would particularly like to see them in the picture and someone from communications. And then just a 10-minute talk and homework. After all, the most important thing is to get that power back on as soon as possible" *(participant 1).*

In contrary to interviewee four, interviewee one stressed the importance of internal coordination amongst all departments to swiftly bring the crisis situation under control. This code and the quotations of interviewee one and four, underline the importance of the development and cooperation of multi-team systems during an acute crisis phase.

4.1.3 Team leader behaviour after an acute crisis phase (post-crisis phase)

Table 3. Descriptive overview of team leader behaviour after an acute crisis phase also denoted as post-crisis phase

Code	N (Participants)	% (Participants)	N1 (Statements)	% (Statements)
Listening to show empathy	**7**	**88%**	**11**	**30%**
Outsourcing of personnel care	5	63%	9	24%
Providing social emotional support	**8**	**100%**	**21**	**57%**

N=8, N1=37

4.1.3.1 Providing social emotional support

The most frequently discovered team leaders' behaviour in the post-crisis phase concerned efforts to display "social emotional support". This behaviour appeared in all eight interviews. For instance, one interviewee mentioned:

"So yes, I think it is especially important to start calming that person down and telling them that everything will be all right" (Interviewee 2).

Furthermore, interviewee 3 highlighted:

"And above all, I would call that person back to give them the feeling; "I heard you and I am going to work on it". Know that you are supported. That is the purpose of the phone call when you call back, in my opinion" (Interviewee 3).

Both interviewees two and three offered social emotional support, to a team member in the post-crisis phase. This behaviour of team leaders suggests that in the post-crisis phase, crisis leaders are particularly keen to emphasise that an emotional team member will never be alone, but will be supported at all times. The described team leader behaviour of "providing social emotional support" differs from the team leader behaviour of "listening to show empathy", which is discussed in greater detail in the next section. Listening to show empathy concerned more acknowledging feelings and validating an emotional response.

4.1.3.2 Listening to show empathy

In the post-crisis phase, "listening to show empathy" appeared to be a common expressed team leader behaviour by the interviewed crisis leaders. The high prevalence of this code suggests that crisis leaders aim to demonstrate empathy for their team members' feelings by allowing them to share their story. For example, interviewee five outlined*: Interviewer:*

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"So, to reassure him, you would listen to his story so that he feels heard?". Interviewee 5: "Yes that he feels heard so that we can then take the right steps".

Crisis leaders' behaviour in case an emotional colleague would call following an acute crisis period is addressed in this quotation. This statement demonstrates clearly the efforts of crisis leaders in the post-crisis phase to acknowledge the feelings of their team members and develop action steps to work through the emotional burden together.

In the first section of this chapter, the findings on team leader behaviour during the three discrete crisis stages were covered in detail. Consequently, the next section will present the most prevalent affected emotions of crisis leaders navigating the crisis scenarios.

4.1.4 Affected emotions

This code category includes all elicit emotions that interviewees referred to during the semi-structured interview. To be included in this part of the results section an emotion had to be reported at least 10 times in total and by at least 5 different participants. A detailed overview of all reported emotions can be found in table 4.

Table 4. Descriptive overview of crisis leaders affected emotions

Code	N (participants)	% (participants)	N1 (statements)	% (statements)
Positive emotional valences				
Feeling of acceptance	2	25%	4	6%
Feeling confident	2	25%	2	3%
Feeling of empathy towards team members	5	63%	7	10%
Feeling of eustress	1	13%	1	1%
Negative emotional valences				
Feeling guilty	1	13%	1	1%
Feeling of anxiety	1	13%	1	1%
Feeling of restlessness	3	38%	3	4%
Neutral emotional valences				
Feeling of responsibility	5	63%	16	24%
Feeling the need to support their peers	5	63%	16	14%

N=8, N1=68

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4.1.4.1 Feeling of responsibility

The first affected emotion that frequently emerged among crisis leaders across the three discreet crisis phases, concerned a sense of responsibility. This indicates that the crisis leader felt responsible on a tactical decision-making level, but also on a social and emotional level during the various crisis phases. The quote of interviewee one refers to this feeling of responsibility.

"Yes well, but I am responsible for this place. If I did not want to, I should have found another job, another profession. No, that is my responsibility" (Interviewee 1).

In addition, this sense of responsibility is also strongly stated by interviewee six.

"I have a sense of responsibility for the organisation, as well as the patient and the employees. So, it affects me, and I do not want to say as much as if this was a family member, but it does" (Interviewee 6).

The statements demonstrated that crisis leader had a strong sense of responsibility, both in terms of social emotional responsibility and tactical decision-making. This illustrates how seriously crisis leaders considered their duties for effectively responding to a crisis situation in order to minimize harm.

4.1.4.2 Feeling the need to support their peers

The second frequently mentioned emotion by crisis leaders across the three different crisis phases included the feeling of having to support their peers. This suggests that crisis leaders typically feel the urge to assist and support team members at all three different crisis phases. The next quote expresses this feeling of supporting someone:

"You are going to work hard to help that person feel good about himself again and feel safe again" (Interviewee 2).

This quotation shows how a crisis leader seeks to support an emotional colleague in a crisis. This strong feeling of having to support their team members, is also highlighted by the following interviewee:

"Yes, I would try to reassure my colleague; "There is nothing you can do about it when the power goes out! So, we will contact the family under the company's name. It is not your concern; it is just mine. I cannot do anything about it either, and we are going to make that clear to the family as well" (Interviewee 1).

In the statement, above, interviewee one discussed a crisis in which he, in the role of crisis leader, is speaking to an emotionally affected member of his team. The discussion demonstrates that the crisis leader made an effort to reassure his team member. He did this by

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ensuring his team member that he acted to the best of his knowledge and that there was nothing that he could have done to prevent this crisis situation.

In conclusion, the most commonly expressed affected emotions among crisis leaders during the three different crisis phases concerned the sense of responsibility and the feeling that they had to support their peers. The next section of this chapter will outline the findings of the co-occurrences analysis.

4.1.5 Co- occurrences

As this study aims to unravel team leader behaviours by manipulating the stress level of crisis leaders in a crisis context, co-occurrences were performed to examine associated patterns between the codes and code categories. The number of times two codes co-occur in a meaningful unit is referred to as co-occurrences (Atlas.ti, 2022). So, within this section, the co-occurrence analysis is summarized to describe the association between crisis leaders affected emotions and their team leader behaviour per crisis phase (i.e., pre-crisis, during and acute crisis and post-crisis). Consequently, the results of the co-occurrence are provided to answer the second sub-question: "*What kind of team leader behaviours do crisis leaders describe during the discreet crisis phases and why do they display this specific kind of behaviour?*".

To clarify, to be included in the co-occurrence analysis, the affected emotions of crisis leaders had to be co-occur to crisis team leader behaviours at least five times. This inclusion criteria was established for the three different crisis phases.

4.1.5.1 Team leader behaviour during the pre-crisis phase

The data analysis demonstrated that no co-occurrences appeared between crisis leaders affected emotions and their team leader behaviour in the pre-crisis phase. This suggests that crisis leaders seem to be rational rather than emotional thinkers before an acute crisis. An alternative reason for the missing association could be, that the interview questions did not capture the crisis leaders affected emotional valences before a crisis.

4.1.5.2 Team leader behaviour during an acute crisis phase

Table 5. Descriptive overview of co-occurrences during an acute crisis phase

Code	Affected emotions	
	Feeling of responsibility	Feeling the need to support their peers
Team leader behaviour (Acute crisis phase)		
Ability to put things into perspective	0	0
Aim to provide clear communication	1	1
Aim to stay calm	0	0
Challenging people to think creatively	0	0
Creating a clear overview of the situation	0	2
Elaborate on different scenario's	0	0
Encouraging people to be critical	0	0
Foster collaboration within the crisis team	0	0
Guiding behaviour	0	0
Promote cooperation among all stakeholders	1	1
Helping team members to get emotions out of the way	1	1
Taking responsibility	2	2
Total	5	7

A total of 15 co-occurrences have been discovered between the affected emotions of crisis leaders and their team leader behaviours during an acute crisis phase. However, out of 13 reported affected emotions only two were relevant during an acute crisis phase. The codes "feeling of responsibility" and "feeling the need to support their peers", were the only two emotions that satisfied the inclusion criteria for the co-occurrence analysis. Casually speaking, it could be stated that the affected emotions of "the feeling of responsibility" and "feeling the need to support their peers" prompted the following team leader behaviours among crisis leaders; aim to provide clear communication, creating a clear overview of the situation, promoting cooperation among all stakeholders, helping team members to get emotions out of the way and taking responsibility. The association between these two affected emotions and team leader behaviour during an acute crisis situation will be presented below. However, as the codes "the feeling of responsibility" and "feeling the need to support their peers" might seem similar, the differences between those two affected emotions should be clarified first.

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The code of "the feeling of responsibility" included statements that circumscribes general job characteristics. In addition, the statements of this code were referring to a perception of a leader as role model. So, this code refers to a more a general responsibility towards the tasks, the organization and the team members in general.

The code "feeling the need to support their peers" included statements related more to social-emotional support. Additionally, the statements concerned the feeling of wanting to support their peers on a more personal-relational level.

More specifically, "the feeling of responsibility" appeared five times in relation to the reported team leader behaviours during an acute crisis phase. The findings imply that during an acute crisis, crisis team leader behaviours were based on a feeling of responsibility.

For instance, one participant commend:

"*Yes, in the first instance I would try to calm that person down. What exactly happened and what steps have been taken yet? And where are the problems at the moment, so just analyse it, but above all calm down the person*" (Participant 5).

This statement reflects a more task-oriented approach to dealing with the crisis. The crisis leader attempts to calm the individual down in order to focus on the duties again for which the crisis leader will take responsibility.

Additionally, the code capturing the affected emotion of "feeling the need to support their peers" was linked seven times to the team leader's behaviour during an acute crisis phase.

Exemplary, one interviewee reported to reassure a team member by:

"*Well, I would just sit down together and ask; What happened? Can you tell me what is going on? How can I help you? To make clear, it is a shared problem. You have the support of the organisation, you have my support, just offering concrete help*" (Participant 1).

This statement demonstrates that crisis leaders strive to acknowledge their team member's emotions during a crisis, but aim to shift their team members focus on the task. Prompting a clear communication and a realistic view of the situation while supporting their team members in distancing themselves from the emotion to be able to complete the task.

Table 6. Descriptive overview of co-occurrences during a post-crisis phase

Code	Affected emotions	
	Feeling of responsibility	Feeling the need to support their peers
Team leader behaviour (post-crisis phase)		
Listening to show empathy	0	3
Outsourcing of personnel care	1	1
Providing social emotional support	5	9
Total	6	13

The findings of the co-occurrence analysis reveal a total of 18 co-occurrences between crisis leaders affected emotions and team leader behaviour during the post-crisis phase. This is the highest co-occurrence discovered in this pilot study, indicating that the aftermath of an acute crisis is characterized by the highest frequency of affected emotions. Strikingly, the code "the feeling of responsibility" and the code "feeling the need to support their peers" were considered meaningful based on the inclusion criteria. In this manner, these two codes were associated with three different team leader behaviours after an acute crisis phase; listening to show empathy, outsourcing of personnel care and providing social emotional support.

First, "The feeling of responsibility", more precisely, emerged six times in regard to team leader behaviour in the post-crisis phase. Casually speaking, the results demonstrated that crisis leaders in the aftermath of an acute crisis phase, primarily express team leader behaviours based on an emotional feeling of responsibility towards team members. Consequentially, crisis leaders engaged in outsourcing of personnel care and crisis leaders provide social emotional support in the post-crisis phase. The association between a sense of responsibility and team leader behaviour of providing social emotional support is supported by the following statement:

Interviewer: "If you received this voicemail, how would you feel after this call?"
Interviewee 1: "Yes, very sorry and I would call him back and say, I'm coming right now. I don't know where he is, at home or at work. I assume that he is still at work. So, I would go and talk to him".

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This comment implied that the crisis leader felt emotionally responsible towards his peers, which resulted in a team leader behaviour that was more emotional-oriented; providing social emotional support. This social emotional support was expressed by taking immediate action to help.

Second, a co-occurrence between "feeling the need to support their peers" and team leader behaviour after an acute crisis phase was discovered even 13 times. Consequently, it can be stated that feeling the need to support their peers prompted the following emotional-oriented team leader behaviours among crisis leaders in the post-crisis phase; listening to show empathy, outsourcing of personnel care and providing social emotional support. This result suggested that after an acute crisis phase, crisis leaders act on a stretching feeling that they need to be there for their team members. The following statement highlights this assumption:

"So yes, I think it is especially important to calm that person down and to say that everything will be all right" (Interviewee 2).

In addition, interviewee five mentioned:

"Yes, I would ask him what he needs. But first I would let him tell his story and try to calm him down" (Interviewee 5).

The presented statements in this paragraph showed that crisis leaders affected emotions in the aftermath of an acute crisis, leading to team leader behaviour of ensuring social emotional support in which the feelings of the individuals were placed in the spot.

The distinction between the codes "the feeling of responsibility" and "feeling the need to support their peers", which was described in the acute crisis phase, has faded away in the aftermath of a crisis. This indicates that the two codes are intertwined. Hence, it can be stated that in the post-crisis phase crisis leaders were not able to distinguish anymore their feelings of responsibility and their social relation feeling to support their peers.

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4.2 Quantitative data

Within this section, the results of the quantitative data are presented. These data serve to answer the final sub-question; *"Can an audio scenario manipulate the stress level of crisis leaders?"*.

4.2.1 Paired Sample T-test

A paired sample T-test was performed to analyse the effect of using an audio recording of a simulated crisis scenario on crisis leaders' scores on the State-Trait Anxiety inventory questionnaire. This statistical test was conducted to indicate whether it was possible to manipulate crisis leaders' stress level. The results of the survey indicate that there was a statically significant decrease in crisis leaders anxiety level on the STAI questionnaire from Time 1, Trait (M = 30,43, SD =4,76) to Time 2, State (M = 26,71, SD = 4,89), t(6) = 3,57, p =0.01. The mean decrease in anxiety level was 3,71 with a 95% confidence interval ranging from 1,17. The eta squared statistic (0.08) indicated a moderate effect size. See appendix 8 for the output of the paired samples t test.

In addition, the average anxiety level scores of crisis leaders were compared with the average anxiety level of working male adults. Adult working males have an anxiety score of 35,72 on average, according to Spielberger's (2020) manual of the State and Trait anxiety inventory for adults. The average anxiety score for crisis leaders within this research was 28.57. As a result, crisis leaders appeared to be less stressed on average than working male adults.

5. Discussion

The purpose of this study was to investigate crisis team leader behaviours across the three crisis phases by using audio vignettes. These audio vignettes were aimed at manipulating crisis leaders' stress level. The goal was to gain a better understanding of the challenging leadership environment in which crisis leaders find themselves. The findings of this study are considered relevant since they provide an insight into the fluctuation of crisis leaders team leader behaviours during the three crisis phases. Moreover, this deeper understanding in the changes in team leader behaviours of crisis leaders was gained due to the reported emotions. The results indicated that crisis leaders need a rather flexible leadership model to capture their complex work environment. Consequently, the study's findings can inform crisis leaders' pieces of training by giving situation-specific suggestions on how to develop coping strategies to deal effectively with the affected emotions that arise across the three different crisis phases.

This pilot study aimed to contribute to the existing literature by addressing the following research question: "*How and why do crisis leaders change their team leader behaviours across the discrete crisis phases?*".

5.1 Discussion of the findings

To begin with, the study results demonstrated that the audio vignettes were not able to manipulate crisis leaders' stress levels; nonetheless, the study design and the provided vignettes were effective in eliciting a significant amount of team leader behaviours. In order to answer the above-mentioned research question, the three sub-questions were first answered separately.

5.1.1 *"Can an audio scenario elicit team leader behaviours during a semi-structured interview?"*

The results demonstrated that this pilot study was statistically successful in eliciting a significant amount of team leader behaviours among crisis leaders. Across all interviews, 20 different team leader behaviours have been discovered and those behaviours were reported 150 times in total. In addition, the findings indicated that crisis leaders change their team leader behaviour across the three crisis phases. This change in team leader behaviours during the various crisis phases will be covered in more detail in the next section.

5.1.2 *"What kind of team leader behaviours do crisis leaders describe during the discreet crisis phases and why do they display this specific kind of behaviour?"*

5.1.2.2 Pre-crisis phase

During the pre-crisis phase, the results showed that crisis leaders mainly engaged in team leader behaviours that are focused on training and preparing team members. This is consistent with the findings in the literature. Crises are navigated by multi-team systems (DeChurch & Marks, 2006). So, for instance, it was not surprising that crisis leaders were looking for training opportunities in the pre-crisis phase to prepare the entire team for a potential crisis. This can be explained by the fact that crises come in a variety of sizes and forms, implying that each crisis occurrence is distinct (Sagun et al., 2009). As a result, crisis leaders seek to prepare as much as possible in the pre-crisis phase as clear guidance, during an acute crisis phase, is lacking.

5.1.2.2 Acute crisis phase

Throughout the acute crisis phase, the findings reported that crisis leaders mainly participated in the following team leader behaviours; aim to stay calm, creating a clear overview, foster collaboration within the crisis team and promoting cooperation among all stakeholders. This can be rationally explained by the findings in the literature. Namely, during an acute crisis phase, crisis leaders are forced to step out of their comfort zone to undertake non-routine activities (Tokakis et al., 2019). In addition, it is expected that crisis leaders provide stability and reassurance during a crisis event (Lussier & Achua, 2004). Consequently, due to this uncertainty and high pressure to perform accurately, it is reasonable for crisis leaders to display a team leader behaviour aimed at remaining calm and obtaining a clear overview of the crisis before taking further steps. Additionally, given the complexity of a crisis, it is frequently essential to collaborate with different teams to ensure a wider range of expertise (DeChurch & Marks, 2006). This is in line with the reported team leader behaviours that crisis leaders displayed during an acute crisis phase; fostering collaboration within the crisis team and promoting cooperation among all stakeholders.

5.1.2.3 Post-crisis phase

During the post-crisis phase, the results demonstrated that crisis leaders mainly engaged in team leader behaviours related to listening to show empathy and behaviour that concerned providing social emotional support. Interestingly, this contradicts what the research has shown. According to Tokakis et al. (2019), the post-crisis phase is intended to reflect and learn in order to prepare for the next potential crisis. However, the reported team leader behaviours in the aftermath of an acute crisis phase, indicated that crisis leaders tend to maintain emotional-oriented team leader behaviour. This suggests that the opportunity for reflecting and learning is limited. Consequently, the findings demonstrate that the post-crisis phase is currently under research, implying that future research should have a critically look at this specific crisis phase.

The co-occurrences analyses revealed that the fluctuations in team leader behaviours across the three different crisis phases can be mainly explained by crisis leaders reported emotions. One of the study's primary findings showed that among crisis leaders, there are essentially two styles of team leader behaviours. To be more specific, during an acute crisis phase, crisis leaders exhibit more task-oriented behaviours, for instance, crisis leaders reported efforts to create a clear overview and promoting cooperation with all stakeholders to successfully navigate the acute crisis phase. However, in the post-crisis phase, crisis leaders displayed more emotional-oriented team leader behaviours. For instance, crisis leaders reported to engage in active listening to show empathy and engaging in behaviours that demonstrate social emotional support. Referring to the results, the co-occurrence analysis illustrated that both team leader behaviours task-oriented as well as emotional-oriented could be explained by two affected emotions of crisis leaders in particular. These included a strong feeling of responsibility and feeling the need to support their peers. Casually speaking, the results indicated that during an acute crisis phase, crisis leaders attempted to reduce emotions in order to re-establish clear communication and a realistic assessment of the crisis situation. By applying these team leader behaviours, crisis leaders were directed to focus on the crisis circumstances allowing them to take responsibility for the job completion. This is in contrast with crisis leaders' team leaders' behaviours in the aftermath of an acute crisis phase in which the emotions more strongly affected team leaders' actions. In the post-crisis phase, crisis leaders reported an enormously strong sense of emotional responsibility and a desire to support and help their team members, which in turn resulted in emotionally supportive behaviour. The results indicated that crisis leaders experienced difficulties in setting clear boundaries where to draw the line where the emotional responsibilities and relational support should end. These

intense emotions in the aftermath of a crisis might be perceived as overwhelming among crisis leaders, which risks reducing performance (Dalhgren et al., 2005). To overcome this drop in performance, it is highly recommended that crisis leaders receive clear guidance and training on how to cope effectively with their emotions.

In addition, the co-occurrence analysis demonstrated that there was no association found between team leader behaviours and crisis leaders affected emotions in the pre-crisis phase. A suggestion could be made that crisis leaders in the phase leading up to an acute crisis appeared to be rational rather than emotional decision-makers. However, it is debatable whether the team leader behaviours of crisis leaders and the associated emotions in the phase preceding an acute crisis have been recorded properly and accurately. It might be stated that the pre-crisis stage received less attention in this research. Almost no explicit questions on pre-crisis phase feelings were posed during the interviews. Consequently, this will therefore be considered as a limitation of this study, followed by a recommendation for further research.

5.1.3 "Can an audio scenario manipulate the stress level of crisis leaders?"

Interestingly, findings of the quantitative data collection demonstrated that the pre-formulated H0: *the anxiety level of crisis leaders will increase in the period between time 1 and time 2,* was rejected. This implied that across the pre-crisis phase and the mimicked acute crisis phases during the interview, the stress level of crisis leaders decreased significantly. Hence, the analysis of the State-Trait anxiety inventory indicated that crisis leaders generally felt more stressed rather than during the semi-structured interviews in which they were exposed to a mimicked crisis scenario. One reason for this might be that crisis leaders felt at ease in the mimicked acute crisis situation rather than in mundane situations. This may be explained by the fact that crisis leaders feel well-prepared, are confident in their abilities, and understand how to behave and how to react when exposing an acute crisis phase.

Another intriguing finding of this pilot study illustrates that using the State- Trait anxiety inventory may not be the appropriate fit to measure the stress level of crisis leaders. According to the qualitative results, crisis leaders care for others in the sense that they have a remarkable feeling of emotional responsibility, striving to support their peers. The State- Trait questionnaire, on the other hand, is more self-directed toward crisis leaders, which may have prevented this questionnaire from capturing a source of stress for crisis leaders connected to a

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sense of responsibility and the desire to help others. Consequently, this might be interpreted as a pitfall, which will be considered in greater depth within the limitations part.

Lastly, according to the quantitative results, it seems that crisis leaders on average are less stressed than working adults (Spielberger, 2020). This might be explained by the fact that crisis leaders are more likely to be exposed to stressful situations and are thus trained to perform under pressure. As a result, it seems that crisis leaders have become stress- resistant over the last years due to prior work experiences. Although, our initial hypothesis based on the literature, was that crisis leaders were prone to work-related stress (Colligan & Higgings, 2006). This research indicates that it seems that they apparently do not suffer from the high amount of work-related stress, but rather adjust to an acute and chronic stress level.

5.2 Limitations and recommendations for future research

There are several limitations to this study. These limitations, as well as future research recommendations will be highlighted in this section.

The first and biggest limitation concerns the generalizability of this research. Only eight crisis leaders have been participating in this study, which indicates a very small sample. Hence, there is a possibility that the study's results on team leader behaviour and the significance of an increase in crisis leaders' stress levels based on the study's manipulation might be different in a larger sample. In addition, since all of the participants worked for the health sector, the findings may not easily generalizable to other professions, such as crisis leaders stemming from the police sector or firefighters. Consequentially, a recommendation for future research is to incorporate a bigger sample and to include crisis leaders from different professions. This will provide a better understanding of behavioural changes among crisis team leaders throughout the distinct crisis phases.

A second limitation of this research is related to the interview guideline. The emotions that affect crisis leaders in the pre-crisis phase were not considered in this study as the researcher did not pose explicit questions in this regard. As a result, limited consultations can be drawn about their team leader's behaviour throughout this phase. However, an intriguing discovery was that crisis leaders did appear to be more stressed on a daily basis than when they were exposed to a simulated crisis scenario, according to the study's findings. Consequently, in

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order to explain the team leader behaviour of crisis leaders in the pre-crisis phase, it would be highly interesting to focus more on the emotions of crisis leaders within this phase. Future research could, for example, focus on examining the concerns of crisis leaders in everyday practice.

A third limitation concerns the inability of the used audio vignettes to manipulate crisis leaders' stress levels. There could be two different explanations for this. First, the manipulation tool (i.e. the audio vignettes that mimicked a crisis) might not have worked successfully as crisis leaders indicated that they could not identify with the scenario presented. Hence, a suggestion for future study would be to personalize the audio vignettes to the various professions. This would likely boost crisis leaders' acknowledgement of such a circumstance. A second explanation for this limitation might be the inappropriate fit of the State and Trait questionnaire to measure crisis leader's anxiety levels. The questionnaire's general questions within the State and Trait questionnaire are rather self-referential, making it nearly impossible to determine the sources of stress for team leaders coping with an emotional colleague. Therefore, it can be concluded that it might be useful to adapt the questions of the State and Trait questionnaire to the context of team leaders. Furthermore, future study may benefit from the use of a different questionnaire that focuses on discovering those worried feelings about others. Thus, developing more personalised realistic sound recordings for various professions or selecting a more appropriate measurement instrument can improve future manipulations of crisis leaders' stress levels.

A fourth limitation concerns the measurement of team leader behaviour of an individual during a particular scenario. Within this study, team leader behaviour was analysed on a snapshot basis during a semi-structured interview. Due to the exclusion of some factors, this might be considered as a constraint. For instance, the behaviour of an individual is also determined by his social environment and background. However, these factors were not considered in this study. In order to improve the validity of the findings, follow-up research might incorporate these aspects in the study of team leader behaviour throughout distinct crisis phases.

The last limitation is related to the reliability of this study. After conducting the intercoder reliability test, the Krippendorff's c-Alpha Binary demonstrates a low score. This indicates that the coding agreement of the qualitative data is not completely satisfactory.

However, in the future, the reliability of the study might be improved by creating a code instruction manual. This handbook will make it easier to understand certain codes, which will make it possible to reproduce the study in the future.

5.3 Implications

This research includes several implications. A distinction is made here between practical implications and scientific implications.

5.3.1 Practical implications

The findings of this study reveal that during an acute crisis phase and in the aftermath of a crisis, crisis leaders are driven by a feeling of responsibility and a desire to help their colleagues. However, when zooming in on the emotions it can be stated that crisis leaders in an acute phase try to suppress these emotions and mainly exhibit task-oriented behaviour. These emotions do take over in the post-crisis phase, leading to behaviour that is focused on emotional responsibility and the urge to emotionally support their peers. As a result, these feelings might become overwhelming in the long run. Consequentially, the study's findings suggest that crisis leaders should be educated on how to cope with this feeling of responsibility and the feeling of always needing to support their colleagues. A recommendation for crisis leaders training organisations could be to incorporate emotional intelligence training opportunities within their curriculum. Additionally, organizations that aim to prepare crisis leader by offering training opportunities, could provide mindfulness programs aimed at teaching crisis managers how to alter their perception of those emotional stressors. Learning how to deal with these emotions may enable crisis leaders to build and improve their resilience toward this stressor in the future.

Additionally, the research results indicated that especially in the aftermath of the crisis, crisis leaders were struggling to find the boundaries of their responsibilities. The findings, for instance, also reported that only a few crisis leaders referred to the outsourcing of personnel care. Hence, it would be effective if crisis leaders were given closer guidance on how to deal with the responsibility, but also on where to draw the line where the social emotional support or the relational support for their peers should end. Moreover, it is advised that crisis leaders should receive standardised support from the BOT-members (Dutch: "Bedrijfsondersteuningsteam"; translated: "Corporate support team") after a crisis incident. As a result of being reassured that their team members are receiving the best possible social care, this will assist crisis leaders in realizing that their social support ends after a crisis.

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Furthermore, the results showed that this research proved to be unsuccessful in manipulating crisis leaders' stress levels by using audio vignettes. This may be explained by the fact that the crisis leaders could not identify with the presented sound recordings. Hence, it is advised that crisis leaders coming from multiple professions will be included in the design process of customized crisis cases for practice. In addition, it is advisable to apply a test trial first to discover how relatable the crisis scenarios are, before using the scenarios to manipulate crisis leaders' stress levels in the future.

5.3.2 Scientific implications

The first scientific implication is concerned with the concept of crisis. Current literature acknowledged three different crisis phases (pre-phase, acute phase, post-phase). However, the findings of this research somehow indicated that there might be four crisis phases (i.e. pre-phase, acute-phase, post-phase that deals with emotions and a post-phase in which crisis leaders may learn and reflect). It is reasonable to divide the post-crisis phase into two distinct phases since it is nearly impossible to start the learning process before getting the emotions under control. Hence, it is advised that future studies critically consider the different crisis phases.

The second scientific implication is related to the concept of leadership. The study's findings demonstrated that there is no one leadership model that fits all crisis situations. As a result, future research is recommended to establish crisis-specific leadership models. This suggestion is supported by the fact that the context and the characteristics of the different crisis phases differ significantly implying that there is no one size fits all solution.

The last scientific implication is related to the concept of stress. The quantitative results of this pilot study identified that in comparison to the general public, crisis leaders seem less stressed but rather more resilient. This is in contrast to what was hypothesised first. Therefore, future studies should acknowledge that crisis leaders may also serve as excellent models of how to become resilient, in addition to considering crisis leaders as underprivileged individuals who need to be supported.

5 Conclusion

This study contributes to the existing literature on the concepts of stress, leadership and crisis, as it is the first study to integrate the concepts of stress and crisis to further unravel team leader behaviours of crisis leaders. This study has been guided by the pre-formulated main research question; *"How and why do crisis leaders change their team leader behaviours across the discreet crisis phases?"*. The results of this study revealed that across crisis phases, crisis leaders shift their behaviour from a task-oriented behaviour to a more emotionally-oriented behaviour, aiming to support their team members in coping with their stress. Based on this pilot study, the results indicated that team leader behaviours of crisis leaders can be explained by affected emotions. Especially by the feeling of responsibility and feeling the need to support their peers. Nevertheless, future research is needed to conceptualize these ideas in a more further research design. As a final social implication, it is recommended that team leaders in general receive help in developing their emotional management skills and learn to define the boundaries of their responsibilities. Lastly, it is suggested that team leaders receive education on the possibility that they may have to manage both their own stress process and the stress processes of other team members. In case team leaders are not given adequate coaching, there is a chance that team leaders will be impacted by what happens in their team.

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List of Tables and Figures

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Appendices

Appendix 1, Top 10 stressors

Top ten codes associated with stress

1) Team leader behaviors
2) Mental stress (indicating a rather cognitive task)
3) Experienced stressor- excessive demands, overload
4) Experienced stressor- Team leader responsibility
5) Crisis success factor (Leadership stress seems to be crucial for a crisis success)
6) Experienced stressor- Decision making responsibility
7) Experienced stressor- lack of understanding (e.g., by the press, the organization or other team members)
8) Stress symptoms- long-term stress
9) Experienced stressor- unpredictability chaos
10) Ways to reduce stress (indicating people know some ways to reduce their stress level)

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Audio vignette 1: Imitating an acute crisis phase

"Boh finally mad, I've got you. I've got you, and I need you to come to the hospital right away. Alarm has gone off and we are without power at our intensive care department. Just as the press is claiming that we are unprepared for crisis scenarios. There's complete chaos here, and the emergency power supply has been depleted. I don't know anything about it they mention something with hackers and malware. It is terrible, and I am completely stressed as well. I am not sure what the solution should be, but we're using oxygen balloons to oxygenate the patients here and there is simply not enough staff available at the moment. You have to come now".

Audio vignette 2: Imitating a situation after an acute crisis phase

"Hi, I am sorry for calling you this late, but I cannot get rid of today's situation in my mind. I have a huge feeling of guilt inside, but I'm also very scared, stressed and frustrated at the same time. The deceased patient's family has threatened me, and they have also stated that they will visit you at home. Our intensive care colleagues' names have been posted on Instagram and Twitter, and they claim to know where we live. I'm having trouble sleeping. Please, please, help me since I have no idea what to do. I'm desperate please help".

Pre-questionnaire

Start of Block: Default Question Block

Q1 Toestemmingsformulier (informed consent) Geïnformeerde toestemming om deel te nemen aan een onderzoek

Leiderschap en stress in crisisteams - Een multi-professioneel veldonderzoek

DOEL EN ACHTERGROND Het onderzoek is gericht op de stress en het leiderschap van crisisleiders. Het interview is bedoeld om een inzicht te verkrijgen in wat crisis teamleaders onder druk zet, hoe en waarom ze op dergelijke situaties reageren en de mate waarin dit een effect heeft op hun teamleiderschap gedrag. Daarnaast beoogt deze studie de redenering van de leider achter de toepassing van zijn leiderschapsgedrag te achterhalen. U bent als crisisleider geselecteerd als deelnemer aan dit onderzoek.

PROCEDURES Als u akkoord gaat met deelname aan dit onderzoek, neemt uw deel aan een interview van ongeveer 30 minuten. De interviewonderwerpen bevatten vragen over leiderschapsgedrag tijdens een crisis. Het interview wordt met audio opgenomen om de gegevens achteraf te verwerken. De gegevens uit het onderzoek worden vertrouwelijk behandeld. De gegevens worden opgeslagen conform de regels van de 'School of Business and Economics' van de Universiteit Maastricht. De gegevens worden anoniem gerapporteerd in alle rapporten of publicaties.

VRAGEN
Voor vragen over het onderzoek, vragen over de rechten van onderzoeksdeelnemers of onderzoeksgerelateerde problemen kunt u contact opnemen met Maxime Nelissen (mjjm.nelissen@student.maastrichtuniversity.nl).

TOESTEMMING UW ONDERSTAANDE HANDTEKENING VERKLAART DAT U VRIJWILLIG HEEFT BESLOTEN AAN DEZE STUDIE DEEL TE NEMEN NA HET LEZEN VAN ALLE BOVENSTAANDE INFORMATIE. U BEGRIJPT DE INFORMATIE IN DIT FORMULIER EN AL UW VRAGEN MET BETREKKING TOT HET ONDERZOEK ZIJN BEANTWOORD. U HEEFT HET RECHT OP TOEGANG TOT UW GEGEVENS OP ELK MOMENT TIJDENS HET ONDERZOEK. U HEEFT HET RECHT OM UW TOESTEMMING OP ELK MOMENT IN TE TREKKEN BINNEN EEN MAAND NADAT HET INTERVIEW HEEFT PLAATSGEVONDEN ZONDER ENIGE REDEN OP TE GEVEN.

○ Ik geef toestemming om deel te nemen aan het onderzoek en het opnemen van het interview (1)

○ Ik geef geen toestemming (2)

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Q2 Wat is uw beroepsfunctie?

_____

Q3 Hoelang bent u al werkzaam in deze functie?

◯ 1 jaar (1)

◯ 2 jaar (2)

◯ 3 jaar (3)

◯ 4 jaar (4)

◯ 5 jaar (5)

◯ 6 jaar (6)

◯ 7 + jaar (7)

Q4 Wat is uw geslacht?

◯ Man (1)

◯ Vrouw (2)

◯ Anders (3)

Q5 Kunt u aangeven hoe vaak u in de afgelopen 5 jaar een crisisteam heeft geleid?

_____

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Q6 Heeft u een bepaald boek, rolmodel of auteur die uw leiderschap heeft geïnspireerd en die u zou willen delen? Indien van toepassing, schrijf de naam van de auteur, het rolmodel of het boek hieronder

_____

End of Block: Default Question Block

Start of Block: Block 1

Q7 Hieronder vindt u een aantal uitspraken, die door mensen zijn gebruikt om zichzelf te beschrijven. Lees iedere uitspraak door en kies een cijfer rechts van de uitspraak om om daarmee aan te geven hoe u zich in het algemeen voelt. Er zijn geen goede of slechte antwoorden. Denk niet te lang na en geef uw eerste indruk. Het gaat er dus om dat u bij deze vragenlijst weergeeft hoe u zich in het algemeen voelt.

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	1. Bijna Nooit (1)	2. Soms (2)	3. Vaak (3)	4. Bijna Altijd (4)
Ik voel me prettig (1)	○	○	○	○
Ik voel me nerveus en onrustig (2)	○	○	○	○
Ik voel me tevreden (3)	○	○	○	○
Ik kan een tegenslag maar heel moeilijk verwerken (4)	○	○	○	○
Ik voel me in vrijwel alles tekort schieten (5)	○	○	○	○
Ik voel me uitgerust (6)	○	○	○	○
Ik voel me rustig en beheerst (7)	○	○	○	○
Ik voel dat de moeilijkheden zich opstapelen zodat ik er niet meer tegenop kan (8)	○	○	○	○
Ik pieker teveel over dingen die niet zo belangrijk zijn (9)	○	○	○	○
Ik ben gelukkig (10)	○	○	○	○
Ik word geplaagd door storende gedachten (11)	○	○	○	○
Ik heb gebrek aan zelfvertrouwen (12)	○	○	○	○
Ik voel me veilig (13)	○	○	○	○
Ik voel me op mijn gemak (14)	○	○	○	○

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Ik ben gelijkmatig van stemming (15)	○	○	○	○
Ik ben tevreden (16)	○	○	○	○
Er zijn gedachten die ik heel moeilijk los kan laten (17)	○	○	○	○
Ik neem teleurstellingen zo zwaar dat ik ze niet van me af kan zetten (18)	○	○	○	○
Ik ben een rustig iemand (19)	○	○	○	○
Ik raak helemaal gespannen en in beroering als ik denk aan mijn zorgen van de laatste tijd (20)	○	○	○	○

End of Block: Block 1

Follow-up questionnaire

01 Graag willen we u vragen om uw beroepsfunctie inclusief datum van het interview hier in te vullen als een code. Deze gegevens hebben we nodig om de twee vragenlijsten met elkaar te kunnen matchen. Voorbeeld: DirecteurGGD29.05

02 Hieronder vindt u aantal uitspraken, die mensen hebben gebruikt om zichzelf te beschrijven. Lees iedere uitspraak door en kies het cijfer rechts van de uitspraak om daarmee aan te geven hoe u zich nu voelt, dus nu op dit moment. Er zijn geen goede of slechte antwoorden. Denk niet te lang na en geef u eerste indruk, die is meestal het beste. Het gaat er dus om dat u weergeeft wat u op dit moment voelt.

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	1. Geheel niet (1)	2. Een beetje (2)	3. Tamelijk veel (3)	4. Zeer veel (4)
Ik voel mij kalm (1)	○	○	○	○
Ik voel me veilig (2)	○	○	○	○
Ik ben gespannen (3)	○	○	○	○
Ik voel me rustig (4)	○	○	○	○
Ik voel me op mijn gemak (5)	○	○	○	○
Ik ben in de war (6)	○	○	○	○
Ik pieker over nare dingen die kunnen gebeuren (7)	○	○	○	○
Ik voel me voldaan (8)	○	○	○	○
Ik ben bang (9)	○	○	○	○
Ik voel me aangenaam (10)	○	○	○	○
Ik voel me zeker (11)	○	○	○	○
Ik voel me nerveus (12)	○	○	○	○
Ik ben zenuwachtig (13)	○	○	○	○
Ik ben besluiteloos (14)	○	○	○	○
Ik ben ontspannen (15)	○	○	○	○
Ik voel me tevreden (16)	○	○	○	○
Ik maak me zorgen (17)	○	○	○	○

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Ik voel me gejaagd (18)	○	○	○	○
Ik voel me evenwichtig (19)	○	○	○	○
Ik voel me prettig (20)	○	○	○	○

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Leiderschap & Stress in Crisis Teams

Een multi-professioneel onderzoek

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OTO LIMBURG
Voorbereiding op rampen en crises
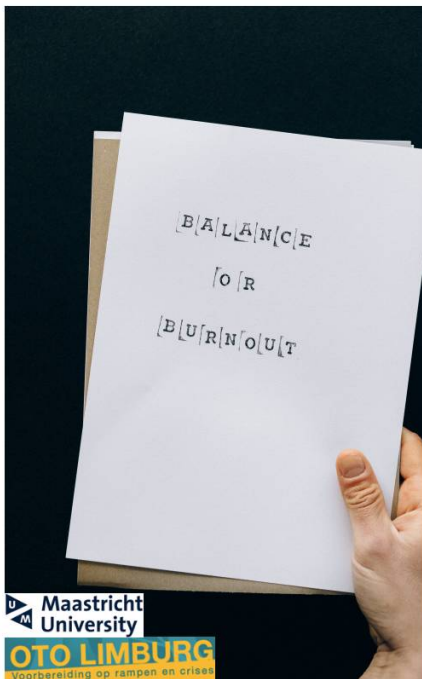
Midden in een wereldwijde crisis

Heeft u het gevoel dat u altijd moet doorzetten? Leider zijn vereist moed om te erkennen dat je onder druk staat. Deze druk kan van invloed zijn op hoe u uw rol als teamleider op zich neemt, en op de interacties van het team.

Het stressproces en de veerkracht van leiders

Studie 2. De huidige status quo op het gebied van crisismanagement wordt onderzocht. Er wordt bekeken hoe crisis leiders reageren op stress situaties en wat voor effect dit heeft op hun leiderschapsgedrag. Een beter begrip van de stress van de teamleider en de gevolgen daarvan is essentieel voor de verbetering van crisismanagement.

Het onderzoeksdoel

Dit onderzoek heeft tot doel een alomvattend begrip op te bouwen van de rol van stress bij crisismanagement. Het zal zich richten op het stressproces van de teamleider, het effect ervan op het gedrag van teamleiders en teaminteracties.Daarom zal het stressproces van de teamleider worden geanalyseerd in relatie tot het algemene functioneren van het team. Door het stressniveau van crisisleiders te manipuleren om zo te onderzoeken welk leidersgedrag wordt toegepast willen de studies een beter beeld verschaffen van deze complexe leiderschapsomgeving. De inzichten zullen ten slotte worden meegenomen in de ontwikkeling van een Masterclass Leiderschap door OTO Limburg. Als zodanig wordt alles in werk gesteld om de veerkracht van mondiaal leiderschap bij crisismanagement te verbeteren.

Uw bijdrage

We nodigen u uit om deel te nemen aan het onderzoek omdat u een crisisleider bent met minstens één ervaring in strategische, tactische en operationele crisisnavigatie.

Het interview is bedoeld om een inzicht te verkrijgen in wat crisis teamleiders onder druk zet, hoe en waarom ze op dergelijke situaties reageren en de mate waarin dit een effect heeft op hun teamleiderschap gedrag. Daarnaast beoogt deze studie de redenering van de leider achter de toepassing van zijn leiderschapsgedrag te achterhalen. Tot slot zal er voor en na het interview gebruikt worden gemaakt van een zelf-beoordelingsvragenlijst. Hiermee kunnen fysiologische correlaten van stressreacties worden gemeten.

De bevindingen van dit onderzoek kunnen leiden tot een dieper inzicht in deze complexe leiderschapsomgeving, waardoor crisisleiders in de toekomst beter kunnen worden opgeleid voor deze buitengewoon cruciale en moeilijke rol.

De interview procedure

Nadat u heeft besloten deel te nemen aan dit onderzoek ontvangt u een e-mail om een online toestemmingsformulier te ondertekenen en een korte zelf-beoordelingsvragenlijst om in te vullen. Aanvullend stelt deze vragenlijst u in staat om een interview te plannen. Interviews kunnen op locatie als ook online worden afgenomen. We verwachten het interview in ongeveer **30 minuten** af te ronden. De interviews worden afgenomen door een master student gerelateerd aan dit onderzoeksproject (kan in het Nederlands/ Engels of Duits). Het interview wordt opgenomen (audio) en getranscribeerd. Alle transcripties zijn alleen toegankelijk via een anonieme onderwerp-ID en bevatten geen identificerende informatie.

Als u vragen, opmerkingen of klachten heeft over het onderzoek, kunt u terecht bij onderzoeker Corinna Rott : corinnarott@maastrichtuniversity.nl.

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Interview Guideline	
Introduction	
Opening	• Welcome, thank you for helping us with our study by taking part in this interview • "As previously communicated, we are currently conducting research on crisis leaders"
Making the participant feel at ease	• My name is Maxime, I am a master student at the school of business & economics of Maastricht University and currently participating in the Master program of Learning and development in Organisations • I work together with a PHD student Corinna Rott, OTO Limburg and Nazl and we are researching the concepts of leadership and stress within crisis teams.
Statement of Consent & Confidentiality	• " I would like to remind you that this interview will be audio-recorded in accordance with the permission form's confidentiality provision." "Are you still agreeing with this proceeding?" • As an investigator, it's critical for me to emphasize that no personally identifiable information will be made public, and that all the information you supply will stay anonymous
Clarification of understanding	• Is everything clear to you or do you have any remaining questions?
Building Rapport	• The aim is to confront you with elements of a crisis situation in order to get a better understanding of your leadership behaviour during a crisis event. • Clarification: there are no right or wrong answers to my questions. We want to get a better understanding of crisis leadership and the reasoning behind it.

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	• Lastly before we start, I would like to clarify that you will eventually receive a transcript of our conversation and that you have the option to withdraw from the study at any time.
Demographic information	• Could you give a short introduction about yourself? (name, function, company or institution you work for) and the years of experience in crisis management?

Body

Starting Questions	• How do you as a crisis leader prepare your team during a calm routine? • What is your preparation for your team before a crisis starts? • What are you doing in the periods where it tends to be calm? • Are there any particular things that you start or try to prone with your leadership behaviour?
First recording → to elicit stress	Please close your eyes and imagine that you receive a phone call in the middle of the night.
Audio recording 1	*"Boh finally mad, I've got you. I've got you, and I need you to come to the hospital right away. Alarm has gone off and we are without power at our intensive care department. Just as the press is claiming that we are unprepared for crisis scenarios. There's complete chaos here, and the emergency power supply has been depleted. I don't know anything about it they mention something with hackers and malware. It is terrible, and I am completely stressed as well. I am not sure what the solution should be, but we're using oxygen balloons to oxygenate the patients here and there is simply not enough staff available at the moment. You have to come now".*
Questions	As a crisis leader, what would you do now and why? How do you feel about this call?
Second recording → debriefing	Please close your eyes again and imagine that you receive a phone call from your colleague on your way home

Audio recording 2	*" Hi, I am sorry for calling you this late, but I cannot get rid of today's situation in my mind. I have a huge feeling of guilt inside, but I'm also very scared, stressed and frustrated at the same time. The deceased patient's family has threatened me, and they have also stated that they will visit you at home. Our intensive care colleagues' names have been posted on Instagram and Twitter, and they claim to know where we live. I'm having trouble sleeping. Please, please, help me since I have no idea what to do. I'm desperate please help"*.
Questions	• How do you feel about this call? • What would you do next and why?
State-trait anxiety questionnaire	Ask participants on spot to fill in the second part of the questionnaire (state part)
Reflecting questions	• Did you feel tension during the scenario? **If Yes**, can you pinpoint the first moment when the tension was released? **If Yes,** when do you normally feel that this tension releases? How long do you need to recover from a crisis event? If No, can you think of an experience in which you were strongly tensed? felt that there was ? • What was the first moment you felt save again?
Debriefing	• How did you feel during the experiment? • Could you give us any feedback on the scenario? • Are there things that could be improved to make it more realistic?
# Conclusion	
Ending	Thank you for participating in this research by answering our questions.
Opening for additional remarks	• Is there anything else you would like to address or that you believe is overlooked concerning of crisis leadership and stress?

Appendix 6, Demographic data participants

Demographic information

Participant	Profession	Gender	Tenure (yrs.)
Participant 1	Chairman board of directors	M	7+
Participant 2	Crisis Coordinator/Safety Team Leader	M	2,5
Participant 3	Manager Acute Care Network	F	7+
Participant 4	Chairman of Safety Region /Director of Public Health	M	7+
Participant 5	Regional manager	F	4
Participant 6	Crisis coordinator/ crisis management advisor	M	4
Participant 7	Chairman board of directors	M	4
Participant 8	Director of GGD/Director of Public Health	M	7+

	Code	Example statement
1 Affected emotions	• Feeling guilty	• "Ja ik heb dat ook wel bij mezelf maar wat ik wel gemerkt heb, soms voel je je schuldig als je s 'avonds niet meer achter je laptop kruipt".
	• Feeling of acceptation	• "Maar een bepaalde relativering in de zin van ja wij hebben alles gedaan wat we moesten doen vanuit onze positie, vanuit het team".
	• Feeling of being restless	• " Ja ik zou hier wel onrustig van worden".
	• Feeling of empathy	• "Ja, als eerste natuurlijk vervelend dat die persoon zo gestrest is".
	• Feeling of eustress	• "Ja maar dan productieve stress, dus ik raak niet in paniek. Het is niet dat ik niet meer weet wat ik moet doen maar het is meer een adrenaline strooom. Dus dat is ook wel functionele stress".
	• Feeling of responsibility	• "Ja goed, ik ben wel verantwoordelijk voor deze tent, dus dan had ik maar een andere baan of een ander vak moet leren. Het is dan mijn verantwoordelijkheid".
	• Feeling the need to support their peers	• "Dus ja ik denk dat het vooral belangrijk is om die person te gaan kalmeren e naan te geven dat alles wel in orde komt".
	• Feeling of team work	• "Vooral dat we er samen voor staan. Dat het werk niet van een person is

		maar dat je daarin samen staat".
	• Feeling of tension	• "Ja natuurlijk op het moment dat het misgaat in situaties waar je verantwoordelijk voor bent dan raak je wel gespannen".
	• Feeling relaxed	• "Ik voel me eigenlijk ontspannen"
2 Team leadership behaviour before a crisis	• Effort to ensure a complete information position	• "Zorgen dat je informatiepositie altijd op orde is"
	• Effort to implement structure	• "Tijdens een vergadering moet je een heel duidelijke structuur hanteren"
	• Effort to maintain network relationships	• "Onderhouden van je netwerk met diverse partners"
	• Effort to make a concrete plan	• "Planvorming is natuurlijk niet onbelangrijk"
	• Training and preparing team members	• "Het team bereiden we echt voor aan de hand van training en simulaties".
3 Team leadership behaviour during an acute crisis phase	• Ability to put things into perspective	• "Je moet er alles aan doen om het zoveel mogelijk klinisch te blijven benaderen"
	• Aim to provide clear communication	• "Je moet heel duidelijk zijn in de situaties".
	• Aim to stay calm	• "Ik probeer zelf altijd heel rustig te blijven"
	• Challenging people to think creatively	• "Ik vind het vooral belangrijk om mensen uit te dagen om naar oplossing te zoeken en niet meteen af te gaan op het eerste was ze denken"
	• Creating a clear overview	• "Ja, een overzicht proberen te krijgen van wat er aan de hand is".
	• Elaborate on different scenarios	• Intervierwer: "U probeert dus eigenlijk te stimuleren om niet direct te handelen maar iets in goed overleg te discussiëren. Wat is

			nou de situatie en wat zijn de oplossingsmogelijkheden? Interviewee: Ja"
		• Encouraging people to be critical	• "Uh ja mensen ook vooral kritisch naar hun plannen te laten kijken".
		• Foster collaboration within the crisis team	• "Ik zou het crisisteam meteen bij elkaar roepen".
		• Guiding behaviour	• "Misschien ook nog even op wat opties wijzen".
		• Helping team members to get emotions out of the way	• "Ja in eerste instantie zou ik proberen om die person rustig te krijgen".
		• Promote cooperation among all stake holders	• "Bellen met de meldkamer techniek, bellen met de ICT-afdeling om alvast een beeld te hebben van wat er aan de hand is alvorens ik in het ziekenhuis ben".
		• Taking responsibility	• "Het is een gedeeld probleem. De organisatie staat achter je, ik sta achter je".
4 Team leadership behaviour after an acute crisis phase		• Listening to show empathy	• " Het verhaal nog een keer laten vertellen en aanhoren zodat hij zich gehoord voelt".
		• Outsourcing of personnel care	• "Ik zou trouwens ook kijken of ik een maatschappelijk werker of z'n type erbij zou kunnen halen".
		• Social emotional support	• "Vooral laten weten dat hij er niet alleen voor staat, dat is wel belangrijk".
5 The BOB Method			• "Gewoon de BOB-systematiek aflopen; Beeldvorming, Oordeelvorming en dan Besluitvorming".

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6 Recovery process	• Reflection	• "En dat je ook gaat reflecteren van wat heb ik wel en wat heb ik niet goed gedaan".
	• Time to recover from a crisis event	• "Op het moment dat die dreiging minder wordt, neemt de spanning ook af".
7	• Feedback on scenario	• "Nou ja weet je, ik vind het een goed scenario en het zou ook zomaar kunnen gebeuren. Het enige dat niet realistisch is, is dat, ik denk niet dat zo iemand mij rechtstreeks zou bellen".
8	• Limitations and recommendations for future research	• "Je zou eigenlijk een keer moet interviewen in een live crisis"
9	• Not setting boundaries	• "Ja ook met die lockdown toen je thuis zat, dan was je continu met werk bezig".
10	• Personal experiences of tense situations	• "Ik heb op meerdere momenten tijdens de corona crisis wel die spanning gevoeld".
11	• Prolonged stress period	• "Het doet natuurlijk wel iets met mij, je hebt natuurlijk die periodes gehad waarin je het gevoel had dat je alleen maar aan stond. Dan begon mijn telefoon om 6 uur te piepen en s 'avonds om 11 uur hield die op".
12	• Setting clear boundaries	• "Maar ik ben daar wel heel bewust, zeker de laatste 6 weken, meer afstand van aan het nemen. Zo laat ik mijn werktelefoon ook wel eens thuis in het weekend".
13	• Sleeping Problems	• " Ik heb tal van onrust momenten gehad van; oh god mijn hemel wat nu. In de eerste paar maanden heb ik ook echt slecht

		geslapen, ben ik s 'nachts wakker geworden heel vaak".
14	• Taking Initiative	• "Bijna altijd leidt het even tot terugbellen".
15	• Ways to reduce stress	• "Ik denk dat het wel een van de belangrijkere eigenschappen is van een goed crisisteam. Is dat je kunt werken op basis van vertrouwen".

Appendix 8, Output paired samples t-test

Descriptive statistics

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Time 1,	30,43	7	4,756	1,798
	Time 2,	26,71	7	4,889	1,848

Paired Samples test

		Paired Samples Test							
		Paired Differences							
					95% Confidence Interval of the Difference	95% Confidence Interval of the Difference			
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Time 1, Time 2,	3,714	2,752	1,040	1,169	6,259	3,571	6	0,12

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Appendix 9, Statement of Originality

By signing this statement, I hereby acknowledge the submitted paper/thesis/report, titled:

Team leader behaviour during crisis
Bringing together literature on stress and crisis management to unravel team leader behaviour further: A pilot study

to be produced independently by me, without external help. Wherever I paraphrase or cite literally, a reference to the original source (journal, book, report, internet, etc.) is given.

By signing this statement, I explicitly declare that I am aware of the fraud sanctions as stated in the Education and Examination Regulations (EERs) of the SBE.

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