Personal Resources and Leadership Behavior:

A Three-Study Investigation on Leaders' Mindfulness and Resilience, Leadership Behavior, and Employees' Work-Related Outcomes

Dissertation

Submitted to the Faculty of Business and Economics

TU Dortmund University

Dortmund

In Partial Fulfillment of the Requirements for the Degree of

Doctor Rerum Politicarum

Submitted by

Nele Hartmann

18.06.1992

Reviewer

1. Prof. Dr. Jens Rowold

2. Prof. Dr. Tessa Flatten

Eine Dissertation in der Fakultät Wirtschaftswissenschaften an der Technischen Universität Dortmund

Dissertationsort: Dortmund

Acknowledgements

"I gotta have roots before branches…" (Room for Two, Roots before Branches).

With the completion of this dissertation, three exiting years are coming to an end. Three years, in which I learned a lot, most about myself. I found and strengthened my roots and started to grow different branches. At this point, I would like to thank the people who accompanied me during this time and helped me growing. First, I would like to thank my supervisor Prof. Dr. Jens Rowold for the opportunity to work on this exiting research project. Thank you very much for your support and advice. I would also like to thank Prof. Dr. Tessa Flatten and Prof. Dr. Stefan Diestel for being part of the examination board and for offering their time and experience.

Further, I would like to thank my amazing colleagues Jana, Catrin, Kai, Johannes, Julia, and Carolin for your encouragement, time, and inspiration. You are awesome and I really enjoyed working with you – you helped me through struggling time, and we also had a lot of fun. A special thank goes to Jana, thank you so much for being the first part of JaNe and for going this way with me.

Finally, I would like to thank my friends and family. I thank all my parents for their support during the last years, you also made this journey possible. A special thank goes to Niko, thank you so much for your support, encouragement, patience, and love. Last but not least, I would like to thank Mona, Mickey, and Leo, my furry friends, for your cuddles and meowtivation.

Summary

In this dissertation, I examine the relationship between mindfulness and resilience as personal resources of leaders and different constructive and destructive leadership behaviors, as well as work-related outcomes of employees. Based on the integrative framework by Good et al. (2016) which embeds mindfulness in the workplace, I developed six research questions linking mindfulness and resilience to leadership behavior and outcomes of employees. Besides the integrative framework, the COR theory (Hobfoll, 1989) represents a basic theory for this dissertation which underlines the importance of personal resources. From that I derived three empirical studies. First, the relationship between leaders' mindfulness and resilience, and servant and destructive leadership behavior was examined as well as the effect on aspects of employees' work-related climate outcomes. To get more insight about the influence of mindfulness and resilience on mental health, I secondly investigated the relationship between leaders' mindfulness and resilience, servant leadership and perceived stress of employees. Finally, I considered neurophysiological measures as indicator for resilience and examined potential relationships to constructive (transactional, transformational, and servant) leadership behaviors.

The first study explores leaders' mindfulness and resilience as potential antecedents of servant and destructive leadership and further examines the mediating effect of servant and destructive leadership behavior between leaders' mindfulness and resilience and employees' trust in the leader and perceived psychological safety climate (PSC). Therefore, 281 leader-follower dyads were recruited for an online-survey. The results of the cross-sectional study revealed that leaders' mindfulness was associated with more servant and less destructive leadership behavior and further that servant leadership mediated the relationship between leaders' mindfulness and employees' PSC and approximately trust in the leader.

The second study investigates whether servant leadership can mediate the negative relationship between leaders' mindfulness as well as leaders' resilience and employees' perceived stress. The cross-sectional study of 213 leader-follower dyads showed that leaders'

mindfulness and resilience were negatively linked to perceived stress of employees through servant leadership. Both personal resources represent important resources for leaders that foster servant leadership which in turn reduces perceived stress of employees.

The third study explores potential relationships between heart rate variability (HRV) as indicator for resilience and constructive (servant, transformational, and transactional) leadership behavior as well as whether changes in HRV due to a stressful event are related to resilience. Therefore, 18 pairs of students were recruited to perform in an assessment center. Although, the results of the third study did not support the assumed hypotheses that resting HRV and its changes due to stressful events are related to resilience as well as that resting HRV is related to transactional, transformational, and servant leadership. However, it revealed that the changes in HRV between resting state and the post-TSST measurement are related to transformational and servant leadership behavior.

In summary, this dissertation reveals important insights regarding personal resources and leadership behavior. Identifying the role of leaders' mindfulness and resilience as antecedents of servant and destructive leadership represents an important step towards the understanding of leadership behavior. Servant leadership represents an important leadership behavior regarding leaders' mindfulness and resilience as well as employees' perceived PSC, stress, and trust in the leader. In general, this dissertation helps to close the research gap regarding mindfulness and resilience at the workplace. Furthermore, it shows insight in neurophysiological processes in the organizational context and reveals its research potential. Further research might benefit from the findings in this dissertation towards a better understanding of personal resources, leadership behavior and stress at the workplace.

Zusammenfassung

In dieser Dissertation untersuche ich den Zusammenhang zwischen Achtsamkeit und Resilienz als persönliche Ressourcen von Führungskräften und unterschiedlichen konstruktiven und destruktiven Führungsverhaltensweisen, ebenso wie arbeitsrelevanten Kriterien von Mitarbeitenden. Basierend auf dem integrativen Rahmenmodell von Good et al. (2016), welches Achtsamkeit in den Arbeitskontext einbettet, habe ich sechs Forschungsfragen entwickelt, welche Achtsamkeit und Resilienz mit Führungsverhalten und arbeitsrelevanten Auswirkungen auf Mitarbeitende verknüpfen. Neben dem integrativen Rahmenmodell stellt die COR Theorie (Hobfoll, 1989) eine Grundlage für diese Dissertation dar, welche die Relevanz von persönlichen Ressourcen verdeutlicht. Daraus habe ich drei empirische Studien abgeleitet. Zuerst wurden die Zusammenhänge von Achtsamkeit und Resilienz von Führungskräften mit dienendem und destruktivem Führungsverhalten untersucht, ebenso wie die Auswirkungen auf das Arbeitsklima von Mitarbeitenden. Um einen tieferen Einblick in die Auswirkungen von Achtsamkeit und Resilienz auf die mentale Gesundheit zu erlangen, habe ich anschließend den Zusammenhang zwischen Achtsamkeit und Resilienz von Führungskräften, dienender Führung und wahrgenommenem Stress von Mitarbeitenden untersucht. Abschließend habe ich neurophysiologische Maße als Indikator für Resilienz in Betracht gezogen und potenzielle Zusammenhänge mit konstruktiven (transaktionalen, transformationalen und dienenden) Führungsverhaltensweisen untersucht.

Die erste Studie zielt darauf ab, Achtsamkeit und Resilienz als potenzielle Antezedenzien von dienender und destruktiver Führung zu erforschen und weiter den mediierenden Effekt von dienender und destruktiver Führung zwischen Achtsamkeit und Resilienz von Führungskräften und Vertrauen der Mitarbeitenden in die Führungskraft und deren wahrgenommenes PSC. Dafür wurden 281 Dyaden, bestehend aus Führungskräften und Mitarbeitenden für eine Online-Umfrage rekrutiert. Die Ergebnisse der korrelativen Querschnittstudie zeigen, dass Achtsamkeit von Führungskräften mit mehr dienender und weniger destruktiver Führung assoziiert wurde und weiter, dass dienende Führung den Zusammenhang zwischen

Achtsamkeit der Führungskraft und dem wahrgenommenen PSC der Mitarbeitenden, ebenso wie näherungsweise dem Vertrauen der Mitarbeitenden in die Führungskraft vermittelt.

In der zweiten Studie wird untersucht, ob dienende Führung den negativen Einfluss von Achtsamkeit und Resilienz von Führungskräften auf den wahrgenommenen Stress von Mitarbeitenden mediieren kann. Die korrelative Querschnittstudie mit 213 Führungskraft-Mitarbeitenden Dyaden zeigte, dass Achtsamkeit und Resilienz negativ mit dem wahrgenommenen Stress von Mitarbeitenden durch das Zeigen von dienender Führung zusammenhängen. Beide persönlichen Ressourcen stellen wichtige Ressourcen für Führungskräfte da, da sie dienende Führung verstärken, welche wiederum den wahrgenommenen Stress von Mitarbeitenden reduziert.

In der dritten Studie werden potenzielle Zusammenhänge zwischen der HRV als Indikator für Resilienz und konstruktivem (dienendem, transformationalem und transaktionalem) Führungsverhalten erforscht, ebenso wie die Frage, ob Veränderungen in der HRV durch eine stressige Situation mit Resilienz zusammenhängen. Dafür wurden Studierende rekrutiert und haben in 18 Zweiergruppen an einem Assessment Center teilgenommen. Die Ergebnisse zeigten allerdings, dass keine der aufgestellten Hypothesen bestätigt werden konnte. Es wurde angenommen, dass die HRV sowohl im Ruhezustand als auch ihre Veränderungen durch eine stressige Situation mit Resilienz zusammenhängen, ebenso wie, dass die HRV im Ruhezustand mit transaktionaler, transformationaler und dienender Führung zusammenhängt. Es zeigte sich, dass Veränderungen in der HRV zwischen dem Ruhezustand und der Messung nach dem TSST mit transformationaler und dienender Führung zusammenhängen.

Zusammengefasst zeigt diese Dissertation wichtige Erkenntnisse in Bezug auf die persönlichen Ressourcen von Führungskräften und Führungsverhaltensweisen. Achtsamkeit und Resilienz von Führungskräften konnten als Antezedenzien von dienender und destruktiver Führung festgestellt werden. Dienende Führung stellt eine wichtige Führungsverhaltensweise in Bezug auf Achtsamkeit und Resilienz von Führungskräften dar, ebenso wie wahrgenommenem Stress und PSC und Vertrauen der Mitarbeitenden in die Führungskraft. Insgesamt

unterstützt diese Dissertation dabei, die Forschungslücke in Bezug auf Achtsamkeit und Resilienz im Arbeitskontext zu schließen. Des Weiteren gibt sie Einblicke in neurophysiologische Prozesse im organisationalen Kontext und zeigt Forschungspotential in diesem Bereich auf. Zukünftige Forschung könnte von den Ergebnissen dieser Dissertation profitieren, hin zu einem besseren Verständnis in Bezug auf persönliche Ressourcen, Führungsverhalten und Stress am Arbeitsplatz.

Table of Contents

List of Tables

List of Figures

List of Abbreviations

ANS   Autonomic nervous system

CD-RISC   Conner-Davidson Resilience Scale

COR   Conservation of Resources

ECG   Electrocardiography

EEG   Electroencephalography

EMG   Electromyography

ELT   Evolutionary Leadership Theory

G-WTS   German Workplace Trust Survey

HF   High frequency

HRV   Heart rate variability

HRVAS   Heart Rate Variability Analysis Software

JD-R   Job Demands-Resources

MAAS   Mindful Attention and Awareness Scale

MBSR   Mindfulness-Based Stress Reduction

PNS   Parasympathetic nervous system

PSC   Psychological safety climate

RMSSD   Square root of the mean squared differences between adjacent R-R intervals

SET   Social Exchange Theory

SNS   Sympathetic nervous system

TSST   Trierer Social Stress Test

1. Introduction

"The oak fought the wind and was broken, while the willow bent when it must and survived." (Jordan, 1993, p. 565).

Leaders deal with several demands, for example, working under time pressure and making important decisions. They face uncertainties, changes, and stressful situations, and maintain complex relationships with business partners, supervisors, and employees. To manage these demands, leaders sometimes need to adapt and *bend* to them. Therefore, leaders need resources to deal with challenges and to be successful (Byrne et al., 2014). Previous research suggests that *mindfulness* is a personal resource which is associated with better regulation of the self, stress, and emotions, as well as faster recovery from stress (Good et al., 2016; Mesmer-Magnus et al., 2017). Furthermore, mindful individuals show more confidence and suffer less from mental illness such as depression and anxiety (Mesmer-Magnus et al., 2017). Leaders' mindfulness has also several positive effects for their followers. Mindful leaders pay more attention to the present moment and their surroundings (Glomb et al., 2011) and show more constructive and less destructive leadership behavior (Lange et al., 2018; Pinck & Sonnentag, 2018). Moreover, mindful leaders are associated to foster their followers' job satisfaction and work-life balance as well as improve performance. Employees perceive also less exhaustion when their leader is mindful (Reb et al., 2014). Another personal resource is *resilience* which is associated with better emotion regulation (Kay, 2016; Tugade & Fredrickson, 2007) and more positive emotions as well as positive reaction to stressors (Tugade & Fredrickson, 2004). Resilient individuals suffer less from mental health issues such as depression and anxiety (Hu et al., 2015), are less neurotic (Oshio et al., 2018), and perceive more life satisfaction (Hu et al., 2015). Accordingly, mindfulness and resilience seem to be relevant resources for leaders that have positive effects on themselves, their leadership behavior, and their followers.

By now, several companies implemented mindfulness practice in their organizational culture. A well-known company is Google, which developed its own mindfulness course for its

employees. The aim of the program was to foster emotional intelligence as well as resilience, mental focus, and understanding. Participants reported to be calmer and more patient and can easier deal with stress and emotions after the training (Schaufenbuel, 2015). Other companies report similar outcomes of mindfulness practice, for example, mental clarity, creativity, engagement, the ability to focus, lower stress levels, and higher well-being (Schaufenbuel, 2015).

However, Pinck and Sonnentag (2018) argue that leadership behavior is necessary to transfer resources from leaders into outcomes of followers. Leaders may influence working conditions, behaviors, and work attitudes of their followers (Yukl, 2013). Depending on their leadership behavior, leaders can, for example, cause stress of their followers or buffer them from it (Harms et al., 2017). Therefore, I focus on leaders' mindfulness and resilience to explore their relationships to constructive and destructive leadership behavior. Additionally, I focus on the mediating role of leadership behavior between leaders' mindfulness and resilience and employees' positive work-related climate outcomes as well as employees' perceived stress. Thereby, I focus on *servant leadership* as a constructive and employee-oriented leadership behavior (van Dierendonck, 2011) and *destructive leadership* as a harmful leadership behavior (Einarsen et al., 2007). Using the earlier mentioned metaphor of Jordan (1993), I aim to explore whether mindfulness and resilience can prevent leaders from *fighting* against their followers by leading destructively and at the same time whether mindfulness and resilience can support leaders to *bend* to their followers and show servant leadership behavior.

Regarding work-related climate, *trust in the leader* is associated with more organizational citizenship behavior (OCB), job performance, job satisfaction, and organizational commitment (Dirks & Ferrin, 2002). Furthermore, *psychological safety climate (PSC)* is associated with less psychological distress, exhaustion, and workload as well as job, psychological and emotional demands and is positively related to psychological health (Idris et al., 2012). Therefore, I focus on trust in the leader and PSC as employees' positive work-related climate outcomes.

Moreover, work-related stress is positively related to mental illness as it leads to anxiety and depression and is negatively related to job satisfaction (Griffin et al., 2010; Lambert et al., 2007; Motowidlo et al., 1986). Therefore, it is not only crucial to examine how leadership is related to employees' perceived stress, but to focus on leaders' perceived stress and on the resources, they need to overcome stressful events (Hobfoll, 2002) and simultaneously show constructive leadership behavior. Consequently, Antonakis (2011) as well as Judge et al. (2009) consider that biological and physiological attributes, beyond psychological traits and resources, play a crucial role in the emergence of leadership behavior. Therefore, I set another focus on neurophysiological attributes in the workplace and explore their relationship to resilience, regarding a stressful event as well as constructive leadership behavior. Additional to servant leadership, I focus on *transactional* and *transformational leadership* which display the constructive leadership behaviors of the *full-range of leadership model* (Bass, 1999) that is seen as the core theory of leadership (Judge & Piccolo, 2004). I include transactional and transformational leadership to gain a wider understanding of the effects of neurophysiological processes and further to potentially strengthen the validity of servant leadership which represents a much younger leadership behavior which has yet not been investigated extensively.

In the following section, I outline the goals of this dissertation as well as the research questions that the three empirical studies of this dissertation are based on.

1.1. Goals of the Dissertation and Research Questions

The overall goal of this dissertation is to explore the role that mindfulness and resilience play in the context of leadership. Therefore, I aim to theoretically explain and empirically examine whether mindfulness and resilience represent antecedents of servant and destructive leadership. Additionally, I aim to explore mediating effects of these leadership behaviors between leaders' mindfulness and resilience and employees' work-related climate outcomes and employees' perceived stress. Finally, I would like to investigate neurophysiological correlates of resilience regarding constructive leadership behavior. The development of the research questions of this dissertation as well as the research model is based on the integrative

framework of mindfulness in the workplace by Good et al. (2016) to explore the relationship of leaders' mindfulness and resilience in the leadership context. Therefore, I have conducted three empirical studies to answer six research questions which will be outlined in the following.

To examine the role of mindfulness and resilience in the context of leadership is of interest for the organizational research field from two perspectives. First, mindfulness and resilience are positively associated with aspects of mental health (Hu et al., 2015; Mesmer-Magnus et al., 2017) and cognitive functioning (Good et al., 2016; Tugade & Fredrickson, 2007). Furthermore, mindfulness and resilience help individuals to manage stressful events and to overcome stressors (Mesmer-Magnus et al., 2017; Tugade & Fredrickson, 2004). Besides their direct positive effects, little is known about whether and how mindfulness and resilience can positively influence leadership behavior. Second, previous research addresses the lack of explored antecedents of servant and destructive leadership behavior (Eva et al., 2019; Tepper et al., 2017). Servant leadership has positive effects on employees' attitudes and behavior such as work engagement and organizational commitment (van Dierendonck et al., 2014) whereas destructive leadership has negative effects on employees' work-related motivation and job satisfaction (Schyns & Schilling, 2013). However, little is known about the personal traits or resources that predict these leadership behaviors or – in case of destructive leadership – can buffer this negative behavior. Previous research found that leaders experience a high amount of work-related stress (Cavanaugh et al., 2000). Therefore, it is crucial to explore whether stress-buffering resources such as mindfulness and resilience positively predict servant leadership and negatively predict destructive leadership. Consequently, I aim to examine the following research question in my dissertation in the first study:

Research Question 1: How are leaders' mindfulness and leaders' resilience related to servant and destructive leadership behavior?

Second, a positive climate of employees seems to be a desirable outcome for leaders. Trust in the leaders and PSC are associated with several positive work-related attitudes and behavior (Dirks & Ferrin, 2002; Idris et al., 2012). Furthermore, work-related stress has

negative consequences for mental health and job satisfaction (Griffin et al., 2010; Lambert et al., 2007; Motowidlo et al., 1986). Therefore, I aim to explore in the first study of this dissertation whether servant leaders transfer their personal resources of mindfulness and resilience into positive climate outcomes of employees, as well as whether destructive leaders lack of mindfulness and resilience and would further reduce employees' positive climate outcomes. In the second study of this dissertation, I aim to follow up on the first study and examine whether mindful and resilient leaders can and reduce their followers' perceived stress through servant leadership. Negative outcomes such as stress of destructive leadership behavior have been examined by previous studies (Schyns & Schilling, 2013; Tepper, 2000). Therefore, I focus on servant leadership as constructive leadership behavior in the second study. This leads to the next research questions that I want to explore in my dissertation:

Research Question 2: Can servant and destructive leadership mediate the relationship between leaders' mindfulness and leaders' resilience and employees' work-related climate outcomes?

Research Question 3: Can servant leadership mediate the relationship between leaders' mindfulness and leaders' resilience and employees' perceived stress?

Previous organizational research suggest that biological and physiological attributes should be considered to gain deeper understanding of psychological characteristics and the leadership process (Antonakis, 2011; Judge et al., 2009). As the *heart rate variability (HRV)* represents an important aspect regarding regulatory processes of the human body, especially during stressful events, and is associated with higher resilience (McCraty & Shaffer, 2015; Shaffer & Ginsberg, 2017), I consider resting HRV as a physiological indicator for psychological resilience as well as changes in HRV regarding stressful events. Furthermore, I aim to explore whether cardiovascular activity in form of resting HRV is relevant for the emergence of constructive leadership behavior. Therefore, I aim to investigate the following research questions in my dissertation in the third study:

Research Question 4: Is resilience related to a person's resting HRV?

Research Question 5: How are changes in HRV during and after a stressful event related to resilience?

Research Question 6: Is resting HRV related to different constructive (servant, transformational, and transactional) leadership behavior?

In order to examine the six research questions, I developed three empirical studies. The first study explores the first two research questions regarding mindfulness and resilience as potential antecedents of servant and destructive leadership as well as the mediating role of these leadership behaviors between leaders' mindfulness and resilience and employees' positive climate outcomes. Therefore, leader-follower dyads were recruited to participate in an online-survey. Self-reports of leaders' mindfulness and resilience were collected, and employees assessed their leaders' leadership behavior as well as their own perceived climate outcomes. The second study addresses the third research question, in order to explore the mediating effect of servant leadership between leaders' mindfulness and resilience and employees' perceived stress. The research design was similar to the first study – leaders rated their own mindfulness and resilience whereas employees rated their leaders' servant leadership behavior as well as their own perceived stress. Finally, the third study is conducted to investigate the fourth, fifth, and sixth research question. Therefore, students were recruited to participate in an assessment center. Self-reports of resilience were collected, and electrocardiography (ECG) was used to measure resting HRV as well as HRV during a stressful event, after the stressful event, and during a mindfulness exercise. Furthermore, two participants were paired to perform a role play to simulate a conversation between leader and follower. Afterwards, the participants with the role of the follower rated the leadership behavior of the participants with the role of the leader.

Consequently, the three multi-modal studies provide insight into the role of mindfulness and resilience in the workplace as potential antecedents of servant and destructive leadership as well as leadership outcomes. Furthermore, I provide exploration of neurophysiological correlates in a work-related setting regarding stressful events and leadership behavior.

1.2. Outline of the Dissertation

This dissertation consists of six main chapters, which are presented in Table 1. The first chapter gives an introduction into the main topic of the dissertation and further includes an outline of the goals and research questions as well as the chapter structure. The second chapter provides the theoretical background of the study variables and outlines relevant theoretical models. Here, the focus lies on leadership behavior, named transactional, transformational, servant, and destructive leadership as well as personal resources, named mindfulness and resilience, and finally work-related outcomes, named trust in the leader, PSC, and perceived stress. Furthermore, the integrative framework by Good et al. (2016) will be illustrated as basis for the underlying research model of this dissertation which will be outlined afterwards.

The three studies of this dissertation which aim to answer the outlined research questions are presented in the Chapters 3 to 5. Each study consists of an introduction, a theoretical background including the relevant hypotheses of the study, the used method including a presentation of the sample, the research design, used measures as well as the analytical approach, followed by an illustration of the results and finally a discussion of the study.

Finally, Chapter 6 presents an overall discussion of the three empirical studies. First, a summary of the findings is given and contributions to existing theory are highlighted. Furthermore, limitations of the studies are discussed and implications for future research and practice are extracted. The Chapter ends with an overall conclusion of the dissertation.

Table 1

Overview of the Chapter Structure

Chapter	Content
1	Introduction, Goals and Research Questions, and Outline of the Dissertation
2	Theoretical Background
3	Study 1: *Do Leaders' Mindfulness and Resilience foster Trust among Employees? Servant and Destructive Leadership as potential Mediators*
4	Study 2: *The Relationship of Leaders' Mindfulness and Resilience, Servant Leadership, and Employees' Stress*
5	Study 3*: Neurophysiological Correlates of Resilience and Constructive Leadership Behavior*
6	Overall Discussion, Summary of Findings and Contribution, Limitations and Future Research, Practical Implications, and Conclusion

2. Theoretical Background

In the following chapter, the theoretical background of all relevant study variables of this dissertation will be outlined. First, a short overview of the evolution of leadership is given, followed by an illustration of the specific leadership behaviors transactional, transformational, servant, and destructive leadership. Second, the personal resources mindfulness and resilience will be outlined as well as third, trust, PSC, and perceived stress as work-related outcomes. Finally, neurophysiological parameters will be explained. Afterwards, the integrative framework by Good et al. (2016) will be illustrated as well as the research model of this dissertation.

2.1. Leadership

By now, the research field of leadership is an element of organizational science for many years, resulting in a great variety of theories and models that has been developed (Antonakis et al., 2012). In general, Antonakis et al. (2012) define leadership as an "influencing process – and its resultant outcomes – that occurs between a leader and followers and how this influencing process is explained by the leader's dispositional characteristics and behaviors, follower perceptions and attributions of the leader, and the context […]" (p. 5). This means that leadership always includes a form of influence which has a positive or negative effect on the involved individuals. Furthermore, it depends on the personality of the leader and how the leader's behavior is perceived by the followers in different situations.

Antonakis et al. (2012) distinguish leadership from power and management. *Power* reflects how a leader can influence her[1] followers, for example through punishment or expertise. Therefore, the authors conclude that power is needed to lead others. Furthermore, they describe *management* as a more objective and rational way to handle organizational tasks. Therefore, leadership is based on successful management but goes further. The authors summarize that leadership is effective if it includes empowerment and a sort of moral guideline

---

[1] To enhance readability, she/her pronouns are used for leaders and he/him pronouns are used for employees in this dissertation.

and make clear that leadership is an essential component in the organizational context, for subordinates, and the organizational environment.

The research on leadership started in the beginning of the 1900s with *trait* approaches of leadership that suggest that stable personal attributes or traits are decisive if someone is capable of being a leader or not. These approaches were followed by *behavioral* theories in the 1950s focusing on the actual behavior of leaders as well as *contingency* approaches in the 1970s with a focus on the perspective that different aspects such as leader-follower relations or task structure are relevant for the effectiveness of leadership. *Contextual* approaches in the 1990s suggest that the outcome of a specific leadership behavior depends on the situation and context (Antonakis et al., 2012). In the 1980s *relational* leadership theories got attention and with it the so called *new leadership* (Antonakis et al., 2012). Bass (1985) represents the opinion that former approaches focused on a transactional exchange process between leader an followers in which the leader points out goals and tasks the employees have to accomplish to achieve a reward. In contrast to these traditional leadership approaches, the theory of transformational and charismatic leadership was developed and includes the motivation of followers to show more than their ordinary performance (Bass, 1985). Researchers argue that it is necessary to understand how a leader influences her followers, for example, to adopt values of the leader or the interests of the organization (Antonakis et al., 2012; Bass, 1985; Yukl, 1999). Based on this leadership paradigm, the *full range of leadership model* was invented (Antonakis et al., 2003; Bass, 1999). This model assigns the activity of leadership styles to their effectiveness including non-leadership or laissez-faire leadership as the most passive and ineffective, transactional leadership with a moderate level of activity and effectivity and transformational leadership as the most active and effective leadership style (Kirkbride, 2006).

In the mean and following time, further leadership approaches emerged which are not part of the full range of leadership model. In addition to the absence of leadership (laissez-faire), negative leadership behaviors got attention in the recent years. This negative behavior

can be summarized under the concept of destructive leadership (Einarsen et al., 2007). Therefore, Rowold and Poethke (2017) added destructive leadership to their *model of integrative leadership* which also includes laissez-faire, transactional and transformational as well as instrumental leadership which represents a more strategic leader behavior, and communication styles. Another research stream focuses on follower-oriented leadership styles such as servant leadership where the main interest of the leader lies in the support of the employees and the consideration of individual needs and interests (van Dierendonck, 2011).

Accordingly, an important goal of many research approaches is to examine the predictors of different leadership behaviors. Zaccaro et al. (2012) summarize some characteristics which they identify as main leader attributes. Cognitive capacities such as general intelligence and personality including extraversion, conscientiousness, emotional stability, openness, and agreeableness are some personal characteristics besides social capacities as well as problem-solving skills, implicit knowledge, and motives of the leader (Zaccaro et al., 2012). A newer research field that is getting more attention is the biological and natural background of individual differences and their connection to leadership. This approach suggests that biological and physiological aspects, for example genes, might influence leadership behavior (Antonakis, 2011; Judge et al., 2009).

2.1.1. Transactional Leadership

Bass (1985) points out that a *transactional* leader, on the one hand, defines a role for the followers and identifies what they need to do to achieve certain goals and outcomes. On the other hand, she finds out the needs of the followers and makes clear that these can be satisfied if the followers fulfil their role and tasks. Avolio et al. (2009) summarize that transactional leadership is "largely based on the exchange of rewards contingent on performance" (p. 427), for example, a leader points out a certain goal an employee has to achieve until the end of the quarter to get a bonus payment. Bass (1985) differentiates between *contingent reward* as an active transactional leadership behavior and *management by exception* where the leader only takes action if it is necessary, for example when an employee makes a mistake.

Later research divides management by exception into an active and a passive behavior (Yukl, 1999). *Passive management by exception* refers to the same definition Bass (1985) uses for management by exception. *Active management by exception* means that the leader actively searches for mistakes and makes sure that rules are observed (Yukl, 1999).

Contingent reward is the main aspect of transactional leadership behavior and is defined as "the degree to which the leader sets up constructive transactions or exchanges with followers" (Judge & Piccolo, 2004, p. 755). Therefore, the leader makes her expectations of the followers clear and communicates the rewards the followers will get if they satisfy these expectations (Judge & Piccolo, 2004). Because contingent reward is the core element of transactional leadership only this dimension is considered in this dissertation.

Previous research examined several positive effects of transactional leadership on leaders and followers. Transactional leadership, especially contingent reward, is associated with successful leadership (Sturm et al., 2011) and leader effectiveness as well as job satisfaction, satisfaction with the leader, and job performance (Judge & Piccolo, 2004).

2.1.2. Transformational Leadership

Bass (1985) defines *transformational leadership* as the motivation of the employees "to do more than originally expected to do" (p. 31). Avolio et al. (2009) summarize it as "leader behaviors that transform and inspire followers to perform beyond expectations while transcending self-interest for the good of the organization" (p. 423). By strengthening the employees' confidence and self-value, the transformational leader encourages them to show an extra amount of effort in their work (Bass, 1985). Furthermore, transformational leadership includes that followers trust and respect their leader, being loyal and show admiration to their leader (Yukl, 1999). Within the full range of leadership model, transformational leadership is considered as more active and effective as transactional leadership (Antonakis et al., 2003; Bass, 1999; Kirkbride, 2006), but Bass (1985) suggests that transformational leadership should complement, not replace transactional leadership behavior.

Based on this theoretical foundation, transformational leadership was classified into four dimensions, the so called *four I's*: individualized consideration, intellectual stimulation, inspirational motivation, and idealized influence (Avolio et al., 1991). *Individualized consideration* means that a leader shows interest in employees' wishes and needs, listens to their problems, and helps them gaining more confidence. The transformational leader is assuming the role of a mentor who trains her followers by building their strengths and gives them individual treatment. Through *intellectual stimulation* a transformational leader encourages her followers to rethink their methods in dealing with problems or tasks. The transformational leader supports followers to change their own way of thinking about their behavior and values and to try out something new. With the ability of *inspirational motivation,* the transformational leader demonstrates an attractive vision for the team and brings the followers to share this vision and its goals. *Idealized influence* means that the transformational leader behaves as a role model for her followers which provides that they intend to mimic her attitudes and behavior, and adopt her values (Avolio et al., 1991).

Following criticism of the four-facet concept of transformational leadership, Podsakoff et al. (1990) extended the leadership approach and divided it into six dimensions named *identifying and articulating a vision*, *providing an appropriate model*, *fostering the acceptance of group goals*, *high performance expectations*, *providing individual support,* and *intellectual stimulation*. In their newer leadership approach, Rowold and Poethke (2017), like Podsakoff et al. (1990), define six adapted dimensions of transformational leadership. *Vision* includes the communication of abstract goals and possibilities for the future of the team. An attractive vision pursues the goal of inspiring the employees and explaining the meaning and value of the work. A vision of a discounter store, for example, could be making it possible for anyone to afford certain products. *Role modeling* means that the leader acts as she expects the employees to act and is therefore seen as a good example with the aim that followers imitate her behavior, such as a leader who finishes her tasks punctual even when they are tedious. *Team spirit* stands for establishing a positive atmosphere in the work group and creating a sense of

unity where the group members are willing to support each other. An example could be the performance of a team event, like a challenge, where the team needs to solve problems and find a solution together. *Performance orientation* describes the communication of high-performance requirements and the explanation why these are necessary. The transformational leader shows her trust and confidence in the employees to achieve the given goals. She, for example, sets a high number of contracts that the employees must enter within a month to motivate them to show their best performance while she points out that she believes in her followers to reach the aim. *Focus on individuality* includes the support of needs and desires of each employee regarding his work and development considering his strengths and weaknesses. For instance, the transformational leader discusses the career aspirations with a team member and assists him in his development. The last dimension, *innovation*, refers to the suggestion to rethink someone's own methods in dealing with problems or tasks, and showing new ways to achieve goals. Furthermore, the transformational leader listens to the innovative and creative ideas of followers to solve challenges. An example could be an internal suggestion system including rewards for innovative ideas.

Transformational leadership is associated with several positive outcomes in the workplace. Latest meta-analytic results show that transformational leadership is positively related to job performance, OCB, engagement, job satisfaction, commitment, trust in and satisfaction with the leader, leader-member exchange (LMX), extra effort, and leader effectiveness (Hoch et al., 2018).

2.1.3. Servant Leadership

The fundamental idea of *servant leadership* goes back to the concept of Greenleaf (1977/2002). Russell and Stone (2002) summarize in their review that "the prime motivation for leadership should be the desire to serve" and further that "it should ascend to a higher plane of motivation that focuses on the needs of others" (p. 145). Based on the work of Greenleaf (1977/2002), Spears (2010) characterizes ten major attributes of servant leadership named listening, empathy, healing, awareness, persuasion, conceptualization, foresight,

stewardship, commitment to the growth of people, and building community. Russell and Stone (2002) identify 20 different attributes of servant leadership according to previous literature. They cluster them into *functional attributes* named vision, honesty, integrity, trust, service, modeling, pioneering, appreciation of others, and empowerment and *accompanying attributes* such as communication, credibility, competence, stewardship, visibility, influence, persuasion, listening, encouraging, teaching, and delegation. With these findings the authors point out that the definition and theory of servant leadership is inconsistent. This is further argued by Liden et al. (2014) who summarize the different theoretical approaches and presented a theoretical model identifying the servant leader behaviors conceptual skills, emotional healing, putting followers first, help followers grow and succeed, behaving ethically, empowerment, and creating value for the community.

In a review, van Dierendonck (2011) defines six servant leadership behaviors. *Empowering and developing people* stands for "fostering a proactive, self-confident attitude among followers and [giving] them a sense of personal power" (p. 1232-1233). The leader values her followers and supports individual development and decision making. *Humility* describes a realistic view of someone's own performance and the ability to admit that talents of other people can be helpful. A servant leader searches for expertise among the followers, shows her interest and supports the followers' performance. *Authenticity* means that the servant leader represents herself in a way that corresponds with her inner values and thoughts. It also includes honesty in revealing actual intentions and keeping one's promises. *Interpersonal acceptance* includes empathy and an atmosphere of trust where mistakes are allowed, and every team member feels accepted. *Providing direction* stands for clarifying expectations within a close relationship between leader and followers and furthermore for an openness to innovative ideas. Lastly, *stewardship* is based on loyalty to the organization, social responsibility, and teamwork. It means assuming the role of a servant for the greater good and therefore deferring someone's own interests.

Besides defining servant leadership as "an other-oriented approach to leadership manifested through one-on-one prioritizing of follower individual needs and interests, and outward reorienting of their concern for self towards concern for others within the organization and the larger community" (p. 114), Eva et al. (2019) declare in their latest review three basic characteristics of servant leadership named motive, mode and mindset. *Motive* describes the "underlying personal motivation for taking up a leadership responsibility" and the "belief that leading others means a movement away from self-orientation" (p. 114). *Mode* "reflects a recognition that each individual follower is unique, and has different needs, interests, desires, goals, strength, and limitations" (p. 114). *Mindset* stands for the ability to empower followers "to be productive and prosocial catalysts who are able to make a positive difference in others' lives" (p. 114).

Accordingly, many researchers declare servant leadership as distinct from transformational leadership although there are some similarities (Bass, 2000; Hoch et al., 2018; Liden et al., 2015; Rivkin et al., 2014; Stone et al., 2004; van Dierendonck, 2011). Bass (2000) points out that the aspects vision, influence, credibility, trust, and service of servant leadership defined by Farling et al. (1999) show similarities to transformational leadership but he mentions servant leadership "goes beyond transformational leadership in selecting the needs of others as its the highest priority" (p. 33). The main parallels seem to lie in the transformational leadership dimensions inspiration and individual consideration and servant leadership behavior (Bass, 2000), however, the main difference seems to be the focus of the leader. Stone et al. (2004) summarize "the transformational leader's focus is directed toward the organization, and his or her behavior builds follower commitment toward organizational objectives, while the servant leader's focus is on the followers, and the achievement of organizational objectives is a subordinate outcome" (p. 349). Parolini et al. (2009) further argue that "transformational leader's motive toward organizational objectives could become self-serving or egoistic, whereas the servant leader's motive toward serving others [is] more altruistic in nature" (p. 275). The two leadership models were also compared by Smith et al. (2004), who argue

that transformational leaders act out of the motivation to lead while servant leaders have the desire to serve others. Because of different philosophies, the leaders focus on different aspects. Idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration are core elements of transformational leadership while valuing and developing people, building community, displaying authenticity, and providing and sharing leadership are basic for servant leadership. Different organizational cultures result from these behaviors which are spiritual, personally, generative, passive, and preserving status quo for servant leadership and are proactive, empowered, dynamic, and innovative for transformational leadership. Therefore, as Smith et al. (2004) argue, servant leadership is more successful in a static environment while transformational leadership is more successful in a dynamic environment.

Moreover, servant leadership must be distinguished from ethical and authentical leadership. An *ethical leader* behaves as a role model regarding appropriate behavior, communicates with her subordinates about ethical behavior, gives them a voice, and makes fair decisions while considering ethical consequences (M. E. Brown et al., 2005). Further, van Dierendonck (2011) argues that "ethical leadership is a more normative approach that focuses on the question of appropriate behavior" (p. 1236) while servant leadership places more emphasize on support and development of employees. *Authentic leaders* are aware of their own behavior and thoughts as well as their surroundings and situational circumstances, and further make clear and transparent decisions while showing "consistency between their words and deeds" (Avolio & Gardner, 2005, p. 326). As van Dierendonck (2011) argues, authentic leadership refers more to consistent leader behavior and the inner self of the leader whereas the supportive behavior and the subordinates first mentality of servant leadership is missing.

Furthermore, Ehrhart (2004) differentiates servant leadership from *leader-member-exchange (LMX)*. The LMX theory describes that leaders maintain different and individual relationships across their followers. Some leader-follower relations are close (these employees belong to the *in-group*) and others are less close (these employees belong to the *out-group*)

which results in a different intensity and quality of relationships (Graen & Uhl-Bien, 1995; Liden & Graen, 1980). Ehrhart (2004) argues that even though "both emphasize the leader's priority of follower development and the relationship between leaders and followers" (p. 69), he points out that servant leadership includes the aspect of ethical behavior which is not part of LMX and does not only focus on followers but also on other organizational stakeholders. Furthermore, one goal of a servant leader is to build high-quality relationships to each subordinate characterized by loyalty and trust (van Dierendonck, 2011) which means that servant leaders would try to avoid the classification into in-group and out-group, more precisely, they would try to build up only an in-group.

By now, several positive work-related outcomes of servant leadership were found. Within their meta-analysis, Hoch et al. (2018) found positive relations between servant leadership and job performance, OCB, job satisfaction, organizational commitment, affective commitment, trust in manager, and LMX.

2.1.4. Destructive Leadership

Einarsen et al. (2007) define destructive leadership as a "systematic and repeated behavior by a leader, supervisor or manager that violates the legitimate interest of the organisation by undermining and/or sabotaging the organisation's goals, tasks, resources, and effectiveness and/or the motivation, well-being or job satisfaction of his/her subordinates" (p. 208). It emerges from this definition that the negative behavior can harm the employees or the organization or both. A destructive leadership behavior towards the subordinates could be, for example, yelling at an employee in front of the whole team because he made a mistake whereas stealing money for oneself, as an example, is directed towards the organization. The definition not only includes verbal but also physical behavior, whereas the intention to harm is not included. Even though these negative behaviors were not meant to cause any harm, they could be "a result of thoughtlessness, insensitivity, or lack of competence" (Einarsen et al., 2007, p. 209). Besides active behaviors, the concept of destructive leadership contains passive behaviors like withholding important information. In their meta-analysis, Schyns and

Schilling (2013) argue that the perception of the leader behavior is more important than the actual behavior because only perceived actions can have an effect on the subordinates. This can be transmitted to the intention of destructive behavior, whereas "behavior that is perceived to be intentionally destructive is more harmful than behavior that is unintentionally destructive, but both can be considered destructive" (Schyns & Schilling, 2013, p. 140).

The explanation of destructive leadership by Einarsen et al. (2007) could be seen as a wider definition which is further narrowed down by other researchers. Krasikova et al. (2013) argue that the harmful behavior needs to be seen in the context of leadership. In their opinion, stealing from the organization, for example, falls under *counterproductive work behavior* and is not part of destructive leadership. They further add the aspect that encouraging employees to reach destructive goals as part of destructive leadership. Tepper (2000) defines *abusive supervision* as "subordinates' perceptions of the extent to which supervisors engage in the sustained display of hostile verbal and nonverbal behaviors, excluding physical contact" (p. 178), where the focus lies on negative behaviors especially towards the followers. Rowold and Poethke (2017) use this definition by Tepper (2000) as base for their concept of destructive leadership. Like Tepper, they describe destructive leadership as an active leadership behavior and delimit it from the absence of leadership called laissez-faire. Furthermore, laissez-faire includes "being indecisive, uninvolved, withdrawn when needed, and reluctant to take a stand" (Bass & Avolio, 1990, p. 22).

Meta-analytic results show that destructive leadership is associated with more follower resistance, negative affect, turnover intentions, counterproductive work behavior, and perceived stress as well as less job satisfaction, justice, commitment, positive affect, well-being, and performance (Schyns & Schilling, 2013).

2.2. Personal Resources

In general, resources are defined as "those entities that either are centrally valued in their own right (e.g., self-esteem, close attachments, health, and inner peace) or act as a

means to obtain centrally valued ends (e.g., money, social support, and credit)" (Hobfoll, 2002, p. 307). In the following section, the personal resources mindfulness and resilience are outlined.

2.2.1. Mindfulness

The main aspect of *mindfulness* is described as the "awareness and observation of the present moment without reactivity or judgement" (Glomb et al., 2011, p. 116). The origin of the concept is based on the Buddhist philosophy (Glomb et al., 2011) but now, different approaches exist (K. W. Brown et al., 2007). In general, Good et al. (2016) have clustered mindfulness in four different aspects named state, trait, practice, and intervention. First, being in the *state* of mindfulness means to be aware of the events and experiences in the present moment and to be able to observe this moment without any judgement or associations (K. W. Brown & Ryan, 2003; Good et al., 2016). Furthermore, it is a state of non-reactivity for feelings and thoughts so that automatic behavior is omitted (Bishop et al., 2004). Therefore, mindfulness can be understood as a variable state of consciousness, attentiveness, and awareness which can change within a person over time and in different situations (K. W. Brown & Ryan, 2003; Glomb et al., 2011). Second, in line with this approach, Kabat-Zinn (2003) points out that mindfulness can be *practiced* and intensified through different meditation techniques. Various programs of mindfulness meditation have been developed in recent years. Third, one of the first *interventions* of mindfulness meditation practice is the *mindfulness-based stress reduction (MBSR)* which was invented for clinical patients with chronical pain to help them to regulate how much they experience this pain (Kabat-Zinn, 1982). As Glomb et al. (2011) argue, interventions and programs like mindfulness meditation are not mindfulness itself but can be used to develop and increase the state of mindfulness. Fourth, in addition, mindfulness is defined as a personal *trait* (K. W. Brown & Ryan, 2003; Glomb et al., 2011). This approach focuses on the fact that mindfulness does not only vary within-person but that individual differences between persons exist (Glomb et al., 2011).

Shapiro et al. (2006) build a model of mindfulness containing the three axioms intention, attention, and attitude. The role of paying *attention* and a non-judging *attitude* have been explained earlier. *Intention* refers to a vision or a purpose why someone is acting mindful or trains to be more mindful. This goal can change, for example, from reducing work-related stress to being more patient with the children at home. This is needed in daily mindfulness practice to set a state of mindfulness while attention and attitude could also happen more unintentionally if someone is not trained in mindfulness (Shapiro et al., 2006).

Glomb et al. (2011) illustrate primary and secondary processes of mindfulness in their *mindfulness path model*. Frist, mindfulness and mindfulness practice help individuals to decouple the self from experiences and emotions, to decrease the use of automatic behavior, as well as to be aware of physiological regulation. Second, this leads to more response flexibility, empathy, affective regulation, self-determination, persistence, working memory, and more accurate forecasting, as well as less rumination. In the last step, this leads to improved self-regulation of emotions, thoughts, and behavior.

Another approach uses a more *western* definition of mindfulness (see Weick & Sutcliffe, 2006). It describes a more active and external way of mindfulness including an open attention to new aspects and a certain flexibility in cognition, summarized by K. W. Brown and Ryan (2003) as "active cognitive operations on perceptual inputs from external environment, such as the creation of new categories and the seeking of multiple perspective" (p. 823; see also Bishop et al., 2004; Levinthal & Rerup, 2006; Weick & Sutcliffe, 2006). This approach differs from the common *eastern* understanding of mindfulness used in this dissertation and will be not further observed. The eastern understanding of mindfulness focuses on awareness, nonjudgmental attitude, acceptance, and attention to the present moment (Glomb et al., 2011; Shapiro et al., 2006) whereas the western understanding of mindfulness focuses cognitive flexibility, multi-perspectivity, and categorization of external inputs (K. W. Brown & Ryan, 2003).

Accordingly, mindfulness is distinct from other constructs as various studies show. K. W. Brown and Ryan (2003) found out that mindfulness is unrelated to private self-consciousness and self-monitoring and argue that mindfulness is distinct from theories of reflexive consciousness (see also K. W. Brown et al., 2007). Furthermore, acting with awareness as part of mindfulness shows no correlation to the personality trait of openness to experience (Baer et al., 2006).

Yet, mindfulness is associated with several outcomes which are central to the organizational research field. The latest meta-analysis investigating trait mindfulness by Mesmer-Magnus et al. (2017) found positive correlations of mindfulness and, for example, confidence, mental health, emotion regulation, and life satisfaction as well as negative correlations to perceived stress, negative emotions, anxiety, and depression. Other empirical results show that mindfulness is a positive predictor for transformational leadership behavior and a negative predictor for destructive leadership behavior (Lange et al., 2018; Pinck & Sonnentag, 2018). Furthermore, leaders' mindfulness has an indirect effect on subordinates' positive affect and job satisfaction through transformational leadership (Pinck & Sonnentag, 2018). A positive relation between trait and state mindfulness was also found (Hülsheger et al., 2013).

2.2.2. Resilience

In general, *resilience* can be described as a "positive pole of individual differences in people's response to stress and adversity" (Rutter, 1987, p. 316). It means the ability of a person to face stressful situations in a certain manner that helps to increase the person's self-confidence and social competencies (Rutter, 1985). Therefore, Rutter (1985) points out that resilience does not include to avoid stress but to respond to it in a positive way. This response is affected by different factors such as the evaluation of the stressor in a certain situation, the capacity of the person to deal with the stressor and how the person is attached to this stressor (Rutter, 1985). This means that resilience is a variable factor – a person can be able to act resilient in one stressful situation and the same person can have problems to deal with another stressor in a different situation (Rutter, 1987). For example, who is resilient during a job

interview might be not resilient when it comes to working under time pressure. In addition to this, Rutter (1985) explains resilience as a relative quality which varies over time and in different situations. He further identifies that resilience refers to the process of vulnerability and protection due to stressful events (Rutter, 1987). Furthermore, Harvey and Delfabbro (2004) summarize the argumentation of Rutter (1985) that a situation can be experienced both as a risk and a protective factor. An example for this phenomenon is quitting a job. This is, on the one hand, a risky decision because of the uncertainty of not finding a new job and the resulting financial problems but, on the other hand, it could be protective to leave a department where the person is bullied by colleagues or the supervisor.

Although resilience is understood as a variable ability, it is often defined as a personal trait (Hu et al., 2015; Wagnild & Young, 1993). This includes characteristics like self-confidence, self-esteem, problem-solving skills, and focusing on positive aspects of the situation (Wagnild & Young, 1993). Furthermore, Hu et al. (2015) explain that resilience "helps individuals cope with adversity and achieve good adjustment and development" (p. 18) and is also associated with the term of bouncing back from negative or stressful events. Unlike this understanding of resilience as a variable trait characteristic, J. H. Lee et al. (2013) define trait resilience as stable and fix, meaning unchangeable, but this dissertation focusses on the common approach by most research which means that resilience is seen as a personal trait but more in form of a capacity that varies regarding different stressors (Connor & Davidson, 2003; Hu et al., 2015; Leppert et al., 2008; Rutter, 1985, 1987; Wagnild & Young, 1993). Harvey and Delfabbro (2004) describe the definition by Rutter (1985, 1987) as an active process. The authors have the view that resilient persons possess the ability to influence their surroundings to protect themselves from negative outcomes of a stressful situation (Harvey & Delfabbro, 2004). Rutter (2012) underlines that resilience has to be seen as a dynamic concept and not as a fixed individual characteristic. Other researchers, such as Atkinson et al. (2009), found trait-like attributes of resilience but explain that many arguments exist that resilience can also be trained and developed.

It is crucial to differentiate between resilience and coping. *Coping* is described as "the thoughts and behaviors used to manage the internal and external demands of situations that are appraised as stressful" (Folkman & Moskowitz, 2004, p. 745). It includes behaviors such as avoidance of a stressful event or situation (Harvey & Delfabbro, 2004) while an avoiding strategy is not included in the definition of resilience (Rutter, 1985). It can be said that resilience is the ability to handle stressful events while coping includes strategies to deal with them.

By now, resilience is associated with some outcomes which are relevant in the organizational context. Meta-analytic results show that resilience is positively related to positive indicators of mental health such as satisfaction with life and positive affect and is negatively related to negative indicators such as negative affect, depression, and anxiety (Hu et al., 2015). Resilience is further associated with less neuroticism as well as higher extraversion, openness, agreeableness, and conscientiousness (Oshio et al., 2018).

2.3. Work Related Outcomes

In the following, work-related climate outcomes named trust in the leader, and psychological safety climate as well as perceived stress will be outlined, and a theoretical background given.

2.3.1. Trust in the Leader

"*Trust* is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" (Rousseau et al., 1998, p. 395). It is also defined as the "willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor" (Mayer et al., 1995, p. 712) even though the behavior of the other party cannot be controlled. Within this understanding of trust, the aspect of taking certain risks is discussed as an assumption for trust. Mayer et al. (1995) argue that "[t]rust is not taking risk *per se*, but rather it is a *willingness* to take risk (p. 712). Furthermore, Rousseau et al. (1998) set interdependence as another condition for trust because one person needs to rely on another to, for

example, achieve a goal. The tendency to trust or to be willing to trust others can be seen as a stable trait which differs between persons (Mayer et al., 1995) whereas trust itself can vary within a person. It can be created and built, further developed and be stable (for a while) but it can also decline (Rousseau et al., 1998). This process is not linear but dynamic, for example, if someone developed strong trust in another person but this trust decreases because of a lie or cheating, it can only slowly be rebuilt after a long while.

Within their *model of organizational trust*, Mayer et al. (1995) distinguish trust from constructs often used as synonyms, such as cooperation, confidence, and predictability. They argue that *cooperation* does not particularly include risk-taking, and a cooperative relationship could work and be successful without the involved parties trusting each other. An employee could work together with a colleague, for example, because they must and maybe pretend to trust each other or even not but the cooperation leads to good results. Using the argumentation of Luhmann (1988), Mayer et al. (1995) describe that identifying and accepting risks is included in the definition of trust but excluded in the definition of *confidence*. For example, when two employees must reach a goal together and the one forwards the results of the other to the team leader without checking, he is confident of the others accuracy. If he thinks about checking the results because he could be disappointed, the decision (checking or forwarding without checking) depends on the level of trust to the coworker. Furthermore, Mayer et al. (1995) argue that *predictability* of another person "is insufficient to make a person willing to take a risk" (Mayer et al., 1995, p. 714). For example, when a leader always starts yelling at her employees when they indicate a mistake the leader made, this behavior is predictable. This does not mean that the employees are more willing to criticize their leader, but it can reduce their trust in the leader. These differentiations emphasize that the aspect of risk-taking represents an important aspect in the understanding of trust.

Within the workplace, trust is categorized into trust in coworkers, leaders, and the organization (Lehmann-Willenbrock & Kauffeld, 2010). In this dissertation, I focus on *trust in the leader* which describes the trust the followers have in their direct leader in the organizational

context. Trust in the leader is a predictor for more job satisfaction, idea generation, and idea implementation (Lehmann-Willenbrock & Kauffeld, 2010). In their meta-analysis, Dirks and Ferrin (2002) found that trust in leadership is related to more OCB, job performance, job satisfaction, organizational commitment, belief in information provided by the leader, commitment to decisions, satisfaction with the leader, LMX, and lesser turnover intentions. As antecedents for trust in leadership were examined transformational and transactional leadership, perceived organizational support, as well as interactional and procedural justice.

2.3.2. Psychological Safety Climate

Hall et al. (2010) describe *psychological safety climate (PSC)* as "an organizational climate for employee psychological safety and health" (p. 355) which contains the domains *senior management support and commitment for stress prevention through involvement and commitment*, *management priority to psychological health and safety versus productivity goals*, *organizational communication* (organization listens to contributions of employees), and *organizational participation and involvement*. Therefore, PCS stands for an organization and leadership that values the health of the employees, sets a priority on stress prevention, and further informs about important stressors at work while integrating the employees in the process of stress prevention and psychological safety (Hall et al., 2010).

Hall et al. (2010) argue that *psychological climate* describes "individual perceptions of the work environment" (p. 357) whereas *safety climate* focuses on the physical safety and health and the authors therefore separate these definitions from PSC. Furthermore, they differentiate between PSC and *team psychological safety climate*. Edmonson (1999) defines the latter as "individuals' perceptions about the consequences of interpersonal risks in their work environment" (p. 4) It focuses on "beliefs about how others will respond when one puts oneself on the line, such as asking questions, seeking feedback, reporting a mistake or proposing a new idea" (p. 4) and therefore stands for the belief that a working environment is safe for the individual. However, PSC does not include freedom of fear from not being safe in general, it means freedom from psychological injury and is seen as a predictor for team PSC (Hall et al.,

2010). The focus in this dissertation lies on the individual level of PSC and on the dimensions management support and commitment and management priority whereas the aspects of organizational communication and organizational participation and involvement were excluded. In this dissertation, only leader-follower relations are examined wherefore organizational aspects and behaviors were not part of the studies Therefore, I focus on the dimensions that directly refer to leader-follower interactions.

Within the organizational research field, PSC has not been examined sufficiently. Yet, PSC is negatively related to psychological distress, exhaustion, workload, as well as job, psychological and emotional demands, and positively related to psychological health (Idris et al., 2012).

2.3.3. Stress

Lazarus and Folkman (1984) define *stress* as "a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (p. 21). They declare stress as a process where a certain stressor – a situation or event – generates a stress reaction. Additionally, Motowidlo et al. (1986) describe stress "as an unpleasant emotional experience associated with elements of fear, dread, anxiety, irritation, annoyance, anger, sadness, grief, and depression (p. 618). By investigating work-related stress, the authors differentiate between frequency and intensity of stressful events. They argue that, in different kinds of jobs, various stressful events occur, and some appear more often than others. In addition to that, stressors can be classified into psychological (e.g., time pressure, conflicts) and physiological (e.g., noise) stressors while stress reactions can be physiological (e.g., sweating) or behavioral in form of coping strategies. Coping strategies can be health promoting (e.g., sports) or harmful (e.g., smoking). Stress-related consequences – so called strains – are associated with heart diseases, headache and dizziness as well as anxiety, and depression (Baker, 1985).

The *transactional theory* of stress intents to explain the emergence of psychological stress and includes two steps of *cognitive appraisal* (Lazarus & Folkman, 1987). The analysis of a situation falls under the *first appraisal* by evaluating whether the situation is a threat to someone's well-being, already harms the person, or is a potential challenge with the possibility to overcome the stressor. Whether circumstances are evaluated as harmful or not depends on personal characteristics and environmental factors such as culture or social settings. During the *second appraisal*, a person assesses whether he or she possesses the required resources to deal positively with the stressful situation and considers which strategy could be useful.

The *conservation of resources (COR) theory* adds on the approach that resources represent a central aspect within the process of stress emergence. However, Hobfoll et al. (2018) point out that the COR theory is rather an opposite of the transactional theory by Lazarus and Folkman (1987) as the "stress-appraisal theory asserts that what is stressful is what is perceived as stressful" (p. 104) whereas the COR theory focuses on the "objectively stressful nature of events (p. 104). According to the COR theory, "resources are defined as those objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions, or energies" (Hobfoll, 1989, p. 516). Stress emerges when a threat of resource loss is present, when resources are lost, or when invested resources cannot be restored or gained sufficiently. Therefore, resources represent an important tool in the stress process as individuals seek to obtain, foster, and protect resources and things they value (Hobfoll, 1989; Hobfoll et al., 2018).

Consequently, the COR theory follows four principles. First, the loss of resources is more salient than the gain of resources. Second, for protection against resource loss, recovery from resource loss, and the gain of resources, individuals must spend and invest other resources. Third, when the loss of resources is high, gaining resources becomes more important and valuable. Fourth, when resources are exhausted, individuals move into defense to protect themselves which sometimes lead to aggressive behavior (Hobfoll et al., 2018). Further, three

implications can be drawn from the COR theory. First, individuals who contain more resources are more protected against resource loss and can gain resources more easily whereas individuals with less resources are less protected against resource loss, and it is more difficult for them to gain resources. Second, as the loss of resources results in stress and resource loss is more significant than resource gain, a stress spiral can occur which means that individuals have less and less resources to overcome resource loss. Third, the spiral to gain resources increases more slowly and weakly (Hobfoll et al., 2018).

The subject of stress is part of many research areas for decades. Within the organizational research field, work-related stress is associated with depression, anxiety (Motowidlo et al., 1986), and burnout (Griffin et al., 2010) as well as decreased job satisfaction (Lambert et al., 2007), and negative leadership behavior (Harms et al., 2017).

2.4. Heart Rate Variability

Heart rate variability (HRV) represents a relevant factor for the body's regulatory system to adapt to or overcome different challenges (McCraty & Shaffer, 2015). According to McCraty and Shaffer (2015), optimal and healthy functions of a human body are comprised of dynamic and continuous interactions between various control systems. The *heart rate* is therefore variable and not monotonous which means that a healthy heart rate consists of irregular intervals between heartbeats, thus the time between each heartbeat is of different length (McCraty & Shaffer, 2015). HRV is "considered a measure of neurocardiac function that reflects heart-brain interactions and autonomic nervous system (ANS) dynamics" (McCraty & Shaffer, 2015, p. 47). As an assisting function, HRV helps the human body to flexibly cope with different challenges or uncertain situations (Shaffer & Ginsberg, 2017) and at an optimal and healthy level, HRV is associated with resilience, adaption, emotional processing, and self-regulation (McCraty & Shaffer, 2015). A state of too high or too low HRV can be an indicator for an imbalanced control system. Over time, very low HRV is associated with (chronic) stress, (age-related) exhaustion, or general insufficiency of regulatory processes. Very high HRV is

associated with harm of regulatory functioning as well as other physiological processes regarding inefficient energy usage (McCraty & Shaffer, 2015).

HRV is defined as the variation of time intervals between heartbeats while the time interval itself is called *R-R* or *inter-beat interval* (Task Force of The European Society of Cardiology and The North American Society of Pacing and Electrophysiology, 1996). During each interval, different processes occur such as tightening and relaxation of the heart muscles (Task Force of The European Society of Cardiology and The North American Society of Pacing and Electrophysiology, 1996). Figure 1 shows an exemplary cardiac wave recorded by electrocardiography (ECG) with its R-R interval and the so called *QRS complex* which is simply expressed what we know as a heartbeat (see Massaro & Pecchia, 2019).

Figure 1

Standard ECG Waveform and R-R (Inter-Beat) Interval
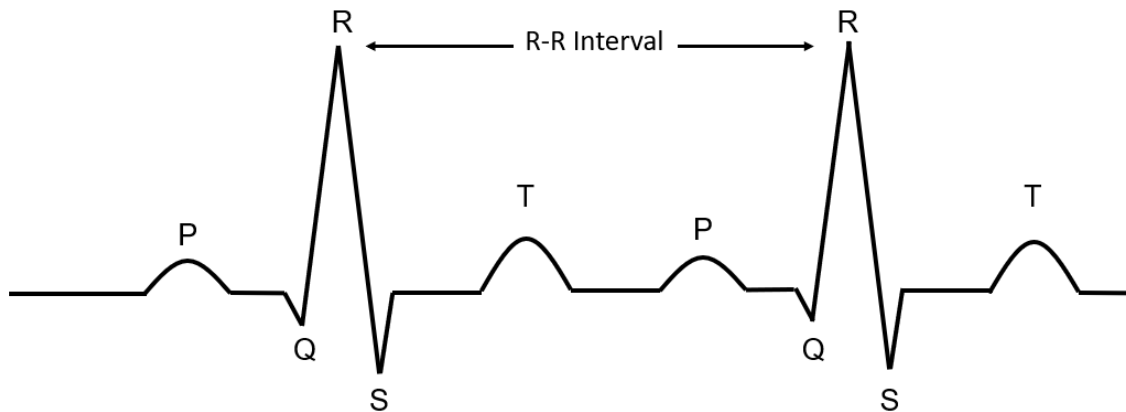
Note. Adapted from "Heart Rate Variability (HRV) Analysis: A Methodology for Organizational Neuroscience" by S. Massaro and L. Pecchia, 2019. *Organizational Research Methods 22*(1), p. 358 (https://doi.org/10.1177/1094428116681072). Copyright 2016 by the authors.

The heart rate is the number of heartbeats or, more precisely, the number of R-R intervals in one minute. The heart rate is measured in beats per minute (bpm) and the R-R interval in milliseconds (ms) and a normal heart rate of an adult lies between 60 and 100 bpm. Generally, a lower heart rate is an indicator for a better fitness and health (Massaro & Pecchia, 2019).

Generally, there are two different ways to measure HRV: *time-domain measures* and *frequency-domain measures*. Time-domain measures "quantify the amount of HRV observed during monitoring periods" (Shaffer & Ginsberg, 2017, p. 3) with ECG and can range from under one minute to over 24 hours. For frequency-domain measurements the variance of R-R intervals is divided into different frequency ranges which are measured in hertz (Appelhans & Luecken, 2006). For a detailed overview of parameters which are relevant for each measurement technique see, for example, Shaffer and Ginsberg (2017), Massaro and Pecchia (2019) or Kim et al. (2018).

Changes in the cardiovascular system are present in everyday life and become increasingly important during stressful events or challenges. According to the *three-stage stress response model* (Selye, 1984, as cited in Kim et al., 2018), the human body reacts to stress in three different steps. In the first stage, the body reacts to an occurring stressor with the so-called *fight or flight reaction*. This means that the body decides to either face the stressor (fight) or escape the stressor (flight). In this stage, the *sympathetic nervous system (SNS)* will be activated. In the second stage, the body uses its resources to overcome or adapt to the stressor. Meanwhile, the *parasympathetic nervous system (PNS)* tries to regulate physiological functions to a normal level. If the resistance or adaption in the second stage fails, the third stage will be reached. In this stage, the resistance against the stressor continues to exhaust the body's resources that causes illness in the long term. This model emphasizes the importance of physiological resources in dealing with stress and adversaries.

Accordingly, the PNS enables certain body functions that are necessary for regenerative processes as well as the replenishment of energy resources. It also slows the heart rate.

In contrast to that, the SNS enables certain body functions which supports the body to be ready to perform which results in resource consumption and depletion of energy. This process is responsible for accelerating the heart rate. Additionally, McCraty and Shaffer (2015) explain that the PNS is mainly active at a heart rate below 100 bpm thus during normal activities, or when someone is resting or sleeping. On the contrary, the SNS is mainly active at a heart rate above 100 bpm. Therefore, at a lower heart rate – when the PNS is active – the time intervals between the heartbeats are longer and HRV increases whereas at a higher heart rate – when SNS is active – the time intervals become shorter and there is less space for variability and the HRV decreases.

Another important theory regarding physiological processes is the *polyvagal theory* (Porges, 1995, 2007) which intends to explain parts of social behavior with physiological regulating processes. Porges (1995) argues that humans possess a vagal brake that, for example, slows the heartbeat in resting and safe situations. When a stressor occurs, the brake is removed, and the body reacts to the stressor as described in the three-stage stress response model (Selye, 1984, as cited in Kim et al., 2018). However, the vagal brake represents one important difference between mammals and reptiles as reptiles do not possess it. Reptiles cannot regulate their body in the way mammals can which is one reason they show less social behavior. Porges (1995) states that antisocial behavior as rage and hyperreactivity with a lack of regulation can be called reptilian. The polyvagal theory emphasizes how important regulative processes are for social interactions because the dynamic of the vagal complex is associated with attention, emotion, and communication which are needed for social interactions (Porges, 1995)

Empirical studies regarding HRV and behavioral or work-related aspects are quite scarce. Ode et al. (2010) found that neuroticism predicts negative affect, stress reactivity, physical complaints, impulsivity, and cognitive failures in everyday life when HRV is low. Miller et al. (2015) examined that altruistic behavior – measured in children who willingly give resources to others – is associated with healthy PNS activity. Barraza et al. (2015) found that

HRV in an adult sample is positively related to the willingness to donate money after watching an emotional story of a father whose young son is diagnosed with cancer.

However, organizational scientists have emphasized the importance of biological und physiological processes regarding leadership and other work-related outcomes (e. g., Antonakis, 2011; Judge et al., 2009). Massaro and Pecchia (2019) argue that recent studies within this field focus more on brain processes and less on other functions of the human body. They state that cardiovascular measures represent an underrated research field even though they are important for social behavior (see Porges, 1995, 2007) and are additionally easier to acquire and therefore more economical than recordings of brain processes . Furthermore, the authors state that the analysis of HRV has not been examined sufficiently within the field of organizational neuroscience. Therefore, in this dissertation, HRV will be embedded in the workplace with a focus on personal resources of leaders as well as leadership behavior.

2.5. Integrative Framework of Mindfulness in the Workplace

As already mentioned earlier, certain resources play an important role within the workplace, especially for leaders. The *Integrative Framework Relating Mindfulness to Workplace Outcomes* by Good et al. (2016) links mindfulness to functional domains as well as various work-related outcomes including organizational outcomes, leadership, and follower-related aspects. A shortened version of the integrative framework is illustrated in Figure 2.

The model considers work-related outcomes of mindfulness as well as several mediators of individual functional domains and workplace outcomes. It further outlines some open questions concerning other relationships of mindfulness and further organizational attributes. Since the model contains many objects, the aspects which are lesser relevant for this dissertation are only represented shortly here.

Figure 2

Integrative Framework Relating Mindfulness to Workplace Outcomes
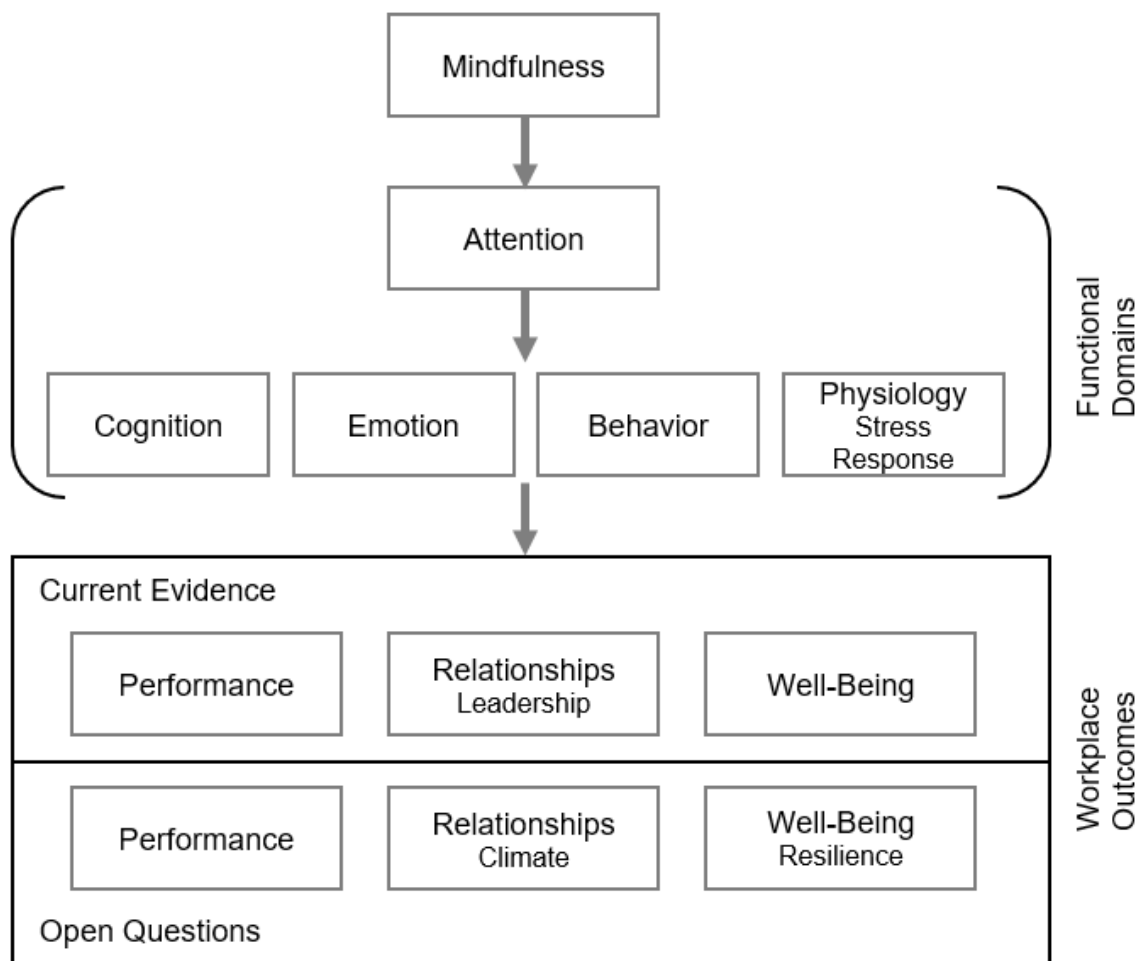
Note. Adapted from "Contemplating Mindfulness at Work" by D. J. Good, C. J. Lyddy, T. M. Glomb, J. E. Bono, K. W. Brown, M. K. Duffy., R. A. Baer, J. A. Brewer, and S. W. Lazar, 2016. *Journal of Management, 42*(1), p. 116 (https://doi.org/10.1177/0149206315617003). Copyright 2015 by the authors. Several subitems have been erased that are not relevant for the dissertation so that the figure remains lucid.

In the first step, the model displays that mindfulness effects functional domains of a human being. Mindfulness can have a positive influence on the stability, control, and efficiency

of attention. It can support *cognitive* capacity and flexibility and influences emotional reactivity and valence of positive and negative *emotions*. Additionally, mindfulness is linked to better self-regulation and lesser automatic *behavior*. Furthermore, the last aspect of human functioning Good et al. (2016) mention is *physiology*. The authors summarize that mindfulness is associated with better stress regulation and faster recovery after stressful events (e.g., less increased cortisol) and that mindfulness training can support certain brain activity such as attention or memory.

The influence on *workplace outcomes* represents the main aspect of the framework. Good et al. (2016) categorize these outcomes into three terms – performance, relationships, and well-being. Mindfulness is associated with greater job performance, prosocial behavior, and lesser deviance as well as counterproductive work behaviors. It can further support communication and relationship qualities, and fosters empathy and compassion. When a leader is mindful, it can have a positive effect on employees' job satisfaction, work life balance, and citizenship behaviors. Mindfulness can further improve team processes as well as conflict management. Additionally, mindfulness can reduce burnout, perceived stress, and work-family conflict.

Moreover, the framework contains open research questions which are to be answered in part in this dissertation. One question considers resilience – it is not only asked how mindfulness and resilience affect each other but further which effects resilience could have in the workplace. Previous studies argue that resilience is associated with emotion regulation strategies, attentional control, and cognitive reappraisal (Kay, 2016; Tugade & Fredrickson, 2007). Tugade and Fredrickson (2004) found evidence that resilient individuals show more positive emotions and can rebound from stressful events. Participants who rate themselves as resilient show less cardiac reactivity during a stressful situation as their heart rate was negatively related to resilience. Therefore, resilience represents a resource which is, like mindfulness, linked to functional domains. Resilience is further related to factors of well-being, for example positive affect (Hu et al., 2015) and performance, for example work engagement (Z. Wang et

al., 2017) and can therefore also be linked to workplace outcomes. Additionally, the relationship between resilience and concrete leadership behavior has not been examined sufficiently.

While Reb et al. (2014) found that leader mindfulness is positively associated with job satisfaction, work-life balance, employees' performance, and negatively with employees' exhaustion, Good et al. (2016) point out that the relationship between mindfulness and concrete leadership behavior has not been investigated sufficiently. Therefore, the open questions regarding the relationships of both mindfulness and resilience with concrete leadership behavior need to be examined and is therefore part of this dissertation.

Another open question of the framework considers work-related climate outcomes that include psychological safety, voice, and trust. The workplace climate plays an important role at the workplace as trust is associated with higher performance, commitment, OCB, and job satisfaction as well as less intentions to quit (Dirks & Ferrin, 2002). Factors of PSC are positively related to commitment, job satisfaction, and well-being (Clarke, 2010). To answer the open questions regarding mindfulness and resilience the workplace climate is additionally part of this dissertation.

Summarized, the integrative framework emphasizes that mindfulness is related to many important aspects regarding oneself as well as other parties in the workplace, and the organization. Resilience can be integrated in the framework as well as it is an important aspect regarding functional domains and workplace outcomes. However, several open questions remain which will partly be addressed in this dissertation. Therefore, in the following, the overall research model of this dissertation will be outlined based on the integrative framework by Good et al. (2016).

2.6. Research Model of the Dissertation

The research model of this dissertation (cf. Figure 3) intends to give a comprehensive outline of the assumed relationships between leader resources, leadership behavior, and employees' outcomes. The research model is based on the integrative framework of Good et al.

(2016) which is described in the previous chapter, linking mindfulness to different workplace outcomes. Additionally, I already argued that resilience can be linked to functional domains and workplace outcomes as well and therefore be integrated in the framework of Good et al. (2016). Within the research model, the focus lies on leaders' personal and physiological resources, constructive and destructive leadership behavior, as well as employees' work-related outcomes resulting from leadership behavior. In the following, the main considerations of the research model are described, and I derive the overall research questions of this dissertation.

As already mentioned, mindfulness seems to be an important resource in the workplace, especially for leaders as it is associated with better cognitive and physical functioning as well as someone's own behavior and performance, and relationships to others (Good et al., 2016; Reb et al., 2014). Mindfulness is associated with better mental health (Mesmer-Magnus et al., 2017), transformational leadership (Lange et al., 2018; Pinck & Sonnentag, 2018) and leaders' mindfulness is related to employees' well-being and performance (Reb et al., 2014). As Good et al. (2016) argue, previous research of mindfulness in the workplace focused more on the direct effects of mindfulness, for example higher well-being, and less on its role regarding leader-follower relationships. Respecting leadership behavior, little is known about the impact of mindfulness. As far as I know, until now, only two studies examined the direct relationship of mindfulness an concrete leadership behavior – Pinck and Sonnentag (2018) found a positive relationship between mindfulness and transformational leadership and Lange et al. (2018) found a positive relationship with transformational leadership as well as a negative relationship with destructive leadership. How mindfulness may affect other leadership behaviors has not been investigated sufficiently.

The basic situation is quite similar for resilience as it seems to represent an important resource for leaders. Resilience is associated with the functional domain (e.g., Tugade & Fredrickson, 2004) as well as important work-related criteria (Hu et al., 2015; Z. Wang et al., 2017) and can be integrated as personal resource in the framework of Good et al. (2016). Resilience plays an essential role in the process of dealing with stress. Resilient individuals

can cope with stressful events successfully and even benefit with a positive outcome (Rutter, 1985, 1987). Good et al. (2016) consider resilience as a "psychological capital at work" (p. 130) which is positively related to mental health (Hu et al., 2015). Many studies investigated resilience in context of traumatic events (for review see Agaibi & Wilson, 2005), child development (for review see Zolkoski & Bullock, 2012), specific samples, for example medical staff (for review see McCann et al., 2013), or specific and sensible contexts, for example child sexual abuse (for review see Domhardt et al., 2015) whereas empirical studies of resilience in the workplace, especially leader-follower relationships are quite scarce. Yet, Z. Wang et al. (2017) found positive relationship between resilience and positive affect as well as work engagement. Maulding et al. (2012) found positive relationships between resilience and attributes of leader behavior (e.g., role assumption, consideration, and predictive accuracy) in school administrators while I did not find any empirical study that examines concrete leadership styles in connection to resilience.

Consequently, both personal resources seem to be promising predictors for leadership behavior since they are relevant for mental health and cognitive functioning and are important factors regarding the management of stress. As already mentioned, how they are related to concrete constructive and destructive leadership behavior has not been investigated sufficiently. Therefore, I look at these resources within the workplace more closely. Regarding concrete leadership behavior, servant leadership represents a highly other-oriented leadership behavior which is, among other aspects, positively related to employees' work engagement and organizational commitment (van Dierendonck et al., 2014). As Eva et al. (2019) argue, little is known about antecedents of servant leadership. On the contrary, destructive leadership represents a harmful behavior towards employees and/or the organization which is, among other things, negatively related to employees' motivation and job satisfaction (Schyns & Schilling, 2013). Tepper et al. (2017) argue as well, that antecedents of destructive leadership are little explored. As both leadership behaviors affect employees' work-related attitudes and behaviors, it seems crucial to focus on those antecedents which are especially

important for leader-follower relationships. Good et al. (2016) consider that – especially – mindfulness might be a relevant factor for employees' climate at work. They further state resilience as an important psychological capital in the workplace which is why this aspect is also part of my investigation. In the first study of this dissertation, I intend to answer the first two research questions:

Research Question 1: How are leaders' mindfulness and leaders' resilience related to servant and destructive leadership behavior?

Research Question 2: Can servant and destructive leadership mediate the relationship between leaders' mindfulness and leaders' resilience and employees' work-related climate outcomes?

As already mentioned, mindfulness and resilience are associated with someone's own mental health. It might be interesting if these resources of leaders could have an impact of mental health aspects of subordinates as well. Mindfulness and resilience are already considered important resources in the process of dealing with stress (Good et al., 2016; Tugade & Fredrickson, 2004), but only on an intrapersonal level. Pinck and Sonnentag (2018) argue that individuals – especially leaders – must show a certain behavior towards their followers to transform their own resources into positive outcomes of their followers. Furthermore, Harms et al. (2017) argue that leadership behavior is an important factor regarding followers' perceived stress – it can be a cause or a buffer. As stress is positively related to depression and anxiety (Motowidlo et al., 1986) as well as burnout (Griffin et al., 2010), and negative to job satisfaction (Lambert et al., 2007), it seems crucial to investigate if mindful and resilient leaders can buffer their subordinates' stress through an employee-oriented and supportive leadership behavior. The second study of this dissertation therefore intends to answer the third research question:

Research Question 3: Can servant leadership mediate the relationship between leaders' mindfulness and leaders' resilience and employees' perceived stress?

Antonakis (2011) suggests that some biological and physiological aspects of the human body should be considered regarding leadership behavior. He argues that including biological measures within behavioral and psychological research could help to a better understanding of psychological characteristics. The *evolutionary leadership theory* (ELT) sates that "physiological, neurological, and psychological processes [are] involved in producing human behavior" (van Vugt, 2012, p. 143). Referring to Darwin's work, van Vugt (2012) summarizes that traits between individuals vary, among others, due to inherited disposition. This variation could be an advantage regarding the competition for important resources. These postulations represent the basis for ELT which states that individuals are selected as leaders if they solve different problems such as finding resources or conflict management while certain physiological traits help to complete the tasks (van Vugt, 2012). The ELT underlines the assumption that specific physiological traits are relevant for the role of a leader.

Furthermore, *the model of leader attributes and leader performance* by Zaccaro et al. (2012) and *the leader trait emergence effectiveness model* by Judge et al. (2009) address similar propositions. Zaccaro et al. (2012) state that cognitive abilities, personality, and values are relevant for certain leader skills such as problem solving, social appraisal, and expertise which in turn predict leadership criteria such as leader emergence, effectiveness, and promotion. This process is influenced by situational and contextual conditions. Judge et al. (2009) propose a more extended approach. They state that genetics and natural selection processes lead to certain traits such as intelligence, emotional stability, or narcissism. These traits predict leader emergence through certain skills such as social skills, and abilities such as the ability to get along. Lastly, this results in subjective perceived leader effectiveness and objective effectiveness such as performance. Both theories assume that certain traits, including biological and physiological aspects, are important for leadership processes.

Good et al. (2016) mention that mindfulness is associated with certain brain activities. Within their review on mindfulness meditation studies using electroencephalography (EEG), Lomas et al. (2015) explain that findings on mindfulness and brain activities are inconsistent

in most aspects. Whereas this research field, in combination with leadership behavior, would be interesting, EEG measures are highly complex as well as the analysis. Therefore, I decided to focus on cardiac activity which could be measured with ECG more easily and more economically (see Massaro & Pecchia, 2019). As cardiac activity is associated with resilience (An et al., 2020; Tugade & Fredrickson, 2007), I intent to expand the previous research in this field of organizational neuroscience.

HRV represents a physiological process which is a relevant factor regarding regulatory processes of a human body and is associated with the ability to be resilient and to cope with uncertain and stressful events (McCraty & Shaffer, 2015; Shaffer & Ginsberg, 2017). It is an interesting research area to investigate physiological aspects within the workplace to get a wider understanding of the emergence of leadership behavior. As leaders work often under pressure and must deal with stressful situations, it is crucial to investigate the body's reaction to stress and if it is related to resilience. Examinations might be helpful regarding health processes and development of leaders. Therefore, the third study intends to answer the fourth and fifth research question:

Research Question 4: Is resilience related to a person's resting HRV?

Research Question 5: How are changes in HRV during and after a stressful event related to resilience?

Furthermore, I propose that HRV is an indicator for resilience and could be used as another measurement for resilience. As self-reports are often biased, it might be helpful to, additionally, have another and more objective possibility to measure resilience. That is why it is interesting to investigate the relationship between HRV and leadership behavior. Judge et al. (2009) already consider that physiological criteria are relevant in the process of leadership emergence. Additionally, the polyvagal theory (Porges, 1995, 2007) states that the regulating functions of a human body are relevant for social behavior and interaction. Constructive leadership behaviors represent a social behavior between leaders and followers and might therefore be influenced by HRV. If it is possible to identify that resting HRV is related to certain

leadership behavior, the results could be very helpful in future hiring processes of leaders. Therefore, I intend to answer the sixth research question in the third study:

Research Question 6: Is resting HRV related to different constructive (servant, trans-formational, and transactional) leadership behavior?

Figure 3

Research Model of the Dissertation
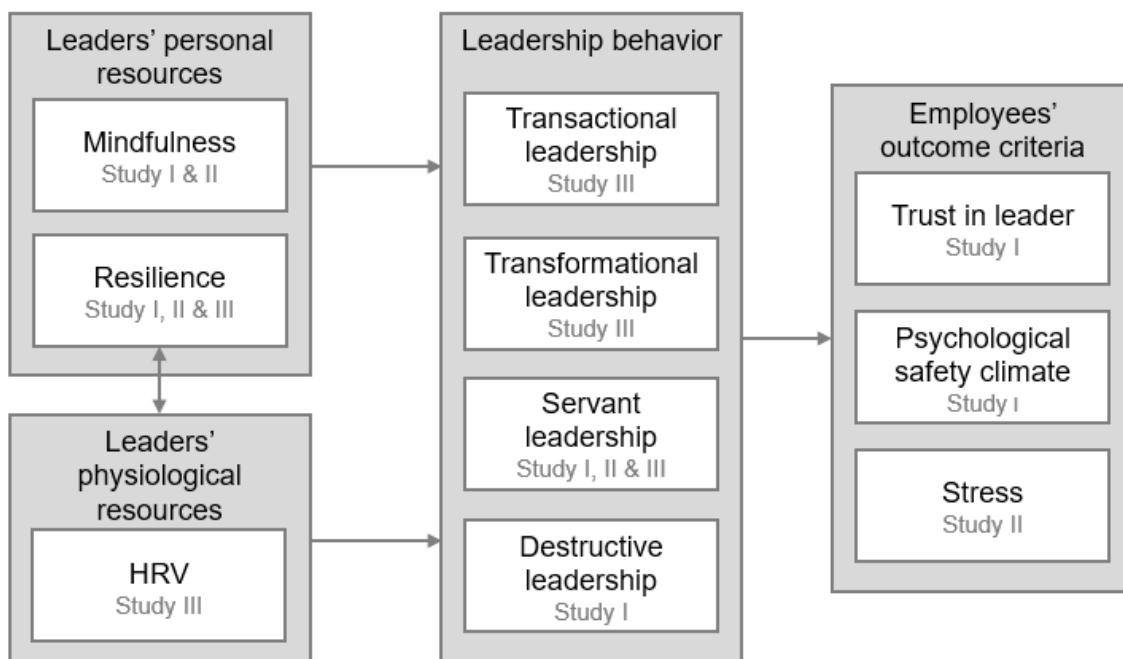
3. Study 1: Do Leaders' Mindfulness and Resilience foster Trust among Employees? Servant and Destructive Leadership as potential Mediators

3.1. Introduction

Within the context of strategic management, Wernerfelt (1984) follows the approach that organizations should not only be viewed from the product perspective but also from the resource perspective. This means that the organization is analyzed from an internal instead of an external view. Organizations contain various resources which could help to strengthen their market position because of a better fit between organization and market instead of focusing only on external attributes. On an organizational level, this approach is global and strategic. Therefore, in this study, I am transferring this resource-based view from the overall organization to its individual level and investigating potential resources for leaders and leadership behavior as well as their relationships to work-related resources of employees.

Leadership behavior is a crucial aspect regarding employees' work attitude. It is, among other things, a critical factor for employees' job satisfaction, performance, and organizational success (Bono & Judge, 2004; Dumdum et al., 2013; Sturm et al., 2011). I focus on leadership behaviors which are especially relevant for the resources of employees – servant leadership as a behavior that potentially builds and increases resources whereas destructive leadership potentially degrades them. Servant leadership, as a highly employee-oriented behavior (Russell & Stone, 2002), is argued to assist the achievement of organizational goals through developmental support of employees and their well-being (Hoch et al., 2018). This means that a servant leader focuses on the needs of each employee as well as on "the good of the whole" (van Dierendonck, 2011, p. 1232) and is further interested in the growth of resources for employees and the organization through a "sustainable performance" (Eva et al., 2019, p. 111). Moreover, servant leadership is negatively related to indicators of employees' psychological strain such as job ambiguity and need for recovery (Rivkin et al., 2014) and

positively linked to employees' work engagement, organizational commitment, and the satisfaction of psychological needs (van Dierendonck et al., 2014). Therefore, servant leadership seems to be a promising factor in the process of resource building. Destructive leadership, as a systematically harmful behavior (Einarsen et al., 2007), has some negative consequences for employees and the organization. When an employee perceives destructive behavior of his leader, he shows resistance towards his leader and his job (Schyns & Schilling, 2013). Destructive leadership decreases employees' motivation and job satisfaction and increases perceived stress among employees (Schyns & Schilling, 2013). It is further associated with more authoritarian and less ethical leadership and LMX and leads to more counterproductive work behavior, depression, emotional exhaustion, and work-family conflict as well as lesser affective commitment, OCB, and performance (Mackey et al., 2017). Therefore, destructive leadership seems to be a factor that would hinder and decrease the resources of employees and should therefore be avoided. As leadership behavior affects employees' work attitudes, some of these attitudes are especially crucial for leader-follower interactions and organizational performance. D.-S. Wang and Hsieh (2013) point out that it is essential for a leader to gain the trust of her employees to be an effective leader. Employees who trust their leader show more job performance, organizational and goal commitment, OCB, job satisfaction, and a greater belief in information while it leads to less intention to quit (Dirks & Ferrin, 2002). Furthermore, employees who perceive a psychological and safety climate report more organizational commitment, job satisfaction, and well-being (Clarke, 2010). Therefore, it seems crucial to investigate how servant and destructive leadership influence trust and PSC of their subordinates.

While some direct consequences of servant and destructive leadership have been frequently studied in recent years (Eva et al., 2019; Hoch et al., 2018; Schyns & Schilling, 2013; Tepper, 2000), little is known about antecedents of both leadership styles. Eva et al. (2019) summarize that there is limited research on the relationship between personality and servant leadership while Tepper et al. (2017) report similar for destructive leadership. As mentioned above, both leadership behaviors have many consequences for employees and organizations.

Therefore, it is crucial to investigate personal attributes and resources which foster servant leadership and mitigate destructive leadership behavior. Previous research found out that low narcissism (Peterson et al., 2012) and extraversion as well as high agreeableness (Hunter et al., 2013) and core self-evaluations (self-esteem, self-efficacy, low neuroticism, and locus of control; Flynn et al., 2016) predict servant leadership. Meta-analytic results show that agreeableness, conscientiousness, extraversion, and openness to experience are negatively, and neuroticism is positively related to abusive supervision as a destructive leader behavior (Mackey et al., 2017). Above these personal characteristics, little is known about the influence of other personal resources.

Mindfulness and resilience seem to be personal resources which are relevant for the work behavior as resilience is associated with work engagement (Z. Wang et al., 2017) and mindfulness with performance (Reb et al., 2014). Within the work-related context, most previous articles focus on direct and intrapersonal health outcomes of mindful or resilient persons and found out that they reduce stress and foster mental health (e.g., Hu et al., 2015; Mesmer-Magnus et al., 2017). How these personal resources could predict leadership behavior, especially servant and destructive leadership is hardly investigated so far (Lange et al., 2018; Verdorfer, 2016). I assume that these personal resources enhance a resource building process and result in more servant and less destructive leadership. As a resource spillover, servant leadership may foster resources of employees – trust in the leader and PSC – while destructive leadership may decrease these resources. This process can be explained using the COR theory. According to the COR theory, individuals wish to protect and develop things they value which includes important resources for survival and everyday life. The COR theory follows the principles that stress emerges when important resources are about to get lost, when they are lost, or when a certain resource gain failed (Hobfoll et al., 2018). One essential conclusion of the COR theory is on the one hand that individuals "with greater resources are less vulnerable to resource loss and more capable of resource gain" and on the other hand that people "who lack resources are more vulnerable to resource loss and less capable of resource

gain" (Hobfoll et al., 2018, p. 106). Based on this, I argue that leaders with higher mindfulness and resilience can use these resources to protect themselves against resource loss and therefore stress. In line with that, these leaders can further gain other resources which could help them to focus on leadership tasks. Therefore, I first assume that mindfulness and resilience positively predict servant leadership. Additionally, leaders with lesser resilience and mindfulness are more vulnerable to resource loss and less capable to gain the resources they need for their role as a leader. That is why I secondly assume that mindfulness and resilience negatively predict destructive leadership. Thirdly, I assume that the resources of employees could be influenced through a resource spillover. The resources built by mindfulness and resilience could be passed to employees through leadership. Servant leadership would increase trust in the leader and perceived PSC while lesser resources would lead to destructive leadership which would decrease trust and PSC.

The assumptions that, especially, these variables interact could be explained by the integrative framework by Good et al. (2016) who focus on mindfulness in the workplace. They mention a lack of research concerning mindfulness and leadership behavior as well as leader-follower relationships and further discuss the role of abusive leader behavior in connection with mindfulness and resilience. They point out that mindfulness has an impact on employees' climate which includes their trust in the leader and perceived PSC. I seek to extend the integrative framework by Good et al. (2016) by examining the influence of mindfulness and resilience on servant and destructive leadership in consideration of employees' trust in their leader and perceived PSC. These assumptions are illustrated in the research model of this study which summarizes the potential relations between personal resources, leadership behavior, and employees' outcomes (cf. Figure 4).

This study contributes to the field of leadership and personal resources in three different ways. First, I examine the resource-based view on an individual level to gain insight into the processes of personal resources. Second, I expand the leadership literature by considering mindfulness and resilience as antecedents of servant and destructive leadership. Third, I

consider servant and destructive leadership as mediators between mindfulness and resilience as leaders' personal resources and trust in the leader and perceived PSC of employees. With this, I seek to extend the integrative framework of Good et al. (2016) and to empirically test these aspects of the framework.

Figure 4

Research Model for Study 1
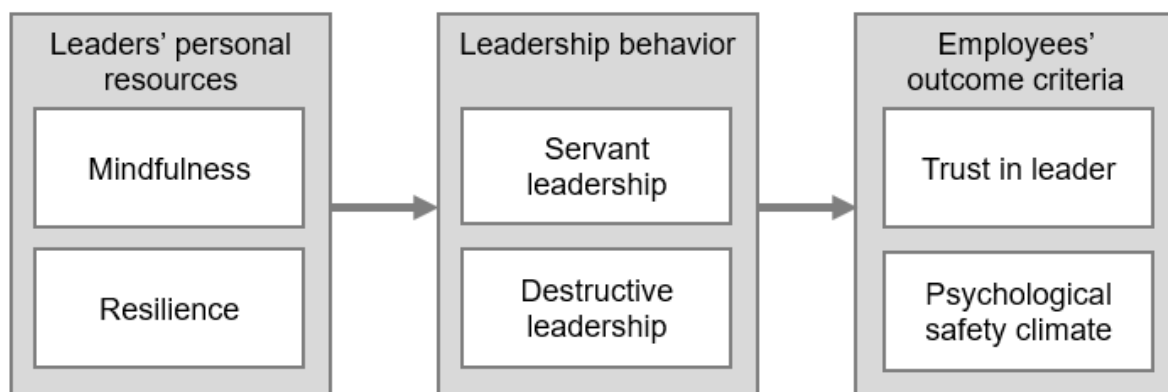
3.2. Theory and Hypotheses

3.2.1. Mindfulness and Servant Leadership

In this study, I focus on mindfulness as a personal resource which is characterized by a certain state of awareness for what happens around someone and paying attention to the current moment without judging the situation (Glomb et al., 2011). A mindful person would, for example, look at the surroundings on the way to work (e.g., nature, people, or buildings) instead of only hurrying from a red traffic light to the next. The mindful person would further not complain about these delays but accept them and the current situation. This behavior of non-reaction – for example not getting angry – is another aspect of mindfulness that prevents people from acting automatically without realizing what they are doing (Bishop et al., 2004). In general, mindfulness is seen as a state which is changeable and can be developed through

different interventions. In addition, a trait perspective sees mindfulness as a personal characteristic that differs between individuals (Bishop et al., 2004; K. W. Brown et al., 2007; Glomb et al., 2011). Based on this trait perspective, people with generally higher levels of mindfulness report a better mental health, confidence, and life satisfaction and lesser perceived stress, negative emotions, depression, and anxiety (Mesmer-Magnus et al., 2017). It further shows positive associations within the organizational context like employee performance, work-life balance, and well-being (Reb et al., 2014).

Good et al. (2016) argue that mindfulness could affect interpersonal behaviors and relationships and further discuss that correlation between mindfulness and leadership has not been particularly examined so far. They further suggest that "mindfulness leads to increased other-orientation, facilitating the experience and expression of prosocial behavior" (Good et al., 2016, p. 128). Therefore, I state mindfulness as an antecedent of servant leadership which focus lies on other-orientation and support of employees (van Dierendonck, 2011). I consider mindfulness as a personal resource following the COR theory. COR theory assumes that individuals seek to gain, keep, develop, and protect valuable things (Hobfoll et al., 2018). A potential threat of resource loss and the loss of resources as well as failed resources gain lead to stress. Individuals who contain resources can react to stress and build a reserve for the future. By developing different resources (personal, material, or social), people become more secure that they are capable of handling stressful events. One of the key inferences of COR theory is that people with higher resources are more robust against resource loss and can better gain resources (Hobfoll et al., 2018). I consider mindfulness as a valuable resource which prevents resource loss and therefore protects a person from stress. Meta-analytic results show that mindfulness negatively predicts stress (Mesmer-Magnus et al., 2017). For example, a mindful leader would be able to concentrate on a task or project without distraction and would not judge or react to inner experiences (Baer et al., 2006) if she gets angry about a mistake or frustrated if something does not work as planned. This could help to save and/or gain other resources like energy, time, or maybe the ability to use other essential skills such

as listening carefully or memorizing important aspects of a project or tasks that her followers work on. The mindful leader could use these resources to fulfill leadership responsibilities and focus on her employees.

A leadership behavior with a high follower orientation is servant leadership. Servant leadership is based on the desire to serve others – especially subordinates – and to place a focus on their needs (Russell & Stone, 2002). Further, van Dierendonck (2011) explains that servant leaders empower their subordinates and help them to develop while they have a realistic perspective towards their own and other performances. This also means admitting that other people's talents can be useful. In line with that, servant leaders appear authentic and represent their own thoughts and values while they accept others. An atmosphere of empathy and trust is established in the working team. Mistakes are allowed and innovative ideas are welcome while expectations are clear. Moreover, servant leaders are loyal towards their organization and show social responsibility to their team. One of the core intentions of servant leaders is considering the needs of other people, especially their subordinates on the basis of the motivation to serve others (Stone et al., 2004). The ten main attributes of servant leadership by Spears (2010) include the aspect of awareness towards ethical topics or values within the organization which is further associated with being vigilant but calm. Other people's needs are very important to servant leaders, so they need the ability to recognize these needs and therefore be attentive towards their followers. As attention and awareness are key aspects of mindfulness (Good et al., 2016), being able to focus on the present moment regarding oneself and the surroundings could help a leader to better recognize and understand what her followers require. A mindful leader, therefore, may show a more supportive attitude towards her followers (Reb et al., 2014).

Using COR theory, I argue that mindfulness may build other resources which are relevant for servant leadership. Researchers found positive relations between mindfulness and empathy (Beitel et al., 2005; Greason & Cashwell, 2009) while Spears (2010) argues that a "servant leader strives to understand and empathize with others" (p 27). This link shows that

a certain awareness of a leader enables her to identify with others and take their perspective and further "suspend judgement and bias to walk in other's shoes" (Greason & Cashwell, 2009, p. 4). This nonjudgmental behavior includes acceptance towards oneself and the surroundings which could involve other people. Interpersonal acceptance is one attribute of a servant leader who better understands others and their feelings and further can "cognitively adopt the psychological perspectives of other people and experience feelings of warmth, compassion, and forgiveness in terms of concern for others even when confronted with offences, arguments, and mistakes" (van Dierendonck, 2011, p. 1234). In this way, being mindful may help leaders to empathize with their subordinates because of a better relation to their inner emotions and motives that could lead to a more employee-oriented behavior. Based on COR theory, I argue that mindfulness is a personal resource that fosters other resources (e.g., empathy and interpersonal acceptance) explained above which are required for servant leadership.

Hypothesis 1: Leaders' mindfulness is positively related to servant leadership.

Accordingly, Good et al. (2016) consider that high-quality relationships between leaders and followers can create an atmosphere of psychological safety. They argue that mindful leaders can initiate positive work-related climate outcomes such as trust and PSC among employees through their attentive and nonjudgmental behavior.

Trust is defined as the disposition of one person to show vulnerability towards another person's action including the expectation that the other person shows a certain behavior. Therefore, trust does not imply actual risk-taking but the willingness to take a risk (Mayer et al., 1995). The process of trust is dynamic (it can be built, increased, and decreased) and includes an interdependence because someone has to rely on another person and his or her behavior (Rousseau et al., 1998). Trust is argued to represent a central aspect of social leader-follower relationships (Stedham & Skaar, 2019). A person – in this case a leader – is trustworthy, when she has a capacity of *ability*, *integrity*, and *benevolence* (Mayer et al., 1995). Stedham and Skaar (2019) consider that "leaders who are mindful exhibit attitudes and

engage in behaviors that result in trust-based relationships" (Stedham & Skaar, 2019, p. 5). They point out that a mindful leader can see a clear reality through her cognitive competencies which helps to focus on her own skills such as decision-making and problem-solving. Showing these attitudes towards followers could lead to more trust and the leader would be perceived as competent. According to the integrated model of trust by Mayer et al. (1995), a person is trustworthy, if he or she is perceived as skilled and competent within a certain domain (ability). Therefore, followers would classify their mindful leader as competent which could reduce their uncertainty. They are willing to show more vulnerability towards their mindful leader and trust her (Stedham & Skaar, 2019).

Within their review of the *social exchange theory* (SET), Cropanzano and Mitchell (2005) argue that social exchange relationships – in the context of the workplace – emerge when leaders look after their subordinates which leads to favorable outcomes. In general, they are "advantageous and fair transactions between strong relationships, and these relationships produce effective work behavior and positive employee attitudes" (p. 882). By the fact that social exchange is based on reciprocity, Eva et al. (2019) argue that a servant leader and her subordinates exchange resources and support each other. Social exchanges are therefore required to evolve leader-related outcomes as trust (Cropanzano & Mitchell, 2005; Eva et al., 2019). According to SET, a servant leader who shows support and empowerment can earn the trust of her employees in exchange. According to Mayer et al. (1995), a leader is trustworthy when she follows principles the followers agree with and further has good intentions towards the followers (benevolence). Clark and Payne (1997) extended this trust model and added competence with regard to the role as a leader, consistent behavior concerning fairness, predictability, discretion and good judgement, loyalty, openness, and respect towards the subordinates as further dimensions. A servant leader possesses attributes such as loyalty, authenticity, openness, and social responsibility towards her followers (van Dierendonck, 2011) and would be seen as trustworthy. Further, A. Lee et al. (2020) argue that a servant leader gains the trust of her followers by placing their interests and goals before her own

desires. Meta-analytic results show significant positive relations between servant leadership and trust (Hoch et al., 2018; A. Lee et al., 2020). Therefore, I assume that more servant leadership leads to higher employees' trust in the leader.

As mentioned earlier, PSC is also important regarding mindfulness and leadership (Good et al., 2016). PSC is defined as a climate in an organization with a focus on the psychological health and safety of employees. The management attaches great importance to the health of the subordinates and values stress prevention. They further communicate information about possible stressors at work and integrate the subordinates in the stress-preventing process (Hall et al., 2010). The individual level of PSC describes the extent to which an employee is free from psychological damage (Hall et al., 2010). A mindful leader can prevent or lessen employees' emotional exhaustion at work (Reb et al., 2014) which is a form of psychological damage. Reb et al. (2014) argue that a mindful leader who is fully aware of the present interaction with an employee can better observe the interests of this employee which conveys the feeling of value and respect among employees. Further, Reb et al. (2014) found evidence that a mindful leader can better satisfy employees' psychological needs. As perceived psychological safety in the workplace can be seen as an important psychological need as well, I assume that leaders' mindfulness fosters PSC among employees.

A servant leader is highly interested in the needs of her followers and takes social responsibility towards every team member (van Dierendonck, 2011) with a supportive focus (Russell & Stone, 2002). Supportive leadership behavior is argued to develop psychological safety because employees could "try and fail without fear of consequences" if the leader creates a supportive environment (Kahn, 1990, p. 711). Within her meta-analysis, Clarke (2010) found that safety climate is associated with organizational commitment, job satisfaction, and general well-being. It is further predicted by psychological climate, the individual perception of the work environment including leadership behavior, for example, support of the leader (Parker et al., 2003). Furthermore, Frazier et al. (2017) argue that leadership and high-quality interpersonal relationships are predictors for PSC and found positive correlations between servant

leadership and PSC. Empirical results show that servant leadership can reduce employees' psychological strain and need for recovery (Rivkin et al., 2014) and is associated with the satisfaction of psychological needs (van Dierendonck et al., 2014). Employees probably feel more secure when their leader supports them and their needs, so I assume that servant leadership is positively related to employees' PSC. Reb et al. (2014) argue that a mindful leader can identify the type of development each employee needs. Showing servant leadership behavior could be the key not only to realize the employees' needs but to further implement the support towards them and build PSC.

As pointed out earlier, COR theory considers that key resources can prevent resource loss and foster resource gain (Hobfoll, 1989; Hobfoll et al., 2018). Seeing mindfulness as a personal resource, I argue that its positive aspects could help a mindful leader to protect existing and gain new resources. These (new) resources can be used to facilitate servant leadership behavior at which the leader passes on important resources to the employees. Within a social exchange, a servant leader supports her employees and shows great interest in their personal goals and desires. As a result, employees would trust their leader in return and the leader can create a PSC among employees. According to this, the mediating effect of servant leadership could work through a resource spillover and creates a positive work-related climate among employees.

Hypothesis 2a): The relationship between leaders' mindfulness and followers' trust in the leader is mediated by servant leadership.

Hypothesis 2b): The relationship between leaders' mindfulness and followers' perceived PSC is mediated by servant leadership.

3.2.2. Resilience and Servant Leadership

Resilience is another personal resource which describes how people react to stressful events in different ways. These differences lie both within an individual and between individuals (Rutter, 1987) which means that one person could handle one challenge positively, for

example a stressful day at work with many meetings but struggles with other stressful situations, for example making important decisions. Another person could have different stressors that represent a challenge. A resilient person does not try to avoid stress but is able to face it in a positive way (Rutter, 1985). Whether a person can act resilient depends on the capacity of the person and how he or she rates the possible stressor. This means that the level of resilience varies in different situations (Hu et al., 2015; Wagnild & Young, 1993). Within the workplace, resilience is positively linked to work engagement (Z. Wang et al., 2017).

Good et al. (2016) consider resilience as an important psychological capital within the workplace and high-quality relationships. According to COR theory, personal resources can prevent resource loss and further stress (Hobfoll et al., 2018). A resilient leader would respond positively to stressful situations (Rutter, 1985) and can attenuate work-related stress and buffer from burnout (Hao et al., 2015). Additionally, a resilient leader can overcome a challenging or stressful situation with a positive outcome of self-confidence and social competencies (Rutter, 1985). Further, a resilient leader would less ruminate (Willis & Brunett Jr., 2016), for example about arising problems in an important project or a difficult task. According to COR theory, this process of protection against resource loss, and further resource gain could help a leader to use these resources for other leadership tasks. Resilience is associated with self-esteem, self-confidence, problem-solving skills, and the focus on the positive aspects of a situation (Wagnild & Young, 1993) which are relevant for leadership behavior. Newly gained resources could be helpful to develop higher servant leadership behavior where social skills display a fundamental basis due to its other-oriented focus since a servant leader aims to build a high-quality relationship with each employee (Eva et al., 2019). Further, Stedham and Skaar (2019) argue that a resilient leader can use her abilities even in challenging situations. This means that a resilient leader would support her followers and focus on their needs even when an adversary occurs. Therefore, I assume that resilient leaders show greater servant leadership behavior.

Hypothesis 3: Leaders' resilience is positively related to servant leadership.

As mentioned earlier, Good et al. (2016) argue that resilience is a crucial factor in high-quality relationships at work which could create PSC and foster trust in the leader. As a leader is stated trustworthy when she is competent and has certain work-related skills (Mayer et al., 1995), I assume that a resilient leader is perceived as trustworthy because important leader competencies such as problem-solving and decision-making are associated with resilience (Wagnild & Young, 1993). A resilient leader can handle stressful and difficult events and use her abilities even in challenging situations (Stedham & Skaar, 2019). This could reduce uncertainty among employees and gives them the confidence that their leader can manage her team and her tasks in any situation. Therefore, I assume that a resilient leader gains the trust of her followers. Furthermore, a resilient leader is self-confident and focusses on the positive sides of an adversity and can develop from a difficult challenge (Hu et al., 2015; Wagnild & Young, 1993). This might create a positive, respectively, safe atmosphere at the workplace because employees get the impression that their leader can handle difficulties that occur in or threaten the team or its members. With her problem-solving skills, a resilient leader (Wagnild & Young, 1993) can support employees and give them a secure feeling. Through the supportive and employee-oriented behavior of servant leadership, a resilient leader can make this feeling of security and safety more present, visible, and tangible.

Similar as stated for mindfulness, the mediating effect of servant leadership could be explained with a resource spillover. As a personal resource, embedded in the COR theory, resilience can hinder resource loss and helps to gain resources (Hobfoll et al., 2018). As described earlier, the positive interaction with stress can help a resilient leader to show more servant leadership which in turn evokes employees' trust in the leader and PSC in form of a social exchange.

Hypothesis 4a) The relationship between leaders' resilience and followers' trust in the leader is mediated by servant leadership.

Hypothesis 4b): The relationship between leaders' resilience and followers' perceived PSC is mediated by servant leadership.

3.2.3. Mindfulness and Destructive Leadership

Good et al. (2016) consider that mindfulness influences leadership behavior and leader-follower relations and ask the question of how it might be related to abusive leadership behavior. Destructive leadership is understood as a repeated harmful behavior of a leader towards the interest of an organization and/or its employees (Einarsen et al., 2007). An important aspect of the definition of active destructive leadership is that the negative behavior does not need to be on purpose even though it could be a consequence of thoughtlessness (Einarsen et al., 2007). However, paying attention to the surroundings and own behaviors and actions are key aspects of mindfulness (Glomb et al., 2011). This ability could help a leader to prevent inconsiderate actions because she is aware of the current setting, her own emotions and could better understand her subordinates' feelings. As outlined earlier, mindfulness is a personal resource which protects people from resource loss and stress. One aspect of COR theory assumes that individuals with lesser resources are not able to, both, prevent resource loss and gain resources (Hobfoll et al., 2018). This leads to the consideration that a less mindful leader is more vulnerable to resource loss which causes stress. Further, Tepper et al. (2017) argue that a high amount of perceived stress could lead to destructive behavior while mindfulness is a predictor for less perceived stress (Mesmer-Magnus et al., 2017). Mindfulness enables a leader to change into a more objective perspective that helps to separate herself from a potentially stressful situation. This reduces rumination and stress (Mesmer-Magnus et al., 2017). Therefore, being mindful could lead to a decrease of negative reactions to stressful events that may be taken out towards the subordinates. In line with this stands that mindfulness is associated with greater emotion regulation (Hill & Updegraff, 2012) whereas destructive leadership is linked to lesser emotion regulation (Tepper et al., 2017). This aspect is in line with the COR theory – a mindful leader could gain other resources as emotion regulation. Mindfulness could help leaders to better control their emotions and therefore prevent harmful and destructive behaviors towards others. In line with that, another aspect of mindfulness is a nonjudgmental attitude towards a current event. Accepting the surroundings as well

as other peoples' behaviors or decisions could lead to a better understanding of these actions even if leader and follower are, for example, in an argument or conflict situation (Greason & Cashwell, 2009). This further could lessen the negative response towards the employee in a tense situation. Due to theoretical considerations and latest empirical results that show that mindfulness is negatively related to destructive leadership (Lange et al., 2018), I claim:

Hypothesis 5: Leaders' mindfulness is negatively related to destructive leadership.

According to SET, high-quality relationships between leaders and followers can create positive reciprocity where leaders treat their followers positively who in turn show positive work behavior (Cropanzano & Mitchell, 2005). Referring to the work of Gouldner (1960), Mitchell and Ambrose (2007) argue that also negative reciprocity can occur. Employees who experience negative treatment by their leader are in response more willing to show negative work behavior. This might be the case if they perceive destructive leadership. A destructive leader may not give fostering resources to her employees but rather harm them. Important attitudes as employees' work motivation decrease through destructive leader behavior (Schyns & Schilling, 2013). Employees report higher perceived stress and lesser well-being when they experience negative leadership behavior (Schyns & Schilling, 2013). When employees are harmed this way constantly it is unlikely that they show positive work attitudes towards their leader such as job satisfaction declines and turnover intentions grow (Schyns & Schilling, 2013).

According to Mayer et al. (1995), a person is trustworthy when he or she possesses abilities of interpersonal communication, is believed to have good intentions, and has mutual principles. A destructive leader would not represent these attributes since she is likely to, for example, yell at employees and treats them unfairly. Within their meta-analysis, Schyns and Schilling (2013) found negative relations between destructive leadership and trust in the leader.

Furthermore, employees may not feel (mentally) safe in presence of a destructive leader because the perceived destructive behavior can harm their psychological well-being

and fosters stress (Schyns & Schilling, 2013). Therefore, PSC among employees seems to be low. A leader who strengthens PSC would be concerned about the psychological health of her employees and tries to prevent stress for her followers (Hall et al., 2010). A destructive leader might behave in opposite directions which would rather weaken PSC.

Based on COR theory, I assume that leaders with less mindfulness show higher destructive leadership while, referring to negative reciprocity, employees who perceive destructive leadership show less trust in their leader and experience less PSC.

Hypothesis 6b): The relationship between leaders' mindfulness and followers' trust in the leader is mediated by destructive leadership.

Hypothesis 6a): The relationship between leaders' mindfulness and followers' perceived PSC is mediated by destructive leadership.

3.2.4. Resilience and Destructive Leadership

As mentioned earlier, resilience represents a crucial part of leader-follower relationships which needs further research (Good et al., 2016). As the ability to face stressful events in a positive way, resilience could represent a protective factor during stressful situations (Hobfoll et al., 2018; Rutter, 1987). This could lead to a reduced perception of someone's own stress level. Since higher stress could cause destructive leadership behavior (Tepper et al., 2017), I assume that resilience prevents leaders from acting destructively. Tepper et al. (2017) argue that leaders tend to act destructively "when they experience threats to their identity as a leader, their sense of power or control, or their competence of effectively fulfill their responsibilities" (Tepper et al., 2017, p. 139). Resilient leaders can deal with certain adversities and even be strengthened by mastering those challenging events (Hu et al., 2015). Therefore, it is unlikely that resilient leaders take their negative experiences out on their employees. Some authors argue that self-regulation plays an important role in the context of resilience (e.g., Gardner et al., 2008; Nota et al., 2004; Wills & Bantum, 2012). Self-regulation can be defined as "any efforts by the human self to alter any of its own inner states or responses" (Baumeister

& Vohs, 2004, p. 2) including emotions, thoughts, and impulses. Tepper et al. (2017) summarize that leadership comes with a high amount of pressure and demands which could increase negative emotions and leaders need, especially, mental resources. Referring to COR theory, when these resources – in this case resilience – are low, they are faster exhausted and other resources – for example self-regulation – could be lost as well (Hobfoll et al., 2018). This could lead to destructive behavior in the long run (Tepper et al., 2017). Accordingly, resilience is an important personal resource which protects a leader from work-related stress and demands of her role. Therefore, I argue that a resilient leader shows less destructive leadership behavior.

Hypothesis 7: Leaders' resilience is negatively related to destructive leadership.

As already mentioned earlier, I argue based on COR theory that less resilient leaders would show more destructive leadership because of a lack of important resources. Furthermore, a destructive leader may not contain abilities or behaviors that make her trustworthy. Following the approach of negative reciprocity, I assume that employees who perceive destructive leadership show less trust in their leader and PSC.

Hypothesis 8a): The relationship between leaders' resilience and followers' trust in the leader is mediated by destructive leadership.

Hypothesis 8b): The relationship between leaders' resilience and followers' perceived PSC is mediated by destructive leadership.

3.3. Method

3.3.1. Sample and Research Design

The present study used a cross-sectional study design with leader-follower dyads[2]. Data acquisition took place from October 2019 to December 2020. Students supported the data collection, as they contacted employees or leaders from different organizations in Germany to recruit them for the survey. The participants were invited personally, via e-mail, or internet platforms to follow a link to a safe website to opt in for the survey. First, the participants were informed that their participation was voluntary and anonymous. Second, participants were asked to enter a personal code which had to be identical for each dyad to match the leader to his/her follower. Then, leaders were instructed to rate their own mindfulness and resilience as well as demographic information. Employees were asked to rate their leader's servant and destructive leadership behavior, their own perception of PSC, their trust in their leader and demographic data. I included attention checks in both surveys to identify and further eliminate inattentive participants (see e.g., DeSimone et al., 2015). My colleague Jana Fürchtenicht and I phrased three different items after research of different bogus items. Meade and Craig (2012) list completely senseless items which could irritate the participants. Therefore, I used these more neutral items: "I have never been on the internet before. (Thank you for reading attentively.)", "I am currently filling in a questionnaire (and I am reading all of the questions).", and "My mother was born on February 30 (which is impossible, of course, but unfortunately, some persons do not read everything).".

Once the data collection was finished, the sample consists of 473 matched dyads. First, I eliminated corrupted data following different criteria (e.g., if leader and follower participated directly one after the other or both late at night at the same day) resulting in 335

---

[2] In all studies of this dissertation further variables and constructs were retrieved which are not reported in this dissertation. First, the students who recruited the participants used some data for their unpublished bachelor or master theses, as well as term papers. Second, my colleague Jana Fürchtenicht used data for her own dissertation, but we made sure that the overlap regarding the variables was as small as possible.

remaining dyads. Second, 293 dyads remained after eliminating inattentive participants using the bogus items. Finally, I eliminated data of participants with less than 10 and more than 80 working hours per week and further leaders who stated that they have no leadership experience. After data cleaning, $N = 281$ leader-follower dyads remained. Of the leaders, 53 % were male and 47 % were female. The youngest leader was 20 and the oldest was 67 years old, the average age was 44.25 years ($SD = 10.43$). Most of the leaders had a university degree (51 %) as highest education level, followed by professional training (21 %), and (professional) baccalaureate (13 %). Only 8 % had a general secondary education certificate, 4 % had a doctorate and 0.7 % a secondary education certificate while 2 % did not answer the question. Further, 63 % had more than five years of leadership experience and 37 % up to five years while 41 % were positioned in the upper management level, 35 % in the middle management level, and 24 % in the lower management level. Half of the leaders were responsible for 1 to 10 employees (51 %), 20 % for 11 to 20 employees, and 28 % for more than 20 employees. Of the employees, 44 % were male and 56 % were female. The youngest employee was 18 years old and the oldest was 66 years old, the average age was 32.22 years ($SD = 11.37$). Most of the employees had a (professional) baccalaureate (34 %), a university degree (30 %) or a professional training (34 %). Only 9 % had a general secondary education certificate, 3 % a secondary education certificate and 1 % a doctorate while 0.4 % did not answer the question.

3.3.2. Measures

Mindfulness. Mindfulness was measured with the Mindful Attention and Awareness Scale (MAAS) by K. W. Brown and Ryan (2003) in its German version (Michalak et al., 2008). The MAAS includes 15 items and were rated on a 6-point Likert scale from 1 = *almost never* to 6 = *almost always*. An example item is "I could be experiencing some emotion and not be conscious of it until some time later" (α = .89).

Resilience. Resilience was measured with the German version of the 10-item Conner-Davidson Resilience Scale (CD-RISC, Connor & Davidson, 2003) translated by Sarubin et al.

(2015). The items were rated on a 7-point Likert scale from 1 = *strongly disagree* to 7 = *strongly agree*. Different from the original scale which is rated on a 5-point Likert scale, I chose the 7-point Likert scale to offer differentiated response options to reduce monotonous response behavior. An example item is "I am able to adapt to change" (α = .81).

Servant Leadership. Servant leadership was measured with the servant leadership scale developed by Ehrhart (2004) and translated into German by Rivkin et al. (2014). The 14 items were used as an overall scale for servant leadership and were rated on a 5-point Likert scale from 1 = *strongly disagree* to 5 = *strongly agree*. An example item is "My department manager spends the time to form quality relationships with department employees" (α = .89).

Destructive Leadership. Destructive leadership was measured with the German Integrative Leadership Survey in the preliminary version of the second edition (Rowold et al., in press). It contains 77 items, of which five measure destructive leadership. An exemplary item is "The leader I am evaluating speaks badly about me behind my back". The items were rated in a 5-point Likert scale from 1 = *strongly disagree* to 5 = *strongly agree* (α = .84).

Trust in the Leader. Trust in the leader was measured with the German Workplace Trust Survey (G-WTS) by Lehmann-Willenbrock and Kauffeld (2010), a German translation of the survey by Ferres (2002). The GWT-S contains 27 items, from which six were used to measure trust in the leader. The items were rated on a 6-point Likert scale from 1 = *completely disagree* to 6 = *completely agree* and an example item is "The leader I am evaluating has good intentions" (α = .91).

Psychological Safety Climate. PSC was measured with the PSC-12 Survey by Hall et al. (2010) in an own German translation. Translation and back-translation procedure (Brislin, 1970) was used – English to German and back to English by different research associated. I used 6 of the 12 original items which refer to the direct leader of the participants (the subscales management support and commitment and management priority). The items were rated on a 5-point Likert scale from 1 = *strongly disagree* to 5 = *strongly agree* and an exemplary item is

"My leader acts decisively when a concern of an employees' psychological status is raised" (α = .92).

Control Variables. Following the steps in the process of selecting control variables by Bernerth and Aguinis (2016), no theoretical relevant control variables have been found. Furthermore, demographic variables which might be interesting concerning the hypotheses did not show any relevant correlations to the research variables. Therefore, I decided to not include any control variables in the further data analysis.

3.3.3. Analytical Approach

For preparing the data, data cleaning and basis analysis (e.g., reliability analysis, descriptive statistics, correlations), I used IBM SPSS Statistics 27. For the further analyses, I used the statistic software R (version 4.1.2; R Core Team, 2020) and imported the data from SPSS using the R-package Haven (Wickham & Miller, 2020). To test for multivariate normal distribution, I used the R-package MVN (version 5.9; Korkmaz et al., 2014).To test the model fit, I compute confirmatory factor analysis (CFA) before I tested the mediation model using structural equation modeling (SEM) with latent variables using the R-package Lavaan (version 0.6.9; Rosseel, 2012).

3.4. Results

Descriptive statistics – means and standard deviations – and intercorrelations are presented in Table 2. The demographic variables leaders' age and gender were not related to any other variable. Resilience was not related to servant leadership ($r = .09$, $p = .15$), destructive leadership ($r = -.09$, $p = .15$), and PSC ($r = .10$, $p = .88$). The correlation between mindfulness and PSC was only marginally significant ($r = .12$, $p = .05$).

Table 2

Study 1: Descriptive Statistics and Correlations for Study Variables

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1. Age (LE)	44.25	10.43	-							
2. Gender (LE) [a]	-	-	-.06	-						
3. Mindfulness	2.55	0.85	-.11	.01	(.89)					
4. Resilience	5.60	0.85	-.01	-.06	.17**	(.79)				
5. SERL	3.68	0.65	-.02	.04	.14*	.09	(.88)			
6. DL	1.51	0.65	-.05	.01	-.14*	-.09	-.57**	(.79)		
7. Trust	5.27	0.80	.01	.02	.22**	.12*	.70**	-.70**	(.89)	
8. PSC	3.75	0.91	-.04	.02	.12†	.10	.75**	-.52**	.65**	(.92)

Notes. N = 281. Cronbachs α are indicated on the diagonal. LE = leader; SERL = servant leadership; DL = destructive leadership.

[a] 1 = male and 2 = female

† $p < .10$. * $p < .05$. ** $p < .01$.

Test of multivariate normality indicated that the research variables were not normally distributed., Due to non-normal distributed data, robust parameters of the CFA were used as well as robust maximum likelihood estimation. Results of the CFA indicate an acceptable fit of the measurement model (χ^2 = 2227.63, *df* = 1469, $p < .001$, comparative fit index [CFI] = .87, root-mean-square error of approximation [RMSEA] = .05, root-mean-square residual [SRMR] = .06). The model fit of the mediation model was acceptable as well (χ^2 = 2227.63, *df* = 1469, $p < .001$, CFI = .86, RMSEA = .04, SRMR = .06).

Results of mediation analysis show in Table 3. In line with Hypothesis 1, mindfulness was positively related to servant leadership (β = .14, $p = .04$). In contrast to Hypothesis 2a, servant leadership did not mediate the positive relationship between mindfulness and trust, as the 95 % confidence interval (CI) of the indirect effect slightly included zero (β = .07, $p = .05$,

95 %-CI [-0.11, 0.00]). For Hypothesis 2b – servant leadership mediates the positive relationship between mindfulness and PSC – significant results were found. The total effect of mindfulness on PSC was only approximately significant (β = .10, p = .09) while the direct effect was not significant (β = -.02, p = .68). Therefore, the indirect effect indicates a total mediation (β = .10, p = .04, 95 %-CI [-0.20, -0.003]). Hypothesis 3 stated a positive relationship between resilience and servant leadership which is not supported (β = .08, p = .29). Further, servant leadership did not function as mediator between resilience and trust in the leader as stated in Hypothesis 4a (β = .04, p = .31, 95 %-CI [-0.04, 0.13]) or PSC as proposed in Hypothesis 4b (β = .06, p = .30, 95 %-CI [-0.07, 0.24]). In limited support for Hypothesis 5; mindfulness was only marginally related to destructive leadership (β = -.12, p = .08). Destructive leadership did not mediate the relationship between mindfulness and trust in the leader (Hypothesis 6a; β = .05, p = .09, 95 %-CI [-0.09, 0.01]) as well as PSC (Hypothesis 6b; β = .01, p = .32, 95 %-CI [-0.03, 0.01]). Thus, hypotheses 6a and 6b were not supported. Moreover, no significant relationship was found between resilience and destructive leadership (β = -.06, p = .44), Hypothesis 7 must therefore be rejected. Besides, destructive leadership did not mediate the relationship between resilience and trust in the leader (Hypothesis 8a; β = .03, p = .45, 95 %-CI [-0.05, 0.11]) as well as PSC (Hypothesis 8b; β = .01, p = .52, 95 %-CI [-0.02, 0.03]). Therefore, hypotheses 8a and 8b must be rejected.

Table 3

Study 1: Results of Mediation Analysis

	β	SE	95% CI
Direct effects			
MF → SERL	.14*	0.05	[-0.21, -0.004]
MF → DL	-.12†	0.04	[-0.01, 0.17]
RES → SERL	.08	0.09	[-0.08, 0.26]
RES → DL	-.06	0.08	[-0.21, 0.09]
SERL → Trust	.50***	0.09	[0.32, 0.68]
SERL → PSC	.77***	0.10	[0.72, 1.12]
DL → Trust	-.44***	0.11	[-0.73, -0.31]
DL → PSC	-.09.	0.11	[-0.34, 0.08]
MF → Trust	.08†	0.03	[-0.13, 0.00]
MF → PSC	-.02	0.04	[-0.06, 0.09]
RES → Trust	.04	0.05	[-0.06, 0.15]
RES → PSC	.03	0.06	[-0.07, 0.15]
Total effects			
MF → Trust	.20**	0.05	[-0.26, -0.06]
MF → PSC	.10†	0.06	[-0.21, 0.02]
RES → Trust	.10	0.09	[-0.06, 0.31]
RES → PSC	.09	0.10	[-0.06, 0.32]
Indirect effects			
MF → SERL → Trust	.07†	0.03	[-0.11, 0.00]
MF → SERL → PSC	.10*	0.05	[-0.20, -0.003]
RES → SERL → Trust	.04	0.05	[-0.04, 0.13]
RES → SERL → PSC	.06	0.08	[-0.07, 0.24]
MF → DL → Trust	.05†	0.02	[-0.09, 0.01]
MF → DL → PSC	.01	0.01	[-0.03, 0.01]
RES → DL → Trust	.03	0.04	[-0.05, 0.11]
RES → DL → PSC	.01	0.01	[-0.02, 0.03]

Notes. MF = Mindfulness. SERL = Servant leadership. DL = Destructive leadership.

RES = Resilience. PSC = Psychological safety climate.

†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

3.5. Discussion

The aim of this study was to investigate the relationship of leaders' personal resources and leadership behavior as well as employees' work-related climate outcomes. More precisely, I examined if mindfulness and resilience are beneficial for servant leadership as well as preventive against destructive leadership. Furthermore, the mediating mechanisms of servant and destructive leadership between leaders' personal resources and employees' trust in the leader and perceived PSC were analyzed. The results show that mindfulness is positively related to servant leadership (Hypothesis 1) and negatively to destructive leadership (Hypothesis 5). Furthermore, servant leadership mediates the relation between mindfulness and PSC (Hypothesis 2b). The rest of the hypotheses cannot be confirmed.

The findings indicate that leaders' mindfulness is an important resource within the workplace, respecting mindful leaders show more servant and less destructive leadership behavior. This contributes to the field of leadership research regarding antecedents of servant and destructive leadership behavior. Additionally, servant leadership represents an important resource for employees as it mediates the mindful state of leaders towards employees' positive work-related climate outcomes and strengthens their employees' perceived PSC. Parts of the integrative framework by Good et al. (2016) are supported – mindfulness is relevant for high quality leader-follower relationships as mindful leaders have the resources to show supportive behavior towards subordinates and give them a feeling of safety at work while less mindful leaders show more negative, destructive behavior. With that, I expand previous findings of Reb et al. (2014) and Pinck and Sonnentag (2018) who found positive relationships between leaders' mindfulness and employees' well-being, and Lange et al. (2018) who, as well, found negative relations between leaders' mindfulness and destructive leadership.

Results show no support for any hypotheses including resilience. Resilience is not significantly related to either servant or destructive leadership as well as trust in the leader and PSC. Previous research regarding resilience and leadership is quite scarce. Z. Wang et al. (2017) identify positive relations between resilience and work engagement while most of the

research investigates resilience from the individual within-person perspective (e.g., Hu et al., 2015). Resilience represents a capacity that individuals possess to deal with stressful events. One can argue that resilience only occurs when a stressful situation appears (see Rutter, 2007) which means if the amount of stress is moderate, resilience might be not needed for leadership. This would explain that resilience is neither related to servant nor destructive leadership. It is possible that the perception of stress changes during the COVID-19 pandemic, for example that leaders in a stable organizational setting might experience less stress because they perceived consciously that their position is safe, and they feel less affected while leaders who had to work on short time might have less workload and a better work-life-balance. Therefore, it is crucial to investigate the perceived stress of leaders to get more clarity regarding these processes.

3.5.1. Limitations and Future Research

Some limitations of this study should be mentioned. First, data quality and the resulting sample size can be criticized. Up to 38 % of the data had to be eliminated due to possible corruption which leads to a huge loss of data. It should be considered to find a more valid strategy to recruit participants than through students to receive reliable data and a bigger sample size. This leads to the fact that the sample is not a random sample but a convenience sample because students recruited participants asking, for example, mostly friends or family members. Therefore, the sample is not representative and might be biased because the sample does not represent a cross-section of the population. Furthermore, the cross-sectional study design does not allow the conclusion of causal relations. It might be possible that the study variables influence each other in a different direction.

Second, the willingness to attend a survey might be low for destructive leaders which makes it difficult to receive valid information about antecedents and consequences of negative leadership. Therefore, experimental study designs can be used to manipulate certain behavior. For example, one could hire an actor to play the role of a destructive leader and let participants in the role of employees rate the short-term consequences of the behavior.

Nevertheless, it is problematic to investigate the long-term consequences of consistently negative leadership behavior.

Third, data was collected cross-sectional at one point in time using only questionnaires so that the problem of common method bias (Podsakoff et al., 2003) is probably relevant. To avoid single source bias, leadership behavior was rated by employees but the bias regarding the usage of surveys only is still present. Therefore, future research should use different measurement techniques. Since mindfulness represents an important resource in the workplace and leadership, it would be revealing to examine mindfulness in a longitudinal study including an experiment. Mindfulness interventions such as mindfulness-based stress reduction (MBSR) by Kabat-Zinn (1982, 2003) could be used to investigate the long-term effects of continuous mindfulness practice.

Fourth, as mentioned earlier, resilience depends on the situation, person, and stressor, and might be present at one stressful event but not at another (Rutter, 2007). Therefore, it is possible that resilience is only present when stress occurs which leads to the point that future research should investigate perceived stress of leaders to examine at which circumstances resilience is needed for leadership. This could take place within organizations, for example, during restructuring measures or other events which include change or pressure. Finally, as servant leadership represents an important factor regarding positive work-related climate outcomes of subordinates, it might be interesting to investigate how servant leadership is related to negative work-related aspects, whether it represents a resource that buffers from stress or burnout of subordinates or if it also could have some negative effects. Eva et al. (2019) argue that servant leaders use a great number of resources to support their subordinates which could lead to stress. Therefore, it seems quite reasonable to investigate the perceived stress of both leaders and followers in the context of resilience and servant leadership as well as mindfulness. Previous research (e.g., Mesmer-Magnus et al., 2017) mostly examined the effects of mindfulness on the within-person perspective while it is also interesting to explore if

mindfulness of one individual could affect stress perception of persons interacting with him or her.

Finally, as already mentioned, the findings of this study support parts of the integrative framework of Good et al. (2016) and further expand it. Future research can build on these results and focus on further parts of the framework regarding functional aspects as well as work-related outcomes for both leaders and followers.

3.5.2. Practical Implications

Some practical implications can be drawn from the findings of this study as well. First, mindfulness represents an important resource for leaders, therefore, mindfulness training such as the MBSR (Kabat-Zinn, 1982, 2003) should be implemented in organizations as mindfulness is associated with a higher servant and less destructive leadership. Organizations should give leaders the opportunity to practice their mindfulness skills to expand their abilities to deal with work-related and private demands. Participation in these trainings should be voluntary since practicing mindfulness is only successful when the person is convinced about the effects of mindfulness exercises and must participate out of personal intentions. Second, as servant leadership is positively related to employees' trust in the leader and perceived PSC, organizations should recommend this behavior and train leaders to adopt servant leadership patterns. Trainings, including coaching and feedback loops, can help to implement servant leadership. In addition to that, destructive leader behavior should be traced, and causes located to transform negative behavior into constructive and effective patterns. As work-related aspects, for example, stress or perceived threat through other company members predict destructive leadership (Tepper et al., 2017), these circumstances should be processed to build up individual training programs supporting leaders towards effective and efficient leadership.

3.5.3. Conclusion

This study contributes to the research field of leadership and personal resources in the following ways. It shows that mindfulness represents an important personal resource for

leaders as it is associated with higher servant leadership and less destructive leadership. This helps to close the research gap regarding antecedents of both leadership behaviors. Moreover, servant leadership mediates the relation between mindfulness and PSC. Therefore, a part of the theoretical framework by Good et al. (2016) could be supported. Future research should address this topic further and improve the research design including experiments to receive profound insights regarding personal resources and leadership.

4. Study 2: The Relationship of Leaders' Mindfulness and Resilience, Servant Leadership, and Employees' Stress

4.1. Introduction

Leaders often find themselves in situations that are stressful or demand an important decision under time pressure before the next meeting or customer visit. "Leaders therefore require an array of tools […] – or in other words, a sufficient number of resources – if they are to be successful" (Byrne et al., 2014, p. 345). It seems that personal resources of leaders might have a great impact on their effectiveness. Mindfulness and resilience represent two of these personal resources which might be crucial for leaders. They are related to positive outcomes such as reduced stress or higher mental health (Hu et al., 2015; Mesmer-Magnus et al., 2017) and further positive work behavior. Mindfulness is related to higher job performance (Reb et al., 2014) and resilience to higher work engagement (Z. Wang et al., 2017). How these two personal resources are linked to leadership behavior has not been examined sufficiently (e. g., Lange et al., 2018). Furthermore, mindfulness and resilience have mostly been investigated on the individual and intrapersonal level (e.g., Mesmer-Magnus et al., 2017). How these leaders' personal resources are related to employees' work-related outcomes has hardly been explored so far. Reb et al. (2014) examined the relationship between leaders' mindfulness and well-being of employees while I found no specific study that investigated the relationship of leaders' resilience and employees' individual outcomes. Therefore, I ask the question how personal resources of leaders are related to positive leadership behavior and how it influences employees' outcomes.

Since stress represents an important aspect in the workplace because of its negative effects on mental health (e.g., depression and anxiety), and job satisfaction (Griffin et al., 2010; Lambert et al., 2007; Motowidlo et al., 1986), it might be crucial to investigate how leaders' mindfulness and resilience are related to employees' perceived stress. Furthermore, Pinck and Sonnentag (2018) argue that leader behavior plays an important part in transferring their

own personal resources into positive outcomes for employees. I argue that a certain leader behavior is needed so that employees can perceive their leader's resources. As servant leadership represents a leadership behavior which is highly employee-oriented and is argued to satisfy employees' psychological needs (van Dierendonck et al., 2014), it might be a promising mediator between leaders' mindfulness and employees' perceived stress as well as between leaders' resilience and employees' perceived stress.

According to COR theory (Hobfoll, 1989; Hobfoll et al., 2018), personal resources help to gain other resources and prevent from resource loss and further stress. Using this approach, I argue that leaders with a high amount of mindfulness and resilience can use these resources to gain resources required for servant leadership. Furthermore, servant leadership might help to transform mindfulness and resilience into positive outcomes for employees and therefore might be related to less perceived stress. For employees, servant leadership might be an external resource which could help them to gain resources and prevent stress. As explained in the first study of this dissertation, the theoretical framework by Good et al. (2016) underlines the importance of mindfulness and resilience in the workplace and further positive leadership behavior. Therefore, I aim to investigate whether servant leadership can mediate a positive relationship between leaders' mindfulness and resilience and employees' perceived stress. An illustration of the assumed relationships can be found in Figure 5.

This study contributes to the research fields of personal resources and leadership as follows: First, I examine the relationship of leaders' mindfulness and resilience with perceived work-related stress of employees. Interpersonal relations of these resources have not been examined sufficiently, especially in the workplace. Second, I consider that servant leadership has a mediating effect between leaders' mindfulness and employees' perceived stress as well as leaders' resilience and employees' perceived stress. With these assumptions, I attempt to expand the theoretical framework by Good et al. (2016) and answer some of its open questions empirically.

Figure 5

Research Model for Study 2
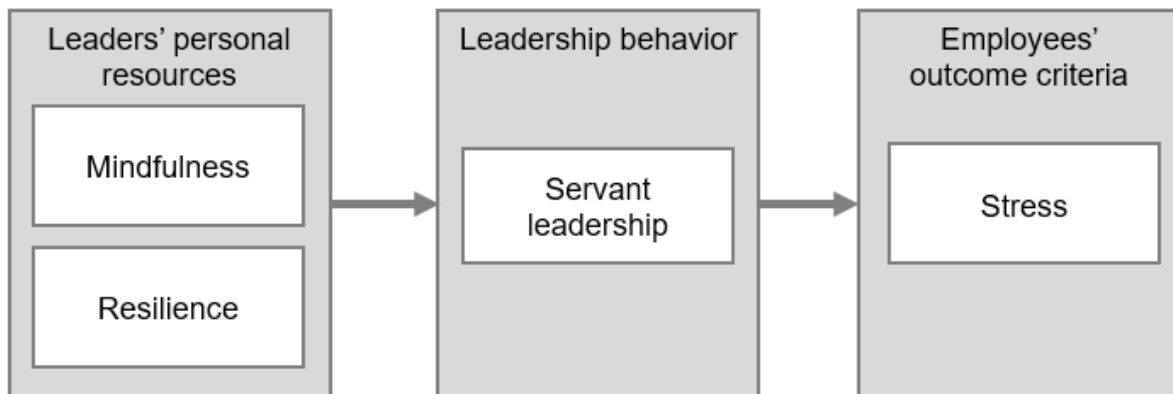
4.2. Theory and Hypotheses

According to Good et al. (2016), mindfulness is relevant for high quality relationships between leaders and their subordinates and would be related to leadership behavior. Mindfulness is described as a state of awareness for a current situation without any judgement of this situation or emotions that occur (Glomb et al., 2011). It is further associated with less automatic behavior and a form of not reacting to, especially, highly positive, or highly negative feelings (Bishop et al., 2004).

As already explained in detail in the first study of this dissertation, COR theory (Hobfoll et al., 2018) indicates that mindfulness as a personal resource is positively related to servant leadership – possessing mindfulness might be helpful to gain further resources which are required for servant leadership. Servant leadership is described as an employee-oriented behavior, where the focus is on service towards others and their interests (van Dierendonck, 2011). There are some characteristics attributed to a servant leader such as listening, empathy, awareness, persuasion, stewardship, conceptualization (Spears, 2010), humility, empowering, and interpersonal acceptance (van Dierendonck, 2011). Through servant leadership, leader mindfulness might be related to subordinates' stress. Stress is defined as a personal reaction to circumstances or situations which could be physiological, psychological or both,

and which are threatening or exhausting valuable resources (Hobfoll, 1989; Lazarus & Folkman, 1984). A mindful leader is attentive to the current situation and is aware of the surroundings. It is argued by Reb et al. (2014) that a mindful leader could therefore better approach to her subordinates. She would act calmly without letting negative emotions overcome her which could have a positive effect on employees and their perceived stress at work. Reb et al. (2014) already found a negative relation between leader mindfulness and employees' emotional exhaustion at work.

Furthermore, leadership behavior is argued to have an impact on subordinates' stress and could either buffer or cause it (Harms et al., 2017). Following COR theory from subordinates' perspective, leadership could be either a resource that buffers from resource loss and further stress or a demand that exhausts their resources which leads to stress (Bakker & Demerouti, 2007; Hobfoll, 1989). As Eva et al. (2019) summarize, COR theory can be combined with the *Job Demands-Resources (JD-R) Model* (Bakker & Demerouti, 2007). From employees' perspective, servant leadership can be assigned as a job-related resource that can buffer certain job demands and stressors at work. Following the JD-R model, this means that servant leadership can protect an employee from the process of (negative) job strain by reducing stressors and further mental illness. As Bakker and Demerouti (2007) summarize, supporting leader behavior can assist employees to handle job demands and prevent from stress. Empirical research on relations between servant leadership and employees' stress are scarce. Babakus et al. (2010) found that servant leadership is related to lesser burnout and turnover intentions in bank employees and Dooley et al. (2020) found that servant leadership moderates the relation between stress and physical health in the way that it buffers the negative effect of stress. However, the study focused on high school teachers in China.

Summarized, based on the COR theory, I assume that mindful leaders are therefore better protected from resource loss and gain potential resources required for servant leadership which is in turn a resource for employees. Based on the JD-R model, servant leadership

could further reduce the negative effects of job demands and therefore reduces subordinates' stress.

Hypothesis 1: The relationship between leaders' mindfulness and followers' perceived stress is mediated by servant leadership.

Resilience is another personal resource which might be important in the workplace and within leader-follower relationships (Good et al., 2016). Resilience describes the differences in how individuals react to stressful events or challenging situations. Resilient individuals do not avoid stress but face it positively. They can handle a stressful situation which could possibly strengthen them (Rutter, 1985, 1987). The differences are both within-person and between-person. The within-person perspective focuses on situational or time-related differences of resilience in one individual. More precisely, an individual can handle one situation resiliently while getting stressed in another situation. The between-person perspective – which is examined in this study – describes the differences in resilience over diverse individuals which means that some persons are more resilient than others (Wagnild & Young, 1993).

As it is for mindfulness, the assumed relationship between resilience and servant leadership is derived in detail in the first study of this dissertation. Following COR theory (Hobfoll, 1989; Hobfoll et al., 2018), I argued that resilience is a valued personal resource that protects a leader from resource loss and helps to gain further resources required for servant leadership. A resilient leader can handle stressful challenges at work positively (Rutter, 1985, 1987). These challenges often concern not only the leader but also involve her subordinates. Therefore, when a leader does not get stressed during a challenge and further can handle the situation positively, it is likely that she might shield or protect her subordinates from further stress. Servant leadership might mediate this transmission through employee-oriented and supportive behavior with focus on interests of employees. As emphasized earlier, servant leadership represents a resource for employees that might mitigate the strain of work demands following the JD-R model and therefore could reduce employees' stress.

76

Hypothesis 2: The relationship between leaders' resilience and followers' perceived stress is mediated by servant leadership.

4.3. Method

4.3.1. Sample and Research Design

A cross-sectional study design was used in this study. Leader-follower dyads were recruited by students from October 2020 to June 2021 in different organizations in Germany. The participants were invited via e-mail, social media or in person, and were asked to follow a link to the platform soSci Survey were the questionnaire was placed. As the survey was anonym, it was necessary that each dyad fills in an identical code to match each pair of leader and follower. Leaders were asked to assess their own mindfulness and resilience and provide information about demographic variables. Employees were instructed to rate their leader's servant leadership as well as their own perceived stress and fill in demographic information. Furthermore, attention checks were included in both questionnaires so that inattentive participants could be identified and eliminated from the survey. Literature research yielded a list of mostly senseless bogus items (Meade & Craig, 2012). These items could irritate participants, therefore, I developed three different and more neutral bogus items for the survey, an example is "I have never been on the internet. (Thank you for reading carefully.) ".

Once the data collection was finished, the sample consists of 307 matched dyads. First, I used an algorithm – developed by one of my colleagues and me – to identify and eliminate corrupted data. Different criteria were tested (e.g., both participants of one dyad started the survey at the exact same time). The remaining 263 dyads were secondly checked on inattention using the bogus items mentioned earlier and 226 dyads remained. In the last step, I eliminated data of leaders who specified no leadership experience and participants who stated less than 10 or more than 80 weekly working hours. Therefore, $N = 213$ leader-follower dyads remained after data cleaning.

Starting with the leaders, 32 % were female and 68 % were male. The average age was 43.73 years (*SD* = 10.90), the youngest leader was 21 and the oldest 72 years old. As highest education degree, most leaders stated a university degree (56 %) followed by professional training (16 %) and (professional) baccalaureate (15 %) then general secondary school (7 %) and doctorate (5 %) and lastly secondary education certificate (0.5 %). Slightly more than half of the leaders had more than five years of leadership experience (56 %) while the rest had up to five years of leadership experience (44 %). Furthermore, 45 % were positioned in the middle management level, 29 % in the upper management level and 27 % in the lower management level. About 53 % lead one to ten subordinates, 30 % lead 11 to 20 subordinates while 17 % were responsible for more than 20 employees. Regarding the employees, 54 % female and 46 % were male with an average age of 34.00 years (*SD* = 12.06) while the youngest employee was 18 years old and the oldest was 64 years old. Most employees had a university degree (36 %), professional training (28 %) and (professional) baccalaureate (24 %) while 10 % had general secondary school, only 1 % a secondary education certificate and 0.5 % a doctorate.

4.3.2. Measures

Mindfulness. A short version of the Mindful Attention and Awareness Scale (MAAS, K. W. Brown & Ryan, 2003) was used in its German version (Michalak et al., 2008). In this study, seven of the original 15 items were used and were rated on a 6-point Likert scale from 1 = *almost never* to 6 = *almost always*. An example item is "I find it difficult to stay focused on what's happening in the present" (α = .74).

Resilience. Resilience was measured with the 10-item Connor-Davidson Resilience Scale (CD-RISC, Connor & Davidson, 2003) in its German version (Sarubin et al., 2015). The original scale is rated on a 5-point Likert scale while I chose 7-point Likert scale from 1 = *strongly disagree* to 7 = *strongly agree* to reduce monotonous response behavior with various response options during the survey. An example item is "I am able to adapt to change" (α = .83).

Servant Leadership. Ehrhart (2004) developed a measurement for servant leadership I used in the German version translated by Rivkin et al. (2014). In this study only 9 of the 14 items were used. The items of the dimensions *ethical behavior* and *value for outside the organization* were not included, the remaining items of the dimensions *relationships, empowerment, help to grow and succeed, conceptual skills,* and *putting subordinates first* were used as an overall scale for servant leadership. The items were rated on a 5-point Likert scale from 1 = *strongly disagree* to 5 = *strongly agree*. An example item is "My department manager spends the time to form quality relationships with department employees" ($\alpha = .89$).

Stress. Stress was measured with the German Irritation Scale by Mohr et al. (2005) which includes perceived emotional as well as cognitive strain at the workplace. In this study, seven of the original eight items were used – three for cognitive irritation and four for emotional irritation. The items were rated on a 7-point Likert scale from 1 = *does not apply at all* to 7 = *is almost completely true*, an example item is "I am quickly annoyed" ($\alpha = .86$).

Control Variables. No theoretical relevant control variables were identified using the process model for selecting control variables by Bernerth and Aguinis (2016). Within their meta-analysis Kiker et al. (2019) found that the effects of servant leadership are moderated by followers' gender. It is likely that women and men differ in their perception of leadership as well as stress and further expect and prefer different leadership styles. Therefore, I include employees' gender as control variable into further analysis.

4.3.3. Analytical Approach

Data preparation, data cleaning and basic analysis for descriptive statistics were performed in IBM SPSS Statistics 27. CFA as well as SEM with latent variables for hypotheses-testing were computed with die R-package Lavaan (version 0.6.9; Rosseel, 2012). Since the sample size of this study is quite small for computing all variables within one model with SEM, I chose additional analysis by two hierarchical regression and mediation analyses – one including mindfulness and the other resilience – using the SPSS macro PROCESS.

4.4. Results

Table 4 shows means, standard deviations, and correlations between study variables. It is noteworthy that both, leaders' gender ($r = -.15$, $p = .03$) and employees' gender ($r = -.14$, $p = .04$) were negatively related to employees' stress. Furthermore, employees' gender and servant leadership were positively related ($r = .15$, $p = .03$). Servant leadership was also positively related to mindfulness ($r = .18$, $p = .008$) and resilience ($r = .19$, $p = .004$) and negatively to employees' stress ($r = -.19$, $p = .005$). Mindfulness was negatively related to employees' stress ($r = -.17$, $p = .01$) as well.

Table 4

Study 2: Descriptive Statistics and Correlations for Study Variables

Variable	*M*	*SD*	1	2	3	4	5	6
1. Gender (leader)[a]	-	-	-					
2. Gender (employee)[a]	-	-	.28**	-				
3. Mindfulness	4.17	0.81	-.06	.10	(.74)			
4. Resilience	5.51	0.73	.01	.04	.37**	(.83)		
5. SERL	3.81	0.74	.09	.15*	.18**	.19**	(.89)	
6. Employees' stress	2.92	1.27	-.15*	-.14*	-.17*	-.08	-.19**	(.86)

Notes. N = 213. Cronbachs α are indicated on the diagonal. SERL = servant leadership.
[a] 1 = male and 2 = female
* $p < .05$. ** $p < .01$.

Study variables indicate lack of normality and, therefore, I chose robust parameters for further analysis. The model-fit of the CFA is acceptable ($\chi^2 = 946.14$, *df* = 521, $p < .001$; CFI = .83; RMSEA = .07; SRMR = .08) as well as the fit of the mediation model ($\chi^2 = 985.79$, *df* = 554, $p < .001$; CFI = .82; RMSEA = .06; SRMR = .09). Results of the SEM which are illustrated in Table 5 show no significance for both hypotheses controlling for employees'

gender. Servant leadership does neither mediate the relationship between leaders' mindfulness and employees' perceived stress (β = -.02, *p* = .32, 95 %-CI [-.07; .02]) nor the relationship between leaders' resilience and employees' perceived stress (β = -.04, *p* = .39, 95 %-CI [-.13; .05]). Both hypotheses are therefore not supported.

Table 5

Study 2: Results of SEM Mediation Analysis

	β	*SE*	95% CI
Direct effects			
MF → SERL	.15†	0.08	[-0.004, 0.30]
RES → SERL	.26†	0.15	[-0.03, 0.55]
SERL → Stress	-.16	0.14	[-0.43, 0.12]
MF → Stress	-.28	0.17	[-0.62, 0.06]
RES → Stress	.10	0.21	[-0.31, 0.52]
Total effects			
MF → Stress	-.30†	0.17	[-0.64, 0.03]
RES → Stress	.06	0.21	[-0.34, 0.47]
Indirect effects			
MF → SERL → Stress	-.02	0.02	[-0.07, 0.02]
RES → SERL → Stress	-.04	0.05	[-0.13, 0.05]

Notes. MF = Mindfulness. SERL = Servant leadership. RES = Resilience.

†*p* < .10.

Further, these results show that both mindfulness (β = .15, *p* = .06) and resilience (β = .26, *p* = .08) were marginally positively related to servant leadership. Leader mindfulness was marginally negatively related to employees' perceived stress regarding to the total effect (β = -.30, *p* = .06). No other significant results could be found when all study variables were analyzed in one mediation model. However, additional analysis, where I tested two single hierarchical regression and mediation analyses for each predictor variable, are presented in Table 6 and Table 7.

Table 6

Study 2: Hierarchical Regression and Mediation Analysis of Leaders' Mindfulness and Employees' Stress

Step	Variable	Model 1			Model 2			Model 3		
		b	*SE*	β	*b*	*SE*	β	*b*	*SE*	β
1	Gender (EM)	-0.37*	0.17	-.14*	-0.33	0.17	-.13	-0.28	0.17	-.11
2	Mindfulness				-0.25*	0.11	-.16*	-0.21*	0.11	-.14*
3	SERL							-0.26*	0.12	-.15*
R^2		.02*			.05**			.07**		
ΔR^2		.02*			.03*			.02*		

Notes. N = 213. EM = employee. SERL = servant leadership. Completely standardized indirect effect: -.03, 95 %-CI: [-.06; -.003].
* $p < .05$. ** $p < .01$.

Table 6 presents the results for the hierarchical regression analysis for Hypothesis 1 that stated that servant leadership mediates the relationship between leader mindfulness and employees' perceived stress. Mindfulness was negatively related to employees' stress (β = -.16, $p = .02$) and this relationship was partial mediated by servant leadership (direct effect: β = -.14, $p = .04$; total effect: β = -.25, $p = .02$; indirect effect: β = -.03; 95 %-CI: [-.06; -.003]). Therefore, Hypothesis 1 was supported. Furthermore, employees' gender as control variable was negatively related to employees' stress (β = -.14, $p = .04$). This effect was not significant when mindfulness (β = -.13, $p = .06$) and further servant leadership (β = -.11, $p = .11$) were included in the hierarchical regression analysis.

Table 7

Study 2: Hierarchical Regression and Mediation Analysis of Leaders' Resilience and Employees' Stress

Step	Variable	Model 1			Model 2			Model 3		
		b	*SE*	β	*b*	*SE*	β	*b*	*SE*	β
1	Gender (EM)	-0.37*	0.17	-.14*	-0.36*	0.17	-.14*	-0.30	0.17	-.12
2	Resilience				-0.13	0.12	-.08	-0.08	0.12	-.04
3	SERL							-0.23*	0.12	-.17*
R^2		.02*			.03			.05*		
ΔR^2		.02*			.01			.02*		

Notes. N = 213. EM= employee. SERL = servant leadership. Completely standardized indirect effect: -.03, 95 %-CI: [-.08; -.002].
* $p < .05$. ** $p < .01$.

Table 7 presents the results of hierarchical regression and mediation analysis for the Hypothesis 2 that stated that servant leadership mediates the relationship between leader resilience and employees' stress. Leader resilience was not significantly related to employees' stress (β = -.08, p = .27) in but the mediation effect was significant (direct effect: β = -.04, p = .52; total effect: β = -.08, p = .27 indirect effect: β = -.03; 95 %-CI: [-.08; -.002]). Therefore, Hypothesis 2 can be supported. Furthermore, the negative relationship between employees' gender and their perceived stress (β = -.14, p = .04) was still significant when resilience was included (β = -.14, p = .04) but not when servant leadership was included (β = -.12, p = .09).

Summarized, testing the hypotheses within one model using SEM, both hypotheses were not supported. However, following additional analysis of two separated hierarchical regression and mediation analyses for each independent variable, both hypotheses can be supported.

4.5. Discussion

The aim of this study was to examine the relationship between leaders' mindfulness and resilience and employees' perceived stress. Furthermore, it was investigated whether servant leadership mediates the negative relationship between leaders' resources and employees' perceived stress. Analysis with SEM yield no significant results for both hypotheses. However, additional analyses show that servant leadership mediates the negative relationship between leaders' mindfulness and employees' perceived stress (Hypothesis 1) as well as the negative relationship between leaders' resilience and employees' perceived stress (Hypothesis 2), both hypotheses can be confirmed controlling for employees' gender. When servant leadership was included in the hierarchical analysis, gender had no longer an effect on employees' perceived stress.

The findings indicate that mindfulness and resilience represent important resources for leaders as they are negatively related to employees' stress through servant leadership. Therefore, the integrative framework by Good et al. (2016) can partly be confirmed – mindfulness and resilience are important for high-quality relationships between a leaders' and their followers as they have the resources to behave supportive towards their subordinates. Especially mindfulness and servant leadership are associated with lower perceived stress of employees. As previous research found positive relations between leader mindfulness and subordinates' well-being (Reb et al., 2014) and job satisfaction (Pinck & Sonnentag, 2018), I contribute to the field of organizational research by linking leaders' mindfulness and leaders' resilience to subordinates' perceived stress through servant leadership. Furthermore, the findings emphasize the importance of mindfulness in the workplace as it has also a direct negative effect on employees' stress. However, the direct effect of resilience on employees' stress was not significant which underlines the importance of the mediating effect of servant leadership.

4.5.1. Limitations and Future Research

Some limitations are present in this study that should be mentioned. First, as I had to eliminate 31 % of the data due to possible corruption, data quality and sample size can be

criticized. Like in the first study of this dissertation, participants were recruited by students which means the convenience sample is not representative and might be biased. Therefore, future research should make sure a valid strategy of data collection is used to receive a representative a sufficient sample size.

Second, Wolf et al. (2013) argue that at a certain number of latent variables, the sample size must be correspondingly big to accurately analyze data with SEM. This might be an explanation for the insignificant results. However, the results of the two hierarchical regressions and mediation analysis show support for the hypotheses. Future research should adapt the method of analysis to the sample size as well as make sure a sufficient sample size is available.

Third, common method bias (Podsakoff et al., 2003) might be relevant since a cross-sectional study design with a single measurement time was used. Therefore, this allows no conclusion regarding causal relationships between study variables. Future research should combine the use of questionnaires with other techniques such as experiments. As mindfulness and resilience seem important regarding servant leadership and employees' perceived stress, long-term effects of both resources should be investigated. Fourth, interventions, for example the MBSR program by Kabat-Zinn (2003), can be used to examine training effects regarding leadership behavior as well as employees' outcomes, and observe the changes over time. In addition to this, resilience might be difficult to measure through questionnaires. Accordingly, a self-reported capacity can be collected but how a person reacts to a stressful event or which situation he or she can overcome positively represents a complex process. Rutter (2007) argues that resilience cannot be observed as a psychological trait and suggests that future research should examine biological and neurophysiological aspects regarding the resilience process. Therefore, future studies should include the measure of biological and neurophysiological parameters (e.g., genes, blood pressure, or cortisol) in experimental and training studies to get more insight in the effects of resilience regarding leadership behavior and work-related outcomes.

4.5.2. Practical Implications

The study findings indicate some implications for practice. As mindfulness and resilience represent valuable resources for leaders, organizations should lay a focus on these resources. They could initiate programs to strengthen leaders' personal resources to enable them to overcome challenges and stressful events. The MBSR program (Kabat-Zinn, 1982, 2003) represents an effective intervention as it strengthens mindfulness and reduces stress (Chiesa & Serretti, 2009). Furthermore, mindfulness training could foster resilience (Joyce et al., 2018). Therefore, mindfulness practice reveals several positive effects which are relevant in the workplace. Additionally, both resources are related to servant leadership, which is associated with lower perceived stress of employees. Therefore, leaders should be trained to put servant leadership behavior into practice. Leadership training programs could combine mindfulness practice with leadership coaching.

4.5.3. Conclusion

Overall, this study contributes to the research field of organizational science in the following ways. It shows that both, mindfulness and resilience, represent important personal resources for leaders as they are both associated with higher servant leadership which mediated the stress-reducing effect of both resources for employees. With these findings, a part of the integrative framework by Good et al. (2016) can be confirmed as mindfulness and resilience are relevant for high-quality relationships between leaders and followers. Future research should continue the investigation of these personal resources and extend it using longitudinal studies as well as experiments and training-studies.

5. Study 3: Neurophysiological Correlates of Resilience and Constructive Leadership Behavior

5.1. Introduction

Individuals need resources to overcome stressful events in everyday life (Hobfoll, 2002). Especially in the workplace, stress resistance is an important ability. Resilience describes individual differences in the reaction to stressful events and how individuals emerge from the situation (Rutter, 1985, 1987). Rutter (2007) stated that resilience "is not and cannot be, an observed trait" (p. 205). He argues that individuals may be resilient regarding some challenging situations but not others which differs from other psychological traits which are mostly stable across situations. He further points out that research regarding resilience needs to include physiological aspects and measurements in addition to the previous psychological approaches. Additionally, other researchers suggest that biological and physiological attributes should be considered to gain deeper understanding of psychological characteristics and the leadership process (Antonakis, 2011; Judge et al., 2009).

As An et al. (2020) proposed, the heart rate variability (HRV) could be used as a physiological index for resilience. HRV describes "the change in the time intervals between adjacent heartbeats" (McCraty & Shaffer, 2015, p. 46). The HRV represents an important aspect in the body's regulatory processes, especially during stressful events (McCraty & Shaffer, 2015; Shaffer & Ginsberg, 2017). As the HRV changes during stressful situations (Kim et al., 2018), the resting HRV as well as the strength of the oscillations during stressful situation could be an indicator for resilience.

Accordingly, the three-stage stress response model (Selye, 1984, as cited in Kim et al., 2018) explains the processes of physical reactions to stress regarding the importance of physiological resources. This process shows resemblance to the COR theory which explains the psychological process of stress emergence focusing more on psychological resources (Hobfoll, 1989; Hobfoll et al., 2018). Combining the physiological and the psychological

approach, I assume that HRV is an indicator for the psychological resource of resilience which individuals need to overcome stressful events. A resilient person would have a higher HRV. Additionally, the HRV of resilient individuals would not react sensitively to stressors as the HRV of persons who are not very resilient.

To extend previous research (e. g., An et al., 2020), this study does not only focus on the relation of HRV and resilience but further includes different aspects of leadership behavior. In the workplace, leaders need to handle stressful challenges positively to be successful and to show constructive leader behavior towards their subordinates. Stressed leaders are more likely to show negative behavior such as destructive leadership (Tepper et al., 2017). Following COR theory, I argue that more resilient individuals – indicated by their resting HRV – show more constructive leadership behavior such as transactional, transformational, and servant leadership. The assumed relations between study variables are illustrated in Figure 6.

This study contributes to the research fields of resilience and leadership in four different ways. First, HRV is used as new measure for resilience since Rutter (2007) argued that it is difficult to measure resilient via self-reports. Second, by including HRV, I aim to explore the role of physiological resources to extend the understanding of the link between resources and reactions to stress. Third, by measuring HRV during different tasks in an assessment center, I seek to bring the research of physiological data in a more practice-oriented organizational context and examine resilience during different work-related tasks. Finally, I combine psychological and physiological approaches and investigate the relationship of HRV – as an indicator for resilience – and constructive leadership behavior to widen the understanding of the link between resources and leadership behavior.

88

Figure 6

Research Model for Study 3
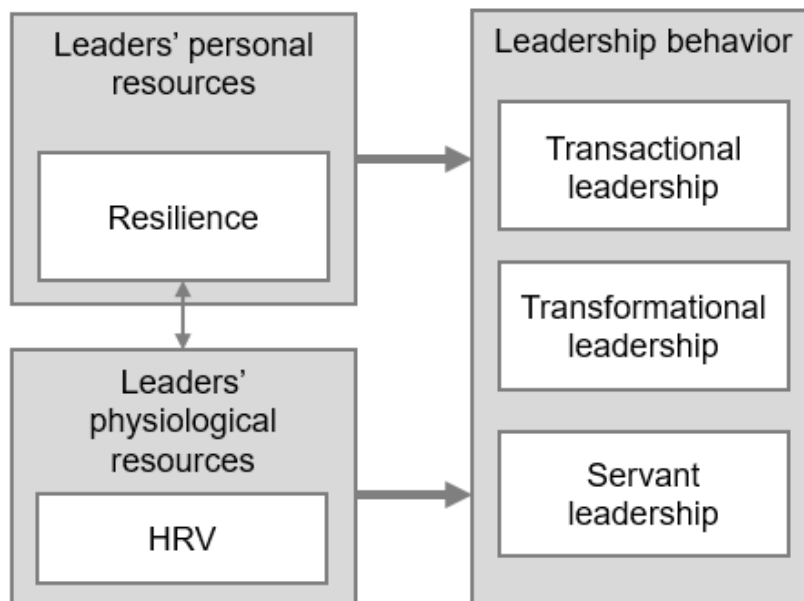
5.2. Theory and Hypotheses

The heart rate is defined as the number of heartbeats per minute and the HRV describes "the change in the time intervals between adjacent heartbeats" (McCraty & Shaffer, 2015, p. 46). The "HRV indexes neurocardiac function and is generated by heart-brain interactions and dynamic non-linear autonomic nervous system (ANS) processes" (Shaffer & Ginsberg, 2017, p. 1). Put more simply, HRV plays an important part in regulatory processes regarding internal and external challenges. A healthy heartbeat is not monotonous but variable, meaning that time intervals between heartbeats are not equal. HRV enables the human body to cope flexibly with uncertainties or challenging events (Shaffer & Ginsberg, 2017). McCraty and Shaffer (2015) assume that an ideal level of HRV is associated with self-regulation, adaption, and resilience. Further, higher HRV is related to attention and emotional processing whereas extremely high HRV is associated with insufficient physiological functioning and inefficient energy usage. Very low HRV is associated with (chronic) stress, (age-related) exhaustion of the system, and insufficient use of self-regulatory mechanisms.

The heart rate and HRV are linked to the parasympathetic nervous system (PNS) and sympathetic nervous system (SNS). The PNS is responsible for regeneration and the increase of energy resources. Additionally, it slows the heart rate. The SNS provides increased readiness to perform which cause depletion of energy resources. Additionally, it quickens the heart rate (McCraty & Shaffer, 2015). McCraty and Shaffer (2015) explain that the PNS activity dominates when the heart rate is below 100 beats per minute (bpm), for example, when someone is at rest, sleeps or during normal activities. When the heart rate is above 100 bpm the SNS becomes more active. When the heart rate increases, the time between each heartbeat becomes smaller and this means that there is less time for variability. Thus, HRV is typically lower. When the heart rate is lower, the time between heartbeats is higher and normally, HRV increases.

According to the three-stage stress response model (Selye, 1984, as cited in Kim et al., 2018), the human body reacts to stress in three different steps. In the first stage, the body reacts to an occurring stressor with the so-called fight or flight reaction. This means that the body decides to either face the stressor (fight) or escape the stressor (flight). In this stage, the SNS will be activated. In the second stage, the body uses its resources to overcome or adapt to the stressor. Meanwhile, the PNS tries to regulate physiological states to a normal level. If the resistance or adaption in the second stage fails, the third stage will be reached. In this stage, the resistance against the stressor continues to exhaust the body's resources and this may cause illness in the long term. This model shows how important physiological resources are in the stress process. The importance of, among other things, personal resources, is presented by the COR theory (Hobfoll, 1989; Hobfoll et al., 2018). Individuals seek to keep resources that can prevent the emergence of stress. If someone lacks resources required for dealing with a stressor, he or she is more vulnerable to lose other resources and stress occurs.

Consequently, resilience is a personal resource which is defined as the ability to deal with stressful events positively (Rutter, 1985, 1987). Furthermore, individuals differ in resilience; some people are more resilient than others and it is easier for them to deal with

stressors. Resilience also varies within-person which means that resilience of an individual varies depending on the different stressors someone has to face (Wagnild & Young, 1993). This means that a person is not necessarily resilient in every aspect of life.

Combining the three-stage stress response model and the COR theory, I argue that HRV could be an indicator for resilience in the way that more resilient individuals have a higher HRV. As Rutter (2007) argues, it is almost impossible to observe resilience, especially by using self-reports and surveys, and resilience only occurs in stressful situations. According to COR theory, resilience can be seen as a personal resource that can be accessed when a stressor occurs. It is possible that even at a resting state, HRV is an indicator for resilience. Individuals with higher HRV have a higher capacity do deal with stressful events because the body can better regulate itself. Furthermore, An et al. (2020) found approximately significant positive correlations between resilience and HRV in the resting state.

Hypothesis 1: Resting state HRV is positively related to resilience.

Resilient individuals are able to handle stressful events well and can overcome stress-ors with a good outcome, but they do not try to avoid stress (Rutter, 1985, 1987). Tugade and Fredrickson (2004) argue that the psychological capacity to bounce back from certain stress-ors might be reflected in the physiological reaction. Referring to the three-stage stress re-sponse model (Selye, 1984, as cited in Kim et al., 2018), when a stressful situation is present, the body reacts to it by, for example, accelerating the heart rate which possibly result in a decrease in HRV. As mentioned earlier, the body of individuals with higher HRV have a greater capacity to regulate its physiological reactions and could therefore be more resilient against a stressor. Resilient individuals have both more physiological and psychological resources to overcome a stressful situation positively as resources can help to buffer or prevent stress (Hobfoll, 1989; Hobfoll et al., 2018). The body of resilient individuals may not react as strongly as it does in less resilient individuals as the heart rate would not increase as much as it does in less resilient persons and the HRV would not decrease as much for resilient persons.

Hypothesis 2: Resilience is negatively related to the difference between HRV in the resting state and HRV during a stressful situation.

Beyond prevention of stress, individual resources help to gain other resources (Hobfoll, 1989; Hobfoll et al., 2018). A resilient person could therefore use resilience as a resource to restore or gain other resources that could be useful in stressful situations. When a stressor occurs, the PNS tries to regulate physiological states back to a normal state which includes slowing the heart rate. As stated above, I assume that resilient individuals have a higher HRV which would decrease less strongly during stressful events. Therefore, it should take less time for their body to down-regulate the stress-related physiological arousal to a normal level because the oscillation between resting HRV and HRV under stress is flatter. Furthermore, even if the HRV decreases during a stressful challenge, resilient individuals have more resources to regulate their physiological states and return faster to the resting state (Tugade & Fredrickson, 2004). Tugade and Fredrickson (2004) found that self-reported resilience is associated with a quicker return to resting heart rate after a stressful arousal.

Hypothesis 3: Resilience is negatively related to the difference between resting state HRV and HRV after a stressful situation a) in a sitting position and b) during a mindfulness exercise.

According to the polyvagal theory (Porges, 1995, 2007), the regulating process of the human body does not only help to overcome stressful or threatening events but also supports social behavior. Porges (1995) argues that humans possess a vagal brake that slows the heart rate in resting and safe situations. When a stressor occurs, the brake is removed, and the body reacts to the stressor. This regulating process represents an important basis for social interactions because the dynamic of the vagal complex is associated with attention, emotion, and communication which are needed for social interactions (Porges, 1995).

As explained earlier, I assume that HRV could be an indicator for resilience as the body of individuals with a higher HRV has a greater capacity to regulate physiological functions and responses. Following polyvagal theory, individuals with higher HRV might show more social

behavior. Transferring this approach to the workplace and leadership behavior, I argued earlier in this dissertation that more resilient leaders show more positive leader behavior in the form of servant leadership. As leader behavior represents a form of social behavior, I assume that HRV is related to leadership. COR theory states that individuals with more personal resources can gain other resources which are, in this case, necessary for successful interactions between leader and follower. As individuals with higher HRV may be more resilient, they may have the physiological and psychological resources which are required for social leadership behavior. In this study, I focus on servant leadership as well as transformational and transactional leadership.

Servant leadership is a highly social leadership style as the servant leader focus on her subordinates. It is characterized by empowerment, support, and empathy (Russell & Stone, 2002; Spears, 2010; van Dierendonck, 2011). The interests of subordinates and their development have the highest priority and the servant leader sets the goal to support her subordinates in every aspect. As it represents a follower-oriented behavior with a strong social core, I assume that individuals with higher HRV can regulate their behavior, according to the polyvagal theory (Porges, 1995, 2007), in that way that they show servant leadership even in a conflict situation or argument with their subordinates. They can regulate their body to stay calm and can still focus on the employees' needs even if a situation gets tense. Therefore, I assume that HRV – as an index of resilience – is positively related to servant leadership.

Hypothesis 4: Resting HRV is positively related to servant leadership.

Transformational leadership includes leadership behaviors that are characterized by motivation and inspiration (Bass, 1985). A transformational leader serves as a role model, communicates a vivid vision, and stimulates her subordinates to develop innovative thinking. She further focuses on the individual needs of her subordinates as well as on the goals of the team. Thereby, she transforms self-interests into interests in organizational goals and values and motivates employees to show extra effort at work. Even though transformational leadership shows some similarities to servant leadership, there are important differences. While

servant leaders are encouraging and supportive in every aspect of their subordinates' individual interests, transformational leaders always refer to organizational goals. Put briefly, a servant leader puts the subordinates first while a transformational leader acts in the interest of the organization (Bass, 2000; Farling et al., 1999; Stone et al., 2004). Therefore, the social aspect seems to be stronger in servant leadership although transformational leadership also includes an individual focus. Individual support is a core element of both leadership behaviors, but the motives are different.

Therefore, I hypothesize that HRV and transformational leadership are also positively related. During a conflict with an employee, a leader with higher HRV has a higher capacity to regulate physical reactions and behavior. Even if an employee puts his own interests first, the leader will not get angry or raise her voice but focus on bringing the interests of the employee and the organization together.

Hypothesis 5: Resting HRV is positively related to transformational leadership.

Transactional leadership is based on exchanges between leader and follower. Leaders communicate their expectations and clarify goals and rewards when a goal is reached (or maybe a sort of punishment if not). The subordinates complete their tasks and receive the promised reward (Bass, 1985; Judge & Piccolo, 2004). In comparison to transformational and servant leadership, transactional leadership represents a less active behavior with less strong relationships between leaders and followers. As leaders with higher HRV can better regulate their physiological responses, they cannot only regulate their negative emotions (e.g., rage) but also other emotions. This could help to keep a distance towards subordinates and not to become too attached to employees' problems or feelings. Becoming too involved in other people's concerns can be stressful. For example, Eva et al. (2019) assume that servant leaders have high demands because they spend much time and energy on their followers what can be exhausting an may result in stress. However, a higher HRV may protect leaders from strong physiological stress reactions. As a result, these leaders could better focus on factual aspects (e.g., goals and expectations) during a conversation or other interaction with employees.

Hypothesis 6: Resting HRV is positively related to transactional leadership.

5.3. Method

5.3.1. Procedure

Both, this study, and the data used in this study were part of a larger research project which is concerned with neurophysiological processes in relationship to personal characteristics and leadership behavior and takes place at the lab at the TU Dortmund University under the direction of professor Rowold. An institutional ethical review board approved the research project. The data of this study was collected during an assessment center at the Department of Human Resource Development and Change Management of the TU Dortmund University. The aim of the assessment center was to simulate work-related tasks as well as exercises implemented in job application processes in organizations. Furthermore, it was tested how participants behave in a conflict situation playing the role of either the leader or the follower. Besides the experience of an assessment center and the preparation for job application processes, participants received the results of free IQ-test free of charge as well as a personality profile.

The participants were students from different universities recruited by students who received extra credit for their current seminar at our department. Students who were attending a seminar at our department at that time were not allowed to participate in the assessment center to avoid ethical concerns. Moreover, students who took prescription medication except for contraceptives or had a mental illness were not permitted to participate.

The data was collected as part of the assessment center at different measurement points. First, the participants were asked to fill in an online survey at home They were asked to fill in a self-report on their resilience as well as demographic information. They were also informed about the conditions for participation (e.g., exclusion of allergies against plaster adhesives) and that neurophysiological data are collected during the assessment center. They were asked to indicate that they had read and understood all information. Second, participants

were divided into groups of two to participate in the assessment center[3] which my colleague Jana Fürchtenicht and I have developed and implemented. The participants were randomly assigned to either the role of the leader or the role of the employee. The role was communicated later during the assessment center. Due to a strict timeline, the employees arrived half an hour later to the assessment center than the leaders. At the beginning, the participants with the role of the leader were asked to sign a written consent form regarding the measurement of neurophysiological data, video and image recording, as well as the voluntariness of their participation which they could end at any time. Then, after the sensors for electroencephalography (EEG), electromyography (EMG) and ECG were attached to the torso of the participants (the participants attached the sensors by themselves aided by a visual manual), a five-minute baseline measurement was performed in a sitting position. Next, the participants with the role of the employee arrived. They received the same instructions and were headed to another room to work on several tasks (e.g., a creativity test).

In the meantime, an adapted form of the *Trierer Social Stress Test (TSST)* by Kirschbaum et al. (1993) was performed. The leaders were given instructions for preparing a self-presentation. After a preparation time of five minutes (that was 10 minutes in the original TSST), the leaders had to give a self-presentation referring to a self-chosen position and organization. In five minutes, they had to convince a fictious recruiter that they are the best candidate for the position. They were not allowed to use any notes and were informed that video and tone recordings were taken to analyze their presentation. During this presentation physiological data were measured. The participants were seated face to face with an interviewer (in the original TSST three interviewers perform) whom they had not seen before during the assessment center. The interviewer asked them to begin with their presentation. During the presentation, the interviewer did not show any reactions to the presentation such as nodding or smiling. If the participants finished their presentation in less than five minutes, they were asked to continue. If they stopped talking a second time before the time was over, the

---

[3] I only describe the parts and aspects of the procedure which are relevant for this study.

interviewer was silent for 20 seconds before asking questions about the subject of study (e.g., which lectures they heard in the last semester). However, in the original TSST, the participants were asked to subtract the number 13 from 1022 as fast as possible.

After five minutes, the participants were thanked for their presentation and the interviewer left the room. Subsequently, a five-minute measurement of physiological data was taken while the participants remained seated.

The next task for the leaders was a mindfulness exercise. Based on the yoga exercise *mountain pose,* the participants were asked to stand up and to follow verbal instructions, for example, breathing deeply, standing on both feet, keeping their head straight, or concentrate on different body parts. During the five-minute exercise, physiological data were measured. Afterwards, again, a five-minute measurement of physiological data was taken in a sitting position.

Now, the participants were informed about their role of leader or employee and were given 15 minutes time to prepare for a 10-minute role play. Both groups of participants were given different information regarding their role and were allowed to take notes. Each participant was seated in a room alone to prepare their part. The setting of the role play was a team-leader who would like to talk with a long-time employee about different aspects such as performance and absence due to illness. The instructions were developed with the intention to create potential for conflicts. For example, the employee intends to ask about a salary raise while the leader has the information that the company needs to save budget. The participants were asked to invent missing information and to react actively to the dialogue partner to form a lively and authentic role play. Afterwards, the employee was asked to rate the leader's transactional, transformational, and servant leadership behavior.

At the end of the assessment center, the participants were given verbal feedback about their performance and a debriefing, especially regarding the TSST. They were informed that no recordings were taken, and that the behavior of the interviewer was intended to stress the

participant during the presentation. Furthermore, the participants received a certificate of attendance as well as the results of their IQ-test and personality profile.

Overall, 35 assessment centers had been planned from October to December 2019 before the research project had to be paused due to the Covid-19 pandemic. Of these scheduled assignments, eight were cancelled by either the participants because of sickness, or the loss of interest, or by us because of problems with the central heating in the lab. Another four measurements did not take place because one or both participants did not arrive, or arrived too late, without cancelling, or due to technical malfunctioning.

5.3.2. Sample

The final sample of this study consists of $N = 18$ dyads who filled in the relevant surveys and participated in the assessment center with its neurophysiological measures. Incomplete or deficient data were eliminated. Half of the leaders were female, and the leaders were between 20 and 28 years old ($M = 23.22$, $SD = 1.98$). The participants were asked to measure their heart rate during the survey at home according to instructions. The self-measured heart rate of the leaders ranged from 52 to 87 beats per minute ($M = 64.25$, $SD = 8.86$), 2 participants did not report their heat rate. Participants were also asked about their blood pressure. While 10 leaders reported to have a normal blood pressure, 2 reported low or high blood pressure, respectively, and 4 did not know their blood pressure.

Only one leader reported to be a smoker while 11 (61 %) reported to be non-smokers and the remaining 6 (33 %) reported to smoke occasionally, for example, at parties. Furthermore, 11 (61 %) leaders reported that they drank alcohol, 5 (27 %) reported that they only drank alcohol very rarely, and 2 (11 %) did not drink any alcohol.

Of the followers, 8 were female and 9 were male, with an age range from 20 to 28 years ($M = 22.47$, $SD = 2.18$) while one did not report either their gender or their age. The self-measured heart rate ranged from 42 to 110 beats per minute ($M = 69.71$, $SD = 16.10$), one follower did not report the heart rate. While 9 followers reported to have normal blood pressure,

2 reported high and one low blood pressure, 5 did not know their blood pressure and one did not answer the question.

Four followers (22 %) were smokers, 11 (61 %) were non-smokers, 2 (11 %) reported to only smoke occasionally and one did not answer the question. Moreover, 12 followers (67 %) reported that they drank alcohol, 4 (22 %) reported that they drank alcohol only very rarely and one did not drink any alcohol while one person did not give information on their alcohol consumption.

5.3.3. Self-Report Measures

Resilience. Resilience was measured with the 10-item Connor-Davidson Resilience Scale (CD-RISC, Connor & Davidson, 2003) in its German version (Sarubin et al., 2015). The original scale is rated on a 5-point Likert scale while I chose a 7-point Likert scale from 1 = *strongly disagree* to 7 = *strongly agree* to reduce monotonous response behavior with different response options during the survey. An example item is "I am able to adapt to change" ($\alpha = .61$).

Servant Leadership. Ehrhart (2004) developed a measurement for servant leadership; I used the German version translated by Rivkin et al. (2014). In this study, only 6 of the 14 items were used. The items of the dimensions *empowerment*, *help to grow and succeed*, and *putting subordinates first* were included, used as an overall scale for servant leadership. I excluded the other three dimensions which could not be shown during the role play. The items were rated on a 5-point Likert scale from 1 = *strongly disagree* to 5 = *strongly agree*. An example item is "My department manager's decisions are influenced by department employees' input." ($\alpha = .56$).

Transactional Leadership. Transactional leadership was measured with the preliminary version of the second edition of the Integrative Leadership Survey, a German questionnaire developed by Rowold et al. (in press). Five of the 10 items for transactional leadership were used, namely the items of the dimension *contingent reward* which were measured on a 5-point

Likert scale from 1 = *strongly disagree* to 5 = *strongly agree*. An example item is "The leader I evaluate sets goals and tasks together with me." (α = .61).

Transformational Leadership. As for transactional leadership, the Integrative Leadership Survey (Rowold et al., in press) was used to measure transformational leadership. It contains 28 items, four or five items for each of the six dimensions of transformational leadership. An example item is "My supervisor explains why best performance is required.", rated on a 5-point Likert scale from 1 = *strongly disagree* to 5 = *strongly agree* (α = .88).

5.3.4. Heart Rate Variability Measures

An ECG was used to measure the heart rate before, during, or after an exercise. Equipment from g.tec – a biosignal amplifier g.USBamp combined with a g.GAMMAbox interface box – was used for recording cardiac activity and other physiological data which are not relevant for this study. A set of two disposable electrodes were placed on the chest at heart level, 2 cm apart left and right from the spine to record the heart rate. A bipolar recording was used, and a ground electrode was placed on the inside of one wrist of the participants. The participants were asked to place the ground electrode on the non-dominant side.

MATLAB was used to gather the data with an interface provided by g.tec with a sampling rate of 4800 Hz. MATLAB (version 2020b) was also used to compute HRV measures. First, the first five seconds and the last second of each recording were eliminated to minimize artifacts of the recordings. Second, the sampling rate was downsampled from 4800 Hz to 600 Hz which is sufficient for calculating the HRV parameters precisely (Berntson et al., 1997). Third, linear trends were eliminated from the data.

The *Pan Tompkins algorithm* (Pan & Tompkins, 1985) which was implemented in MATLAB by Sedghamiz (2014) was used to detect the QRS complexes. An algorithm of the HRV Analysis Software (HRVAS) by Ramshur (2010) was used to identify irregular inter-beat intervals. Visualization of the ECG waves showed that the algorithm did not detect all irregularities or artifacts. Therefore, I eliminated the data of 4 participants with irregular data. For the

data analysis, I used the two HRV measures RMSSD and HF power, which were calculated with the HRVAS. For the calculation of the HF power a *fast Fourier transformation* was used (see Welch, 1967).

5.3.5. Analytical Approach

For the statistical analysis I used IBM SPSS Statistics (Version 27). After I transformed the RMSSD and the HF power to the natural logarithmic scale due to its greater reliability (see Plews et al., 2013), I used bivariate Pearson correlations to test linear relationships. For the test of the second and third hypotheses, I computed the three differences between both RMSSD and HF power at a) the TSST (t_2), b) post-TSST (t_3), as well as c) the mindfulness exercise (t_4), and the resting state (t_1).

5.4. Results

Table 8 shows the intercorrelations of the demographic and study variables as well as several physiological parameters at the resting state. Resilience is positively correlated to the gender of the leaders ($r = .51$, $p = .03$) which indicates that male participants perceive themselves as more resilient than female participants. The self-measured heart rate that the participants measured at home before the assessment center is positively related to the measured heart rate at resting state at the beginning of the assessment center ($r = .52$, $p = .04$) and positively related to resilience ($r = .60$, $p = .01$). Furthermore, the heart rate at the resting state and RMSSD at the resting state are negatively correlated ($r = -.52$, $p = .03$). RMSSD and HF power at the resting state are strongly correlated to each other ($r = .98$, $p < .001$). Finally, transformational leadership is positively related to servant leadership ($r = .64$, $p = .007$) whereas all other variables show no significant correlations.

Results for the first three hypotheses can be found in Table 9. Hypothesis 1 stated that resilience is positively related to HRV in the resting state, the results show that resilience is neither significantly correlated to the HF power ($r = -.01$, $p = .97$) nor RMSSD ($r = -.08$, $p = .76$) at the resting state. Hypothesis 2 stated that resilience is negatively related to the change in

HRV from resting state to a stressful situation, here represented by the TSST. Results show that resilience is neither related to the change in the HF power ($r = -.22$, $p = .37$) nor the change in RMSSD ($r = -.22$, $p = .38$). Hypothesis 3 stated that resilience is negatively related to the change in HRV from resting state to a) HRV after the stressful event and b) HRV during a mindfulness exercise. For both assumptions no significant correlations could be found. Resilience is neither related to the change of the HF power ($r = -.24$, $p = .34$) nor RMSSD ($r = -.19$, $p = .44$) after the stressful event. Likewise, it is the same for the mindfulness exercise (for HF power: $r = -.29$, $p = .24$; for RMSSD: $r = .-22$, $p = .39$). Therefore, the first three hypotheses cannot be supported.

Results for hypotheses 4 to 6 can be found in Table 8. Hypothesis 4 stated that HRV in the resting state is positively related to servant leadership. Neither the HF power ($r = -.13$, $p = .63$) nor RMSSD ($r = -.16$, $p = .55$) at the resting state are significantly related to servant leadership. Hypothesis 5 stated that HRV at the resting state is positively related to transformational leadership. Again, no significant relationship can be found for HF power ($r = -.14$, $p = .60$) and RMSSD ($r = -.24$, $p = .38$). Finally, Hypothesis 6 stated a positive relationship between HRV at the resting state and transactional leadership. Neither HF power ($r = -.18$, $p = .50$) nor RMSSD ($r = -.29$, $p = .28$) are significantly related to transactional leadership. Therefore, the last three hypotheses cannot be supported either.

Table 8

Study 3: Descriptive Statistics and Correlations for Demographic and Study Variables at Resting State

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Age (leader)	23.22	1.99	-									
2. Gender (leader) [a]	-	-	.23	-								
3. Resting Pulse at Home[b]	64.25	8.86	.16	.02	-							
4. Resting Heart Rate[c]	71.06	8.65	.16	-.08	.52*	-						
5. Resilience	5.09	0.70	.26	.51*	.60*	.10	(.61)					
6. Transactional Leadership	3.25	0.79	.05	.20	.14	.17	.19	(.61)				
7. Transformational Leadership	3.31	0.54	-.42	.27	-.16	.29	.09	.33	(.88)			
8. Servant Leadership	3.43	0.55	-.34	.41	-.07	-.03	.26	-.12	.64**	(.56)		
9. Resting ln(HF)	6.45	1.21	-.39	-.30	-.07	-.41	-.01	-.18	-.14	-.13	-	
10. Resting ln(RMSSD)	3.68	0.58	-.35	-.27	-.19	-.52*	-.08	-.29	-.24	-.16	.98**	-

Notes. N = 18. Cronbachs α is indicated on the diagonal.

[a] 1 = female and 2 = male. [b] Measured by participants before the assessment center. [c] Measured during the assessment center.

* $p < .05$. ** $p < .01$.

Table 9

Study 3: Correlations between Resilience and HRV

	Resilience		Resilience
Resting ln(HF)	-.01	Resting ln(RMSSD)	-.08
$\Delta\ln(HF)t_2$ to t_1	-.22	$\Delta\ln(RMSSD)t_2$ to t_1	-.22
$\Delta\ln(HF)t_3$ to t_1	-.24	$\Delta\ln(RMSSD)t_3$ to t_1	-.19
$\Delta\ln(HF)t_4$ to t_1	-.29	$\Delta\ln(RMSSD)t_4$ to t_1	-.22

Note. All *p*-values are bigger than .10.

5.5. Discussion

The aim of this study was to investigate the relationship between resilience and HRV in a work-related context as well as the relationship of HRV to constructive leadership behavior. Furthermore, the body's reaction to stress has been examined during a work-related challenge to focus on a practical view within the research field of organizational neuroscience. Results show that none of the hypotheses can be supported, as the two measures of HRV are neither related to resilience nor to transactional, transformational, or servant leadership. However, the findings show moderate correlations between resilience and the difference between HF power during the mindfulness exercise and the resting measurement (Hypothesis 3b). This means that the participants who rated themselves as more resilient recover faster to the baseline HRV after a stressful event during a mindful exercise. I assume that these correlations show no significance due to the small sample size.

However, statistical analysis reveals additional results which are not part of the hypotheses. First, the change in HRV from resting state to the measurement after the stressful event is significantly negatively related to both transformational (for HF power: $r = -.59$, $p = .02$; for RMSSD: $r = .-62$, $p = .01$) and servant leadership (for HF power: $r = -.60$, $p = .01$; for RMSSD:

r = .-69, *p* = .003). This means, the smaller the differences between the resting HRV and the HRV during the post-TSST measurement, the more the participants are perceived to be transformational or servant leaders during the role play. It can be assumed that these relationships illustrate that the participants who recover faster from the TSST – the HRV returns faster to baseline level after the stressful event – show more transformational and servant leadership. Therefore, future studies should focus on the time slot directly after the TSST. Previous studies on the TSST found that the heart rate reacts very fast to the stressor as it increases fast during the TSST and decreases fast after the TSST (Hellhammer & Schubert, 2012; Kirschbaum et al., 1993). It is possible that the reaction of the HRV is fast as well. Furthermore, these findings indicate that the absolute oscillation of the HRV might be not as relevant as its changes regarding stressful events. This assumption would also support the polyvagal theory (Porges, 1995, 2007) – applied to leadership behavior – which stated that social behavior is predicted by physiological functioning. Consequently, a well-regulated system would allow more social behavior such as transformational and servant leadership.

Contrary to these findings, the HRV measures during the measurement after the TSST are significantly negatively related to both transformational (for HF power: *r* = -.50, *p* = .047; for RMSSD: *r* = .-57, *p* = .02) and servant leadership (for HF power: *r* = -.50, *p* = .048; for RMSSD: *r* = .-54, *p* = .03). This means that a lower HRV (in a sitting position after a stressful event) is related to more perceived constructive leadership behavior. This is surprising because the opposite would be assumed as higher HRV is associated with better regulating capacity as already argued. The fact that only the parameters calculated in this session are related to leadership behavior and not for any other recording makes it difficult to draw any conclusion from it.

Furthermore, the heart rate during the TSST is significantly positively related to perceived transformational leadership (*r* = .50, *p* = .05) which is also a surprising result as higher heart rate reflects a physical reaction to stress or other stimuli and a higher heart rate is related to a lower HRV which is unrelated to leadership at this recording. This raises the question if

the heart rate quickened during the TSST while the HRV did not change or not strong enough to be significant. Hellhammer and Schubert (2012) and Kirschbaum et al. (1993) already detected that the heart rate rises during the TSST. Here, a higher heart rate during this stressful situation is associated with more perceived transformational leadership, meaning that participants who show a greater reaction to the stressful situation are perceived as more transformational leaders. This is surprising and should be further examined by future research.

An et al. (2020) considered HRV as an index for resilience as well but also only slightly approximately significant correlations between resilience and HRV in the resting state (for HF/LF power: $r = -.28$, $p = .20$). They further examined related variables they declare as factors of resilience and found positive correlations between HRV and emotion regulation as well as adaptive engagement. As I could not find any recent studies which investigated the relationship between physiological parameters and leadership behavior, no consistent conclusion can be drawn by the finding of this study, therefore further research might be needed.

5.5.1. Limitations and Future Research

There are some limitations of this study that should be discussed. As already mentioned in the method section, the algorithm which should detect irregular heartbeats did not detect all measurement artifacts. Additionally, I made a visual inspection of recordings with conspicuous data to detect irregular heartbeats. For example, for one participant a resting heart rate of 134 bpm was calculated whereas a regular resting heart rate would be between 60 and 100 bpm. Therefore, future research should consult an expert regarding visual inspection of ECG recordings to guarantee accurate data processing.

Furthermore, the sample size of this study should be improved. Even though studies including experiments of lab-based data are often quite small, a sample size of 18 participants is still small. To give an example, An et al. (2020) worked with a sample of 24 participants and could only find small to no effects between resilience and HRV. Schönbrodt and Perugini

(2013) found that the point of stability for correlations with calculated effect sizes around $r = .25$ is a sample size of $N = 161$. Therefore, future studies should increase the sample size.

The sample in this study comprised students with an age ranging from 20 to 28 years which could be problematic due to their lack of work or leadership experience. The participants only played the role of a leader or employee but did not have a similar professional position. This further means that the two participants of each assessment center did not know each other but had to pretend to be leader and follower which does not reflect a realistic leader-follower relationship. Therefore, future research should perform the assessment center with real leader-follower dyads; this is already planned for the current larger research project.

Additionally, the proceedings of the assessment center itself could be problematic. As mentioned earlier, some technical problems occurred during some measurements, moreover, external aspects can influence the measurements. Noises from outside may distract the participants and may cause undesirable movements of participants. Additionally, some persons find it more difficult to sit still during a five-minute measurement than others which could further cause movement artifacts in the recordings. Personal factors of participants such as sleep quality or recent meals can further influence measurements. One participant admitted that she did not eat anything in the morning before the assessment center that started at 9:15 o'clock. This may have affected physiological functioning. Furthermore, the heart rate that the participants measured at home was lower than the heart rate during the resting state measurement at the beginning of the assessment center. This could indicate that the assessment center is perceived as stressful, or participants get excited about the forthcoming events and uncertainties. Therefore, I recommend a resting phase when the participants arrive before the first recording starts. Moreover, the placing of the electrodes had not been visually controlled by the experimenters to protect the participants' privacy and an inaccurate placement may have an influence on the recorded data. These aspects show how sensible neurophysiological measurements are and future research should improve the proceedings.

Another aspect that should be mentioned concerns the use of surveys. First, resilience was rated in a self-report which can lead to biased data because participants might rate themselves more resilient than they are (Podsakoff et al., 2003). Furthermore, leadership behavior was rated based only on a ten-minute role play between leader and follower. It is unlikely that all aspects of each leadership style can be shown in such a short time. Future research could analyze the facets of each leadership behavior for a more detailed perspective. Other leadership behaviors such as destructive leadership represent an interesting research aspect, as well as perceived stress is a predictor for destructive behavior (Tepper et al., 2017). Different versions of a role play can be tested, for example, with an actor playing the role of the employee, trying to provoke the leader. Furthermore, additional exercises can be developed to create stressful events for the leader, for example, working under time pressure or completing a task while getting interrupted frequently. If real leader-follower dyads participate in the assessment center, and leadership behavior can be rated beyond the assessment center.

As it is already planned by the research group of the larger research project this study is a part of, different personal characteristics such as the big five or resources such as mindfulness which are already found to be related to leadership behavior (Bono & Judge, 2004; Lange et al., 2018; Pinck & Sonnentag, 2018) should be included in future lab studies to receive a more comprehensive picture of the role of neurophysiological processes in the context of leadership emergence.

5.5.2. Conclusion

Even though none of the assumed hypotheses could be supported, this study revealed some interesting methodological implications for future research within organizational neuroscience. As one of the first studies examining physiological processes in the work-related context, it can be seen as a starting point for future research and emphasizes the need for further investigation.

6. Overall Discussion

The overall aim of this dissertation was to examine the relationship between mindfulness and resilience as personal resources of leaders and different constructive and destructive leadership behaviors as well as work-related outcomes of employees. Based on parts of the integrative framework by Good et al. (2016) which embeds mindfulness in the workplace, I developed six research questions and a research model linking mindfulness and resilience to leadership behavior and outcomes of employees. Besides the integrative framework, the COR theory (Hobfoll, 1989) represents a basic theory for this dissertation which underlines the importance of personal resources. From that I derived three empirical studies. First, the relationship between leaders' mindfulness and resilience, and servant and destructive leadership behavior was examined as well as the effect on aspects of employees' work-related climate outcomes. To get more insight about the influence of mindfulness and resilience on mental health, I secondly investigated the relationship between the two personal resources, servant leadership and perceived stress of employees. Finally, I considered neurophysiological measures as indicator for resilience and examined potential relationships to constructive leadership behaviors.

The main finding of this dissertation is that especially mindfulness is an important resource for servant leadership and positive climate factors – trust in the leader and PSC – of employees. Further, both, leaders' mindfulness and leaders' resilience as well as servant leadership represent crucial factors regarding employees' perceived stress. The more mindful and resilient a leader is, and the more servant leadership she shows, the lesser is the perceived stress of employees.

The first study revealed that leaders' mindfulness is associated with more servant and less destructive leadership behavior and further that servant leadership mediates the relationship between leaders' mindfulness and employees' PSC and approximately trust in the leader. Study 2 showed that leaders' mindfulness and resilience are linked to perceived stress of employees through servant leadership. Both personal resources represent important

resources for leaders that foster servant leadership which in turn reduces perceived stress of employees. Although, the results of the third study did not support the assumed hypotheses that resting HRV and its changes due to stressful events are related to resilience as well as that resting HRV is related to transactional, transformational, and servant leadership. It revealed that the changes in HRV between resting state and the post-TSST measurement are related to transformational and servant leadership behavior in a certain way, but no expressive conclusions can be drawn from this study.

In the following, I summarize the main results of the three empirical studies and relate them to previous theoretical and empirical literature. Furthermore, I review the research questions and point out the contribution of this dissertation. Afterwards, I describe the limitations which the study designs entail and derive implications for future research and practice. Finally, I draw a conclusion for the dissertation.

6.1. Summary of Findings and Contributions

The main contribution of this dissertation to the field of leadership is to gain more insight into the relationships between personal and physiological resources and leadership behavior. The aim was to extent the integrative framework by Good et al. (2016) by examining the role of mindfulness and resilience in the workplace and concrete leadership behavior as well as employees' outcomes.

The aim of the first study was to answer the first two research questions (*Research Question 1: How are leaders' mindfulness and leaders' resilience related to servant and destructive leadership behavior?; Research Question 2: Can servant and destructive leadership mediate the relationship between leaders' mindfulness and leaders' resilience and employees' work-related climate outcomes?*) and shows that mindfulness predicts both higher servant and lesser destructive leadership behavior. Furthermore, servant leadership mediated the positive relationship between mindfulness and both employees' perceived PSC and approximately employees' trust in the leader. The findings are partly in line with previous research on

mindfulness and destructive and, respectively, constructive leadership behavior (Lange et al., 2018; Pinck & Sonnentag, 2018) while it further contributes to the research of antecedents of servant leadership as it has been expanded by mindfulness. It confirms the research on servant leadership and trust in the leader (Hoch et al., 2018; A. Lee et al., 2020) and expands it by the positive relationship between servant leadership and PSC. Therefore, the study reveals that mindfulness represents an important personal resource for leaders and servant leadership can be seen as a desirable leadership behavior regarding employees' perceived work climate.

Surprisingly, resilience showed no significant relations to either leadership behavior or employees' outcomes in the first study. Rutter (2007) already argued that resilience might only occur in stressful situations which probably makes it difficult to display it in a usual workday. Especially for resilience, the context and situation seem to be relevant which was not sufficiently considered in this study. Here, resilience was examined in the workplace without any specification of the work situation or manipulation of work settings.

The third research question (*Research Question 3: Can servant leadership mediate the relationship between leaders' mindfulness and leaders' resilience and employees' perceived stress?*) was intended to be examined in the second study. Hierarchical regression and mediation analyses revealed that servant leadership mediated the negative relationship between both, leaders' mindfulness and resilience and employees' perceived stress. The results are in line with previous research regarding leaders' mindfulness and employees' well-being (Reb et al., 2014) and expands it by linking leaders' mindfulness and resilience to subordinates' stress through servant leadership. Therefore, mindfulness and resilience represent important personal resources for leaders and followers as well as servant leadership which has provided as desirable leadership behavior regarding employees' mental health at work.

The fourth and fifth research questions (*Research Question 4: Is resilience related to a person's resting HRV?; Research Question 5: How are changes in HRV during and after a stressful event related to resilience?*) were considered in the third study of this dissertation.

The findings showed no significant correlations between resilience and resting HRV which is partly in line with previous research. An et al. (2020) found only slightly approximately significant correlation between resilience and HRV in the resting state. Further research is therefore needed in this field. The third study deals also with the last research question (*Research Question 6: Is resting HRV related to different constructive (servant, transformational, and transactional) leadership behavior?*). The results revealed inconsistent correlations between constructive leadership behavior and HRV. Finding show that the smaller the differences between the resting HRV and the HRV during the post-TSST measurement, the more the participants are perceived to be transformational or servant leaders during the role play. On the one hand, it can be assumed that these relationships illustrate that the participants who recover faster from the TSST – meaning the HRV returns faster to baseline level after the stressful event – show more transformational and servant leadership. On the other hand, a lower HRV (in a sitting position after a stressful event) is related to more perceived transformational and servant leadership behavior. It seems that cardiac activity and leadership behavior are related but no straight conclusion can be drawn from these findings. Further research is needed is the field of organizational neuroscience.

In summary, this dissertation contributes to the research field of leadership in three main points. First, the research on antecedents of servant leadership is extended by mindfulness and resilience. Both personal resources are important for leaders to show servant leadership behavior. This confirms part of the integrative framework by Good et al. (2016) and expands it by two open questions regarding the role of resilience in the workplace and the relationship between mindfulness and concrete leadership behavior. Second, the literature regarding consequences of leadership behavior can be both confirmed and expanded. Servant leadership is positively related to employees' trust in the leader and PSC as well as negatively related to employees' stress while destructive leadership is negatively related to trust. Since servant leadership acts as mediator between personal resources and employees' outcomes, parts of the framework (Good et al., 2016) can be confirmed and extended.

Mindfulness is related to climate factors and stress as an aspect of mental health through servant leadership. Third, even though results regarding neurophysiological parameters were not as expected, the findings revealed that changes in HRV regarding a stressful situation seem to be related to leadership behavior. Therefore, the third study contributes to the research field of organizational neuroscience as one of the first studies examining reactions to stressful situations as well as leadership behavior in a realistic work-related setting. This can be used as basis for further research.

6.2. Limitations and Future Research

There are some limitations of the present research project that should be mentioned regarding methodological aspects as well as theoretical ones.

Regarding methodological aspects, two different methods were used in the studies of this dissertation. For the first two studies, leader-follower dyads were investigated whereby self-reports of both leaders and followers were used as well as the evaluation of the leadership behavior by the followers. Even though single source bias was avoided, common method bias regarding surveys is present (Podsakoff et al., 2003). Two of the study variables – leadership behavior and outcomes of employees – were measured by the same source. It might be problematic that the ratings affect each other. Furthermore, personal, and interpersonal aspects might influence the followers' ratings of leadership behavior as the current mood or current events between leader and follower. For the third study, neurophysiological measurements were additionally used. Although the mixed-method approach has some advantages as the measurement with ECG is mostly objective, it is still sensible to environmental changings, movements or circumstances that happened before the measurement.

In general, all three studies were surveyed cross-sectional and therefore causality cannot be expected. More precisely, a clear direction between predictor and dependent criteria cannot be derived. It is possible that the relations of study variables exist vice versa to the assumed relations. I proposed that leadership behavior affects different outcomes of

employees. It is, however, possible that, for example, employees have a positive attitude towards their leader and show them their trust which could result in a closer leader-follower relationship where the leader shows more servant leadership behavior including personal support of the followers. In this case followers' trust would affect the leadership behavior. Even though it is more likely that leaders' personal resources affect leadership behavior that further affects work-related attitudes of followers, alternative explanations cannot be excluded. Longitudinal studies could help to examine long-term effects of leadership behavior and, especially, experimental studies could be useful to gain more insight in leadership processes. Previous studies found that mindfulness trainings have an impact on leadership behavior (Lange & Rowold, 2019) and well-being (Gu et al., 2015) and could further foster resilience (Joyce et al., 2018). Future research should use mindfulness training studies to gain more insight on the process of personal resources, especially mindfulness and resilience and their effect on leadership behavior, especially servant leadership. Currently, I found no previous studies regarding trainings on servant leadership. Furthermore, experimental studies could manipulate certain behavior and create stressful events for participants to examine resilience in a particular stressful situation.

Moreover, the samples of the studies reveal some limitations that should be discussed. First, participants were recruited by students. Therefore, the sample is convenient and for the first two studies inspection of the data revealed that more than one third of the collected data might be corrupt. The probably corrupt data was eliminated. Furthermore, it is likely that students mainly recruited family members or friends that reduces the range. Therefore, the sample is not representative and might be biased because the sample does not represent a cross-section of the population. Future research should consider alternative sources for data acquisition which are more reliable and independent to obtain a representative sample, participants should be required randomly as well. Second, for the third study, a student sample was used where participants were recruited by other students. It is possible that some students only participated as a favor for a friend without any real interest for the exercises. Future studies

should aim for a more independent sample by widening the range of potential participants who show real interest in the assessment center. However, selection bias would still be present, therefore, a random sample should be used. Furthermore, the sample should be extended by real leader-follower dyads since most of the student do not have any leadership experience. As real leaders and their employees know each other and have a work-based relationship, findings would be more expressive than for fictional leaders. Measurements could take place beyond the assessment center reflecting work behavior and attitudes in the everyday work life. Expanding the group of participants is already planned in the larger research project for further studies.

Regarding theoretical and content-related aspects, future research might expand the present research project. First, in all three studies the focus laid on leader-follower relationship, therefore, it would be interesting to examine the study variables on group level. Mindfulness and resilience represent important resources not only for leaders but for employees as well. To investigate if both personal resources might affect team processes represents an interesting research approach. Furthermore, leadership is also a group phenomenon (see e. g., Kozlowski & Klein, 2000) and team processes might include shared leadership wherefore further research should consider investigating servant and destructive leadership behavior within a team. Additionally, leaders might not treat every employee the same way (Yukl, 2013), different perceptions of every group member would give more insight on constructive and destructive leadership behavior.

Second, even though mindfulness and resilience are related to leadership behavior, the underlying mechanisms of this process are not displayed in this dissertation. Stedham and Skaar (2019) consider that specific mindfulness mechanisms (e.g., attention, cognitive capacity, self-regulation) lead to certain leader characteristics and behavior (e.g., empathy, resilience, transformational leadership). Future research should focus on these mechanisms and on the question which facets of mindfulness are relevant for specific leadership behavior. Furthermore, mechanisms of resilience remain unclear. Whether a person is resilient depends on

the situation and stressor and is difficult to measure (Rutter, 2007). Neurophysiological indicators would be helpful during a stressful situation and should be combined with surveys about this specific stressful event. Additionally, coping strategies (e.g., avoidance, acceptance, or searching for support), should be examined for a better understanding of the stress process and the used strategies against specific stressors.

Third, literature of resilience reveals not entirely clear theoretical distinction of the construct. Bonanno et al. (2011) argue that resilience is distinguished from *recovery*. While resilience is "a relatively stable trajectory of healthy functioning" (p. 514) even direct after a stressful event, recovery is described by "elevated symptoms and some functional impairment […] followed by a gradual return to normal levels of functioning" (p. 515). Following this approach, this would mean that a person first gets stressed by a difficult situation but recovers after a certain time to a normal level while a resilient person is able to hold on to the stress in a lower level which means that the trajectory increases less strongly. In the third study, I argued that resilient participants have the capacity to regulate their body faster to a normal level after a stressful situation – in other words, they would recover faster. It is crucial that future research disentangle the theoretical concept of resilience and provide clarification whether, for example, aspects as recovery are part of resilience.

Fourth, regarding servant and destructive leadership behavior, other personal resources or characteristics might be relevant. Eva et al. (2019) argue that research concerning antecedents of servant leadership is quite scarce while Tepper et al. (2017) argue similar for destructive leadership. Therefore, future research should consider additional predictors for these leadership behaviors, for example *humility* since it is considered to have a significant impact on organizational benefits and humble leaders put their own success behind the success of employees and the organization (Collins, 2001; Morris et al., 2005). Furthermore, the focus in study three was laid on resilience as personal resource. Future studies should explore the relationships of other resources and characteristics as mindfulness or the big five with neurophysiological parameters to gain more insight in the emergence of leadership behavior.

Mindfulness is associated with mental health as well as positive leadership outcomes (Lange et al., 2018; Lange & Rowold, 2019; Mesmer-Magnus et al., 2017). Good et al. (2016) argue that mindfulness is associated with certain brain activities whereas the review of Lomas et al. (2015) reveals that findings regarding the relationship of mindfulness and brain activity are inconsistent. Therefore, future research should further focus on this research field. Of the big five personality characteristics, for example, neuroticism might influence the perception of stressful events. Therefore, EEG recordings could be investigated as previous studies found that neuroticism and extraversion are related to brain activity (Aghajani et al., 2014; Gao et al., 2013; Schmidtke & Heller, 2004). Future studies should investigate the relationships between these neurophysiological aspects and stress reaction as well as leadership behavior.

Furthermore, servant and transformational leadership were measured as global leadership behaviors. Future studies should consider examining both leadership styles on the dimensional level. Besides the focus on followers, servant leadership includes an ethical behavior dimension as well as a dimension that focuses on behavior regarding the society outside of the organization, and a dimension regarding conceptual skills (Rivkin et al., 2014). It is interesting to explore to which dimension leaders' mindfulness and resilience are related more strongly than others and whether there are differences in the two personal resources. Maybe, resilience might be more related to conceptual skills and mindfulness more to ethical and social behavior. Transformational leadership dimensions can be clustered into individual-oriented and team-oriented behavior. During an assessment center, tasks including individual leadership behavior as well as tasks including groups could be invented to differentiate potential situational relevance of personal and physiological traits.

Finally, the theoretical and empirical findings of this dissertation can be extended regarding contextual and situational variables. Mindfulness goes back to Buddhist meditation that finds increasing interest in western culture. Previous researchers suggest that the understanding and conceptualization of mindfulness might be different in western cultures compared to eastern cultures which are based of Buddhist thinking (Haas & Akamatsu, 2019;

Kabat-Zinn, 2003; Karl et al., 2020). Therefore, future research should focus on cultural settings regarding mindfulness and its effects on mental health and leadership behavior. If the western understanding is different from the eastern understanding, potential and desirable positive effects might not occur. Previous research found also negative effects of mindfulness practice. The findings of two experimental studies suggest that mindfulness is associated with increased false memory (Sherman et al., 2012; Wilson et al., 2015). Britton (2019) argue that effects of mindfulness practice could be U-shaped, meaning that too much mindfulness practice can have negative consequences for mental health. Therefore, future studies should consider negative effects of mindfulness on individuals as well as in the workplace. As mindfulness is associated with clear thinking (Stedham & Skaar, 2019) and the awareness of the current situation (Glomb et al., 2011), it is possible that mindful leaders start to question their own role in the organization as well as structures and processes. Therefore, it should be considered whether mindfulness could influence commitment and selfish thinking, especially with regard to leaders.

Consequently, Figure 7 shows possible expansions of the research model of this dissertation for future research. The aspects written in gray and marked with a plus symbol illustrate the potential extensions of the current research flied.

6.3. Practical Implications

Several practical implications can be drawn from the findings of this dissertation. First, leaders' mindfulness and resilience are both related to leadership behavior and have positive impact on employees' work attitude and mental health. They represent important resources in the workplace which are desirable to develop. The MBSR program developed by Kabat-Zinn (1982, 2003) which was first used for clinical interventions found resonance in the organizational context and showed beneficial effects on stress reduction (Chiesa & Serretti, 2009). Bartlett et al. (2019) found evidence that mindfulness interventions in the workplace have a positive impact on mental health, stress and well-being. Furthermore, Lange and Rowold (2019) adapted a mindfulness intervention especially for leaders which revealed positive

effects on constructive leadership, reduced destructive leadership as well as perceived stress of the leaders. Additionally, Joyce et al. (2018) found a positive relationship between mindfulness trainings and resilience. Therefore, mindfulness interventions reveal several positive effects for mental health, leadership behavior, and are beneficial for resilience, and, therefore, should be introduced in organizations.

Second, regarding personnel selection of leaders, organizations should focus on the capacity of personal resources as mindfulness and resilience among other personal characteristics (e.g., intelligence, Judge et al., 2004). Furthermore, assessment center or certain exercises could be used to test applicants' resources and leadership abilities. The feedback participants gave on our assessment center were altogether positive. Job-related tasks or role plays could reveal a meaningful insight on cognitive and social abilities as well as expertise above a standardized job interview.

Third, assessment center can be used for leader development as well. They can be combined with mindfulness trainings mentioned earlier and leadership trainings. Leadership trainings especially for transformational leadership show beneficial effects on leaders and their followers (Abrell et al., 2011; Kelloway & Barling, 2010). Using a multi-method approach combining training and coaching as well as multi-source evaluation and feedback, these leadership programs could reveal comprehensive results. After the need for leadership training is detected through, for example, employee assessment, strengths and weaknesses of leaders can be defined, and certain behavior improved. The process of multi-source feedback including the leaders themselves, their followers, supervisors and possibly colleagues (also called 360° feedback) reveals a holistic picture about the leader's performance (Lacerenza et al., 2017). Respecting the results of this dissertation, leadership training programs should be extended by servant leadership. Organizations should therefore consider implementing leadership training programs.

Fourth, even though findings of neurophysiological processes revealed no consistent insight, further studies in this research field could be fruitful for organizational use. Findings

indicate that faster recovery from a stressful situation is associated with more servant and transformational leadership behavior. Previous studies found that mental and physical health is related to job performance (Merrill et al., 2013; Montano et al., 2017). As the cardiac system represents an indicator for physical health (e.g., Massaro & Pecchia, 2019), occupational health management could use ECG recordings to track leaders' fitness and physical health. Therefore, a fitness program could be developed and integrated in former leadership training programs. Short exercises at the workplace and theoretical coaching about health-related behavior as well as the monitoring of cardiac activity could be beneficial for organizational success.

6.4. Conclusion

This dissertation reveals important insights regarding personal resources and leadership behavior. Identifying the role of leaders' mindfulness and resilience relating to servant and destructive leadership represents an important step towards the understanding of leadership and further its mediating processes. Findings show that leaders' mindfulness and resilience represent relevant resources, especially for servant leaders as well as employees' perceived PSC, stress, and trust in their leader. In general, this dissertation helps to close the research gap regarding mindfulness and resilience at the workplace as well as antecedents of servant and destructive leadership. Furthermore, it shows insight in neurophysiological processes in the organizational context and reveals its research potential. Further research might benefit from the findings in this dissertation towards a better understanding of personal resources, leadership behavior and stress at the workplace.

Figure 7

Extended Research Model for Future Research
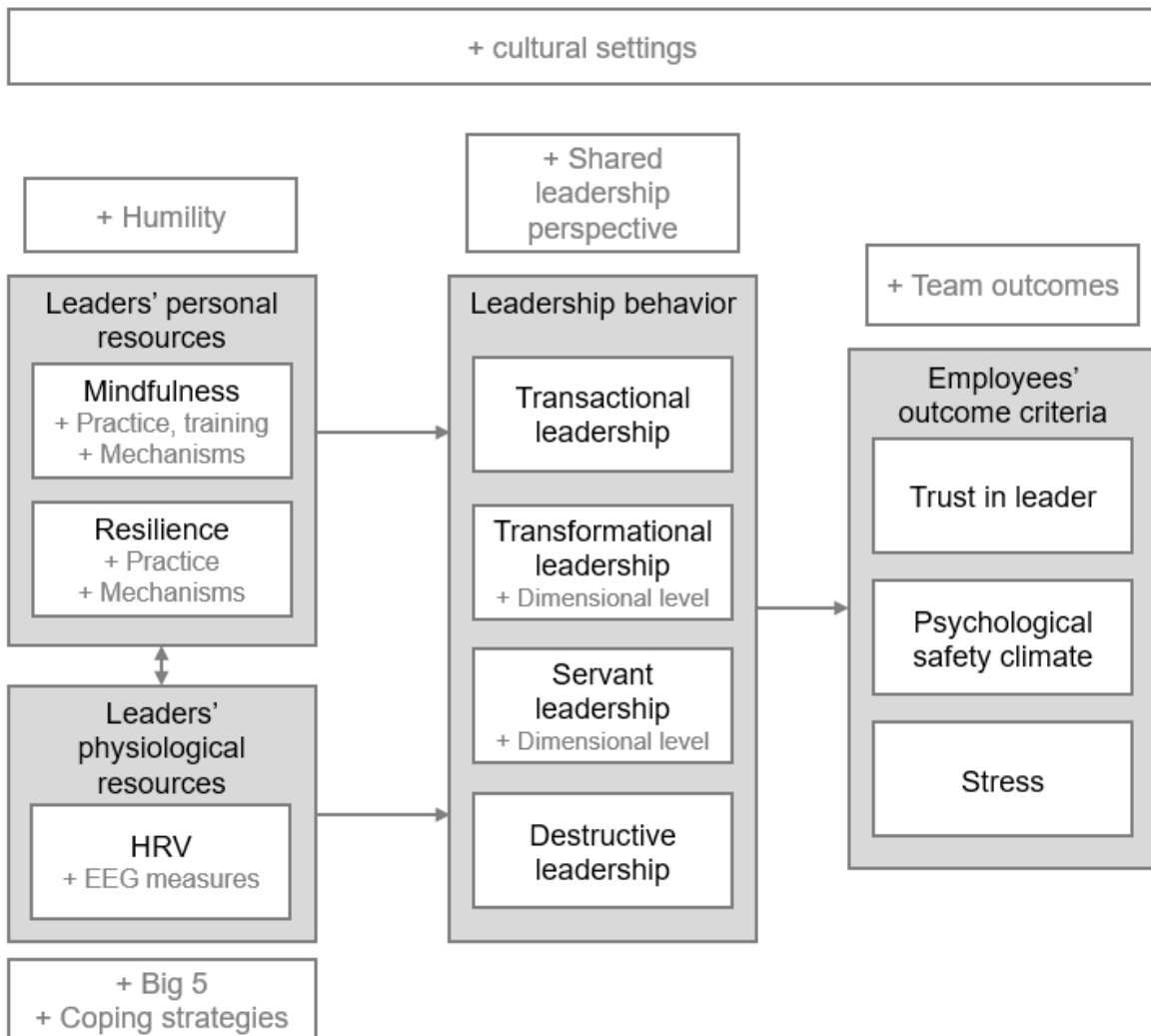
7. References

Abrell, C., Rowold, J., Weibler, J., & Moenninghoff, M. (2011). Evaluation of a long-term transformational leadership development program. *German Journal of Human Resource Management*, *25*(3), 205–224. https://doi.org/10.1177/239700221102500307

Agaibi, C. E., & Wilson, J. P. (2005). Trauma, PTSD, and resilience: A review of the literature. *Trauma, Violence, & Abuse*, *6*(3), 195–216. https://doi.org/10.1177/1524838005277438

Aghajani, M., Veer, I. M., van Tol, M.-J., Aleman, A., van Buchem, M. A., Veltman, D. J., Rombouts, S. A. R. B., & van der Wee, N. J. (2014). Neuroticism and extraversion are associated with amygdala resting-state functional connectivity. *Cognitive, Affective and Behavioral Neuroscience*, *14*(2), 836–848. https://doi.org/10.3758/s13415-013-0224-0

An, E., Nolty, A. A. T., Amano, S. S., Rizzo, A. A., Buckwalter, J. G., & Rensberger, J. (2020). Heart rate variability as an index of resilience. *Military Medicine*, *185*(3-4), 363–369. https://doi.org/10.1093/milmed/usz325

Antonakis, J. (2011). Predictors of leadership: The usual suspects and the suspect traits. In A. Bryman, D. Collison, K. Grint, B. Jackson, & M. Uhl-Bien (Eds.), *The SAGE Handbook of Leadership* (pp. 269–285). Sage Publications.

Antonakis, J., Avolio, B. J., & Sivasubramaniam, N. (2003). Context and leadership: an examination of the nine-factor full-range leadership theory using the Multifactor Leadership Questionnaire. *The Leadership Quarterly*, *14*(3), 261–295. https://doi.org/10.1016/S1048-9843(03)00030-4

Antonakis, J., Cianciolo, A. T., & Sternberg, R. J. (2012). Leadership: Past, present and future. In J. Antonakis & D. V. Day (Eds.), *The nature of leadership* (2nd ed., pp. 3–15). SAGE.

Appelhans, B. M., & Luecken, L. J. (2006). Heart rate variability as an index of regulated emotional responding. *Review of General Psychology*, *10*(3), 229–240. https://doi.org/10.1037/1089-2680.10.3.229

Atkinson, P. A., Martin, C. R., & Rankin, J. (2009). Resilience revisited. *Journal of Psychiatric and Mental Health Nursing*, *16*(2), 137–145. https://doi.org/10.1111/j.1365-2850.2008.01341.x

Avolio, B. J., & Gardner, W. L. (2005). Authentic leadership development: Getting to the root of positive forms of leadership. *The Leadership Quarterly*, *16*(3), 315–338. https://doi.org/10.1016/j.leaqua.2005.03.001

Avolio, B. J., Waldman, D. A., & Yammarino, F. J. (1991). Leading in the 1990s: The four I's of transformational leadership. *Journal of European Industrial Training*, *15*(4). https://doi.org/10.1108/03090599110143366

Avolio, B. J., Walumbwa, F. O., & Weber, T. J. (2009). Leadership: Current theories, research, and future directions. *Annual Review of Psychology*, *60*, 421–449. https://doi.org/10.1146/annurev.psych.60.110707.163621

Babakus, E., Yavas, U., & Ashill, N. J. (2010). Service worker burnout and turnover intentions: Roles of person-job fit, servant leadership, and customer orientation. *Services Marketing Quarterly*, *32*(1), 17–31.

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, *13*(1), 27–45. https://doi.org/10.1177/1073191105283504

Baker, D. B. (1985). The study of stress at work. *Annual Review of Public Health*, *6*(1), 367–381. https://doi.org/10.1146/annurev.pu.06.050185.002055

Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, *22*(3), 309–328. https://doi.org/10.1108/02683940710733115

Barraza, J. A., Alexander, V., Beavin, L. E., Terris, E. T., & Zak, P. J. (2015). The heart of the story: Peripheral physiology during narrative exposure predicts charitable giving.

Biological Psychology, *105*, 138–143. https://doi.org/10.1016/j.biopsy-cho.2015.01.008

Bartlett, L., Martin, A., Neil, A. L., Memish, K., Otahal, P., Kilpatrick, M., & Sanderson, K. (2019). A systematic review and meta-analysis of workplace mindfulness training randomized controlled trials. *Journal of Occupational Health Psychology*, *24*(1), 108–126. https://doi.org/10.1037/ocp0000146

Bass, B. M. (1985). Leadership: Good, better, best. *Organizational Dynamics*, *13*(3), 26–40. https://doi.org/10.1016/0090-2616(85)90028-2

Bass, B. M. (1999). Current developments in transformational leadership: Research and applications. *The Psychologist-Manager Journal*, *3*(1), 5–21. https://doi.org/10.1037/h0095852

Bass, B. M. (2000). The future of leadership in learning organizations. *Journal of Leadership Studies*, *7*(3), 18–40. https://doi.org/10.1177/107179190000700302

Bass, B. M., & Avolio, B. J. (1990). Developing transformational leadership: 1992 and beyond. *Journal of European Industrial Training*, *14*(5), 21-27. https://doi.org/10.1108/03090599010135122

Baumeister, R. F., & Vohs, K. D. (2004). Understanding self-regulation. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 1–9). Guilford Press.

Beitel, M., Ferrer, E., & Cecero, J. J. (2005). Psychological mindedness and awareness of self and others. *Journal of Clinical Psychology*, *61*(6), 739–750. https://doi.org/10.1002/jclp.20095

Bernerth, J. B., & Aguinis, H. (2016). A critical review and best-practice recommendations for control variable usage. *Personnel Psychology*, *69*(1), 229–283. https://doi.org/10.1111/peps.12103

Berntson, G. G., Bigger, J. T., Eckberg, D. L., Grossman, P., Kaufmann, P. G., Malik, M., Nagaraja, H. N., Porges, S. W., Saul, J. P., Stone, P. H., & van der Molen, M. W.

(1997). Heart rate variability: Origins, methods, and interpretive caveats. *Psycho-physiology*, *34*(6), 623–648. https://doi.org/10.1111/j.1469-8986.1997.tb02140.x

Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., Segal, Z. V., Abbey, S., Speca, M., Velting, D., & Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, *11*(3), 230–241. https://doi.org/10.1093/clipsy/bph077

Bonanno, G. A., Westphal, M., & Mancini, A. D. (2011). Resilience to loss and potential trauma. *Annual Review of Clinical Psychology*, *7*(1), 511–535. https://doi.org/10.1146/annurev-clinpsy-032210-104526

Bono, J. E., & Judge, T. A. (2004). Personality and transformational and transactional leadership: A meta-analysis. *The Journal of Applied Psychology*, *89*(5), 901–910. https://doi.org/10.1037/0021-9010.89.5.901

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, *1*(3), 185–216. https://doi.org/10.1177/135910457000100301

Britton, W. B. (2019). Can mindfulness be too much of a good thing? The value of a middle way. *Current Opinion in Psychology*, *28*, 159–165. https://doi.org/10.1016/j.copsyc.2018.12.011

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*(4), 822–848. https://doi.org/10.1037/0022-3514.84.4.822

Brown, K. W., Ryan, R. M., & Creswell, J. D. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry*, *18*(4), 211–237. https://doi.org/10.1080/10478400701598298

Brown, M. E., Treviño, L. K., & Harrison, D. A. (2005). Ethical leadership: A social learning perspective for construct development and testing. *Organizational Behavior and Human Decision Processes*, *97*(2), 117–134. https://doi.org/10.1016/j.ob-hdp.2005.03.002

Byrne, A., Dionisi, A. M., Barling, J., Akers, A., Robertson, J., Lys, R., Wylie, J., & Dupré, K. (2014). The depleted leader: The influence of leaders' diminished psychological resources on leadership behaviors. *The Leadership Quarterly*, *25*(2), 344–357. https://doi.org/10.1016/j.leaqua.2013.09.003

Cavanaugh, M. A., Boswell, W. R., Roehling, M. V., & Boudreau, J. W. (2000). An empirical examination of self-reported work stress among U.S. Managers. *The Journal of Applied Psychology*, *85*(1), 65–74. https://doi.org/10.1037/0021-9010.85.1.65

Chiesa, A., & Serretti, A. (2009). Mindfulness-based stress reduction for stress management in healthy people: A review and meta-analysis. *Journal of Alternative and Complementary Medicine (New York, N.Y.)*, *15*(5), 593–600. https://doi.org/10.1089/acm.2008.0495

Clark, M., & Payne, R. L. (1997). The nature and structure of workers' trust in management. *Journal of Organizational Behavior*, *18*(3), 205–224. https://doi.org/10.1002/(SICI)1099-1379(199705)18:3<205::AID-JOB792>3.0.CO;2-V

Clarke, S. (2010). An integrative model of safety climate: Linking psychological climate and work attitudes to individual safety outcomes using meta-analysis. *Journal of Occupational and Organizational Psychology*, *83*(3), 553–578. https://doi.org/10.1348/096317909X452122

Collins, J. (2001). Level 5 leadership: The triumph of humility and fierce resolve. *Harvard Business Review*, *79*(1), 67–77.

Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, *18*(2), 76–82. https://doi.org/10.1002/da.10113

Cropanzano, R., & Mitchell, M. S. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management*, *31*(6), 874–900. https://doi.org/10.1177/0149206305279602

DeSimone, J. A., Harms, P. D., & DeSimone, A. J. (2015). Best practice recommendations for data screening. *Journal of Organizational Behavior*, *36*(2), 171–181. https://doi.org/10.1002/job.1962

Dirks, K. T., & Ferrin, D. L. (2002). Trust in leadership: Meta-analytic findings and implications for research and practice. *The Journal of Applied Psychology*, *87*(4), 611–628. https://doi.org/10.1037/0021-9010.87.4.611

Domhardt, M., Münzer, A., Fegert, J. M., & Goldbeck, L. (2015). Resilience in survivors of child sexual abuse: A systematic review of the literature. *Trauma, Violence & Abuse*, *16*(4), 476–493. https://doi.org/10.1177/1524838014557288

Dooley, L. M., Alizadeh, A., Qiu, S., & Wu, H. (2020). Does servant leadership moderate the relationship between job stress and physical health? *Sustainability*, *12*(16), 1-13. https://doi.org/10.3390/su12166591

Dumdum, U. R., Lowe, K. B., & Avolio, B. J. (2013). A meta-analysis of transformational and transactional leadership correlates of effectiveness and satisfaction: An update and extension. In B. J. Avolio & F. J. Yammarino (Eds.), *Monographs in leadership and management: Vol. 5. Transformational and charismatic leadership: The road ahead : 10th anniversary edition* (2nd ed., Vol. 5, pp. 39–70). Emerald. https://doi.org/10.1108/S1479-357120130000005008

Edmonson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, *44*(2), 350–383. https://doi.org/10.2307/2666999

Ehrhart, M. G. (2004). Leadership and procedural justice climate as antecedents of unit-level organizational citizenship behavior. *Personnel Psychology*, *57*(1), 61–94. https://doi.org/10.1111/j.1744-6570.2004.tb02484.x

Einarsen, S., Aasland, M. S., & Skogstad, A. (2007). Destructive leadership behaviour: A definition and conceptual model. *The Leadership Quarterly*, *18*(3), 207–216. https://doi.org/10.1016/j.leaqua.2007.03.002

Eva, N., Robin, M., Sendjaya, S., van Dierendonck, D., & Liden, R. C. (2019). Servant leadership: A systematic review and call for future research. *The Leadership Quarterly*, *30*(1), 111–132. https://doi.org/10.1016/j.leaqua.2018.07.004

Farling, M. L., Stone, A. G., & Winston, B. E. (1999). Servant leadership: Setting the stage for empirical research. *Journal of Leadership Studies*, *6*(1-2), 49–72. https://doi.org/10.1177/107179199900600104

Ferres, N. (2002). *Development of the workplace trust questionnaire: Unpublished Masters of Applied Psychology dissertation*. University of Newcastle, Callaghan.

Flynn, C. B., Smither, J. W., & Walker, A. G. (2016). Exploring the relationship between leaders' core self-evaluations and subordinates' perceptions of servant leadership. *Journal of Leadership and Organizational Studies*, *23*(3), 260–271. https://doi.org/10.1177/1548051815621257

Folkman, S., & Moskowitz, J. T. (2004). Coping: Pitfalls and promise. *Annual Review of Psychology*, *55*, 745–774. https://doi.org/10.1146/annurev.psych.55.090902.141456

Frazier, M. L., Fainshmidt, S., Klinger, R. L., Pezeshkan, A., & Vracheva, V. (2017). Psychological safety: A meta-analytic review and extension. *Personnel Psychology*, *70*(1), 113–165. https://doi.org/10.1111/peps.12183

Gao, Q., Xu, Q., Duan, X., Liao, W., Ding, J., Zhang, Z., Li, Y., Lu, G., & Chen, H. (2013). Extraversion and neuroticism relate to topological properties of resting-state brain networks. *Frontiers in Human Neuroscience*, *7*, 257. https://doi.org/10.3389/fnhum.2013.00257

Gardner, T. W., Dishion, T. J., & Connell, A. M. (2008). Adolescent self-regulation as resilience: Resistance to antisocial behavior within the deviant peer context. *Journal of Abnormal Child Psychology*, *36*(2), 273–284. https://doi.org/10.1007/s10802-007-9176-6

Glomb, T. M., Duffy, M. K., Bono, J. E., & Yang, T. (2011). Mindfulness at work. *Research in Personnel and Human Resource Management*, *30*, 115–157. https://doi.org/10.1108/S0742-7301(2011)0000030005

Good, D. J., Lyddy, C. J., Glomb, T. M., Bono, J. E., Brown, K. W., Duffy, M. K., Baer, R. A., Brewer, J. A., & Lazar, S. W. (2016). Contemplating mindfulness at work. *Journal of Management*, *42*(1), 114–142. https://doi.org/10.1177/0149206315617003

Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, *25*(2), 161. https://doi.org/10.2307/2092623

Graen, G. B., & Uhl-Bien, M [Mary] (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly*, *6*(2), 219–247. https://doi.org/10.1016/1048-9843(95)90036-5

Greason, P. B., & Cashwell, C. S. (2009). Mindfulness and counseling self-efficacy: The mediating role of attention and empathy. *Counselor Education and Supervision*, *49*(1), 2–19. https://doi.org/10.1002/j.1556-6978.2009.tb00083.x

Greenleaf, R. K. (1977/2002). *Servant leadership: A journey into the nature of legitimate power and greatness*. Paulist Press.

Griffin, M. L., Hogan, N. L., Lambert, E. G., Tucker-Gail, K. A., & Baker, D. N. (2010). Job involvement, job stress, job satisfaction, and organizational commitment and the burnout of correctional staff. *Criminal Justice and Behavior*, *37*(2), 239–255. https://doi.org/10.1177/0093854809351682

Gu, J., Strauss, C., Bond, R., & Cavanagh, K. (2015). How do mindfulness-based cognitive therapy and mindfulness-based stress reduction improve mental health and wellbeing? A systematic review and meta-analysis of mediation studies. *Clinical Psychology Review*, *37*, 1–12. https://doi.org/10.1016/j.cpr.2015.01.006

Haas, B. W., & Akamatsu, Y. (2019). Psychometric investigation of the five facets of mindfulness and well-being measures in the Kingdom of Bhutan and the USA. *Mindfulness*, *10*(7), 1339–1351. https://doi.org/10.1007/s12671-018-1089-7

Hall, G. B., Dollard, M. F., & Coward, J. (2010). Psychosocial safety climate: Development of the PSC-12. *International Journal of Stress Management*, *17*(4), 353–383. https://doi.org/10.1037/a0021320

Hao, S., Hong, W., Xu, H., Zhou, L., & Xie, Z. (2015). Relationship between resilience, stress and burnout among civil servants in Beijing, China: Mediating and moderating effect analysis. *Personality and Individual Differences*, *83*, 65–71. https://doi.org/10.1016/j.paid.2015.03.048

Harms, P. D., Credé, M., Tynan, M., Leon, M., & Jeung, W. (2017). Leadership and stress: A meta-analytic review. *The Leadership Quarterly*, *28*(1), 178–194. https://doi.org/10.1016/j.leaqua.2016.10.006

Harvey, J., & Delfabbro, P. H. (2004). Psychological resilience in disadvantaged youth: A critical overview. *Australian Psychologist*, *39*(1), 3–13. https://doi.org/10.1080/00050060410001660281

Hellhammer, J., & Schubert, M. (2012). The physiological response to Trier Social Stress Test relates to subjective measures of stress during but not before or after the test. *Psychoneuroendocrinology*, *37*(1), 119–124. https://doi.org/10.1016/j.psyneuen.2011.05.012

Hill, C. L. M., & Updegraff, J. A. (2012). Mindfulness and its relationship to emotional regulation. *Emotion (Washington, D.C.)*, *12*(1), 81–90. https://doi.org/10.1037/a0026355

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *The American Psychologist*, *44*(3), 513–524. https://doi.org/10.1037/0003-066x.44.3.513

Hobfoll, S. E. (2002). Social and psychological resources and adaptation. *Review of General Psychology*, *6*(4), 307–324. https://doi.org/10.1037//1089-2680.6.4.307

Hobfoll, S. E., Halbesleben, J., Neveu, J.-P., & Westman, M. (2018). Conservation of resources in the organizational context: The reality of resources and their consequences. *Annual Review of Organizational Psychology and Organizational Behavior*, *5*(1), 103–128. https://doi.org/10.1146/annurev-orgpsych-032117-104640

Hoch, J. E., Bommer, W. H., Dulebohn, J. H., & Wu, D. (2018). Do ethical, authentic, and servant leadership explain variance above and beyond transformational leadership?

A Meta-Analysis. *Journal of Management*, *44*(2), 501–529.

https://doi.org/10.1177/0149206316665461

Hu, T., Zhang, D., & Wang, J. (2015). A meta-analysis of the trait resilience and mental

health. *Personality and Individual Differences*, *76*, 18–27.

https://doi.org/10.1016/j.paid.2014.11.039

Hülsheger, U. R., Alberts, H. J. E. M., Feinholdt, A., & Lang, J. W. B. (2013). Benefits of

mindfulness at work: The role of mindfulness in emotion regulation, emotional ex-

haustion, and job satisfaction. *The Journal of Applied Psychology*, *98*(2), 310–325.

https://doi.org/10.1037/a0031313

Hunter, E. M., Neubert, M. J., Perry, S. J., Witt, L. A., Penney, L. M., & Weinberger, E.

(2013). Servant leaders inspire servant followers: Antecedents and outcomes for em-

ployees and the organization. *The Leadership Quarterly*, *24*(2), 316–331.

https://doi.org/10.1016/j.leaqua.2012.12.001

Idris, M. A., Dollard, M. F., Coward, J., & Dormann, C. (2012). Psychosocial safety climate:

Conceptual distinctiveness and effect on job demands and worker psychological

health. *Safety Science*, *50*(1), 19–28. https://doi.org/10.1016/j.ssci.2011.06.005

Jordan, R. (1993). *The fires of heaven*. Orbit.

Joyce, S., Shand, F., Tighe, J., Laurent, S. J., Bryant, R. A., & Harvey, S. B. (2018). Road to

resilience: A systematic review and meta-analysis of resilience training programmes

and interventions. *BMJ Open*, *8*(6), 1-9. https://doi.org/10.1136/bmjopen-2017-

017858

Judge, T. A., Colbert, A. E., & Ilies, R. (2004). Intelligence and leadership: A quantitative re-

view and test of theoretical propositions. *The Journal of Applied Psychology*, *89*(3),

542–552. https://doi.org/10.1037/0021-9010.89.3.542

Judge, T. A., & Piccolo, R. F. (2004). Transformational and transactional leadership: A meta-

analytic test of their relative validity. *The Journal of Applied Psychology*, *89*(5), 755–

768. https://doi.org/10.1037/0021-9010.89.5.755

Judge, T. A., Piccolo, R. F., & Kosalka, T. (2009). The bright and dark sides of leader traits: A review and theoretical extension of the leader trait paradigm. *The Leadership Quarterly*, *20*(6), 855–875. https://doi.org/10.1016/j.leaqua.2009.09.004

Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry*, *4*(1), 33–47. https://doi.org/10.1016/0163-8343(82)90026-3

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, *10*(2), 144–156. https://doi.org/10.1093/clipsy.bpg016

Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, *33*(4), 692–724. https://doi.org/10.5465/256287

Karl, J. A., Prado, S. M. M., Gračanin, A., Verhaeghen, P., Ramos, A., Mandal, S. P., Michalak, J., Zhang, C.-Q., Schmidt, C., Tran, U. S., Druica, E., Solem, S., Astani, A., Liu, X., Luciano, J. V., Tkalčić, M., Lilja, J. L., Dundas, I., Wong, S. Y. S., & Fischer, R. (2020). The cross-cultural validity of the Five-Facet Mindfulness Questionnaire across 16 countries. *Mindfulness*, *11*(5), 1226–1237. https://doi.org/10.1007/s12671-020-01333-6

Kay, S. A. (2016). Emotion regulation and resilience: Overlooked connections. *Industrial and Organizational Psychology*, *9*(2), 411–415. https://doi.org/10.1017/iop.2016.31

Kelloway, E. K., & Barling, J. (2010). Leadership development as an intervention in occupational health psychology. *Work and Stress*, *24*(3), 260–279. https://doi.org/10.1080/02678373.2010.518441

Kiker, D. S., Callahan, J. S., & Kiker, M. B. (2019). Exploring the boundaries of servant leadership: A meta-analysis of the main and moderating effects of servant leadership on behavioral and affective outcomes. *Journal of Managerial Issues*, *31*(2), 172–197.

Kim, H.-G., Cheon, E.-J., Bai, D.-S., Lee, Y. H., & Koo, B.-H. (2018). Stress and heart rate variability: A meta-analysis and review of the literature. *Psychiatry Investigation*, *15*(3), 235–245. https://doi.org/10.30773/pi.2017.08.17

Kirkbride, P. (2006). Developing transformational leaders: The full range leadership model in action. *Industrial and Commercial Training*, *38*(1), 23–32. https://doi.org/10.1108/00197850610646016

Kirschbaum, C., Pirke, K. M., & Hellhammer, D. H. (1993). The 'Trier Social Stress Test'—a tool for investigating psychobiological stress responses in a laboratory setting. *Neuropsychobiology*, *28*(1-2), 76–81. https://doi.org/10.1159/000119004

Korkmaz, S., Goksuluk, D., & Zararsiz, G. (2014). MVN: An R package for assessing multivariate normality. *The R Journal*, *6*(2), 151–162.

Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In Klein, K. J, Kozlowski, S. W. J. (Ed.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 3–90). Jossey-Bass.

Krasikova, D. V., Green, S. G., & LeBreton, J. M. (2013). Destructive leadership. *Journal of Management*, *39*(5), 1308–1338. https://doi.org/10.1177/0149206312471388

Lacerenza, C. N., Reyes, D. L., Marlow, S. L., Joseph, D. L., & Salas, E. (2017). Leadership training design, delivery, and implementation: A meta-analysis. *Journal of Applied Psychology*, *102*(12), 1686–1718. https://doi.org/10.1037/apl0000241

Lambert, E. G., Hogan, N. L., & Griffin, M. L. (2007). The impact of distributive and procedural justice on correctional staff job stress, job satisfaction, and organizational commitment. *Journal of Criminal Justice*, *35*(6), 644–656. https://doi.org/10.1016/j.jcrimjus.2007.09.001

Lange, S., Bormann, K. C., & Rowold, J. (2018). Mindful leadership: mindfulness as a new antecedent of destructive and transformational leadership behavior. *Gruppe. Interaktion. Organisation. Zeitschrift Für Angewandte Organisationspsychologie*, *49*(2), 139–147. https://doi.org/10.1007/s11612-018-0413-y

Lange, S., & Rowold, J. (2019). Mindful leadership: Evaluation of a mindfulness-based leader intervention. *Gruppe. Interaktion. Organisation. Zeitschrift Für Angewandte Organisationspsychologie*, *50*(3), 319–335. https://doi.org/10.1007/s11612-019-00482-0

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.

Lazarus, R. S., & Folkman, S. (1987). Transactional theory and research on emotions and coping. *European Journal of Personality*, *1*(3), 141–169. https://doi.org/10.1002/per.2410010304

Lee, A., Lyubovnikova, J., Tian, A. W., & Knight, C. (2020). Servant leadership: A meta-analytic examination of incremental contribution, moderation, and mediation. *Journal of Occupational and Organizational Psychology*, *93*(1), 1–44. https://doi.org/10.1111/joop.12265

Lee, J. H., Nam, S. K., Kim, A.-R., Kim, B., Lee, M. Y., & Lee, S. M. (2013). Resilience: A meta-analytic approach. *Journal of Counseling and Development*, *91*(3), 269–279. https://doi.org/10.1002/j.1556-6676.2013.00095.x

Lehmann-Willenbrock, N., & Kauffeld, S. (2010). Development and construct validation of the German Workplace Trust Survey (G-WTS). *European Journal of Psychological Assessment*, *26*(1), 3–10. https://doi.org/10.1027/1015-5759/a000002

Leppert, K., Koch, B., Brähler, E., & Strauß, B. (2008). Die Resilienzskala (RS) - Überprüfung der Langform RS-25 und einer Kurzform RS-13. *Klinische Diagnostik Und Evaluation*, *1*(2), 226–243.

Levinthal, D., & Rerup, C. (2006). Crossing an apparent chasm: Bridging mindful and less-mindful perspectives on organizational learning. *Organization Science*, *17*(4), 502–513. https://doi.org/10.1287/orsc.1060.0197

Liden, R. C., & Graen, G. (1980). Generalizability of the vertical dyad linkage model of leadership. *Academy of Management Journal*, *23*(3), 451–465. https://doi.org/10.5465/255511

Liden, R. C., Panaccio, A., Meuser, J. D., Hu, J., & Wayne, S. J. (2014). Servant leadership: Antecedents, processes and outcomes. In D. V. Day (Ed.), *The Oxford Handbook of Leadership and Organizations.* Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199755615.013.018

Liden, R. C., Wayne, S. J., Meuser, J. D., Hu, J., Wu, J., & Liao, C. (2015). Servant leadership: Validation of a short form of the SL-28. *The Leadership Quarterly*, *26*(2), 254–269. https://doi.org/10.1016/j.leaqua.2014.12.002

Lomas, T., Ivtzan, I., & Fu, C. H. Y. (2015). A systematic review of the neurophysiology of mindfulness on EEG oscillations. *Neuroscience and Biobehavioral Reviews*, *57*, 401–410. https://doi.org/10.1016/j.neubiorev.2015.09.018

Luhmann, N. (1988). Familiarity, confidence, trust: Problems and alternatives. In D. G. Gambetta (Ed.), *Trust* (pp. 94–107). Basil Blackwell.

Mackey, J. D., Frieder, R. E., Brees, J. R., & Martinko, M. J. (2017). Abusive supervision: A meta-analysis and empirical review. *Journal of Management*, *43*(6), 1940–1965. https://doi.org/10.1177/0149206315573997

Massaro, S., & Pecchia, L. (2019). Heart rate variability (HRV) analysis: A methodology for organizational neuroscience. *Organizational Research Methods*, *22*(1), 354–393. https://doi.org/10.1177/1094428116681072

Maulding, W. S., Peters, G. B., Roberts, J., Leonard, E., & Sparkman, L. (2012). Emotional intelligence and resilience as predictors of leadership in school administrators. *Journal of Leadership Studies*, *5*(4), 20–29. https://doi.org/10.1002/jls.20240

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *The Academy of Management Review*, *20*(3), 709. https://doi.org/10.2307/258792

McCann, C. M., Beddoe, E., McCormick, K., Huggard, P., Kedge, S., Adamson, C., & Huggard, J. (2013). Resilience in the health professions: A review of recent literature. *International Journal of Wellbeing*, *3*(1), 60–81. https://doi.org/10.5502/ijw.v3i1.4

McCraty, R., & Shaffer, F. (2015). Heart rate variability: New perspectives on physiological

    mechanisms, assessment of self-regulatory capacity, and health risk. *Global Ad-*

    vances in Health and Medicine, *4*(1), 46–61. https://doi.org/10.7453/gahmj.2014.073

Meade, A. W., & Craig, S. B. (2012). Identifying careless responses in survey data. *Psycho-*

    logical Methods, *17*(3), 437–455. https://doi.org/10.1037/a0028085

Merrill, R. M., Aldana, S. G., Pope, J. E., Anderson, D. R., Coberley, C. R., Gross-

    meier, J. J., & Whitmer, R. W. (2013). Self-rated job performance and absenteeism

    according to employee engagement, health behaviors, and physical health. *Journal*

    of Occupational and Environmental Medicine, *55*(1), 10–18.

    https://doi.org/10.1097/JOM.0b013e31827b73af

Mesmer-Magnus, J., Manapragada, A., Viswesvaran, C., & Allen, J. W. (2017). Trait mindful-

    ness at work: A meta-analysis of the personal and professional correlates of trait

    mindfulness. *Human Performance*, *30*(2-3), 79–98.

    https://doi.org/10.1080/08959285.2017.1307842

Michalak, J., Heidenreich, T., Ströhle, G., & Nachtigall, C. (2008). Die deutsche Version der

    Mindful Attention and Awareness Scale (MAAS) Psychometrische Befunde zu einem

    Achtsamkeitsfragebogen. *Zeitschrift Für Klinische Psychologie Und Psychotherapie*,

    37(3), 200–208. https://doi.org/10.1026/1616-3443.37.3.200

Miller, J. G., Kahle, S., & Hastings, P. D. (2015). Roots and benefits of costly giving: Children

    who are more altruistic have greater autonomic flexibility and less family wealth. *Psy-*

    chological Science, *26*(7), 1038–1045. https://doi.org/10.1177/0956797615578476

Mitchell, M. S., & Ambrose, M. L. (2007). Abusive supervision and workplace deviance and

    the moderating effects of negative reciprocity beliefs. *The Journal of Applied Psychol-*

    ogy, *92*(4), 1159–1168. https://doi.org/10.1037/0021-9010.92.4.1159

Mohr, G., Rigotti, T., & Müller, A. (2005). Irritation - ein Instrument zur Erfassung psychischer

    Beanspruchung im Arbeitskontext. Skalen- und Itemparameter aus 15 Studien. *Zeit-*

    schrift Für Arbeits- Und Organisationspsychologie, *49*(1), 44–48.

    https://doi.org/10.1026/0932-4089.49.1.44

Montano, D., Reeske, A., Franke, F., & Hüffmeier, J. (2017). Leadership, followers' mental health and job performance in organizations: A comprehensive meta-analysis from an occupational health perspective. *Journal of Organizational Behavior*, *38*(3), 327–350. https://doi.org/10.1002/job.2124

Morris, J. A., Brotheridge, C. M., & Urbanski, J. C. (2005). Bringing humility to leadership: Antecedents and consequences of leader humility. *Human Relations*, *58*(10), 1323–1350. https://doi.org/10.1177/0018726705059929

Motowidlo, S. J., Packard, J. S., & Manning, M. R. (1986). Occupational stress: Its causes and consequences for job performance. *The Journal of Applied Psychology*, *71*(4), 618–629. https://doi.org/10.1037/0021-9010.71.4.618

Nota, L., Soresi, S., & Zimmerman, B. J. (2004). Self-regulation and academic achievement and resilience: A longitudinal study. *International Journal of Educational Research*, *41*(3), 198–215. https://doi.org/10.1016/J.IJER.2005.07.001

Ode, S., Hilmert, C. J., Zielke, D. J., & Robinson, M. D. (2010). Neuroticism's importance in understanding the daily life correlates of heart rate variability. *Emotion*, *10*(4), 536–543. https://doi.org/10.1037/a0018698

Oshio, A., Taku, K., Hirano, M., & Saeed, G. (2018). Resilience and big five personality traits: A meta-analysis. *Personality and Individual Differences*, *127*, 54–60. https://doi.org/10.1016/j.paid.2018.01.048

Pan, J., & Tompkins, W. J. (1985). A real-time QRS detection algorithm. *IEEE Transactions on Bio-Medical Engineering*, *32*(3), 230–236. https://doi.org/10.1109/TBME.1985.325532

Parker, C. P., Baltes, B. B., Young, S. A., Huff, J. W., Altmann, R. A., LaCost, H. A., & Roberts, J. E. (2003). Relationships between psychological climate perceptions and work outcomes: a meta-analytic review. *Journal of Organizational Behavior*, *24*(4), 389–416. https://doi.org/10.1002/job.198

Parolini, J., Patterson, K., & Winston, B. (2009). Distinguishing between transformational and servant leadership. *Leadership and Organization Development Journal*, *30*(3), 274–291. https://doi.org/10.1108/01437730910949544

Peterson, S. J., Galvin, B. M., & Lange, D. (2012). Ceo servant leadership: Exploring executive characteristics and firm performance. *Personnel Psychology*, *65*(3), 565–596. https://doi.org/10.1111/j.1744-6570.2012.01253.x

Pinck, A. S., & Sonnentag, S. (2018). Leader mindfulness and employee well-being: The mediating role of transformational leadership. *Mindfulness*, *9*(3), 884–896. https://doi.org/10.1007/s12671-017-0828-5

Plews, D. J., Laursen, P. B., Kilding, A. E., & Buchheit, M. (2013). Evaluating training adaptation with heart-rate measures: A methodological comparison. *International Journal of Sports Physiology and Performance*, *8*(6), 688–691. https://doi.org/10.1123/ijspp.8.6.688

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *The Journal of Applied Psychology*, *88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Podsakoff, P. M., MacKenzie, S. B., Moorman, R. H., & Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *The Leadership Quarterly*, *1*(2), 107–142. https://doi.org/10.1016/1048-9843(90)90009-7

Porges, S. W. (1995). Orienting in a defensive world: Mammalian modifications of our evolutionary heritage. A polyvagal theory. *Psychophysiology*, *32*(4), 301–318. https://doi.org/10.1111/j.1469-8986.1995.tb01213.x

Porges, S. W. (2007). The polyvagal perspective. *Biological Psychology*, *74*(2), 116–143. https://doi.org/10.1016/j.biopsycho.2006.06.009

R Core Team. (2020). *R: A language and environment for statistical computing. R Foundation for Statistical Computing*. https://www.R-project.org/

Ramshur, J. (2010). *Design, evaluation, and application of heart rate variability analysis soft-ware (HRVAS)* [Master thesis]. University of Memphis, Memphis, TN. https://github.com/jramshur/HRVAS

Reb, J., Narayanan, J., & Chaturvedi, S. (2014). Leading mindfully: Two studies on the influence of supervisor trait mindfulness on employee well-being and performance. *Mindfulness*, *5*(1), 36–45. https://doi.org/10.1007/s12671-012-0144-z

Rivkin, W., Diestel, S., & Schmidt, K.-H. (2014). The positive relationship between servant leadership and employees' psychological health: A multi-method approach. *German Journal of Human Resource Management*, *28*(1-2), 52–72. https://doi.org/10.1688/ZfP-2014-01-Rivkin

Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*(2), 1–36. http://www.jstatsoft.org/v48/i02/.

Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not so different after all: A cross-discipline view of trust. *Academy of Management Review*, *23*(3), 393–404. https://doi.org/10.5465/amr.1998.926617

Rowold, J., & Poethke, U. (2017). *Fragebogen zur integrativen Führung: FIF*. Hogrefe.

Rowold, J., Poethke, U., & Klasmeier, K. N. (in press). *Fragebogen zur Integrativen Führung (2. Auflage)*. Hogrefe.

Russell, R. F., & Stone, A. G. (2002). A review of servant leadership attributes: developing a practical model. *Leadership and Organization Development Journal*, *23*(3), 145–157. https://doi.org/10.1108/01437730210424

Rutter, M. (1985). Resilience in the face of adversity. Protective factors and resistance to psychiatric disorder. *The British Journal of Psychiatry*, *147*, 598–611. https://doi.org/10.1192/bjp.147.6.598

Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *The American Journal of Orthopsychiatry*, *57*(3), 316–331. https://doi.org/10.1111/j.1939-0025.1987.tb03541.x

Rutter, M. (2007). Resilience, competence, and coping. *Child Abuse and Neglect*, *31*(3), 205–209. https://doi.org/10.1016/j.chiabu.2007.02.001

Rutter, M. (2012). Resilience as a dynamic concept. *Development and Psychopathology*, *24*(2), 335–344. https://doi.org/10.1017/S0954579412000028

Sarubin, N., Gutt, D., Giegling, I., Bühner, M., Hilbert, S., Krähenmann, O., Wolf, M., Jobst, A., Sabaß, L., Rujescu, D., Falkai, P., & Padberg, F. (2015). Erste Analyse der psychometrischen Eigenschaften und Struktur der deutschsprachigen 10- und 25-Item Version der Connor-Davidson Resilience Scale (CD-RISC). *Zeitschrift Für Gesundheitspsychologie*, *23*(3), 112–122. https://doi.org/10.1026/0943-8149/a000142

Schaufenbuel, K. (2015). Why Google, Target, and General Mills are investing in mindfuless. *Harvard Business Review*. https://hbr.org/2015/12/why-google-target-and-general-mills-are-investing-in-mindfulness

Schmidtke, J. I., & Heller, W. (2004). Personality, affect and EEG: predicting patterns of regional brain activity related to extraversion and neuroticism. *Personality and Individual Differences*, *36*(3), 717–732. https://doi.org/10.1016/S0191-8869(03)00129-6

Schönbrodt, F. D., & Perugini, M. (2013). At what sample size do correlations stabilize? *Journal of Research in Personality*, *47*(5), 609–612. https://doi.org/10.1016/j.jrp.2013.05.009

Schyns, B., & Schilling, J. (2013). How bad are the effects of bad leaders? A meta-analysis of destructive leadership and its outcomes. *The Leadership Quarterly*, *24*(1), 138–158. https://doi.org/10.1016/j.leaqua.2012.09.001

Sedghamiz, H. (2014). *MATLAB implementation of Pan Tompkins ECG QRS detector.* https://doi.org/10.13140/RG.2.2.14202.59841

Selye, H. (1984). *The stress of life* (Rev. ed.). McGraw-Hill.

Shaffer, F., & Ginsberg, J. P. (2017). An overview of heart rate variability metrics and norms. *Frontiers in Public Health*, *5*, 1–17. https://doi.org/10.3389/fpubh.2017.00258

Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology*, *62*(3), 373–386. https://doi.org/10.1002/jclp.20237

Sherman, G. D., Lee, J. J., Cuddy, A. J. C., Renshon, J., Oveis, C., Gross, J. J., & Lerner, J. S. (2012). Leadership is associated with lower levels of stress. *Proceedings of the National Academy of Sciences of the United States of America*, *109*(44), 17903–17907. https://doi.org/10.1073/pnas.1207042109

Smith, B. N., Montagno, R. V., & Kuzmenko, T. N. (2004). Transformational and servant leadership: Content and contextual comparisons. *Journal of Leadership and Organizational Studies*, *10*(4), 80–91. https://doi.org/10.1177/107179190401000406

Spears, L. C. (2010). Character and servant leadership: Ten characteristics of effective, caring leaders. *The Journal of Virtues and Leadership*, *1*(1), 25–30.

Stedham, Y., & Skaar, T. B. (2019). Mindfulness, trust, and leader effectiveness: A conceptual framework. *Frontiers in Psychology*, *10*(1588), 1–11. https://doi.org/10.3389/fpsyg.2019.01588

Stone, A. G., Russell, R. F., & Patterson, K. (2004). Transformational versus servant leadership: a difference in leader focus. *Leadership and Organization Development Journal*, *25*(4), 349–361. https://doi.org/10.1108/01437730410538671

Sturm, M., Reiher, S., Heinitz, K., & Soellner, R. (2011). Transformationale, transaktionale und passiv-vermeidende Führung. *Zeitschrift Für Arbeits- Und Organisationspsychologie, 55*(2), 88–104. https://doi.org/10.1026/0932-4089/a000049

Task Force of The European Society of Cardiology and The North American Society of Pacing and Electrophysiology (1996). Heart rate variability: Standards of measurement, physiological interpretation, and clinical use. *European Heart Journal*, *17*(3), 354–381. https://doi.org/10.1093/oxfordjournals.eurheartj.a014868

Tepper, B. J. (2000). Consequences of abusive supervision. *Academy of Management Journal*, *43*(2), 178–190. https://doi.org/10.5465/1556375

Tepper, B. J., Simon, L., & Park, H. M. (2017). Abusive supervision. *Annual Review of Organizational Psychology and Organizational Behavior*, *4*(1), 123–152. https://doi.org/10.1146/annurev-orgpsych-041015-062539

Tugade, M. M., & Fredrickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology*, *86*(2), 320–333. https://doi.org/10.1037/0022-3514.86.2.320

Tugade, M. M., & Fredrickson, B. L. (2007). Regulation of positive emotions: Emotion regulation strategies that promote resilience. *Journal of Happiness Studies*, *8*(3), 311–333. https://doi.org/10.1007/s10902-006-9015-4

van Dierendonck, D. (2011). Servant leadership: A review and synthesis. *Journal of Management*, *37*(4), 1228–1261. https://doi.org/10.1177/0149206310380462

van Dierendonck, D., Stam, D., Boersma, P., Windt, N. de, & Alkema, J. (2014). Same difference? Exploring the differential mechanisms linking servant leadership and transformational leadership to follower outcomes. *The Leadership Quarterly*, *25*(3), 544–562. https://doi.org/10.1016/j.leaqua.2013.11.014

van Vugt, M. (2012). Evolutionary, biological, and social neuroscience perspectives. In J. Antonakis & D. V. Day (Eds.), *The nature of leadership* (2nd ed.). SAGE.

Verdorfer, A. P. (2016). Examining mindfulness and its relations to humility, motivation to lead, and actual servant leadership behaviors. *Mindfulness*, *7*(4), 950–961. https://doi.org/10.1007/s12671-016-0534-8

Wagnild, G. N., & Young, H. M. (1993). Development and psychometric evaluation of the Resilience Scale. *Journal of Nursing Measurement*, *1*(2), 165–178.

Wang, D.-S., & Hsieh, C.-C. (2013). The effect of authentic leadership on employee trust and employee engagement. *Social Behavior and Personality: An International Journal*, *41*(4), 613–624. https://doi.org/10.2224/sbp.2013.41.4.613

Wang, Z., Li, C., & Li, X. (2017). Resilience, leadership and work engagement: The mediating role of positive affect. *Social Indicators Research*, *132*(2), 699–708. https://doi.org/10.1007/s11205-016-1306-5

Weick, K. E., & Sutcliffe, K. M. (2006). Mindfulness and the quality of organizational atten-

    tion. *Organization Science*, *17*(4), 514–524. https://doi.org/10.1287/orsc.1060.0196

Welch, P. (1967). The use of fast Fourier transform for the estimation of power spectra: A

    method based on time averaging over short, modified periodograms. *IEEE Transac-*

    tions on Audio and Electroacoustics, *15*(2), 70–73.

    https://doi.org/10.1109/tau.1967.1161901

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*,

    5(2), 171–180. https://doi.org/10.1002/smj.4250050207

Wickham, H., & Miller, E. (2020). *Haven: Import and export 'SPSS', 'Stata' and 'SAS' files. R*

    package version 2.3.1. https://CRAN.R-project.org/package=haven

Willis, K. D., & Brunett Jr., H. J. (2016). The power of stress: Perceived stress and its rela-

    tionship with rumination, self-concept clarity, and resilience. *North American Journal*

    of Psychology, *18*(3), 483–498.

Wills, T. A., & Bantum, E. O. (2012). Social support, self-regulation, and resilience in two

    populations: General-population adolescents and adult cancer survivors. *Journal of*

    Social and Clinical Psychology, *31*(6), 568–592.

    https://doi.org/10.1521/jscp.2012.31.6.568

Wilson, B. M., Mickes, L., Stolarz-Fantino, S., Evrard, M., & Fantino, E. (2015). Increased

    false-memory susceptibility after mindfulness meditation. *Psychological Science*,

    26(10), 1567–1573. https://doi.org/10.1177/0956797615593705

Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements

    for structural equation models: An evaluation of power, bias, and solution propriety.

    Educational and Psychological Measurement, *76*(6), 913–934.

    https://doi.org/10.1177/0013164413495237

Yukl, G. (1999). An evaluation of conceptual weaknesses in transformational and charis-

    matic leadership theories. *The Leadership Quarterly*, *10*(2), 285–305.

    https://doi.org/10.1016/S1048-9843(99)00013-2

Yukl, G. (2013). *Leadership in organizations* (8th ed.). Pearson.

Zaccaro, S. J., Kemp, C., & Paige, B. (2012). Leader traits and attributes. In J. Antonakis &

D. V. Day (Eds.), *The nature of leadership* (2nd ed., pp. 101–124). SAGE.

Zolkoski, S. M., & Bullock, L. M. (2012). Resilience in children and youth: A review. *Children

and Youth Services Review*, *34*(12), 2295–2303.

https://doi.org/10.1016/j.childyouth.2012.08.009