

Anger: The Misunderstood and Mismatched Workplace Emotion

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*Для моих современников и для будущих поколений, и в благодарность нашим
предшественникам.*

Abstract

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Anger is a familiar yet often misunderstood and mismanaged emotion in organizational settings, commonly viewed as a purely negative force to be mitigated. This dissertation challenges such reductive perspectives by proposing a comprehensive reconceptualization of workplace anger as a potentially constructive emotion. It argues that, when properly understood and managed, anger can enhance employee productivity and well-being. Through a systematic examination of the antecedents, characteristics, and outcomes of anger in the workplace, this work introduces new theoretical frameworks and empirically validated strategies for harnessing anger's positive potential.

The dissertation is structured into three main sections that collectively advance the understanding of workplace anger. Chapter 1 establishes a foundational understanding by developing and validating a new State-Trait Anger Scale tailored for organizational research. This scale addresses limitations in existing measures by incorporating advanced psychometric techniques and a cross-cultural lens, revealing that workplace anger is influenced by both individual traits and situational factors, with significant variations across cultural contexts. A meta-analytic review follows, synthesizing the antecedents, concomitants, and consequences of workplace anger. The findings indicate that anger often arises from perceived negative workplace events and blame appraisals, which can primarily lead to destabilizing reactions.

Chapter 2 advances the theoretical framework by introducing a novel perspective that links workplace anger to morality and perceived moral discrepancies. Through a series of empirical studies—including experience sampling, vignette experiments, and egocentric network analysis—this research demonstrates that anger frequently emerges from perceived transgressions of moral expectations in workplace interactions. The dissertation presents the Interaction Discrepancy Model, an innovative theoretical framework that integrates cognitive, social, and moral dimensions to better understand the dynamics of anger. This model elucidates how anger, a latent, morally and hedonically non-valenced construct, can motivate change-oriented behaviors aimed at rectifying moral discrepancies.

Chapter 3 builds on these theoretical insights by developing practical strategies for constructive anger management in organizations. The research contrasts traditional mitigation-oriented strategies—such as suppression/rumination, avoidance, diffusion, and seeking social support—with constructive, approach-oriented strategies like confrontation and assertion. It shows that when anger is channeled appropriately through these constructive

strategies, it can enhance both individual productivity and well-being. The empirical evidence further supports these findings, demonstrating that change-oriented strategies for managing anger are more effective in achieving work-related goals and maintaining well-being than mitigation-oriented approaches.

This dissertation makes significant contributions to the fields of organizational psychology and organizational behavior by reconceptualizing workplace anger as a complex construct with both constructive and destructive potential. It introduces an empirically robust anger measurement tool that enhances research precision by addressing gaps in existing scales and incorporating advanced psychometric techniques. It also provides a meta-analytic overview of anger dynamics, offering a comprehensive synthesis of the antecedents, concomitants, and outcomes of anger in workplace settings. Furthermore, the dissertation offers theoretical advancements in the study of anger and emotions more broadly, integrating cognitive, social, and moral dimensions to provide a deeper understanding of emotional dynamics in organizational contexts. Additionally, it presents evidence-based strategies for practitioners to harness anger's constructive potential, demonstrating how appropriate management of anger can lead to enhanced productivity and well-being. By challenging the conventional view of anger, this research opens new avenues for theory, practice, and future research, suggesting that anger, when understood and managed appropriately, can be a positive force in organizations.

Stuttgart, 20.09.2024,

Place and date

Signature (doctoral candidate)

Stuttgart, 20.09.2024,

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Zusammenfassung

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Wut ist eine vertraute, aber oft missverstandene und schlecht gemanagte Emotion in organisatorischen Kontexten und wird häufig als eine rein negative Kraft angesehen, die gemildert werden muss. Diese Dissertation stellt solche reduktiven Perspektiven infrage, indem sie eine umfassende Neugestaltung der Wut am Arbeitsplatz als potenziell konstruktive Emotion vorschlägt. Sie argumentiert, dass Wut, wenn sie richtig verstanden und gemanagt wird, die Produktivität und das Wohlbefinden der Mitarbeitenden steigern kann. Durch eine systematische Untersuchung der Ursachen, Merkmale und Ergebnisse von Wut am Arbeitsplatz führt diese Arbeit neue theoretische Rahmenwerke und empirisch validierte Strategien ein, um das positive Potenzial von Wut zu nutzen.

Die Dissertation ist in drei Hauptteile gegliedert, die gemeinsam das Verständnis von Wut am Arbeitsplatz voranbringen. Kapitel 1 schafft ein grundlegendes Verständnis, indem es eine neue State-Trait-Wut-Skala entwickelt und validiert, die speziell für die Organisationsforschung zugeschnitten ist. Diese Skala behebt Einschränkungen bestehender Messinstrumente, indem sie fortgeschrittene psychometrische Techniken und eine interkulturelle Perspektive einbezieht. Sie zeigt auf, dass Wut am Arbeitsplatz sowohl von individuellen Merkmalen als auch von situativen Faktoren beeinflusst wird, mit signifikanten Unterschieden in verschiedenen kulturellen Kontexten. Eine Meta-Analyse folgt, die die Ursachen, Begleiterscheinungen und Konsequenzen von Wut am Arbeitsplatz synthetisiert. Die Ergebnisse zeigen, dass Wut häufig aus wahrgenommenen negativen Ereignissen am Arbeitsplatz und Schuldzuweisungen resultiert, die vor allem destabilisierende Reaktionen hervorrufen können.

Kapitel 2 entwickelt das theoretische Rahmenwerk weiter, indem es eine neue Perspektive einführt, die Wut am Arbeitsplatz mit Moral und wahrgenommenen moralischen Diskrepanzen in Verbindung bringt. Durch eine Reihe empirischer Studien – einschließlich Tagebuchstudien, Vignettenexperimenten und egozentrischer Netzwerk-Analyse – zeigt diese Forschung, dass Wut häufig aus wahrgenommenen Verletzungen moralischer Erwartungen in Arbeitsplatzinteraktionen entsteht. Die Dissertation präsentiert das Interaktions-Diskrepanz-Modell, ein innovatives theoretisches Rahmenwerk, das kognitive, soziale und moralische Dimensionen integriert, um die Dynamik von Wut besser zu verstehen. Dieses Modell verdeutlicht, wie Wut, ein latentes, moralisch und hedonisch nicht valentes Konstrukt,

veränderungsorientierte Verhaltensweisen motivieren kann, die darauf abzielen, moralische Diskrepanzen zu korrigieren.

Kapitel 3 baut auf diesen theoretischen Erkenntnissen auf, indem es praktische Strategien für ein konstruktives Wutmanagement in Organisationen entwickelt. Die Forschung kontrastiert traditionelle, auf Minderung ausgerichtete Strategien – wie Unterdrückung/Grübeln, Vermeidung, Ablenkung und die Suche nach sozialer Unterstützung – mit konstruktiven, annäherungsorientierten Strategien wie Konfrontation und Durchsetzung. Es zeigt sich, dass, wenn Wut angemessen durch diese konstruktiven Strategien kanalisiert wird, sie sowohl die individuelle Produktivität als auch das Wohlbefinden steigern kann. Die empirischen Beweise stützen diese Erkenntnisse weiter und zeigen, dass veränderungsorientierte Strategien zur Bewältigung von Wut effektiver sind, um arbeitsbezogene Ziele zu erreichen und das Wohlbefinden aufrechtzuerhalten, als auf Minderung ausgerichtete Ansätze.

Diese Dissertation leistet bedeutende Beiträge zu den Bereichen der Organisationspsychologie und des Organisationsverhaltens, indem sie die Wut am Arbeitsplatz als komplexes Konstrukt mit sowohl konstruktivem als auch destruktivem Potenzial neu konzipiert. Sie führt ein empirisch robustes Wutmesserinstrument ein, das die Forschungsgüte verbessert, indem es Lücken in bestehenden Skalen schließt und fortgeschrittene psychometrische Techniken einbezieht. Sie bietet auch einen meta-analytischen Überblick über die Dynamik von Wut und liefert eine umfassende Synthese der Ursachen, Begleiterscheinungen und Konsequenzen von Wut in Arbeitsplatzkontexten. Darüber hinaus bietet die Dissertation theoretische Fortschritte in der Erforschung von Wut und Emotionen im weiteren Sinne, indem sie kognitive, soziale und moralische Dimensionen integriert, um ein tieferes Verständnis der emotionalen Dynamik in organisatorischen Kontexten zu ermöglichen. Zusätzlich präsentiert sie evidenzbasierte Strategien für Praktiker, um das konstruktive Potenzial von Wut zu nutzen und zeigt auf, wie ein angemessenes Management von Wut zu erhöhter Produktivität und Wohlbefinden führen kann. Indem diese Forschung die konventionelle Sichtweise auf Wut infrage stellt, eröffnet sie neue Wege für Theorie, Praxis und zukünftige Forschung und deutet darauf hin, dass Wut, wenn sie richtig verstanden und gemanagt wird, eine positive Kraft in Organisationen sein kann.

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Prologue

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“The deficiency – whether it is a sort of imperturbability or whatever else it may be – is blamed, because those who do not get angry at things that ought to make them angry are considered to be foolish, and so are those who do not get angry in the right way or at the right time or with the right people. Such a person seems to be deficient in perceptivity and sensitivity; and (because he does not get angry) incapable of defending himself; and to put up with insults to oneself, and overlook those done to one’s friends, is regarded as servile.”

– Aristotle (ca. 350 B.C.E./2004, p. 101)

Managing emotions in the workplace is crucial for fostering a productive and harmonious environment (Grant, 2013; Jiang et al., 2013; Niven, 2016). Among various emotions, anger has garnered significant attention in both research (Ashkanasy & Humphrey, 2011; Geddes et al., 2020; Lindebaum & Gabriel, 2016) and popular culture (Caron, 2023; Potter, 2023; Stabile, 2023) over the past few decades. This focus has ostensibly deepened our understanding of workplace anger and strategies for managing it effectively. Typically, anger is perceived as a negative emotion that should be controlled through mitigative strategies (e.g., avoidance, waiting it out, diffusion/distraction, seeking social support) to maintain productivity and emotional well-being—a perspective widely endorsed by research community (see Scheibe & Moghimi, 2019; Thomas, 2001; Yun & Yoo, 2021).

However, such advice may be misleading and counterproductive (Geddes et al., 2020; Hershcovis et al., 2018; Kjærvik & Bushman, 2024). The central issue lies in a fundamental misunderstanding and mismanagement of anger within workplaces. Constructively managing anger, rather than merely mitigating it, may lead to genuine and long-lasting productivity and well-being. As Aristotle (ca. 350 B.C.E./2004, p. 101) noted, failing to get angry in the right circumstances renders people servile, potentially leading to detrimental consequences for their productivity and emotional well-being (Feinberg et al., 2020; Grandey & Sayre, 2019; Lee et al., 2021). Therefore, addressing the nature of anger and finding effective ways to manage it may be a crucial challenge within contemporary organizational sciences.

Research Gaps, Research Objectives and Questions

Significant gaps persist in our understanding of workplace anger (Ashkanasy & Humphrey, 2011). Despite existing research (Geddes et al., 2020; Hershcovis et al., 2018; Potegal et al., 2010), comprehensive knowledge of the fundamental characteristics, antecedents, and typical outcomes of workplace anger remains limited. This is due to a lack of systematic reviews and the absence of conceptual models specifically focused on workplace anger (see Ashkanasy & Humphrey, 2011; Moors et al., 2013; Weiss & Beal, 2005). Although organizational theories address emotions (e.g., Hacker, 1985; Vroom, 1964; Weiss & Cropanzano, 1996), they often fail to capture the intricate dynamics of anger in workplace settings. While person-environment interactions frequently trigger anger in daily life (Frijda, 1987; Lazarus, 1991; Potegal et al., 2010), these interactions in the workplace context—such as supervisor power abuse, irresponsible behavior, and job demands (e.g., Adiyaman & Meier, 2022; Khan et al., 2022; Lim et al., 2016)—are often more focused and unique to this environment. This may be due in part to the distinct work culture, which interacts with the broader societal culture (see also Diefendorff & Greguras, 2008; House et al., 2004; Moran et al., 2013). Moreover, most empirical studies (e.g., Butts et al., 2015; Khan et al., 2022; Vidal, 2014) and established theoretical organizational models (e.g., Blau, 1964; Higgins, 1987; Weiss & Cropanzano, 1996) predominantly characterize workplace anger as destructive. This perspective has likely limited the exploration of its constructive potential (see also Geddes et al., 2020; Hershcovis et al., 2018; Lindebaum & Geddes, 2016), including its role in facilitating efficient and effective conflict resolution (e.g., Hershcovis et al., 2018; Karppinen et al., 2023). My dissertation aims to address these gaps by systematically examining the essence of workplace anger, including its key characteristics, antecedents, and outcomes. By proposing novel conceptual models, I intend to elucidate the complex dynamics of anger in work environments and explore its potential to enhance individual productivity and emotional well-being.

The primary objective of this dissertation is thus to explore workplace anger comprehensively by addressing the following research questions: What constitutes the essence of workplace anger, including its fundamental characteristics, antecedents, and typical outcomes? What constructive anger management strategies could exist to enhance individual productivity and emotional well-being?

Contributions

This dissertation makes significant contributions across multiple domains: (1) advancing the understanding of workplace emotions, particularly anger, within research contexts; (2) providing actionable insights for counselors and coaches dealing with anger-related issues in the workplace; (3) offering valuable strategies for organizational decision-makers to better manage emotions within their organizations; and (4) empowering individual employees to navigate and manage their own workplace anger more constructively.

Contributions to Research

This dissertation makes significant contributions to the research fields of organizational psychology and organizational behavior by offering a comprehensive advancement in the understanding of workplace emotions, with a focus on anger. It begins with a critical examination and synthesis of existing research, systematically analyzing theoretical and empirical patterns in the current literature to establish a fundamental understanding of what constitutes workplace anger. Building on this foundation, the dissertation introduces a novel conceptualization of anger that challenges traditional views and offers a more nuanced understanding of this complex emotion. Furthermore, it develops a sophisticated conceptual model that captures the intricate dynamics of anger within workplace settings. Most notably, this research redefines the role of anger management in the workplace, shifting the prevailing perspective from viewing anger as a primarily destructive force to be suppressed (e.g., Butts et al., 2015; Khan et al., 2022; Vidal, 2014) to recognizing how, when managed effectively, it can become a constructive and transformative emotion. These contributions collectively push the boundaries of current knowledge and open new avenues for research and practical application.

Critical Examination and Synthesis of Existing Research

A comprehensive understanding of any topic requires a thorough examination and synthesis of the underlying patterns that define it. This dissertation takes on this challenge by being among the first to critically analyze workplace anger in such depth. Through the work presented in Manuscripts 1 (*How to Capture The Rage? Development and Validation of a State-Trait Anger Scale*) and 2 (*The Angry Employee: A Meta-Analytic Review of Workplace Anger*), I lay a solid foundation for understanding anger within workplace contexts, moving beyond the simplistic view of anger as merely a reaction to an offense (Lazarus, 1991) or negative event (Weiss & Cropanzano, 1996). Instead, this research offers a more nuanced and critically evaluated conceptualization of workplace anger. By clarifying what workplace anger truly is—and what it is not—this work enhances its conceptual clarity within the existing literature. Through this rigorous examination and synthesis, I establish a more precise foundation for understanding the true nature of workplace anger and what we are dealing with in this complex emotion.

Novel Conceptualization of Anger

While critically examining and synthesizing existing research is crucial, it may not be sufficient to fully grasp the complexities of (workplace) anger. Existing empirical research often builds on the limited theoretical foundations just described, which constrains the depth of understanding of workplace anger. To address these limitations, my work in Manuscripts 3 (*The Path to Antagonism is Paved with Moral Superiority: Relations between Colleague-Directed Moral Superiority, Moral Emotions, and Workplace Antagonism*) and 4 (*Forget Not That Our Errand is Just: The Relations Between Moral Transgressions, Experiences of Immorality, Moral Emotions, and Regulatory Behaviors at Work*) aims to expand our

conceptualization of workplace anger by proposing a more nuanced perspective. These manuscripts collectively introduce a novel conceptualization of anger that goes beyond traditional views, linking it inherently to morality and the defense of moral values within the workplace (see also Horberg et al., 2011; Rozin et al., 1999; Shweder et al., 1997). This approach challenges conventional understandings and offers a deeper, more comprehensive view of the dynamics surrounding workplace anger, providing a fresh lens through which to study and interpret this emotion.

Development of a Sophisticated Conceptual Model

With a foundational and advanced understanding of workplace anger established, it becomes essential to take a step back and explore analogies that bridge the gap between existing theories and the novel conceptualization I propose. Workplace anger is inherently complex, making it valuable to abstract this complexity in order to better understand the construct and its dynamics within organizational environments. In this context, Manuscript 5 (*The Interaction Discrepancy Model: A Theoretical Framework for Understanding Person-Environment Interactions*) introduces a sophisticated conceptual model that encapsulates the intricate dynamics of anger in workplace settings.

This model is a significant innovation, being the first of its kind in decades (see Ashkanasy & Humphrey, 2011; Blau, 1964; Ellsworth, 2013; Frese & Zapf, 1994; Hacker, 1985; Higgins, 1987; Lazarus, 1991; Moors et al., 2013; Roseman, 2013; Scherer, 2009; Vroom, 1964; Weiss & Beal, 2005; Weiss & Cropanzano, 1996). It aligns several foundational and novel theoretical frameworks with contemporary empirical research across various interdisciplinary domains, including cognitive-, social-, environmental-, and moral-psychology as well as behavioral neuroscience. By abstracting how emotions, including anger, interact and respond within different environmental contexts, including workplace settings, this model offers a more nuanced and comprehensive understanding of these dynamics.

Ultimately, the new model makes a substantial contribution to existing theoretical literature by providing a more reliable framework for explaining and predicting the dynamics within person-environment interactions. Its ability to integrate complex emotional dynamics within diverse contexts, including the workplace, marks a valuable advancement in the study of workplace emotions.

Changing the Way Anger is Viewed and Managed in the Workplace

While the previous contributions already significantly advance theoretical research, the most profound impact of my work may lie in its redefinition of how anger is perceived and managed in the workplace. Traditionally, anger has been viewed as a destructive force that should be suppressed (e.g., Butts et al., 2015; Khan et al., 2022; Vidal, 2014). My research challenges this notion, demonstrating that, when managed effectively, anger can be harnessed as a constructive and transformative emotion. Manuscripts 6 (*The Daily Relations Between Workplace Anger, Coping Strategies, Work Outcomes, and Workplace Affiliation*) and 7 (*Anger, Employee Attitudes, and Interpersonal Coping in the Workplace*) further elucidate

the importance of this shift in perspective, providing new insights into the dynamics of workplace anger and its management.

This redefinition of anger management not only enriches our theoretical understanding but also has significant practical implications. By offering a more nuanced approach to managing anger, my research challenges current practices recommended in the literature (see Scheibe & Moghimi, 2019; Thomas, 2001; Yun & Yoo, 2021). The insights gained from this work are crucial for professionals who navigate anger management daily, a topic I will now address in greater detail.

Contributions to Counseling and Coaching Practices

For counselors and coaches, this research offers valuable insights into the triggers and dynamics of workplace anger, enabling them to develop more effective, targeted strategies for their clients. The findings support the creation of tailored interventions that address specific person-environment interactions, ultimately aiding in the effective management of anger-related issues in the workplace. This contribution ensures that counseling practices are grounded in cutting-edge research, thereby improving client outcomes and the overall effectiveness of therapeutic interventions.

Contributions to Organizational Decision-Making

This research provides practical strategies for organizational decision makers, such as leaders, to better understand and manage emotions—both their own and those of their subordinates. By applying the insights gained from this dissertation, decision-makers can reduce the risk of unnecessary conflicts, improve workplace relationships, and protect their professional standing and benefits. Additionally, managing their own anger more effectively can lead to greater productivity and emotional well-being, thereby contributing to the overall success of their organization.

Contributions to Individual Employees

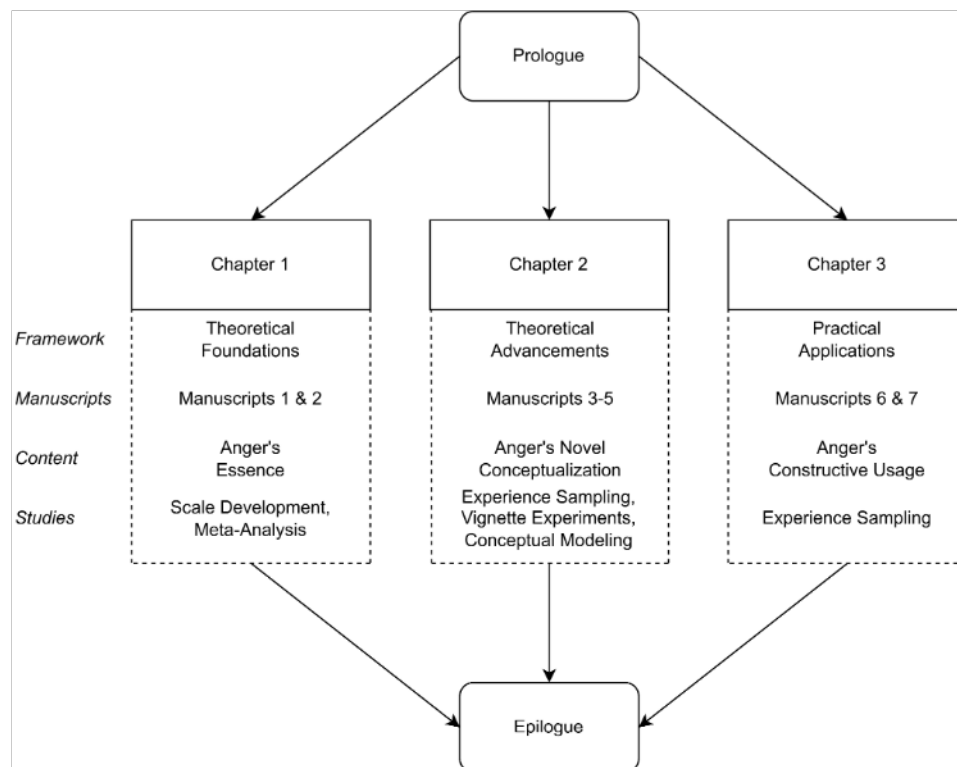
For individual employees, this research offers practical guidance on how to manage workplace anger in a way that enhances both productivity and emotional well-being. The dissertation provides strategies that empower employees to assert themselves, prevent conflicts, and create a more harmonious work environment. By applying these insights, employees can take proactive steps to improve their daily interactions and overall well-being, leading to a better work life.

In summary, this dissertation contributes to the understanding and management of workplace anger across various professional contexts, offering actionable insights that benefit researchers, counselors, organizational leaders, and employees alike.

Overview of Manuscripts

I gather and discuss the implications and recommendations for these audiences through seven full-length manuscripts, which constitute this dissertation. These manuscripts are divided into three main chapters: Chapter 1 (*A Foundational Understanding of Workplace Anger*), Chapter 2 (*Advancing Our Understanding of Workplace Anger*), and Chapter 3 (*Managing Workplace Anger Constructively*). I provide a visual overview of this structure in Figure 1.

Figure 1
Dissertation Overview



Chapter 1: A Foundational Understanding of Workplace Anger

Chapter 1 (*A Foundational Understanding of Workplace Anger*) includes Manuscripts 1 and 2, which provide the theoretical foundations of workplace anger, including its fundamental characteristics, antecedents, and typical outcomes.

In Manuscript 1 (*How to Capture The Rage? Development and Validation of a State-Trait Anger Scale*), I explore the essence of anger through three workplace studies—expert ratings, a multinational observation, and a diary study. I develop a comprehensive conceptualization of anger and a bilingual and theory-overarching measurement metric. The key findings reveal that the actual conceptualization of anger is narrower than previously anticipated (c.f., Lazarus, 1991; Potegal et al., 2010), consistent between Germans and Americans for state anger (momentary emotion) but not for trait anger (predisposition to feel the momentary emotion). Additionally, anger is conceptually similar to hostility but distinct from joviality, serenity, and sadness. The likelihood of an employee becoming angry or expressing anger in the workplace is equally related to personal and situational characteristics (see also Angoff, 1988; Botero, 2012; Mason & Capitanio, 2012). Furthermore, anger is strongly related to both direct (verbal aggression, property aggression, interpersonal violence) and indirect (guilt induction, malicious humor, social exclusion) forms of anger expression (see also Archer & Coyne, 2005; Kaukiainen et al., 2001), while trait anger is uniquely related to verbal aggression and malicious humor (see also Hershcovis et al., 2007; Mill et al., 2018). Thus, Manuscript 1 establishes the foundation for a preliminary understanding of the nature of anger in workplace settings.

Building on this preliminary understanding, I conduct a meta-analytic review in Manuscript 2 (*The Angry Employee: A Meta-Analytic Review of Workplace Anger*) to deepen the understanding of anger's antecedents, concomitants, and outcomes. Using a systematic review approach combined with meta-correlational and meta-structural equation model analyses, I develop and test a comprehensive conceptual model of anger at work. My investigation identifies several antecedents of anger. Situational factors, such as negative workplace events (e.g., acts of injustice, social mistreatment, and increased job demands) and the attribution of blame for these events (e.g., accountability, controllability, fault, and maliciousness), positively relate to anger. Conversely, positive workplace events (e.g., acts of justice, social support, and job resources) negatively relate to anger. Together these results demonstrate that anger could be conceptualized as an emotional reaction to workplace events that have negatively (as opposed to positively) judged attributes (see also Weiss & Cropanzano, 1996). Personal factors, including trait anger, negative emotionality, occupational tenure, and employment in the private sector, are positively associated with anger, while resilience, age, and higher positions within a company are negatively associated. Workplace environment factors, such as the time elapsed since a negative event and feministic policy labeling, correlate positively with anger, whereas individual-based reward systems (compared to team-based) correlate negatively. Furthermore, it seems that the predictors of workplace anger are equally attributable to characteristics related to the situation, the person, and the work environment (see also Angoff, 1988; Botero, 2012; Mason & Capitanio, 2012). Concomitants of anger include negative emotions such as disgust, fear, sadness, and shame, which frequently co-occur with anger in workplace settings (see also Russell, 1980; Russell & Carroll, 1999). In contrast, positive emotions like joviality, pride, self-assurance, serenity, and attentiveness generally inversely relate to anger. Outcomes of anger encompass destabilizing attitudes and behaviors, including deviance, punishment, antagonism, counterproductive workplace behavior, confrontation, and snitching (see also

Geddes & Callister, 2007; Hershcovis et al., 2007). Paradoxically, anger is also associated with some prosocial behaviors (see also Linden et al., 2003). Conversely, anger is negatively related to stabilizing attitudes and behaviors, including sympathy, helping, organizational citizenship behaviors, and making amends. Finally, anger frequently relates to reduced workplace performance. Thus, Manuscript 2 builds on the preliminary understanding of anger from Manuscript 1 and deepens it further.

Chapter 2: Advancing Our Understanding of Workplace Anger

Having established a solid foundation of current research on anger and its specific relations to workplace factors, I challenge and advance this knowledge in Chapter 2 (*Advancing Our Understanding of Workplace Anger*). This chapter encompasses Manuscripts 3 to 5, which provide an advanced understanding of workplace anger's essence, characteristics, antecedents, and outcomes. I propose that the core assumption established in Chapter 1—that negative workplace events are the primary reason for workplace anger (Weiss & Cropanzano, 1996)—may be valid yet misleading. Instead, I tentatively put forward and test the overarching hypothesis that employees feel and express anger at work because they perceive a moral discrepancy between how interactions at work are and how they ought to be (see also Shweder et al., 1997). Anger serves as a motivating force, and its expression acts as a practical means to address this moral discrepancy, realigning reality with moral expectations.

To investigate this hypothesis, I conduct an experience sampling study and a vignette experiment in Manuscript 3 (*The Path to Antagonism is Paved with Moral Superiority: Relations between Colleague-Directed Moral Superiority, Moral Emotions, and Workplace Antagonism*). The key findings preliminarily support my hypothesis that employees experience and express anger at work when they perceive a moral discrepancy between actual and expected workplace interactions. The results reveal that a significant and consistent relationship exists between the perceived moral discrepancy between one's own behavior (i.e., the expected behavior) and that of coworkers (i.e., the actual behavior) and the resulting anger directed toward those coworkers (Rozin et al., 1999). Furthermore, the anger felt towards these coworkers reliably relates to developing antagonistic attitudes and behaving antagonistically towards them, presumably prompted by the initial moral discrepancy (see also Lindebaum & Geddes, 2016; Tripp & Bies, 2010). Thus, Manuscript 3 serves as an initial step to challenge the foundational assumptions posed in Chapter 1 and advances these assumptions by proposing and testing that employees feel and express anger at work because they perceive a moral discrepancy between how interactions with their coworkers are and how they ought to be.

To strengthen the reliability and validity of the results from Manuscript 3, I conduct a refined experience sampling study with an egocentric network approach and an additional vignette study in Manuscript 4 (*Forget Not That Our Errand is Just: The Relations Between Moral Transgressions, Experiences of Immorality, Moral Emotions, and Regulatory Behaviors at Work*). The results reveal that moral discrepancies, particularly those involving acts of injustice by a specific coworker toward the focal person, are strongly and consistently associated with feelings of anger toward that coworker. Specifically, when a coworker's

behavior deviates from what an employee expects—where the actual interaction is perceived as immoral or unjust, contrasting with the expected moral and just behavior—such moral discrepancies lead to anger and subsequent retributive action, further supporting my overarching hypothesis that employees feel and express anger at work when they perceive a moral discrepancy between how interactions actually are (i.e., immoral, unjust) and how they ought to be (i.e., moral, just), motivating the focal person to express their anger to address the discrepancy (see also Khattak et al., 2019). Thus, Manuscript 4 reliably replicates the results of Manuscript 3 and further supports my hypothesis that employees experience and express anger at work when they perceive a moral discrepancy between actual and expected workplace interactions. It demonstrates that employees feel and express anger at work because they perceive a moral discrepancy between how interactions with their coworkers are (immoral, unjust) and how they ought to be (moral, just), and that anger expressions presumably act as practical means to address these discrepancies.

Building on the positive feedback regarding my hypothesis that perceived moral discrepancies primarily drive workplace anger, I present an alternative conceptual model in Manuscript 5 (*The Interaction Discrepancy Model: A Theoretical Framework for Understanding Person-Environment Interactions*), contrasting with the traditional model in Manuscript 2 (*The Angry Employee: A Meta-Analytic Review of Workplace Anger*). In this model, I propose an eight-stage process, outlining that anger results primarily from the perception of an undesirable moral discrepancy attributed to another person, yet perceived as changeable (see also Lazarus, 1991; Hacker, 1985; Higgins, 1987). The resulting anger then serves as a motivating force, with its expression through change-oriented behaviors acting as a practical means to address the moral discrepancy, thereby realigning reality with moral expectations. Thus, Manuscript 5 synthesizes and creates a comprehensive analogy of the results from Manuscripts 1 to 4, advancing our understanding of workplace anger.

Chapter 3: Managing Workplace Anger Constructively

Having extensively addressed the first research question on the essence of workplace anger, I build upon this foundation and turn to the secondary objective of my dissertation: exploring and proposing strategies for the constructive management of anger. Chapter 3 (*Managing Workplace Anger Constructively*) is dedicated to this objective and encompasses Manuscripts 6 and 7. These manuscripts explore and propose strategies for the constructive management of anger, comparing them to traditional mitigation-oriented strategies mentioned earlier (see also Folkman et al., 1986; Linden et al., 2003). This aims to support my claim that constructively managing anger, rather than dealing with it through mitigative means, may lead to genuine and long-lasting productivity and well-being (see also Herscovis et al., 2018; Karppinen et al., 2023).

In Manuscript 6 (*The Daily Relations Between Workplace Anger, Coping Strategies, Work Outcomes, and Workplace Affiliation*), I test the assumption that anger management involving behavior aimed at changing an undesirable discrepancy in a person-environment interaction may be constructive. In an intensive diary study spanning two weeks, I surveyed participants about their daily anger experiences, how they dealt with these experiences,

and how many work-related goals they achieved. The key insights support my assumption that change-oriented behavior can be constructive (see also Brodscholl et al., 2007; Elliot, 2006; Wollburg & Braukhaus, 2010), revealing that anger has the potential to positively relate to work-related goal attainment when dealt with via change-oriented behavior (i.e., confrontation/assertion). Additionally, the findings indicate that anger-induced change-oriented behavior is somewhat more constructive than mitigation-oriented behavior (i.e., suppression/rumination) in terms of goal attainment. Thus, Manuscript 6 lays the groundwork for the assumption that constructively managing anger may lead to increased productivity.

To further test this assumption, I continue my investigation in Manuscript 7 (*Anger, Employee Attitudes, and Interpersonal Coping in the Workplace*), aiming to replicate the results of Manuscript 6 and compare constructive anger-induced change-oriented behavior to traditional mitigation-oriented strategies. Through another intensive diary study, I pit these different categories of anger management strategies against one another and investigate how they impact the relationship between daily anger and daily employee emotional well-being. The key findings support my core assumption that constructively managing anger may lead to increased well-being. In particular, they show that among the most common anger management strategies (e.g., confrontation/assertion, avoidance¹), confrontation/assertion is the primary anger management strategy related to increased employee emotional well-being (see also Hershcovis et al., 2018; Karppinen et al., 2023; Wollburg & Braukhaus, 2010). Moreover, other anger management strategies robustly relate to decreased employee emotional well-being. Thus, Manuscript 7 drives home the point that constructively managing anger, rather than using mitigative means, may lead to increased well-being. Dismissing the constructive potential of anger may be misleading and counterproductive, echoing Aristotle's wisdom from centuries ago that failing to get angry when necessary can have detrimental consequences.

Epilogue

Having addressed both objectives of this dissertation—determining the essence of workplace anger and proposing constructive management strategies—I turn to a comprehensive discussion of the results. This final section aims to aggregate the results of Manuscripts 1 to 7 and draw analogies between them to conclusively answer the research questions: What constitutes the essence of workplace anger, and what constructive anger management strategies can enhance individual productivity and emotional well-being? I will outline the implications of these findings for both theory and practice, discuss the limitations of my research, and propose directions for future research.

¹Due to an initial revision process, the manuscript includes primarily the anger management strategies of confrontation/assertion and avoidance. However, I also measured and analyzed direct anger-out, rumination, diffusion, and social support-seeking as anger management strategies. These additional strategies are noted here and will be discussed in detail in the epilogue.

Establishing the Foundations of Understanding

In summary, this dissertation embarks on a critical exploration of workplace anger, addressing significant gaps in the existing literature by investigating its characteristics and constructive management strategies. The introduction has provided a comprehensive overview of the theoretical background, outlined the pressing research questions, and underscored the relevance of this study for both academic scholarship and practical application.

The journey begins with Chapter 1, “*A Foundational Understanding of Workplace Anger*,” which serves as the cornerstone of this dissertation. This chapter lays the essential groundwork by offering a deep dive into the theoretical and empirical underpinnings of workplace anger. It comprises two pivotal manuscripts that collectively build a robust foundation for understanding this complex emotion in organizational contexts.

The first manuscript in this chapter focuses on the development and validation of a state-trait anger scale, offering an essential and theoretically grounded understanding and measurement of workplace anger. The second manuscript extends this foundation by conducting a meta-analytic review, which synthesizes existing research to identify key antecedents, concomitants, and outcomes of workplace anger. Together, these manuscripts enhance our theoretical and empirical understanding of workplace anger necessary for the advanced examinations that will follow in subsequent chapters.

As we transition into Chapter 1, we delve into the essential elements of workplace anger, establishing the theoretical pillars upon which the rest of this dissertation is built. This chapter is integral to the overall narrative, setting the stage for the more sophisticated examinations that will unfold in the later chapters. The insights gained here will resonate throughout the dissertation, guiding us through the intricate dynamics of anger in organizational life.

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Chapter 1:
A Foundational Understanding of Workplace Anger

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How to Capture The Rage? Development and Validation of a State-Trait Anger Scale

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Our research seeks to contribute to the existing literature on emotion measurement and research by proposing a new anger metric that addresses limitations of previous scales. This metric shows promise in meeting modern standards and drawing from traditional methods, potentially impacting the study of emotions. Additionally, our study explores cross-cultural congruence in assessing anger between English and German speakers, revealing differences in state and trait anger assessment. We offer theoretical perspectives on these cultural variances and emphasize the importance of considering language nuances in cross-cultural emotion assessment. Furthermore, our research delves into the relationship between anger and other emotions within an affective space, suggesting support for the notion that emotions are composite constructs consisting of valence and activation. We also discuss alternative theoretical perspectives on emotion construction to enhance our understanding. Additionally, our study examines the intricate relationship between anger and different forms of aggression, highlighting the association between anger and various aggressive behaviors in work settings. Our findings underscore the influence of personal traits and situational factors on experiences of anger and aggression, offering insights into the relationships between emotional states, traits, and behavior.

Keywords: Anger Assessment Metric (AAM), Scale Development and Validation, Cognitive-Motivational-Emotive System Model, State-Trait, Bilingual

“The wrath do thou sing, O goddess, of Peleus’ son, Achilles . . . ”

– Homer (ca. 700 B.C.E./1928)

Throughout history, the significance of capturing the essence of anger in literature has been widely recognized by humans. In fact, anger has been documented as the first written word in Western literature, underscoring its enduring importance (Potegal & Novaco, 2010). As we progress into the 21st century, anger continues to be depicted as an arousing and often negative emotion linked to perceptions of arbitrary, reckless, or malicious actions directed towards oneself or confidants (Lazarus, 1991). Despite this long-standing acknowledgment of anger’s significance, there seems to be a decreasing emphasis on studying anger within the scientific community. Considering the extensive impact that anger can have on individuals, groups, and communities, it is imperative for scientists to prioritize understanding and effectively measuring this intricate emotion. Therefore, the development of precise methods for measuring anger could play a pivotal role in advancing research and enriching our comprehension of this crucial facet of human experience.

One potential reason for the decreasing emphasis on research regarding the measurement of anger could be the belief that existing tools are sufficient for measuring anger accurately. While previous research, as shown in Table 1, offers support for this claim, we might want to consider the evolving nature of the world we live in. Developments in the scientific *Zeitgeist*, advancements in technology, changes in theoretical understanding of emotions, and improvements in methodological approaches suggest that a modest “renaissance” in anger measurement could be beneficial for researchers. This does not mean that existing measurement tools are obsolete or should be disregarded; rather, it suggests the importance of developing new tools that align with current standards while drawing inspiration from past methods. By adapting measurement techniques to suit our modern context, researchers could enhance the accuracy and ecological validity of their studies on anger.

With the recent developments in the scientific *Zeitgeist* (e.g., a progression toward open science; Foster & Deardorff, 2017; Lewis, 2012; Swan, 2007), technological advancements (e.g., increased availability of mobile phones and internet access, user-friendly survey apps; Comer & Wikle, 2008; Dhamdhare & Dovrolis, 2011; Mestdagh et al., 2023), developments in theory (including partial agreement between cognitivist, basic-emotion, and constructivist perspectives on emotion; Gendron & Barrett, 2009; Suri & Gross, 2022; Zachar, 2022), and advances in methodology (such as confirmatory factor analyses, multilevel modeling, multidimensional scaling, and new sampling techniques like experience sampling; Muthén & Muthén, 2019; Hout et al., 2013; Gabriel et al., 2019), our current research is focused on creating a novel, pre-registered, and open-access anger metric that strives to meet current standards while also drawing inspiration from traditional approaches. The development of the metric was guided by theoretically-driven principles derived from the cognitive-motivational-emotive system model (CMESM; Lazarus, 1991; Smith & Lazarus, 1990) and research on metric development and validation by Hinkin (1998). In conducting three separate studies testing our metric, we sought to increase its validity and reliability across a range of theoretical contexts. We argue that our results may suggest some level of achievement in this pursuit. Through the inclusion of unique conditions based on theory, we were able to gather valuable insights into different emotion theories and uncovered empirical evidence that appears to support existing research.

In our current research, we argue that we have made four reasonable contributions to the existing literature on emotion measurement and research. Our work has resulted in the development of an anger metric that shows promise in meeting certain modern standards and drawing inspiration from traditional methods. Our metric also appears to address limitations of previous scales in terms of the measured constructs, metric complexity, theoretical background, statistical methods used for scale development, sensibility, and accessibility (see Table 1). Among other things, these limitations include a lack of state anger measurements, inclusion of confounding constructs in anger measurement, excessive complexity, absence of theoretical foundations and data-driven metric construction, lack of contemporary statistical methods used for scale development, issues with the detectability of within-person variance, and proprietary status. As such, we are cautiously optimistic about the potential for our metric to be adopted in important situations where understanding anger is crucial.

Table 1
Self-Report Anger Metrics

Metric	Authors	Constructs	Complexity	Theoretical background	Statistical methods for scale development	Sensibility	Accessibility
Anger Assessment Metric	current	<ul style="list-style-type: none"> State anger Trait anger 	<ul style="list-style-type: none"> 4 items (state anger; terms) 4 items (trait anger; terms) 	<ul style="list-style-type: none"> Cognitive-motivational-emotion system model 	<ul style="list-style-type: none"> Single-level principal component analysis Single-level confirmatory factor analysis Multi-level confirmatory factor analysis Multidimensional scaling analysis Single-level exploratory factor analysis 	<ul style="list-style-type: none"> Between-person variance detectable Within-person variance detectable 	<ul style="list-style-type: none"> Open access
State-Trait Anger Scale	Spielberger et al. (1983)	<ul style="list-style-type: none"> State anger Trait anger 	<ul style="list-style-type: none"> 10 items (state anger; terms) 10 items (trait anger; sentences) 	<ul style="list-style-type: none"> Unknown (data-driven) 	<ul style="list-style-type: none"> Single-level exploratory factor analysis 	<ul style="list-style-type: none"> Between-person variance detectable Within-person variance detectable 	<ul style="list-style-type: none"> Publicly available
State-Trait Anger Expression Inventory	Spielberger (1999)	<ul style="list-style-type: none"> State anger Trait anger 	<ul style="list-style-type: none"> 15 items (state anger; terms & sentences) 10 items (trait anger; sentences) 	<ul style="list-style-type: none"> Unknown (data-driven) 	<ul style="list-style-type: none"> Single-level exploratory factor analysis Single-level confirmatory factor analysis 	<ul style="list-style-type: none"> Between-person variance detectable Within-person variance detectable 	<ul style="list-style-type: none"> Proprietary access
Positive and Negative Affect Schedule	Watson & Clark (1994)	<ul style="list-style-type: none"> State hostility Trait hostility 	<ul style="list-style-type: none"> 6 items (state hostility; terms) 6 items (trait hostility; terms) 	<ul style="list-style-type: none"> Circumplex model of emotion 	<ul style="list-style-type: none"> Single-level principal component analysis 	<ul style="list-style-type: none"> Between-person variance detectable Within-person variance detectable 	<ul style="list-style-type: none"> Publicly available
Profile of Mood States	McNair et al. (1992)	<ul style="list-style-type: none"> State anger-hostility Trait anger-hostility 	<ul style="list-style-type: none"> 7 items (state hostility; terms) 7 items (trait hostility; terms) 	<ul style="list-style-type: none"> Circumplex model of emotion 	<ul style="list-style-type: none"> Single-level exploratory factor analysis 	<ul style="list-style-type: none"> Between-person variance detectable Within-person variance detectable 	<ul style="list-style-type: none"> Publicly available
Facets of Emotional Experiences in Everyday Life Scale	Chung et al. (2022)	<ul style="list-style-type: none"> State anger Trait anger 	<ul style="list-style-type: none"> 16 items (state anger; terms) 16 items (trait anger; terms) 	<ul style="list-style-type: none"> Circumplex model of emotion Differential emotions model 	<ul style="list-style-type: none"> Single-level exploratory factor analysis Single-level confirmatory factor analysis Multi-level exploratory factor analysis Multi-level confirmatory factor analysis 	<ul style="list-style-type: none"> Between-person variance detectable Within-person variance detectable 	<ul style="list-style-type: none"> Publicly available
Differential Emotions Scale	Izard (1982)	<ul style="list-style-type: none"> State anger Trait anger 	<ul style="list-style-type: none"> 3 items (state anger; terms) 3 items (trait anger; terms) 	<ul style="list-style-type: none"> Differential emotions model 	<ul style="list-style-type: none"> Single-level exploratory factor analysis Single-level confirmatory factor analysis 	<ul style="list-style-type: none"> Between-person variance detectable Within-person variance detectable 	<ul style="list-style-type: none"> Publicly available
Buss-Perry Aggression Questionnaire	Buss & Perry (1992)	<ul style="list-style-type: none"> Trait anger 	<ul style="list-style-type: none"> 7 items (sentences) 	<ul style="list-style-type: none"> Unknown (data-driven) 	<ul style="list-style-type: none"> Single-level exploratory factor analysis Single-level confirmatory factor analysis 	<ul style="list-style-type: none"> Between-person variance detectable 	<ul style="list-style-type: none"> Publicly available
Buss-Durkee Hostility Inventory	Buss & Durkee (1987)	<ul style="list-style-type: none"> Trait irritability 	<ul style="list-style-type: none"> 11 items (sentences) 	<ul style="list-style-type: none"> Unknown (data-driven) 	<ul style="list-style-type: none"> Single-level exploratory factor analysis 	<ul style="list-style-type: none"> Between-person variance detectable 	<ul style="list-style-type: none"> Publicly available
Novaco Anger Scale and Provocation Inventory	Novaco (2003)	<ul style="list-style-type: none"> Trait anger 	<ul style="list-style-type: none"> 25 items (sentences) 	<ul style="list-style-type: none"> Unknown (data-driven) 	<ul style="list-style-type: none"> Single-level exploratory factor analysis 	<ul style="list-style-type: none"> Between-person variance detectable 	<ul style="list-style-type: none"> Proprietary access
Anger Self-Report	Reynolds et al. (1994)	<ul style="list-style-type: none"> Trait anger 	<ul style="list-style-type: none"> 30 items (sentences) 	<ul style="list-style-type: none"> Unknown (data-driven) 	<ul style="list-style-type: none"> Single-level exploratory factor analysis 	<ul style="list-style-type: none"> Between-person variance detectable 	<ul style="list-style-type: none"> Publicly available
Avery Aggression Scale	Bjornbekk & Howard (2012)	<ul style="list-style-type: none"> Trait anger 	<ul style="list-style-type: none"> 20 items (sentences) 	<ul style="list-style-type: none"> Quadrant-type typology of violence model 	<ul style="list-style-type: none"> Single-level exploratory factor analysis 	<ul style="list-style-type: none"> Between-person variance detectable 	<ul style="list-style-type: none"> Publicly available
Multidimensional Anger Inventory	Siegel (1986)	<ul style="list-style-type: none"> Trait anger 	<ul style="list-style-type: none"> 26 items (sentences) 	<ul style="list-style-type: none"> Unknown (data-driven) 	<ul style="list-style-type: none"> Single-level principal component analysis 	<ul style="list-style-type: none"> Between-person variance detectable 	<ul style="list-style-type: none"> Publicly available
Anger Disorders Scale	Diguaterra & Tufano (2004)	<ul style="list-style-type: none"> Trait anger reactivity 	<ul style="list-style-type: none"> 76 items (sentences) 	<ul style="list-style-type: none"> Unknown (data-driven) 	<ul style="list-style-type: none"> Single-level exploratory factor analysis 	<ul style="list-style-type: none"> Between-person variance detectable 	<ul style="list-style-type: none"> Proprietary access
Dimensions of Anger Reactions	Fonnes et al. (2004)	<ul style="list-style-type: none"> Trait anger 	<ul style="list-style-type: none"> 7 items (sentences) 	<ul style="list-style-type: none"> Unknown (data-driven) 	<ul style="list-style-type: none"> Single-level principal component analysis Single-level confirmatory factor analysis 	<ul style="list-style-type: none"> Between-person variance detectable 	<ul style="list-style-type: none"> Publicly available

Table 1 continued
Self-Report Anger Metrics

Metric	Authors	Constructs	Complexity	Theoretical background	Statistical methods for scale development	Sensibility	Accessibility
Reaction Inventory	Evans & Stangorland (1971)	<ul style="list-style-type: none"> • Trait anger elicitors 	<ul style="list-style-type: none"> • 40 items (sentences) 	<ul style="list-style-type: none"> • Unknown (data-driven) 	<ul style="list-style-type: none"> • Single-level exploratory factor analysis 	<ul style="list-style-type: none"> • Between-person variance detectable 	<ul style="list-style-type: none"> • Publicly available
Anger Consequences Questionnaire	Dorenbocher et al. (1996)	<ul style="list-style-type: none"> • Trait anger consequences 	<ul style="list-style-type: none"> • 26 items (sentences) 	<ul style="list-style-type: none"> • Unknown (data-driven) 	<ul style="list-style-type: none"> • Single-level exploratory factor analysis 	<ul style="list-style-type: none"> • Between-person variance detectable 	<ul style="list-style-type: none"> • Publicly available
Anger Regulation and Expression Scale	Digueppe & Taffrè (2011)	<ul style="list-style-type: none"> • Trait anger 	<ul style="list-style-type: none"> • 23 items (sentences) 	<ul style="list-style-type: none"> • Unknown (data-driven) 	<ul style="list-style-type: none"> • Single-level exploratory factor analysis 	<ul style="list-style-type: none"> • Between-person variance detectable 	<ul style="list-style-type: none"> • Proprietary access

Second, our study may add to the existing literature on cross-cultural congruence in assessing anger between English and German speakers. The findings suggest that there may be some differences in the assessment of state anger and trait anger between the US and German cultures. While there are some similarities in momentary experiences of anger across cultures, there may be some cultural differences in the baseline levels of trait anger. We provide some theoretical perspectives on the potential reasons for this intercultural difference and highlight the importance of considering language nuances in assessing emotions across cultures. Therefore, the study's findings may provide some insight into the universality of emotions and the impact of cultural-semantic differences on assessing emotional states and traits from a basic-emotion theory perspective (Ekman & Cordaro, 2011; Ekman & Friesen, 1971; Russell et al., 2011).

Third, our study may also contribute to the existing literature on affect by examining the relationship between our assumed anger construct and other emotions, including hostility, joviality, serenity, and sadness, within the context of an affective space of emotion. The findings suggest that the constructivist assumption that emotions are composite constructs consisting of valence and activation may hold some merit (Russell, 1980; Watson et al., 1988). However, we also discuss alternative theoretical perspectives that aim to enhance our understanding of the construction of emotions. As such, the study's findings may offer valuable insights into the compositionality of emotions and the assessment of emotional states and traits from a constructivist-emotion theory perspective.

Fourth, our research may also make a valuable contribution to the existing literature on aggression by exploring the intricate relationship between anger and aggressive behaviors. Our findings suggest that anger is broadly associated with various forms of aggression (verbal, property, and interpersonal aggression, as well as guilt induction, malicious humor, and social exclusion) in work settings to a similar extent. The results also highlight the balance between personal traits and situational factors in shaping experiences of anger and aggression, which is consistent with the general model of human aggression (Anderson & Bushman, 2002). Furthermore, our study sheds some light on the specific association between trait anger and verbal aggression and malicious humor. It suggests that trait anger may be uniquely linked to speech-mediated aggression and emphasizes the need for further theorizing and empirical research in this area (Forrest et al., 2005; Verona et al., 2008). As such, our study's findings may provide valuable insights into the relationships between emotional states and traits and behavior.

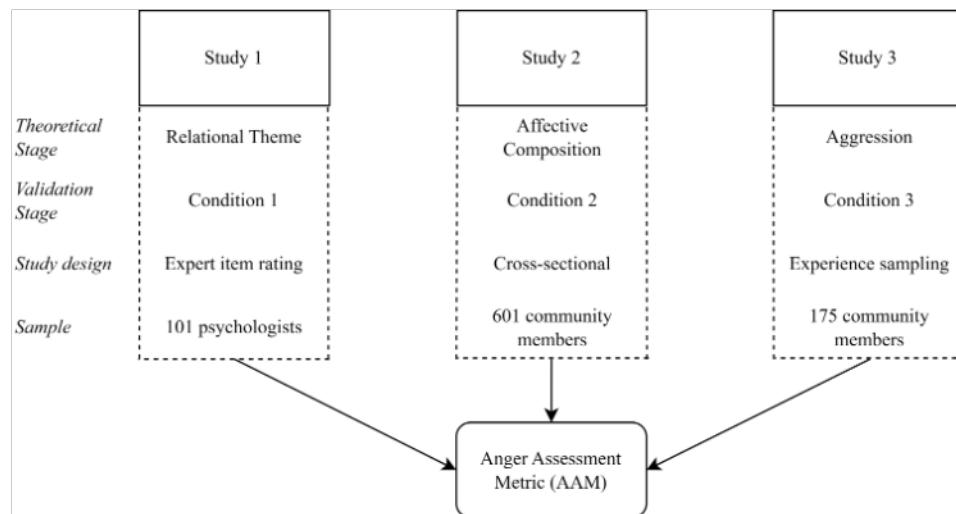
Theoretical Background

From Cognitive-Motivational-Emotive System Model to Construct Measurement

We have devised a workflow to enhance the efficiency of the development and validation process, as depicted in Figure 1. Our approach is based on the CMESM, which provides a comprehensive and theory-based framework for comprehending anger and its associated factors. According to the model, a construct gauging anger should meet three criteria: (1) it should be essentially linked to a relational theme of arbitrary, reckless or malicious actions

directed towards oneself or confidants, (2) it should be aligned with other negative and highly arousing emotions while diverging from positively valenced or low arousal emotions, and (3) it should positively relate to aggression. These criteria will guide the metric development process.

Figure 1
Overview of Studies



Criterion 1: Item Content Consistent with the Relational Theme

The CMESM posits that anger is essentially linked to a relational theme of unjust or harmful actions towards oneself or confidants (Lazarus, 1991; Smith & Lazarus, 1990). Therefore, the content of any items intended to measure the construct of anger must be consistent with a definition (i.e., the essence) of anger that is grounded in this relational theme. We have endeavored to address this criterion through our item development and content validation procedures in Study 1.

Criterion 2: Convergence and Divergence in Relation to Affective Composition

The CMESM describes anger as an emotion characterized by negative valence and high arousal (Lazarus, 1991; Smith & Lazarus, 1990). In addition, the CMESM also suggests that emotions with similar valence and arousal tend to align with each other, while those with opposite attributes tend to diverge. Accordingly, we would expect our construct to be more closely aligned with other negative and highly arousing emotions, and less so with positive or low arousal emotions.

To determine which emotions align or diverge from our construct, we rely on the constructionist account of emotion (Russell, 1980; Watson et al., 1988). This account categorizes emotions based on valence and arousal, resulting in four different combinations of affective compositions represented in distinct "affective quadrants." By selecting emotions from each quadrant, we should be able to determine which emotions are more closely aligned with our construct and which are not, providing a spatial differentiation for analysis. Based on previous research within this framework (Watson & Clark, 1994), we identify hostility (negative valence, high arousal), joviality (positive valence, high arousal), sadness (negative valence, low arousal), and serenity (positive valence, low arousal) as relevant emotions, as shown in Figure 2 (in the online supplemental).

We expect our construct to be located in the affective quadrant characterized by negative valence and high arousal (Lazarus, 1991; Smith & Lazarus, 1990; Watson & Clark, 1994). Based on the assumption that emotions with similar valence and arousal tend to align with each other, we hypothesize that our construct will converge with hostility and diverge from joviality, serenity, and sadness (Hypothesis 1).

It is important to note that constructivist accounts do not single out anger specifically but instead include it in the emotion of hostility, along with disgust (Russell, 2017; Watson & Clark, 1994). To validate a construct measuring anger, it would be beneficial to incorporate other constructs that have previously measured anger. In accordance with the assumption that emotions with similar valence and arousal tend to align with each other (Lazarus, 1991; Smith & Lazarus, 1990), we hypothesize that our construct will also align with the emotion of anger (Hypothesis 2). We have endeavored to address these hypotheses and the criterion of convergence and divergence in relation to affective composition through our construct validation procedure in Study 2.

Criterion 3: Relation to Aggression

As per the CMESM, there is a positive relation between anger and aggression (Lazarus, 1991; Smith & Lazarus, 1990), as demonstrated in Figure 3 (in the online supplemental). Aggression can be classified into two types - direct and indirect (Archer, 2004; Archer & Coyne, 2005; Bryant & Smith, 2001). Direct aggression includes overt and hostile actions taken by one person towards another, such as verbal aggression, property aggression, or interpersonal aggression (Verona et al., 2008). Indirect aggression, on the other hand, involves covert and hostile behaviors like guilt induction, malicious humor, and social exclusion (Forrest et al., 2005). Based on the CMESM proposition of anger being positively related to aggression, along with prior research on aggression categories, we hypothesize that our construct will also exhibit a positive association with verbal aggression, property aggression, interpersonal aggression, guilt induction, malicious humor, and social exclusion (Hypothesis 3). We have tried to address this hypothesis and the criterion of relation to aggression through our predictive validation procedure in Study 3.

Further Theory-Related Factors to Consider

State-Trait Character and Fluctuations

In this manuscript, our primary focus is on the conceptual construct of state anger. However, we argue that it is imperative to also consider the conceptual construct of anger that reflects one's predisposition to experience the state anger construct, which is known as trait anger. This is crucial because some theorists (Frijda, 1987; Lazarus, 1991; Steyer et al., 2015) would argue that state anger can only be considered a momentary experience of anger when the predisposition of experiencing this emotion is taken into account. Hence, we aim to incorporate a trait anger measure in our metric and use it to integrate the assumptions of theorists in Study 3.

Additionally, it is noteworthy that various theories pertaining to emotions (James, 1884; Moors et al., 2013; Russell, 1980) suggest a general requirement of a state metric that is capable of precisely measuring a given "state." This requirement necessitates that natural fluctuations are observed within people when assessed by said metric. Consequently, we intend to address this requirement by examining whether our measure exhibits similar within-person fluctuations in Study 3.

Item Quantity

In the pursuit of developing and validating a state metric for utilization in experience sampling contexts, we address the issue of determining the number of items that should be included in our metric. As per the theoretical understanding of emotions (Lazarus, 1991; Smith & Lazarus, 1990), they are latent constructs and cannot be directly observed by the person. Therefore, a metric that only includes one observable construct would not be sufficient to precisely capture the latent construct of anger.

Resorting to analytics, a confirmatory factor analysis, which endeavors to approximate latent constructs through observable indicators, requires that at least three items are necessary to indicate a latent construct (Depaoli, 2021; Geiser, 2020). In addition, four items would be adequate to test the latent model fit of the construct. Hence, our goal is to devise a metric that comprises four items.

Item Quality

In order to develop an accurate measure of the latent construct of anger, it is necessary to determine which observable component of an emotion is suitable to approximate anger (i.e., the item quality). In examining the CMESM, there are four primary options to consider: the appraisal itself, the physiological changes that accompany the emotion, the action tendency (impulse), and the feeling state (affect) of anger. While reducing item length and ensuring ease of participant response are important reasons to consider, theoretical reasons also weigh in favor of the use of the affect component in our measure.

While self-reporting and the use of "feeling" words to measure emotion have been met with some reservations in the emotion literature (Frijda, 2009; Kagan, 2010; Picard,

2010), we argue that this method provides the best theoretical means of measuring the latent construct of an emotion. This is because the self-reported feeling state of an emotion by a participant is conceptually regarded as the most comprehensive representation of the emotional experience as a whole (James, 1884; Lazarus, 1991; Russell, 1980). In theory, the affective component should encompass the participant's appraisal, as well as their experience of the physiological changes and changes in action tendency associated with the emotion. Based on this theoretical reasoning, we intend to use affective items in our measure.

Response Anchors

It may be imperative to take into account the response anchors of our measurement instrument. Our construct comprises different levels of intensity along with within-person fluctuations and between-person differences (Lazarus, 1991; Smith & Lazarus, 1990). For this reason, a metric from low expression to high expression should be preferred over a binary measure of no/yes, with respect to measurement accuracy (Casper et al., 2020). All variables used in our studies align with this argumentation, and thus we confine our anchor metrics for each variable to a 5-point measure.

Moreover, it is worthwhile to consider the possibility that different response anchors may be necessary to measure our state and trait construct. Typically, emotional states are measured in terms of intensity (Potegal et al., 2010; Spielberger et al., 1983; Watson & Clark, 1994), which presumably comprises a latent construct containing valence and arousal (Russell & Carroll, 1999). Conversely, emotional traits are measured in terms of frequency (Potegal et al., 2010; Spielberger et al., 1983; Watson & Clark, 1994), which presumably comprises a latent construct containing the level of predisposition (Frijda, 1987). Therefore, it may be fitting to use intensity response anchors for our state metric and frequency response anchors for our trait metric, given these considerations.

Language and Cross-Culturalism

The basic-emotion accounts of emotion theory (Ekman & Cordaro, 2011; Ekman & Friesen, 1971; Russell et al., 2011) suggest the universality of certain emotions, indicating that some emotions are experienced similarly across diverse cultures. Anger, for instance, is considered a universal/basic emotion by basic-emotion theorists, implying that the creation of an anger metric capable of evaluating the anger experience of different cultures would bring incremental practical and theoretical value. Such an approach would not only expand the applicability of the metric but also enable us to somewhat test the basic-emotion assumption concerning anger through invariance tests between two cultures. In this context, our objective is to develop a bilingual (English-German) anger assessment metric and employ it to examine the basic-emotion assumption regarding anger in both US and German cultures in Study 2.

Experience Sampling Context

To enhance the practicality of our metric in experience sampling scenarios, it is crucial to validate it in such circumstances and with samples that are intrinsic to these contexts.

The primary aim of this validation approach is to acquire samples that could be somewhat generalized to the general (working) population, particularly within worksite settings, as our metric is intended for this purpose. For this objective, the participant pool will mainly consist of currently employed full-time workers aged between 18 and 67 years, who work a 35-hour weekly schedule, have a regular 9 to 5 job, and work with co-workers.

Transparency and Openness

Before pre-registration, the exploratory content validation stage (Study 1) was finished. The hypotheses, research, and analysis plans for Studies 2 and 3 have been preregistered on the Open Science Framework and can be accessed at https://osf.io/bnwfd/?view_only=c03e97b0fc2d4516ac3591a03fe0d969 (Study 2) and https://osf.io/68vuq/?view_only=d85b81f060bf4c439d2aecef5b841f35 (Study 3). Online supplementals, data summaries and analysis codes are provided in the parent directory at https://osf.io/efy9r/?view_only=3d28ec8ddf264cd18a7b958214f5cfa0.

Study 1

The primary objective of Study 1 is to construct and validate items that effectively measure the concept of anger as per the CMESM (Condition 1). This approach posits that anger is inherently associated with a relational theme of unjust or harmful actions perpetrated against oneself or confidants. In this study, we aim to gather and analyze expert quantitative ratings of our developed items to enhance the likelihood that these items' content aligns with the definition of anger and conforms to the theoretical framework.

Method

Selection and Procedure

To generate terms related to anger, we reviewed the relevant literature, including works by Lazarus (1991) and American English and German dictionaries. Our primary criteria for extracting terms were that they needed to be adjectives, synonymous with or related to the concept of anger, describe an affect, and be categorized as terms describing both a state and a trait. Ultimately, we developed 47 items based on these criteria.

To ensure accuracy in all studies, we translated items from American English to German using the back-translation method, as detailed by Brislin (1970). A native American English-speaking psychologist assisted us in the translations.

We recruited academic staff with a postgraduate degree in psychology as subject matter experts for the present study. The target sample size was 100, as determined by consulting Kass & Tinsley (1979). According to Kass & Tinsley, a principal component analysis (PCA) requires an item-to-participant ratio of at least 1:5. All participants held academic ranks ranging from research assistant to full professor. We contacted eligible participants via their university email, which was publicly available on the university website from June to July

2022. We excluded participants who did not respond to the full survey or indicated that they misunderstood the instructions in the post-survey feedback. Ultimately, a sample size of 101 was achieved.

Measures

In our study, we provided the participants with a German definition of anger, which was based on the relational theme of arbitrary, reckless or malicious actions directed towards oneself or confidants (Lazarus, 1991). Our aim was to ask the participants to rate the 47 German items based on their clarity and fit with the definition. To measure conceptual fit and clarity, we employed a metric adapted from Schriesheim (1993) with response options ranging from 1 (not at all) to 5 (completely). Additionally, we provided a residual option for participants who were unsure.

Analytic Strategy and Data Diagnostics

We began by extracting items with a mean conceptual fit score of at least 3, indicating sufficient alignment with our conceptual definition of anger (Schriesheim, 1993). This step reduced the initial pool of 47 items to 15 items, after removing items such as grumpy, vengeful, and annoyed. We then examined the clarity scores and feedback sections of our survey to identify items that were ambiguous or unclear. As a result, we removed three items (infuriated, incensed, and indignant), which were deemed ambiguous by the participants. This left us with a final set of 12 items.

To analyze the data for these 12 items, we used R version 4.1.2 (R Core Team, 2022) and employed R-methodology PCA and Q-methodology PCAs with a principal component regression estimator (Hinkin, 1998; Buchta, 2022; Revelle, 2022). Additionally, we conducted data diagnostics recommendations to confirm the quality of our data (Field et al., 2012). According to the statistical analysis, the item scores appeared to follow a negatively skewed beta distribution. This observation suggests that the conceptual fit was generally high for the 12 items (Cullen & Frey, 1999). Consequently, we can assert that the use of our data to inform the metric development was appropriate.

Results and Discussion

Bartlett's test produced a significant result for the 12 items ($\chi^2(66) = 478.64, p < .001$). The Kaiser-Meyer-Olkin statistic indicated good sampling adequacy ($MSA = .74$; Hutcheson & Sofroniou, 1999), and the determinant of the correlation matrix was greater than .00001 ($|R| = .0065$). Additionally, all standardized item loadings on a common component were above 0.40 in both R- and Q-methodology PCAs, implying some degree of content validity (Hinkin, 1998).

The main objective of Study 1 was to develop and validate items that effectively measure the concept of anger, as per the CMESM (Condition 1). During this study, expert quantitative ratings were gathered and analyzed to ensure that the content of the developed items aligns with the definition of anger and conforms to the theoretical framework. Based on our findings,

we can conclude that the twelve items we derived through our item development process may sufficiently align with the definition of anger and provide support for Condition 1. Our investigation indicates that our construct should to an adequate degree be essentially linked to a relational theme of arbitrary, reckless or malicious actions directed towards oneself or confidants.

Study 2

The primary objective of Study 2 is to examine the connection between our anger construct and other emotions based on their valence and arousal levels. In doing so, we intend to leverage the constructionist account of emotion to determine whether our anger construct aligns with and deviates from theoretically predefined emotions (Russell, 1980; Watson & Clark, 1994) in a proper manner (Condition 2). Our hypothesis is that our construct will align with emotions that are characterized by negative valence and high arousal, such as hostility, and diverge from emotions with distinct affective compositions, such as joviality, serenity, and sadness. Furthermore, we plan to substantiate our construct by integrating other constructs that have been used previously to measure anger and hypothesize that anger will also align with our construct. In summary, our ultimate goal is to provide a comprehensive understanding of the relationship between our construct of anger and other emotions within the wider framework of affective composition.

Method

Selection and Procedure

In order to assess the alignment and deviations of our anger construct with respect to theoretically predefined emotions, we conducted a correlational study. Our study aimed to not only examine the inter-emotional alignment but also to test the comparability of our anger construct between two distinct cultures, i.e., the US and Germany. Our participant pool consisted of people aged between 18 to 67 years, who were native speakers of their country's primary language, resided and worked in their respective countries, and worked at least 35 hours a week. To determine the appropriate sample size for each country, we referred to the recommendations of Comrey & Lee (1992), which suggested 300 participants for each country. In September of 2022, we partnered with an ISO 20252-certified panel provider for market, opinion, and social research to gather our samples. Our participants were remunerated with 3.00 EUR for their participation. To ensure a sufficient degree of data quality (Burchett et al., 2023), we included attention checks (. . . please select "a little" if you're paying attention), with participants being screened out if they failed these.

The US sample consisted of 301 participants, while the German sample had 300 participants. In the American sample, 49.8% of the participants were male ($n = 150$), 49.5% were female ($n = 149$), and 0.7% identified as non-binary ($n = 2$). The age of participants ranged from 21 to 67 years ($M = 43.12$, $SD = 13.24$), while their weekly working hours ranged from 35 to 80 ($M = 41.15$, $SD = 6.31$). Similarly, in the German sample, 50.3% were

male ($n = 151$), and 49.6% were female ($n = 149$), with no participants identifying as non-binary. The age range of the German sample was 18 to 66 years ($M = 43.67$, $SD = 11.35$), and their weekly working hours ranged from 35 to 55 ($M = 39.76$, $SD = 3.05$).

Our surveys used a randomization technique to address common method bias (Doty & Glick, 1998). Participants were randomly assigned to one of two test batteries, with the first battery containing all state measures and the second battery containing all trait measures. After completing the first battery, participants were presented with the second battery. Additionally, we randomized the order of measures within both batteries and the order of items within the Anger Affect Metric.

Measures

For Watson & Clark's (1994) items, we adopted item translations used in Grünh et al. (2010) and utilized Breyer & Bluemke's (2016) German introduction stem and response options. Response options for these items ranged from 1 (very slightly or not at all) to 5 (extremely).

Anger. As part of the assessment of state anger (AAM), four items were selected from the twelve Anger Affect Metric - State submetric items, using theory-driven item reduction and invariance tests, as detailed in the following Analytic Strategy section. The four items were designed to measure anger in the present moment, with the statement "Right now, I feel angry" being one of them ($\omega = .95$). Participants rated their responses on a metric from 1 (not at all) to 5 (extremely). Additionally, we used Spielberger et al.'s (1983) 10-item State Anger Metric (STAS) to evaluate various dimensions of state anger, with an example item being "I am mad" ($\omega = .97$). Participants were required to rate their responses on a Likert metric ranging from 1 (not at all) to 4 (very much so). Trait anger (AAM) was evaluated using four items from the Anger Affect Metric - Trait submetric, such as the statement "In general, I feel angry" ($\omega = .91$). Participants rated their responses on a metric from 1 (never) to 5 (always). We also employed Spielberger et al.'s (1983) 10-item Trait Anger Metric (STAS) to assess trait anger, such as the statement "When I get mad, I say nasty things" ($\omega = .93$). The response options ranged from 1 (never) to 5 (always). Finally, trait anger was also measured using the Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992), which included the statement, "I sometimes feel like a powder keg ready to explode" ($\omega = .90$). Participants rated their responses on a metric from 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me) using the German translations of the BPAQ items as developed by Werner & Collani (2004).

Hostility. To assess state hostility we used a 6-item metric developed by Watson & Clark (1994) that includes statements like "Right now, I feel hostile" ($\omega = .96$). Trait hostility was measured using an 8-item metric created by Buss & Perry (1992), with one of the items being "I sometimes feel that people are laughing at me behind my back" ($\omega = .92$). Responses were rated on a metric of 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me). Werner & Collani (2004) provided the German translations for the items.

Joviality. An eight-item metric developed by Watson & Clark (1994) was utilized to measure state joviality. An example of an item that assesses state joviality is "Right now, I feel cheerful" ($\omega = .96$). The same metric was used for evaluating trait joviality. A representative item for trait joviality is "In general, I feel cheerful" ($\omega = .97$).

Serenity. A three-item metric was utilized to assess state serenity, developed by Watson & Clark (1994). One example of an item concerning state serenity is, "Right now, I feel calm" ($\omega = .94$). The same metric was used for the evaluation of trait serenity, with an example item being, "In general, I feel calm" ($\omega = .94$).

Sadness. To assess the level of sadness experienced by a person, a 5-item metric developed by Watson & Clark (1994) was utilized. An example of a state sadness item from the metric is, "Right now, I feel sad" ($\omega = .96$). The same metric was also employed to evaluate trait sadness, with an item such as "In general, I feel sad" ($\omega = .96$).

Analytic Strategy

For our statistical analysis, we utilized R version 4.1.2 (R Core Team, 2022) and applied a weighted least square mean and variance adjusted (WLSMV) estimator. To capture our latent constructs and their corresponding relations in a theory-aligning manner, we employed confirmatory factor analyses.

In our first step, we utilized confirmatory factor analyses to reduce items from 12 to the desired four. We took into account the PCA results from Study 1 and examined various combinations of four-item CFAs of our 12 items, utilizing chi-square difference tests, comparative fit indexes, root-mean square errors of approximation, squared root-mean errors, as well as Akaike and Bayesian Information criteria. After considering all of these factors, we found that the best fitting models for both state- and trait-metrics were the items "angry," "furious," "riled up," and "mad," which were confirmed cross-culturally once we substituted the German translation for the word "furious" from "rasend" to "zornig," as presented in Table 2. Finally, we tested for invariance between the American English and German metrics (van de Schoot et al., 2012). We found scalar invariance for the state metric and metric invariance for the trait metric, as presented in Table 3 (in the online supplemental). Consequently, we merged the two samples for subsequent analyses.

In the subsequent phase of our study, we focused on evaluating the extent of convergent validity. To conduct this evaluation, we adopted the assessment approach presented by Cunningham et al. (2001). As per this approach, for our anger construct to demonstrate a sufficient degree of convergent validity, it should be related to other similar measures. We considered this criterion fulfilled if the 95% confidence interval between two factors' correlation coefficient (ϕ) does not encompass null.

However, we recognized that relying solely on correlational coefficient results may not provide adequate evidence for a meaningful level of convergent validity (Carlson & Herdman, 2012; Cheung & Wang, 2017; Duckworth & Kern, 2011). Hence, we added a second criterion also derived from Cunningham et al. (2001). According to this criterion, all

convergence-related constructs should tap into a common meta-construct. In other words, we explored whether the first-order constructs of anger and hostility were also linked to a common second-order factor. This second-order factor could be considered an emotional meta-construct that both anger and hostility are part of. We deemed this criterion satisfied if all standardized factor loadings of first-order factors onto a common second-order factor had 95% confidence intervals with lower limits greater than 0.40 (Hinkin, 1998).

In the subsequent phase of our study, we undertook an evaluation of the degree of discriminant validity of our anger construct. For this purpose, we adopted the assessment approach proposed by Rönkkö & Cho's (2020). Our objective was to show that our anger construct was not strongly related with other dissimilar measures. According to the recommended cut-off values of Rönkkö & Cho (2020), we considered this requirement as fulfilled if the 95% confidence interval between two factors' correlation coefficient (*confidence interval*[ϕ ; 95%]) did not include 0.80 or -0.80 .

However, we again acknowledged that relying solely on correlational coefficient results, which are also relatively large (Cohen, 1988), may not provide adequate evidence for a meaningful level of discriminant validity (Cheung & Wang, 2017; Shaffer et al., 2015). Therefore, we included a second criterion to our evaluation, which was also derived from Rönkkö & Cho's (2020) approach. As per this particular criterion, our main objective was to show that the measurement instrument used by us more accurately measures the construct of anger than other measures that are assumed to measure different constructs. In other words, we explored whether the addition of the explanatory power of another measure, dissimilar from our anger measure (e.g., a measure for joviality), would add measurement accuracy to the modeling of our anger construct. We considered this criterion as fulfilled if an unconstrained model, whereby the interfactor correlations were unconstrained, fit the data significantly better than its nested constrained model, whereby the interfactor correlation was constrained to the cutoff values recommended by Rönkkö & Cho (2020; ϕ constrained to ± 0.80).

As a final step in our research, we sought to heuristically evaluate the proposed circumplex model, which was presented in Figure 2 (in the online supplemental). To achieve this, we conducted a multidimensional scaling analysis on the distance-transformed correlation matrix of our investigated constructs (R Core Team, 2022). We then visually plotted their positions relative to one another on a 2-dimensional affective grid.

Table 2
Anger Assessment Metric (AAM)

Anger Assessment Metric – State (AAM-S)	
English Items	German Items
not at all – a little – moderately – very – extremely	gar nicht – ein bisschen – mittelmäßig – sehr – extrem
Right now, ...	In diesem Moment, ...
1. ... I feel angry.	1. ... fühle ich mich wütend.
2. ... I am furious.	2. ... fühle ich mich zornig.
3. ... I am riled up.	3. ... fühle ich mich aufgebracht.
4. ... I feel mad.	4. ... fühle ich mich sauer.
Anger Assessment Metric – Trait (AAM-T)	
English Items	German Items
never – rather infrequently – some of the time – quite often – always	nie – eher selten – manchmal – ziemlich oft – immer
In general, ...	Im Allgemeinen, ...
1. ... I feel angry.	1. ... fühle ich mich wütend.
2. ... I am furious.	2. ... fühle ich mich zornig.
3. ... I am riled up.	3. ... fühle ich mich aufgebracht.
4. ... I feel mad.	4. ... fühle ich mich sauer.

Results and Discussion

The findings presented in Table 4 (in the online supplemental) include statistical values such as means, standard deviations, omega reliabilities, and correlations among the focal variables. The AAM State submetric (AAM-S; $\chi^2(2) = 0.20, p = 0.91, CFI = 1.00, RMSEA = 0.00, SRMR = 0.01, \lambda_{min} = 0.68$) and AAM Trait submetric (AAM-T; $\chi^2(2) = 0.55, p = 0.76, CFI = 1.00, RMSEA = 0.04, SRMR = 0.01, \lambda_{min} = 0.65$) presented with exact model fit. The study's convergent validity analysis indicates strong correlation coefficients between the factors, with range[ϕ] values showing between 0.62 – 0.93. Furthermore, all standardized factor loadings of first-order factors onto a common second-order factor had lower limits greater than 0.40. These results lend support to a sufficient degree of convergent validity of our metric.

In terms of discriminant validity, our analysis showed that the correlation coefficients between two factors exhibit a predetermined level of discriminance ($-.80 < confidence\ interval[\phi; 95\%] < .80$). Additionally, each unconstrained model fit the data significantly better than its nested constrained model. These results lend support to a sufficient degree of discriminant validity of our metric.

Our research findings on the level of convergent and discriminant validity of the metric are further substantiated by the multidimensional scaling analysis represented in Figures 4 and 5 (in the online supplemental). Although the results of our spatial differentiation analysis are somewhat heuristic in nature, they appear to be consistent with our assumed circumplex research model and do not contradict the quantitative results.

The main objective of Study 2 was to investigate the association between our anger construct and other emotions based on their valence and arousal levels. In doing so, we aimed to utilize the constructionist account of emotion to determine whether our anger construct is in alignment with and deviates from theoretically predefined emotions (Russell, 1980; Watson & Clark, 1994) in a theory-congruent manner (Condition 2). Based on our findings, we could infer that the data collected in our study seem to support Hypotheses 1 and 2. Thus, our study suggests that our construct should be properly aligned with other negative and highly arousing emotions while diverging from positively valenced or low arousal emotions, thus corroborating Condition 2.

Study 3

The main objective of Study 3 is to evaluate and substantiate the theoretical proposition that our hypothesized anger construct is positively linked with various types of aggression, including direct and indirect aggression (Condition 3). To achieve this objective, we plan to explore how anger, as a component of the CMESM, is interrelated with different forms of aggression, such as verbal aggression, property aggression, interpersonal aggression, guilt induction, malicious humor, and social exclusion (Lazarus, 1991; Forrest et al., 2005; Verona et al., 2008). To investigate these relationships, we intend to employ an experience sampling procedure, acknowledging theoretically relevant within-person fluctuations and

between-person differences. Our ultimate aim is to offer a comprehensive understanding of the link between our anger construct and aggression within the context of everyday life.

Method

Sample and Procedure

To evaluate the association between the anger construct and aggression and to consider the natural fluctuations within and between the constructs, we conducted a time-lagged experience sampling study. This study was part of a larger research project, and additional information can be found in the data transparency appendix (in the online supplemental). The objective was to obtain a sample that could be somewhat generalized to the general (working) population, particularly in worksite contexts, given our metric's intended purpose. As a result, the participant pool was limited to native German speakers aged 18 to 67 who worked at least 35 hours a week, beginning their workday between 7 a.m. and 9 a.m., had frequent contact with coworkers, and were actively employed during the survey weeks. Gabriel et al. (2019) and Scherbaum & Ferreter (2009) informed the determination of the target sample size in this study. Their results revealed a minimum Level 2 sample of 83 people and a minimum Level 1 sample of 835 person-day measurement points. Our multilevel power analysis, guided by Scherbaum & Ferreter, supports these level-specific sample sizes.

In March 2023, we collected data for ten consecutive workdays employing a panel provider certified by ISO 20252. The study began with a baseline survey, followed by morning surveys at 11 a.m. and afternoon surveys at 4 p.m. each workday. To ensure a sufficient degree of data quality (Burchett et al., 2023), we included attention checks (. . . please select "a little" if you're paying attention) within the baseline survey, with participants being screened out if they failed these. We did not include attention checks during the experience sampling part of our study, given the already high participant burden (Gabriel et al., 2019). Nevertheless, we also tested for response bias with a social desirability metric (Stöber, 2001; Burchett et al., 2023).¹ The research collected data from 175 people, resulting in 1,256 person-day observations, which exceeded standard sample size norms for experience sampling (Gabriel et al., 2019). Of the 175 participants, 54% were male, and their ages ranged from 24 to 67 years ($M = 44.12$, $SD = 9.97$). The weekly working hours of participants ranged from 35 to 60 hours ($M = 40.00$, $SD = 3.15$).

Measures

We employed a 5-point Likert metric for cases without explicit instructions ranging from 1 (never) to 5 (always). Our item selection was based on their respective factor-loading matrices.² In Study 3, we measured and analyzed all 12 state and trait anger items from

¹Our hypothesized results remained consistent regardless of the inclusion of the social desirability control variable.

²We removed one item from each metric measuring guilt induction, verbal aggression, property aggression, and interpersonal aggression due to inadequate model fit. Supplementary analyses confirm that the results remain consistent regardless of this change.

Study 2 using multilevel confirmatory factor analysis. This was done to confirm the 4-item structure that was identified in Study 2. Given the confirmatory results (AAM-S: $\chi^2(4) = 1.81, p = 0.77, CFI = 1.00, RMSEA = 0.00, SRMR_{within} = 0.00, SRMR_{between} = 0.01$; AAM-T: $\chi^2(2) = 0.52, p = 0.77, CFI = 1.00, RMSEA = 0.00, SRMR_{between} = 0.01$), only the analyses based on the 4-item structure are discussed in this study.

State Anger. Our morning survey assesses state anger using the 4-item Anger Affect Metric - State submetric. An example of a state anger item is "Right now, I feel angry" ($\omega_{between} = .93; \omega_{within} = .94$). The response options range from 1 (not at all) to 5 (extremely).

Verbal Aggression. Verbal aggression is measured in the afternoon survey by employing three items from a metric developed by Verona et al. (2008). For instance, a sample item used to gauge verbal aggression is "Today, since filling out the last questionnaire, I cursed another person out" ($\omega_{between} = .87; \omega_{within} = .88$).

Property Aggression. In the afternoon survey, we utilize three items from a metric developed by Verona et al. (2008) to gauge property aggression. One of the items on this metric reads as follows: "Today, since filling out the last questionnaire, I damaged another person's property" ($\omega_{between} = .91; \omega_{within} = .91$).

Interpersonal Aggression. In the afternoon survey, we gauge interpersonal aggression using three items from a metric developed by Verona et al. (2008). An illustrative example of an item for interpersonal aggression is "Today, since filling out the last questionnaire, I hit, kicked, or pushed another person" ($\omega_{between} = .90; \omega_{within} = .90$).

Guilt Induction. In the afternoon survey, we gauge the perpetration of guilt induction by implementing three items sourced from a metric developed by Forrest et al. (2005). An exemplar item about guilt induction is "Today, since filling out the last questionnaire, I used emotional blackmail on another person" ($\omega_{between} = .87; \omega_{within} = .88$).

Malicious Humor. In our afternoon survey, we assess the level of malicious humor using four items from a metric developed by Forrest et al. (2005). One example item we use to measure malicious humor is, "Today, since filling out the last questionnaire, I used sarcasm to insult another person" ($\omega_{between} = .87; \omega_{within} = .88$).

Social Exclusion. In our afternoon survey, we utilize four items from a metric developed by Forrest et al. (2005) to measure social exclusion. One such item about social exclusion is as follows: "Today, since filling out the last questionnaire, I excluded another person from a group" ($\omega_{between} = .91; \omega_{within} = .92$).

Control – Trait Anger. There is a possibility that our sampling interval may be considered too large, leading to the argument that the morning assessment of anger is more indicative of trait-based anger instead of momentary state-based anger. We turn to state-trait

theory (Steyer et al., 1999, 2015), which postulates that the "true" state-relation is the result of the difference between the relation between a trait and a state and the relation between two states. Thus, if we consider the relationship between state anger and interpersonal aggression, and account for the variance predicted by trait anger, we should arrive at the "true" state relation between state anger and interpersonal aggression. Hence, our baseline survey assesses trait anger using the 4-item Anger Affect Metric - Trait submetric. An example of a trait anger item is "In general, I feel angry" ($\omega_{between} = .81$). The response options range from 1 (never) to 5 (always).

Analytical Strategy

We used R version 4.2.2 (R Core Team, 2022) for data preparation and Mplus version 8.4 (Muthén & Muthén, 2019) for data analysis. The data had a hierarchical structure with person-day observations (Level-1) nested within people (Level-2; Hayes, 2006). We used multilevel structural equation modeling to account for variability between people and person-day observations. The model included random intercepts and random slopes to capture variable effects between participants (Hamaker & Muthén, 2020). In our estimation process, we employed Bayesian inference and utilized a Gibbs sampler algorithm estimator (Depaoli, 2021), assuming data non-normality and model intractability. To capture our latent constructs and their corresponding relations in a theory-aligning manner, we employed confirmatory factor analyses. We used two Markov chains with over 24,900 iterations of the Markov-Chain-Monte-Carlo algorithm. For uncertainty assessment, we used 95% highest density intervals for the posterior distributions (Kruschke et al., 2012). We evaluated model convergence using a 1.10^3 Gelman-Rubin potential metric reduction factor and visually inspected trace and autocorrelation plots (Depaoli, 2021; Gelman et al., 2013). Our models had diffuse priors⁴, resulting in results similar to maximum likelihood estimation (cf. Depaoli, 2021). Our analysis replicated the data diagnostic criteria used in Studies 1 and 2 and found no abnormalities.

Results and Discussion

Preliminary Analyses

Table 5 (in the online supplemental) presents the statistical analysis of study variables that includes means, standard deviations, interclass correlation coefficients, omega reliabilities, and correlations. The state anger submetric showed high within- and between-person reliability with high omega values. We conducted confirmatory factor analyses for the proposed factor structure, and the hypothesized model was found to be a good fit as shown in Table 6 (in the online supplemental). We conducted constrained confirmatory factor analyses

³We had to increase the factor from 1.02 to 1.10 to ensure consistent convergence of the models. Although this adjustment was necessary to improve accuracy, our results remained comparable.

⁴ $v, \lambda, \beta, \alpha \sim N(0, \infty)$; $\theta \sim IG(-1, 0)$; $\psi \sim IW(0, -p - 1)$; see Muthén & Muthén, 2017, p. 775).

to evaluate the degree of discriminant validity. The hypothesized model outperformed the constrained models.

Main Analyses

Table 7 (in the online supplemental) displays the outcomes of the Bayesian multilevel structural equation modeling, presenting the direct effects. State anger was positively related with verbal aggression ($E(\gamma) = 0.33, E(\sigma) = 0.06, 95\% CI [0.22, 0.44], p < .001$), property aggression ($E(\gamma) = 0.34, E(\sigma) = 0.03, 95\% CI [0.28, 0.40], p < .001$), interpersonal aggression ($E(\gamma) = 0.29, E(\sigma) = 0.03, 95\% CI [0.24, 0.34], p < .001$), guilt induction ($E(\gamma) = 0.37, E(\sigma) = 0.04, 95\% CI [0.30, 0.44], p < .001$), malicious humor ($E(\gamma) = 0.36, E(\sigma) = 0.04, 95\% CI [0.29, 0.43], p < .001$), and social exclusion ($E(\gamma) = 0.46, E(\sigma) = 0.05, 95\% CI [0.37, 0.54], p < .001$).

The primary objective of Study 3 was to assess and substantiate the theoretical proposition that our anger construct is positively linked to various types of aggression, including direct and indirect aggression (Condition 3). We adopted an experience sampling procedure to examine these relationships, taking into account both within-person fluctuations and between-person differences. Based on the evidence gathered from our study, we could deduce that the data collected supports Hypotheses 3. Therefore, our study findings seem to indicate that our construct is positively related to aggression, thus corroborating Condition 3.

General Discussion

This study aimed to create and validate a new state-trait anger metric using a 3-study approach. The methodology was based on the cognitive-motivational-emotive system model (CMESM; Lazarus, 1991; Smith & Lazarus, 1990), which suggests that an anger metric should meet three specific criteria: (1) it should be closely connected to a relational theme of arbitrary, reckless or malicious actions directed towards oneself or confidants, (2) it should correlate with other negative and high arousing emotions while differing from positive or low arousal emotions, and (3) it should be positively associated with aggression. These guidelines helped shape the development of the metric, which was tested in three separate studies, each corresponding to a different stage of the process. Through this iterative process, it seems that we were able to increase the validity and reliability of our new metric in various contexts, while also providing insights into different accounts of emotion theory that align with previous research.

Theoretical Implications

The validation process did reveal some significant theoretical implications that warrant attention. In Study 1, as we developed items for the metric, we were surprised to find that approximately 60% of the terms commonly used by laypeople in everyday interactions did not adequately reflect the emotion of "anger". This finding raises two important points:

firstly, despite starting with a large number of anger-related words (47), the final selection of only 12 words suggests that there may be a limited number of words in the German language that truly capture the concept of anger theoretically. Secondly, the further reduction to only four items implies that there may be even fewer words that empirically reflect anger in both English and German. While this in itself may not be a significant issue, it does raise concerns about the validity and reliability of some prior metrics that include anger-related terms not supported by our data (e.g., Rohrmann et al., 2013; Spielberger, 1999; Spielberger et al., 1983). This calls into question their effectiveness in accurately measuring anger as an emotion.

However, when considering items that seem to measure anger somewhat accurately both theoretically and empirically, it appears that there is some level of cross-cultural congruence between the US and Germany regarding anger, although there seem to be some challenges. In Study 2, it is evident that there is scalar invariance in the assessment of state anger for both US and German participants, but only metric invariance for trait anger. This suggests that the experience of momentary anger is somewhat similar between English and German speakers, supporting the idea of universality of emotions across cultures as proposed by basic emotion theorists (Ekman, 1970; Ekman & Cordaro, 2011; Ekman & Friesen, 1971).

Nonetheless, the results for trait anger indicate a potential intercultural discrepancy. While this does not contradict basic-emotion theory, which focuses on states rather than traits (Russell et al., 2011), it raises questions about why such a difference could exist. Examining the invariance tests for the trait subscales, it appears there is variance in the intercepts of items #2 (. . . I am furious / . . . fühle ich mich zornig) and #3 (. . . I am riled up / . . . fühle ich mich aufgebracht). This suggests that the baseline levels of furious and riled up may differ between English and German speakers, or that there is a semantic distinction between expressions like “I am” and “I feel” in English compared to their German counterpart of “Ich fühle mich”. It may be beneficial to consider using “Ich bin” in German as a closer equivalent to “I am” in English for some trait items to improve cross-cultural congruence.

Delving deeper into Study 2, we observe that the assumed relationship between our anger construct and the emotions of hostility, joviality, serenity, and sadness appears to be appropriate based on heuristic analysis. This suggests that the idea that emotions can be constructed from a blend of valence and activation is supported to some extent by our findings. While we cannot definitively say that the x- and y-scales of Figures 4 and 5 (in the online supplemental) align precisely with valence and arousal (Castelfranchi & Miceli, 2009; Frijda, 2009), as our objective was to capture the broader concept of emotions rather than their specific components, the visual representation, in line with our initial assumptions and hypotheses, lends some credence to the constructivist perspective (Russell, 1980; Watson et al., 1988). However, it is important to consider alternate theoretical perspectives, which suggest that the two components represented in our diagram could also reflect the merging of valence and action readiness (Frijda, 1987), appraisal and arousal (Moors et al., 2013), or a combination of these factors (Dewey, 1894; James, 1884; Reisenzein & Stephan, 2013).

Moving on to Study 3, we delve into three potential theoretical implications stemming from our research findings. The first implication seems to be that anger appears to be equally strongly related to both direct and indirect forms of aggression, as well as to each specific

type of aggression within these categories. This suggests that anger is broadly associated with various types of aggression in work settings to a similar extent. This finding is somewhat surprising, as one might expect the organizational environment to serve as a buffer between anger and aggression (Diefendorff et al., 2011; Domagalski & Steelman, 2007; Moran et al., 2013), particularly in promoting indirect forms of aggression over direct forms (Duffy et al., 2002, 2006; Hershcovis, 2011).

The one notable exception seems to be that anger shows a stronger positive relationship with social exclusion compared to interpersonal aggression. This discrepancy could be explained by the idea that these two forms of aggression exist at opposite ends of a plausible deniability spectrum (Cormac & Aldrich, 2018; Pinker et al., 2008; Poznansky, 2022). Interpersonal aggression is overt and easily observable (Bryant & Smith, 2001; Buss & Perry, 1992), while social exclusion is more covert and could be denied more easily (Forrest et al., 2005). Employees might be more inclined to engage in social exclusion as a way to manage anger in the workplace because this could allow for greater face-saving opportunities compared to interpersonal aggression (Brown & Garland, 1971; Carson & Cupach, 2000; Pattison, 2014). While our data support this line of reasoning to some extent, further research is needed to confirm these conclusions.

Moving on to the second implication, the between-person and within-person variabilities appear to be evenly matched, as indicated by all intra-correlation coefficients hovering around 50%. This suggests that around half of the variance in the occurrence of anger and various forms of aggression, whether direct or indirect, is related to personal traits, while the other half is related to interactions within specific situations. While this balance may not be surprising given past nature-nurture debates (Angoff, 1988; Botero, 2012; Mason & Capitano, 2012), it underscores the significant role that people's perceptions of day-to-day interactions play in shaping their experiences of anger and aggression, on par with their inherent traits. As such, the results of our study also align with the general model of human aggression, which suggests that aggression is related equally to both personal characteristics and situational factors (Anderson & Bushman, 2002).

Concluding our investigation with the third implication, our findings suggest a positive relationship between trait anger and daily perpetration of aggression. However, it should be noted that not all relations between trait anger and aggression constructs appear to be significant, particularly when considering the influence of state anger. Specifically, when taking state anger into account, trait anger only shows a positive relationship with verbal aggression and malicious humor. This raises questions about the nature of the relationship between trait anger and different forms of aggression and underscores the need for further theorizing and empirical research to understand why trait anger specifically relates to verbal aggression and malicious humor.⁵

⁵It may be important to consider that our focus has shifted from examining the overall occurrence of various aggression constructs to exploring the specific relationship between trait anger and some aggression constructs. The lack of significant relationships between trait anger and other forms of aggression should thus not invalidate our previous implications regarding the variance distribution between person- and situation-level constructs.

Upon closer examination, it appears that both verbal aggression and malicious humor involve the sole expression of aggression through speech (Forrest et al., 2005; Verona et al., 2008), rather than other means of aggression. This may suggest that trait anger may be uniquely linked to the likelihood of engaging in speech-mediated aggression. However, this hypothesis requires further investigation and empirical validation, as current research and conceptual models have not tested this line of reasoning.

Practical Implications

Our study's findings suggest that anger is a highly individualized emotional response among employees and can vary significantly from day to day. Managers should be attentive to potential correlates for anger, which often involve perceptions of unfair treatment or malicious behavior directed towards oneself or others (i.e., its relational theme; Lazarus, 1991; Smith & Lazarus, 1990). It may be important for leaders to promote a work culture that encourages respectful communication and relationships between employees (Carmeli et al., 2015; Gerpott et al., 2020; van Quaquebeke & Eckloff, 2010). Failing to do so may lead to increased instances of aggression, which is likely to have negative consequences (Geddes & Callister, 2007; Hershcovis et al., 2007; Hershcovis & Barling, 2010). To address this issue, leaders could use our research metric to gauge the levels of anger among their team members and implement interventions, such as anger-management training (Lochman et al., 2004; Morland et al., 2021; Schat & Kelloway, 2006), to help mitigate the potential for anger-related aggression.

Limitations and Future Research Directions

To ensure accurate interpretation of the results, it is crucial to acknowledge the limitations of our research. One of the limitations we encountered was the possibility of common method bias, which was introduced by self-report measures (Doty & Glick, 1998). To address this concern, we implemented randomization in Study 2, and collected predictor and outcome variables at different times in Study 3 (Podsakoff et al., 2003). However, it would be beneficial for future research to incorporate additional perspectives such as other-report or dyadic data. Therefore, it would be useful to gather input from acquaintances, relatives, colleagues, and supervisors regarding the focal individual's conduct with the assistance of our metric.

When considering the results of Study 2 as a whole, it becomes clear that the correlations with our criterion variables provide more support for convergent validity than for discriminant validity. Despite conducting two additional tests to assess discriminant validity, namely the model comparison test and heuristic multidimensional scaling analysis, the high correlations observed suggest some overlap of our constructs (Campbell & Fiske, 1959; Hinkin, 1998).

It is imperative to note that our findings from Study 3 should not be taken as evidence for causality (Doty & Glick, 1998). Although our objective was not directly to assess causality, but rather to examine the relationship between anger and aggression, the use of time-lagged sampling and the structural equation modeling methodology may imply a certain degree of

assumed causality. It seems plausible that the direction of the assumed relations could be reversed, implying that aggression could have also led to feeling angry. As such, alternative explanations that may have contributed to the observed relations cannot be ruled out. To address this concern, it is advisable to control for the previous measurement point for each aggressive subcategory in future studies. Additionally, conducting experimental studies could provide valuable insights into testing causal assumptions. An experimental study that manipulates the experience of anger could help determine whether the emotion uniquely leads to increased levels of direct and indirect aggression. An ethical evaluation is required to ensure that participants do not experience any harm.

Our study implemented a time-based sampling strategy, which has limitations. The sampling intervals we used could be considered quite large, which means that we may have overlooked event-based variance due to fixed sampling intervals (Trull & Ebner-Priemer, 2009). To mitigate this potential bias, we accounted for trait anger while estimating the relations between anger and aggression subtypes. However, we suggest that future research may consider introducing random survey prompts during a predetermined time window throughout a day to overcome the limitations of our current sampling strategy.

Another potential limitation of Study 3 could be the presence of a floor effect. Specifically, a significant portion of participants reported various forms of aggression at relatively low frequencies (range from 9.06% to 28.57%). Verbal aggression was reported by 26.98% of participants in 20.21% of cases, property aggression by 15.07% in 10.20% of cases, interpersonal aggression by 11.11% in 9.06% of cases, guilt induction by 28.57% in 16.40% of cases, malicious humor by 29.37% in 20.31% of cases, and social exclusion by 25.40% in 18.30% of cases. While these percentages suggest that the occurrence of aggression was relatively low, ranging from one to five percent, which aligns with established psychological theories (Archer, 2004; Lazarus, 1991; Smith & Lazarus, 1990), it is possible that this skewed distribution may have influenced the statistical outcomes of our analyses. To address this potential limitation, it is recommended that future studies replicate our research in populations known to have a high predisposition towards aggression. If similar findings are obtained, it would enhance the credibility of our results. Alternatively, if the results diverge significantly, it may be necessary to explore other factors like individual aggression tendencies (Buss & Perry, 1992) to better understand the nature of aggressive behavior within daily life.

Furthermore, we missed the opportunity in Study 3 to distinguish between the different sources and targets of anger experiences, such as organizational members, non-organizational members, or unidentifiable entities. While this oversight should not discredit our findings, future research could be enhanced by including these measures to determine if the connections between anger and aggression differ depending on the sources and targets of anger experiences, as might be suggested by the CMESM (Lazarus, 1991; Smith & Lazarus, 1990).

In our study, we did not collect information on the racial or ethnic backgrounds of participants across any of our samples, which has limited our ability to assess possible race/ethnicity group differences. Past research has shown that variations in racial and ethnic groups can have a significant impact on the outcomes of studies (Butler et al., 2010; Mabry & Kiecolt, 2005), and incorporating this information into future research projects may provide

a more comprehensive understanding of anger. Therefore, we suggest that future studies consider including these variables to better account for possible between-person differences.

Finally, in our studies, we exclusively used the newly proposed anger scale and did not compare it with any other existing anger scales. This lack of comparison raises questions about the quantitative degree of incremental validity our scale may offer over others. Demonstrating incremental validity is an important step in validating a new scale (Haynes & Lench, 2003; Hunsley & Meyer, 2003). Therefore, future research should consider conducting comparative studies to assess our scale against existing ones in terms of internal consistency, model fit, parsimony, and predictive validity. It could be beneficial for future research to adopt methodologies similar to those employed by Barger (2002) and adhere to the guidelines outlined by Hunsley & Meyer (2003) and Haynes & Lench (2003) when conducting these comparative assessments.

Future researchers could further enhance the results of our study by addressing these limitations. In addition, delving deeper into unanswered questions, such as experimenting with different compositions in circumplex models, examining how the work environment influences the connection between anger and aggression, and investigating the distinctive link between trait anger and speech-mediated aggression, could lead to a more comprehensive understanding of these crucial topics. Another intriguing aspect that has not been previously mentioned in the manuscript is the subjective experience of anger by a person, including how anger is appraised by the person themselves. This topic has been explored in prior research (Harmon-Jones et al., 2011; Howard, 2017) and could provide valuable insights into the multifaceted emotion anger. Further studies in these areas have the potential to shed more light on anger and its relationship with aggression in everyday situations.

Conclusion

In conclusion, our endeavor to develop an anger metric has been a journey filled with both insights and obstacles. By integrating theories of emotion, we hope to have added valuable insights to the current understanding of anger and its relationship to behavior. While our efforts mark only the initial stages of this project, we are hopeful to witness the widespread adoption of our metric in key situations where knowledge of anger is essential. We approach this task with humility, appreciative of the chance to make a modest yet potentially meaningful impact on the study of emotions.

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The Angry Employee: A Meta-Analytic Review of Workplace Anger

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This meta-analytic review of 88 studies investigates the factors associated with state anger experience in workplace settings. Utilizing emotion and cognitive theories, we aim to provide a comprehensive understanding of how anger manifests in professional environments. We primarily employ Affective Events Theory and supplement it with propositions from cognitive appraisal theories and constructionist theories of emotion. This approach enables us to create a holistic picture of anger, including its antecedents, co-occurring emotions, and outcomes within workplace settings. Our analysis includes meta-correlational and meta-structural equation modeling findings. We reveal that negative workplace events and attributions of blame are positively associated with anger, while positive events correlate with reduced anger levels. Additionally, we identify the distinct roles of related emotions, such as disgust, fear, joy, and pride, emphasizing the importance of analyzing negative and positive emotion categories separately. Furthermore, our study shows that anger is correlated with destabilizing behaviors, such as aggression and sabotage, and inversely related to stabilizing behaviors, such as cooperation and problem-solving. These findings challenge conventional perspectives and highlight the need for further research to establish causality and fully understand the implications for organizational behavior. This research elucidates the complex relationships among anger, workplace events, blame appraisals, emotions, and behaviors, underscoring the necessity for ongoing exploration in organizational settings.

Keywords: State Anger, Workplace, Antecedents, Co-Occurring Emotions, Outcomes

Anger, an emotion that arises from attributing blame to others for negative events in the workplace (Lazarus, 1991; Weiss & Cropanzano, 1996), is a multifaceted issue extensively explored in organizational sciences (Osgood & Quartana, 2021). Its significance in the workplace is well-documented due to its substantial impact on the work environment (Geddes & Callister, 2007). However, empirical research on workplace anger has produced inconsistent results regarding its antecedents, manifestations, and consequences. This inconsistency highlights the need for a meta-analytic review to consolidate existing findings and clarify the role of anger in the workplace, which is crucial for developing effective management strategies.

Previous studies have provided a robust foundation for examining the role of anger in workplaces. Notably, Hershcovis et al. (2007) conducted a meta-analytic review, published in the *Journal of Applied Psychology*, finding a strong relationship between employees' anger and their antagonistic behaviors toward coworkers and the organization. Their work suggests that factors leading to aggression may also lead to anger, such as interpersonal

conflicts, instances of injustice (e.g., distributive and procedural injustice), unfavorable situational constraints, threats to job satisfaction, and individual traits like trait anger and negative affectivity. Hershcovis et al. (2007) also implied the potential importance of blame attributions in eliciting aggression and, by extension, anger. Thus, they identified aggressive behavior as a common manifestation of workplace anger and emphasized the need to investigate the role of blame attribution further.

On a theoretical front, Geddes et al. (2020) offered a comprehensive view of workplace anger in their article published in the *Academy of Management Perspectives*. They argued that workplace anger commonly results from perceived injustices and motivates individuals to take corrective actions. This anger can manifest as either assertive expressions (expressed anger) or defiant behaviors (deviant anger). Geddes et al. (2020) demonstrated conceptually how anger signals perceived injustice and catalyzes corrective actions.

These seminal works have enhanced our understanding of anger dynamics in workplaces but also have limitations. While Hershcovis et al. (2007) provided a strong foundation, aggression is not synonymous with anger; aggression is the behavioral counterpart, while anger is the emotional experience (Anderson & Bushman, 2002; Frijda, 1987; Lazarus, 1991). Thus, it is unwise to infer the dynamics of workplace anger solely from aggression research. Conversely, Geddes et al. (2020) provided a preliminary model of workplace anger dynamics, but their theoretical approach lacks empirical validation. Questions remain about the primary triggers of anger and whether anger leads only to antagonistic behaviors and deviance.

In summary, although prior studies offer valuable insights into workplace anger dynamics, they leave our understanding fragmented. A systematic approach that combines theoretical and empirical research is needed to address these limitations. We propose a meta-analytic review of the literature on workplace anger to develop a comprehensive conceptual model integrating various theoretical perspectives, including triggers of anger and its behavioral outcomes. We utilize meta-correlation and meta-structural equation modeling analyses to test our model and provide falsifiability of previous research assumptions and our proposed model. Our analysis incorporates 88 independent samples from 74 records, enabling us to explore systematically the factors related to workplace anger.

Our research aims to advance the current knowledge of state anger through a multi-faceted approach. The first phase involves developing a conceptual model of anger manifestation in employees, drawing on established theories such as Affective Events Theory (Weiss & Cropanzano, 1996), cognitive appraisal theories (Frijda, 1987; Lazarus, 1991; Roseman, 1984), and constructionist theories of emotion (Russell, 2017; Russell & Carroll, 1999; Watson et al., 1988). Subsequently, we conduct a thorough literature review to gather existing evidence on key factors influencing anger dynamics in the workplace. By synthesizing and analyzing previous studies, we aim to build upon existing knowledge and identify gaps in understanding state anger. In the final phase, we undertake meta-correlation and meta-structural equation analyses to delve into the complexities of anger across various work environments. These approaches will test the validity of our conceptual model and provide insights into the mechanisms underlying state anger in professional contexts.

Our research promises to make three significant theoretical contributions. First, by synthesizing diverse theoretical perspectives into a cohesive and comprehensive model, we aim to significantly enhance the conceptual clarity of state anger and its manifestations within workplace environments. This synthesis aims to create a conceptual foundation of workplace anger that is robust and adaptable to evolving theoretical reasoning. It will serve as a valuable tool for future researchers who wish to empirically test their assumptions about workplace anger or to further enhance our theoretical understanding of the intricate dynamics of anger in workplace environments.

Second, our meta-analytic approach systematically uncovers consistent patterns and contextual variables that influence anger. By examining a wide range of empirical studies, we are able to identify and highlight the nuanced ways in which situational factors, individual differences, and organizational characteristics uniquely contribute to anger responses. By synthesizing the vast breadth of empirical research, we aim to provide a nuanced overview of whether current theoretical reasoning concerning anger is supported or falsified. This approach paves the way for more refined theoretical reasoning, enabling us to explain even the most intricate mechanisms underlying the dynamics of workplace anger.

Third, the findings from our research provide a solid foundation for the development of evidence-based interventions and management strategies. By grounding these strategies in rigorous empirical analysis, we aim to offer practical solutions that can be effectively implemented to manage anger in organizational settings. This contribution serves as a cornerstone for informing both organizational theorists and practitioners. It will enable them to devise and implement anger management strategies that efficiently and effectively address the negative aspects of workplace anger dynamics while potentially harnessing its more positive aspects.

In summary, our meta-analytic review aspires to advance the current understanding of anger, both within and beyond workplace contexts. By synthesizing data from a diverse array of studies and settings, we aim to challenge existing beliefs and offer a fresh perspective on the complexities of anger. This comprehensive approach paves the way for future research to delve deeper into the intricate dynamics of anger and its far-reaching implications for employees and organizations.

Theoretical Background

Our endeavor is ambitious and requires a solid theoretical foundation. To achieve this, we will employ Affective Events Theory (Weiss & Cropanzano, 1996) as the primary framework for our meta-analytic review. Affective Events Theory, while prominent and widely used in organizational sciences to study emotional dynamics, alone cannot fully capture the intricate and complex nature of workplace anger dynamics. Therefore, we will enhance our research strategy by incorporating additional emotion theories from general psychology: appraisal theories (Frijda, 1987; Lazarus, 1991; Roseman, 1984) and constructionist theories of emotion (Russell, 2017; Russell & Carroll, 1999; Watson et al., 1988). By using Affective Events Theory as the cornerstone of our research and supplementing it with these auxiliary theoretical perspectives, we aim to conduct a meta-analytic review and propose a conceptual

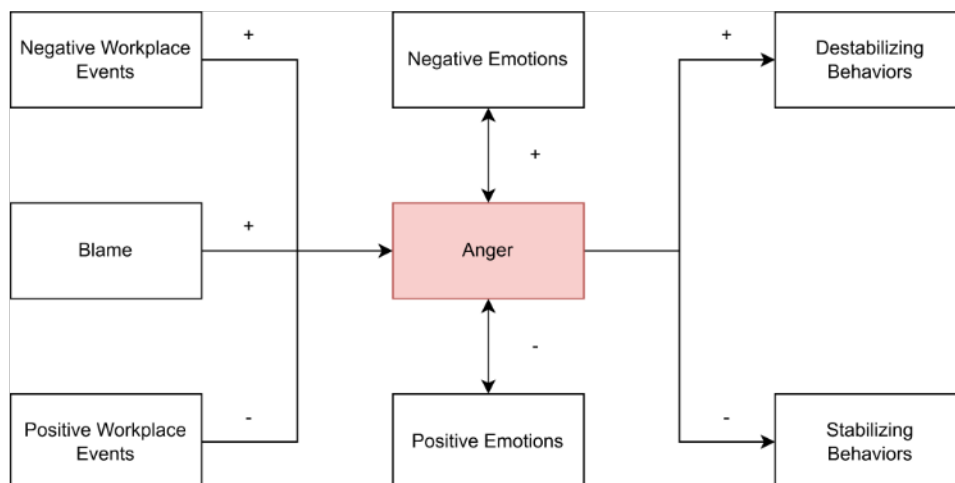
model with both breadth and depth in its theoretical scope. The following paragraphs will outline each theoretical approach in detail.

Affective Events Theory

Affective Events Theory is an influential framework that elucidates the triggers and consequences of emotions within organizational contexts (Weiss & Cropanzano, 1996). According to Affective Events Theory, emotions arise in response to workplace events, which can be categorized as either positive or negative. Positive events typically elicit positive emotional responses, whereas negative events are associated with negative emotions. A workplace event is defined as any occurrence or situation that an employee perceives as significant, encompassing interactions with others, personal struggles, or encountered challenges within the work environment (Weiss & Cropanzano, 1996).

Anger, a prevalent negative emotion (Potegal et al., 2010), is particularly linked to negative workplace events (Weiss & Cropanzano, 1996). Within this framework, anger is characterized as an emotional response to perceived negative workplace events (Weiss & Cropanzano, 1996). When employees experience anger, they may develop negative sentiments towards the entity responsible for the negative event, potentially fostering increased antagonism (Weiss & Cropanzano, 1996). Affective Events Theory further suggests that these anger reactions can motivate employees to address the issues through actions aimed at promoting change or, in general, instability, such as aggression. These components collectively form a procedural model, akin to our conceptual model depicted in Figure 1, which aims to elucidate how anger is interconnected with events and behaviors in the workplace.

Figure 1
Conceptual Model



Beyond the event-level link between workplace events and emotions, Affective Events Theory posits that person-level factors, such as individual dispositions, significantly influence emotional reactions to these events (Weiss & Cropanzano, 1996). Additionally, organizational factors at the environmental level also play a crucial role in shaping anger responses within the workplace.

Cognitive Appraisal Theories and the Dynamics of Anger in the Workplace

Cognitive appraisal theories (Frijda, 1987; Lazarus, 1991; Roseman, 1984) also provide a comprehensive framework for understanding the triggers and consequences of anger in workplace settings. According to these theories, affective and attitudinal responses are influenced by individuals' perceptions and evaluations of their changing status and interactions within the social environment (Frijda, 1987; Lazarus, 1991; Roseman, 1984). Emotions are generated based on the appraisal of events and situations, particularly those perceived as relevant to one's well-being.

When an individual perceives an event as negative, this appraisal can trigger anger (Frijda, 1987; Lazarus, 1991; Roseman, 1984). Cognitive appraisal theories posit that once anger is triggered, it leads to a series of attitudinal and behavioral responses aimed at addressing the perceived negative event. Anger can drive individuals to take action to rectify the situation, often through destabilizing and antagonistic behaviors intended to restore balance and harmony within the work environment.

A crucial aspect of cognitive appraisal theories is the role of blame in the emotional response process (Frijda, 1987; Lazarus, 1991; Roseman, 1984). Anger is frequently triggered when individuals attribute blame to others for negative events. This attribution process involves assessing responsibility and intent behind the actions that led to the negative event. When employees perceive that a negative event could have been prevented or mitigated and attribute blame to a specific person or entity, anger is more likely to be triggered.

Constructionist Theories of Emotion and the Co-Occurrence of Anger and Other Emotions in the Workplace

Constructionist theories of emotion (Russell, 2017; Russell & Carroll, 1999; Watson et al., 1988) propose that emotions exist within a circumplex space defined by valence and arousal. In this model, emotions are plotted on a continuum from 1 (complete co-occurrence) to -1 (complete co-absence). Negative emotions typically occupy one side of the affective space, while positive emotions are on the opposite side. This indicates that emotions of the same valence often co-occur, whereas opposite-valenced emotions rarely occur together. As such, these theories propose that anger should co-occur with other negative emotions, but less so with positive ones.

Hypotheses Development

Anger's Antecedents

A core tenet of Affective Events Theory (Weiss & Cropanzano, 1996) posits that negative workplace events are likely to elicit negative emotions in individuals. According to the theory, individuals may experience emotions such as anger, fear, and sadness. Indeed, this proposition seems to tentatively be the case, given that empirical research has repeatedly found associations between negative workplace events and negative emotions, particularly anger (Adiyaman & Meier, 2022; Butts et al., 2015; Zhu et al., 2022). Therefore, it can be hypothesized that individuals are more likely to feel anger following a negative workplace event:

Hypothesis 1a: *Negative workplace events are positively related to anger.*

Affective Events Theory (Weiss & Cropanzano, 1996), while established and effective in understanding the relationships between events, emotions, attitudes, and behaviors in work environments (Ashkanasy & Humphrey, 2011; Wegge et al., 2006; Weiss & Beal, 2005), still has room for growth in its handling of anger. To enhance Affective Events Theory's explanatory power, integrating insights from cognitive appraisal theories (Moors et al., 2013) could be beneficial. These cognitive appraisal theories emphasize the role of individual appraisal processes in emotional responses, which can provide a deeper understanding of how anger is triggered and managed within organizational settings. By incorporating these perspectives, Affective Events Theory could offer a more thorough comprehension of how anger relates to workplace events, attitudes, and behaviors. This integration of cognitive and affective perspectives has the potential to enhance the theory's utility for organizations, making it a more robust tool for understanding and managing emotions in the workplace.

To enhance our understanding of anger in work environments, it is essential to introduce a construct that distinguishes anger from other negative emotions such as fear and sadness, as suggested by Affective Events Theory (Weiss & Cropanzano, 1996). Cognitive appraisal theories (Frijda, 1987; Lazarus, 1991; Roseman, 1984) provide valuable insights into this differentiation. These theories highlight the role of blame appraisal in anger responses. Specifically, anger is distinguished by an appraisal of blame, wherein the employee perceives that a negative event could have been prevented or mitigated.

Incorporating this appraisal of blame into Affective Events Theory (Weiss & Cropanzano, 1996) could significantly enhance its applicability to studying anger in workplace settings. By understanding that anger arises when employees attribute blame for negative events, we can develop a more nuanced model of anger dynamics in organizations. This integration allows for a more precise examination of how anger impacts employee attitudes and behaviors. Given the strong theoretical connection between the appraisal of blame and the experience of anger, and given the additional empirical research which seems to support this notion (Cobb & de Chabert, 2002; Q. Wang et al., 2018; Zhang et al., 2011), we hypothesize that:

Hypothesis 1b: *Appraisals of blame are positively related to anger.*

Conventionally, theories of emotion have maintained a direct correlation between negative appraisals and negative emotions (James, 1884; Moors et al., 2013; Russell, 2017), as well as positive appraisals and positive emotions, with negative and positive emotions seen as inversely related. However, our research takes a new approach by suggesting that positive events may actually be linked to decreased negative emotions, and positive events may be related to reduced positive emotions. In this study, we specifically focus on the relationship between positive events and anger, aiming to add a new dimension to our understanding of emotional responses within Affective Events Theory (Weiss & Cropanzano, 1996).

The relationship between positive workplace events and anger, two inversely related constructs, may initially appear to contradict Affective Events Theory. This theory typically assumes that negative emotions are only associated with negative workplace events (Weiss & Cropanzano, 1996). However, by examining the theory itself more closely, we can logically derive how such a relationship may come about. Affective Events Theory posits that affective responses, such as anger, fear or sadness are related to workplace events. These affective responses are seen as metric in nature, varying in intensity on a continuum from positive, over neutral, to negative (Wegge et al., 2006). On the other hand, workplace events themselves are typically viewed as categorical, falling into categories such as negative, neutral, or positive. The traditional view would thus suggest that a categorical predictor, such as workplace events, would relate to a metric outcome, such as anger. However, upon closer examination, it seems more likely that workplace events may actually also be spread out on a metric scale, ranging from very negative to very positive events (see Weiss & Beal, 2005). With this understanding, it becomes plausible to consider that positive workplace events may be related to anger in an inverse manner. This is because positive and negative workplace events are assumed to be inversely related, and anger is typically associated with negative experiences. Some empirical evidence seems to indeed support this notion (de Ruyter et al., 2020; Shepherd et al., 2023; Zhu et al., 2022). In conclusion, we hypothesize that positive workplace events are negatively related to anger:

Hypothesis 1c: *Positive workplace events are negatively related to anger.*

Anger's Co-Occurring Emotions

It is now important to delve deeper into the emotions that typically accompany anger in the workplace. This analysis serves two purposes: first, by investigating the relationship between anger and other emotional states, we can gain insight into whether emotions tend to cluster in response to positive or negative workplace situations. Additionally, this exploration can help us determine whether emotions related to anger should be categorized into broader groups such as negative emotions or positive emotions, or if they should be understood as distinct emotions like joviality and pride versus sadness and shame (Watson & Clark, 1994).

Affective Events Theory (Weiss & Cropanzano, 1996) has limitations in predicting whether anger will occur instead of other negative emotions or alongside them. To address this, we turn to constructionist theories of emotion (Russell, 2017; Russell & Carroll, 1999; Watson et al., 1988), which directly tackle this issue. Constructionist theories posit that emotions are constructs comprising two components: valence (the “goodness” of the feeling) and arousal (the level of activation). These components exist on a continuum from low to high and are in constant flux. Constructionist theories of emotion suggest that, rather than one emotion displacing another (implying a zero correlation), emotions with similar valence co-occur (implying a positive correlation). Given that anger has negative valence, it is reasonable to assume that other emotions with negative valence are positively related to the occurrence of anger. Empirical evidence supports this assumption (Miranda & Welbourne, 2023; Reio & Callahan, 2004; Shepherd et al., 2023). Thus, we propose the following hypothesis:

Hypothesis 2a: *Negative emotions are positively related to anger.*

For positive emotions, a similar rationale can be applied. Constructionist theories of emotion suggest that, rather than one emotion (anger) displacing another (implying a zero correlation), emotions with dissimilar valence tend not to co-occur (implying a negative correlation). Therefore, according to this rationale, anger, as a negative emotion, is unlikely to co-occur with positive emotions. Preliminary empirical evidence supports the assumption that anger and positive emotions are negatively related (Gooty et al., 2014; Groenvynck et al., 2011; Wong et al., 2023). Thus, we propose the following hypothesis:

Hypothesis 2b: *Positive emotions are negatively related to anger.*

Anger’s Outcomes

Affective Events Theory posits that negative emotions are positively related to negative workplace behaviors (Weiss & Cropanzano, 1996). Anger, in particular, is seen as being related to negative workplace behaviors. However, the theory does not specify what exactly constitutes these negative workplace behaviors (see Weiss & Beal, 2005). To gain a more thorough understanding, we can again turn to cognitive appraisal theories (Frijda, 1987; Lazarus, 1991; Roseman, 1984).

Cognitive appraisal theories suggest that anger is typically associated with behaviors aimed at confronting and attacking the source of the anger (Frijda, 1987; Lazarus, 1991; Roseman, 1984). This could manifest in various ways in the workplace, such as direct aggression or social undermining (see also Forrest et al., 2005; Verona et al., 2008). However, the central idea in cognitive appraisal theories is that anger prompts behaviors aimed at destabilizing the current employee-work environment interaction (Frijda, 1987; Lazarus, 1991; Roseman, 1984). Destabilizing behaviors are those that employees engage in to change and adjust their events with the work environment. This could include confronting

the individual responsible for the negative event (e.g., Shepherd et al., 2023), reporting inappropriate behavior (e.g., Hu et al., 2024), or exploiting the work environment to address the anger-provoking issue (e.g., Jeong & Gong, 2024). In this sense, anger should be positively related to destabilizing behaviors in the workplace. This assumption seems to be indeed supported by further empirical evidence (Brown & Robinson, 2011; Miranda & Welbourne, 2023; Mroz & Allen, 2017). As such, we hypothesize that:

Hypothesis 3a: *Anger is positively related to destabilizing behavior.*

Conventionally, theories of emotion have proposed a direct negative correlation between negative emotions and negative behaviors (James, 1884; Moors et al., 2013; Russell, 2017), as well as a positive correlation between positive emotions and positive behaviors. However, our research once again seeks to augment this conventional wisdom by suggesting that negative emotions may also be associated with a decrease in positive behaviors, while positive emotions may be related to a reduction in negative behaviors. In our study, we specifically examine the connection between anger and positive behaviors, seeking to enhance our understanding of how individuals respond behaviorally to feelings of anger within the framework of Affective Events Theory.

Research on the relationship between anger and positivity within the framework of Affective Events Theory remains inconclusive (see Weiss & Beal, 2005). Conventionally, this theory has focused on the impact of negative emotions on workplace events (Weiss & Cropanzano, 1996), overlooking the potential relationship between anger and positive workplace behaviors. To address this gap, we can draw insights from cognitive appraisal theories (Frijda, 1987; Lazarus, 1991; Roseman, 1984), which suggest that positive emotions are often linked to behaviors aimed at sustaining the status quo. In this context, positive emotions may drive employees to engage in stabilizing behaviors that uphold or enhance their relationships with the work environment.

Given the positive relationship between anger and destabilizing behavior, it would not align with an employee's goal to maintain the status quo. While it may be unlikely for individuals to exhibit increased stabilizing behavior when feeling angry, this does not necessarily mean that these two constructs are not related. In fact, one way to interpret this relationship is to view stabilizing behavior as the opposite of destabilizing behavior, suggesting that a decrease in stabilizing behavior could be seen as behavior similar to destabilizing behavior. This implies that when individuals experience anger, they are less likely to engage in behaviors aimed at maintaining or enhancing the current state of affairs within an employee-work environment event. Indeed, preliminary empirical evidence seems to support this assumption (S. Khan et al., 2022; Shepherd et al., 2023; Struthers et al., 2001). Therefore, we hypothesize that anger is negatively related to stabilizing behavior:

Hypothesis 3b: *Anger is negatively related to stabilizing behavior.*

Anger's Mediating Role in Linking Events to Behavioral Outcomes at Work

As we delve deeper into our exploration of anger and its relation to various workplace events, it is important to consider the underlying theoretical framework. Affective Events Theory (Weiss & Cropanzano, 1996), coupled with our cognitivist augmentations (Frijda, 1987; Lazarus, 1991; Roseman, 1984), provides a solid foundation for understanding the workplace dynamics at play. These theories are process-oriented, highlighting the dynamic nature of emotions such as anger and how they manifest in behavior. Building on our previous hypotheses regarding the direct relations between anger and its antecedents and outcomes, we can now focus on investigating the mediating role that anger may play in certain workplace events. For instance, we hypothesize that a negative workplace event is positively associated with destabilizing behavior through the emotion of anger. This suggests that anger acts as a mediator in the relationship between workplace events and subsequent behavior. By testing these hypotheses, we could gain a more comprehensive understanding of the underlying mechanisms driving these processes and further validate our theoretical framework. As such, we pose the following hypotheses:

Hypothesis 4a: *Negative workplace events are positively related to destabilizing behavior via anger.*

Hypothesis 4b: *Negative workplace events are negatively related to stabilizing behavior via anger.*

Hypothesis 4c: *Appraisals of blame are positively related to destabilizing behavior via anger.*

Hypothesis 4d: *Appraisals of blame are negatively related to stabilizing behavior via anger.*

Hypothesis 4e: *Positive workplace events are negatively related to destabilizing behavior via anger.*

Hypothesis 4f: *Positive workplace events are positively related to stabilizing behavior via anger.*

Method

Transparency and Openness

This study did not involve preregistration of the conceptual model or analysis plan on the Open Science Framework (OSF). However, upon publication, the data summary and analysis code will be made available in a directory on OSF. The review presented in this

article adheres to the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocol (PRISMA-P; Moher et al., 2016) guidelines to ensure transparency and rigor.

Transparency and Openness

Our systematic review focuses on articles published in English, German, or Russian that report primary quantitative data obtained from observations or experiments. The main objective is to assess state anger, defined as anger experienced momentarily and lasting up to one day¹ (see Lazarus, 1991; Moors et al., 2013; Potegal et al., 2010). We specifically examine the role of anger in the workplace among adults, deliberately excluding student studies to ensure representativeness of the working population. Our meta-analysis includes both peer-reviewed and non-peer-reviewed papers and datasets that meet the same eligibility criteria.

Information Sources, Search Strategy, and Extraction

On April 20, 2024, we conducted a comprehensive search for abstracts related to workplace anger across several databases, including Web of Science, Scopus, and ProQuest Dissertations & Theses Global, using a specific search string² to refine our results. We supplemented this search through cross-referencing and by reaching out to scholars via IO-psychology association lists. In cases where full texts were not readily available, we contacted corresponding authors to obtain copies. Our focus was on extracting all possible effect sizes related to the main construct of anger. If multiple effect sizes for a similar theoretical construct were found within the same study, we calculated a mean-composite score from these effect sizes.

Synthesis

Our qualitative synthesis categorized the findings based on their alignment with the theoretical constructs outlined in Affective Events Theory (Weiss & Cropanzano, 1996), cognitive appraisal theories (Frijda, 1987; Lazarus, 1991; Roseman, 1984), and constructionist theories of emotion (Russell, 2017; Russell & Carroll, 1999; Watson et al., 1988). These theories received significant attention due to their frequent occurrence in the studies we reviewed. This method allowed for a cohesive and comprehensive theory-driven analysis. We grouped lower-level constructs into broader theoretical constructs to conduct a thorough analysis.

¹While we acknowledge that the timeframes we utilized in our study may not perfectly align with the traditional definitions of emotional states in the literature, such as “at present,” our choice of these specific timeframes was intentional to encompass research focusing on workplace emotions. Many studies in this field examine emotions throughout the workday, which informed our criteria. However, we recognize that this approach does not solely justify the use of the term “state anger.”

²AB = (“anger” OR “angry” OR “angered”) AND (“at work” OR “work* setting*” OR “workplace*” OR “job*” OR “on duty” OR “occupation*” OR “organization*” OR “business*” OR “office*”) and English or German or Russian (Languages)

For the quantitative synthesis, we used the random effects model of Hedges & Olkin (1985), employing summary statistics such as the number of studies (k), cumulative sample size (N), Pearson correlation coefficient (r), standard deviation (SD), confidence intervals, Kendall's tau (τ^2), Q -statistic, and I -statistic. Structural equation modeling was applied to test our proposed conceptual model using meta-correlation matrix data, allowing for systematic and cohesive analysis of the evidence.

Meta-Biases

To address potential publication bias, we implemented several strategies. We computed the trim-and-fill estimates and calculated their confidence statistics (Duval & Tweedie, 2000; Viechtbauer, 2010), where applicable. We also used failsafe- N measures to determine the number of additional studies with null results needed to negate our findings (Orwin, 1983; Rosenberg, 2005; Rosenthal, 1979). Additionally, we generated trim-and-fill funnel plots to visually assess publication bias (Duval & Tweedie, 2000). These measures ensured a robust examination of the potential biases in our analysis.

Results

Selection of Studies

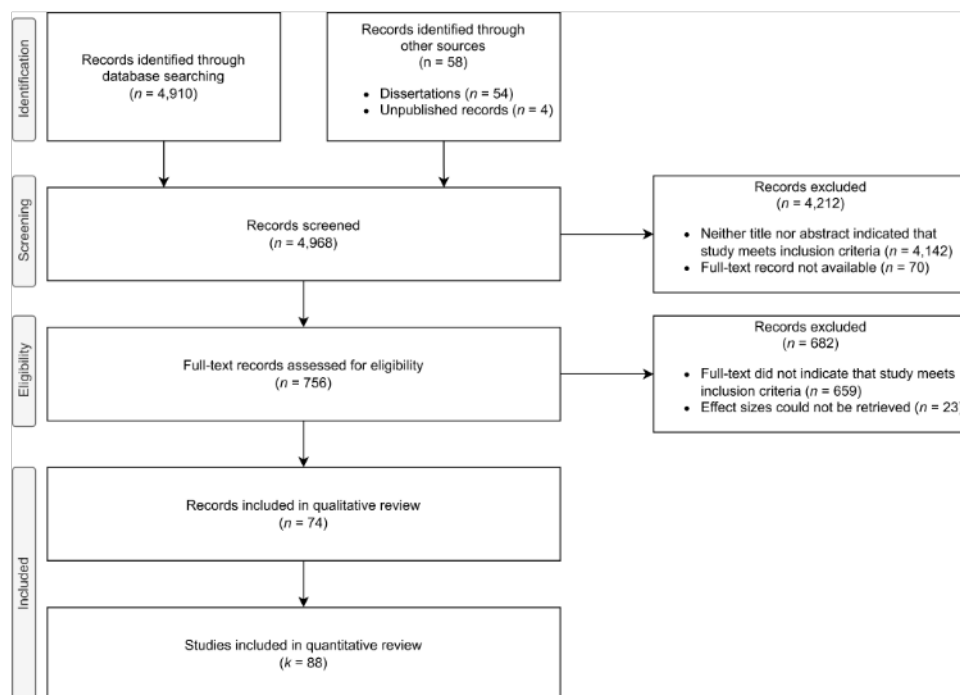
The selection process for our study is depicted in Figure 2. We conducted comprehensive database searches and utilized additional sources, such as dissertations and unpublished data, to identify relevant records. Initially, identified records were screened based on their titles and abstracts to assess their suitability. The records that passed this initial screening underwent a full-text examination to determine eligibility for inclusion. Articles that met the inclusion criteria and contained retrievable effect sizes were included in the qualitative review. Other records that aligned with the inclusion criteria were also included in the quantitative review.

Characteristics of Included Studies

The studies examined anger using various research methods, including cross-sectional, critical-incident recall, longitudinal/experience-sampling, intervention, and simulation/lab experiments. Most studies (93.18%) were published journal articles, followed by unpublished records (5.68%) and dissertations (1.14%). Regarding study design, 67.05% were observational, 31.82% were experimental, and 1.14% were interventional.

Anger was reported across different time frames: 30.69% of participants felt anger during the past moment, 1.14% within the past ten minutes, 2.28% in the past hour, 9.09% in the past day, 27.27% during a recalled moment, and 29.53% during a simulated moment.

Figure 2
Flowchart of Selection Procedure



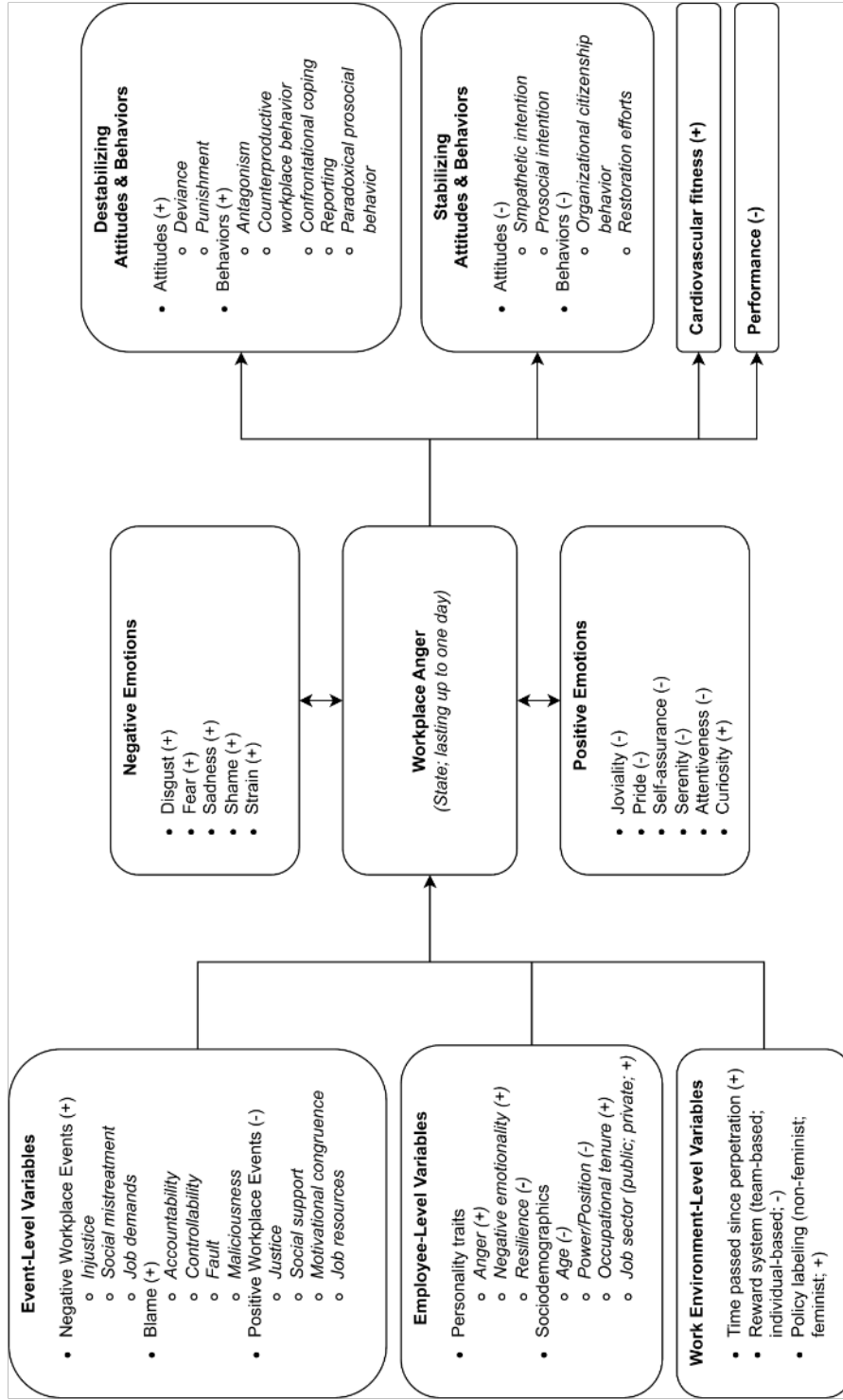
Participants

The majority of participants (78.41%) were employed in various private industries. A small percentage (1.14%) were sole proprietors. The remaining 20% of participants were distributed across different sectors: 4.55% in criminal justice, 4.55% in the military, 4.55% in healthcare, and 4.55% in education. Sample sizes for these groups ranged from 8 to 819 individuals ($M = 225$, $SD = 175$).

Qualitative Synthesis (Systematic Review)

Our systematic review identified three main categories of research on anger in workplaces, as illustrated in Figure 3. These categories include antecedents, co-occurring emotions, and outcomes of anger.

Figure 3
Nomological Network of Assumed Antecedents, Co-Occurring Emotions, and Outcomes of Workplace Anger



Note. The figure presented here synthesizes findings from both our qualitative and quantitative reviews. Relationships are categorized as either generally positive (+) or generally negative (-) with respect to anger, as noted in the literature. One-headed arrows denote relationships assumed to be causal in theory, while double-headed arrows denote relationships assumed to be correlational, not causal, in theory.

It is important to note that many studies on anger are non-experimental, which may introduce potential biases to internal validity despite their external validity. Therefore, caution is required when drawing conclusions about causality in our synthesis, meta-analysis, and meta-structural equation model. Additionally, while we discuss hierarchical structures in our analysis, these should be considered theoretical rather than empirically validated, as we were unable to examine the multilevel structure due to the lack of research utilizing a multilevel methodology.

Antecedents

In the realm of anger's theoretical antecedents (Weiss & Cropanzano, 1996), three distinct sub-categories can be identified: event-level variables, employee-level variables, and work environment-level variables. In the following sections, we will examine each of these levels to better understand the factors that relate to the experience of anger.

Event-Level Variables. Event-level variables encompass factors that vary within employee-work environment events, indicating variability within employees. These factors are dependent on specific events and can be considered nested within their respective employees. Our review revealed constructs operationalized similarly to the theoretical concepts of negative and positive workplace events (Weiss & Cropanzano, 1996). Additionally, we identified constructs derived from cognitive appraisal theories, such as blame and innocence appraisals (Frijda, 1987; Lazarus, 1991; Moors et al., 2013), as well as appraisals of future expectancy.

Negative Workplace Event. Witnessing mistreatment by supervisors, such as abusive treatment, withholding promotions, or gossiping, is associated with feelings of anger among employees (Butts et al., 2015; Chen & Wu, 2022; Eatough et al., 2016; S. Khan et al., 2022; Tata, 2002; Yu & Duffy, 2021; Zhu et al., 2022; Zong et al., 2024). Observing mistreatment by colleagues or customers, such as aggression, unethical behavior, or invasions of privacy, is also related to anger responses (Adiyaman & Meier, 2022; Brown & Robinson, 2011; Chen & Wu, 2022; de Ruiter et al., 2020; Desrumaux et al., 2018; Discont, 2017; Gao & Lin, 2023; Hall & Dhanani, 2023; Lim et al., 2016; Liu et al., 2021; Miranda & Welbourne, 2023; Mroz & Allen, 2017; Raper et al., 2023; Sufi et al., 2023; Q. Wang et al., 2018; Why et al., 2003; Yost et al., 2019; Zong et al., 2024). Experiences of injustice, whether interpersonal, distributive, or procedural, and imbalances in effort-reward relationships, are linked to increased feelings of anger (Dewe & Trenberth, 2012; Hoggan & Dollard, 2007; S. Khan, 2021; Lei & Kaplan, 2023; Schilling et al., 2020). Encountering threats, distress, or helplessness, known as motivational incongruences (Lazarus, 1991), is also related to heightened anger (Bennett & Lowe, 2008; Jeong & Gong, 2024). Increased workloads, emotional labor, or lack of control over tasks are associated with anger in the workplace (da Costa et al., 2018; Idris & Dollard, 2011; Lim et al., 2016; Plückhahn, 2024; Schilling et al., 2020; Sohn et al., 2018). A less common finding revealed anger in response to negative events caused by employees themselves. This perspective shift allowed us to tentatively

conclude that an appraisal of a negative event is negatively associated with anger when the negative event originates from the employee (Li et al., 2023).

Blame Appraisal. Blame appraisal in employee-work environment events refers to the perception that a negative event could have been avoided or mitigated (Weiss & Cropanzano, 1996). This suggests that certain elements of the event are seen as deserving of blame. Our research shows that when employees attribute accountability (Bennett & Lowe, 2008; Brown & Robinson, 2011; Cobb & de Chabert, 2002; Mroz & Allen, 2017; Patton, 2022; Struthers et al., 2001; Zhang et al., 2008, 2011), controllability (Harvey et al., 2017; Mroz & Allen, 2017; Struthers et al., 2001; Zhang et al., 2008, 2011), fault (Bennett & Lowe, 2008; Cobb & de Chabert, 2002; Q. Wang et al., 2018; Zhang et al., 2011), and malicious intent (Harvey et al., 2017; Yu & Duffy, 2021) to their work environment, amplified feelings of anger can be observed.

Innocence Appraisal. Innocence appraisal involves the perception that a negative event was unavoidable or stemmed from positive intentions (Weiss & Cropanzano, 1996). Our research indicates that when employees perceive justifications (Patton, 2022; Tata, 2002) or benevolent motives (Yu & Duffy, 2021) in their event with their work environment, decreased feelings of anger can be observed.

Positive Workplace Event. Positive workplace events refer to attributes perceived as positive, favorable, or reassuring by employees (Weiss & Cropanzano, 1996). This assessment implies that certain aspects of the event may be considered appropriate or desirable.

Experiences of justice and fairness, whether interpersonal, distributive, or procedural, are negatively associated with anger (A. K. Khan et al., 2013; S. Khan, 2021; Tata, 2002; Yu & Duffy, 2021; Zhu et al., 2022). Receiving social support from coworkers or supervisors is linked to lower levels of anger (da Costa et al., 2018; Idris & Dollard, 2011; Plückhahn, 2024). Witnessing a positive organizational culture, including civility norms, trustworthiness among coworkers, and intraorganizational mobility, is related to reduced feelings of anger (Guzzo et al., 2021; Miranda & Welbourne, 2023; Sagioglou et al., 2023; Zong et al., 2024). Situations aligning with one's motivations, such as positive feedback, challenging tasks, and indirect benefits, are related to decreased anger levels (Bennett & Lowe, 2008; de Ruyter et al., 2020; Hu et al., 2024; Raper et al., 2023; Tata, 2002). Having job resources like office plants, psychological safety, animals, or team-building activities are associated with a lower likelihood of experiencing anger (Idris & Dollard, 2011; Jdanova & Carmona, 2024; S. Khan et al., 2022; Plückhahn, 2024).

Future Expectancy Appraisal. Future expectancy appraisal refers to the perception that responses to current events could influence future outcomes (Lazarus, 1991; Weiss & Cropanzano, 1996). Our review did not uncover a clear relation between future expectancy and feelings of anger, with results varying and not pointing to a specific direction (Bennett & Lowe, 2008; Harvey et al., 2017; Lei & Kaplan, 2023; Xu et al., 2020).

Employee-Level Variables. Employee-level variables encompass factors that differ between employees, indicating variability between individuals. We identified constructs akin to Affective Events Theory (Weiss & Cropanzano, 1996) and cognitive appraisal theories (Lazarus, 1991; Smith & Lazarus, 1990), such as traits, commitments, values, and socio-demographics.

Traits. Traits in the employee-work environment context refer to stable dispositional attributes of employees (Lazarus, 1991; Weiss & Cropanzano, 1996). Here, several distinct factors were identified.

Trait anger (da Costa et al., 2018; Hoggan & Dollard, 2007; Plückhahn, 2024; Reio & Callahan, 2004; Umbra & Fasbender, 2024; Zhu et al., 2022) and negative affectivity (Chen & Wu, 2022; Evans et al., 2006; Gao & Lin, 2023; Harvey et al., 2017; S. Khan et al., 2022; Lim et al., 2016; Niemann et al., 2014; Patton, 2022; Plückhahn, 2024; Reio & Callahan, 2004; Szczygiel & Mikolajczak, 2018) are positively related to the experience of anger. Positive affectivity (Eatough et al., 2016; Gao & Lin, 2023; Plückhahn, 2024; Reio & Callahan, 2004; Szczygiel & Mikolajczak, 2018) and trait resilience (Jeong & Gong, 2024; Raper et al., 2023) are negatively associated with anger. The relationship between traits like interpersonal competence (Gooty et al., 2014; Plückhahn, 2024; Szczygiel & Mikolajczak, 2018) and social desirability (Chen & Wu, 2022; Miranda & Welbourne, 2023; Q. Wang et al., 2018) and anger is unclear.

Commitments. Commitment in the employee-work environment context refers to the loyalty of employees towards their work environment (Lazarus, 1991; Weiss & Cropanzano, 1996). The relationship between commitments and anger remains unclear, with no clear directionality between anger and organizational (Conroy et al., 2016; Sufi et al., 2023; Umbra & Fasbender, n.d.-a; C. S. Wang et al., 2021) or occupational commitments (Conroy et al., 2016; Hoggan & Dollard, 2007).

Values. Values in the employee-work environment context refer to the ideological patterns that employees adhere to, reflecting their belief structures (Lazarus, 1991; Weiss & Cropanzano, 1996). Our research did not find a clear link between values and anger, with relationships between anger and moral identity (Hu et al., 2024; Jeong & Gong, 2024) and feminist values (C. S. Wang et al., 2021) appearing ambiguous.

Socio-demographics. Numerous reports discuss the connection between anger and various socio-demographic factors of employees. Anger is positively associated with occupational tenure (Jeong & Gong, 2024; Kadoya et al., 2021; Plückhahn, 2024) and working in the private sector as opposed to the public sector (Hoggan & Dollard, 2007; Idris & Dollard, 2011). Conversely, it is negatively related to age (Butts et al., 2015; Chen & Wu, 2022; Conroy et al., 2016; Eatough et al., 2016; Gao & Lin, 2023; Groenvynck et al., 2011; Harvey et al., 2017; Hoggan & Dollard, 2007; Hu et al., 2024; Idris & Dollard, 2011; Jeong & Gong, 2024; Kadoya et al., 2021; Liu et al., 2021; Patton, 2022; Plückhahn, 2024; C. S. Wang et al., 2021; Q. Wang et al., 2018; Zhu et al., 2022; Zong et al., 2024) and power or hierarchical position within an organization (Cobb & de Chabert, 2002; Liu et al., 2021;

Niemann et al., 2014; Plückerhahn, 2024; Sagioglou et al., 2023; Sufi et al., 2023; Zong et al., 2024). There does not appear to be a clear relationship between anger and gender (Brown & Robinson, 2011; Butts et al., 2015; Cobb & de Chabert, 2002; Eatough et al., 2016; Gao & Lin, 2023; Groenvynck et al., 2011; Hall & Dhanani, 2023; Harvey et al., 2017; Hoggan & Dollard, 2007; Hu et al., 2024; Idris & Dollard, 2011; Li et al., 2023; Liu et al., 2021; Patton, 2022; Sufi et al., 2023; C. S. Wang et al., 2021; Q. Wang et al., 2018; Wesemann et al., 2021; Zedlacher & Yanagida, 2023; Zhu et al., 2022; Zong et al., 2024), education level (Gao & Lin, 2023; Groenvynck et al., 2011; Idris & Dollard, 2011; Kadoya et al., 2021; Plückerhahn, 2024), marital status (Butts et al., 2015; Conroy et al., 2016; Kadoya et al., 2021), organizational tenure (Conroy et al., 2016; da Costa et al., 2018; Gao & Lin, 2023; Hoggan & Dollard, 2007; Jeong & Gong, 2024; Liu et al., 2021; Q. Wang et al., 2018), weekly working hours (Butts et al., 2015; Kadoya et al., 2021; Plückerhahn, 2024; Q. Wang et al., 2018), or salary/income (Hoggan & Dollard, 2007; Hu et al., 2024; Kadoya et al., 2021).

Work Environment-Level Variables. Work environment-level variables encompass factors that vary between different work environments and individual employees (see Weiss & Cropanzano, 1996). Specific constructs related to the perpetration and the organization were identified.

Perpetration Context. Perpetration context refers to the circumstances and attributes of the work environment associated with anger-inducing events perpetrated towards employees (see Weiss & Cropanzano, 1996). Our research shows that the gender of the perpetrator does not significantly relate to anger in employee-work environment events (Cobb & de Chabert, 2002; Desrumaux et al., 2018; Zedlacher & Yanagida, 2023). However, the amount of time since the last perpetration positively relates to the level of anger experienced by employees (Q. Wang et al., 2018; Zhu et al., 2022).

Perpetration Context. Organizational context refers to the circumstances and attributes of the organizational environment (see Weiss & Cropanzano, 1996). Our research indicates that labeling an organizational policy as feminist, as opposed to non-feminist, is related to increased feelings of anger among employees (C. S. Wang et al., 2021). Conversely, having an individual-based reward system, rather than a team-based one, is linked to decreased anger levels following negative events (Hu et al., 2024).

Co-Occurring Emotions

Anger often accompanies a range of emotions (Russell, 2017; Russell & Carroll, 1999; Watson et al., 1988), which can be categorized into positive and negative emotions. These categories can be further broken down into various emotions. In the following paragraphs, we will explore each category in detail to understand better the factors that relate to the experience of anger.

Positive Emotions. Positive emotions refer to emotional states perceived by employees as positive (Weiss & Cropanzano, 1996). Our research indicates that positive emotions are

inversely associated with feelings of anger. Specifically, anger was linked to lower levels of joviality (de Ruiter et al., 2020; Gooty et al., 2014; Groenvynck et al., 2011; Guzzo et al., 2021; Jdanova & Carmona, 2024; Kadoya et al., 2021; Liu et al., 2021; Plückhahn, 2024; Raper et al., 2023; Schilling et al., 2020; Umbra & Fasbender, 2024; Wong et al., 2023), serenity (Kadoya et al., 2021; Plückhahn, 2024; Umbra & Fasbender, 2024), attentiveness (de Ruiter et al., 2020; Idris & Dollard, 2011; Plückhahn, 2024; Zhu et al., 2022), and pride (Gooty et al., 2014; Shepherd et al., 2023; C. S. Wang et al., 2021), but higher levels of curiosity (Jeong & Gong, 2024; Reio & Callahan, 2004). There appears to be no significant relationship between anger and feelings of self-assurance (Adiyaman & Meier, 2022; Umbra & Fasbender, n.d.-b).

Negative Emotions. Negative emotions refer to emotional states perceived by employees as negative (Weiss & Cropanzano, 1996). Our research indicates that negative emotions are positively related to anger. Specifically, anger is positively related to disgust, fear, sadness, shame, and strain, yet no clear relation was found between anger and envy or guilt. Anger is positively linked to feelings of disgust (Miranda & Welbourne, 2023; Shepherd et al., 2023), fear (de Ruiter et al., 2020; Groenvynck et al., 2011; Guzzo et al., 2021; Jdanova & Carmona, 2024; Koohkan et al., 2021; Lim et al., 2016; Mulder et al., 2014, 2016; Plückhahn, 2024; Raper et al., 2023; Reio & Callahan, 2004; Shepherd et al., 2023; Sohn et al., 2018; Sufi et al., 2023; C. S. Wang et al., 2021; Wong et al., 2023; Xu et al., 2020), sadness (Adiyaman & Meier, 2022; Groenvynck et al., 2011; Idris & Dollard, 2011; Jdanova & Carmona, 2024; Kadoya et al., 2021; A. K. Khan et al., 2013; Lei & Kaplan, 2023; Plückhahn, 2024; Schilling et al., 2020; Shepherd et al., 2023; Sohn et al., 2018; Szczygiel & Mikolajczak, 2018; Umbra & Fasbender, n.d.-b, 2024), shame (Groenvynck et al., 2011; Harvey et al., 2017; Shepherd et al., 2023; Sufi et al., 2023; Zong et al., 2024), and strain (da Costa et al., 2018; de Ruiter et al., 2020; Jdanova & Carmona, 2024; Kadoya et al., 2021; Plückhahn, 2024; Schilling et al., 2020; Sohn et al., 2018; Szczygiel & Mikolajczak, 2018; Wettstein et al., 2020). However, no significant relationship was found between anger and envy (Hu et al., 2024) or guilt (Gooty et al., 2014; Groenvynck et al., 2011; Harvey et al., 2017; Li et al., 2023; Lim et al., 2016; Yu & Duffy, 2021).

Outcomes

Within the realm of anger's theoretical consequences, several attitudinal and behavioral concepts are commonly associated with event-specific anger (Weiss & Cropanzano, 1996). Additionally, cardiovascular fitness and job performance play roles in understanding the experience of anger. The following sections delve into the relationships between these factors.

Attitudes.

Destabilizing Attitudes. Destabilizing attitudes in the employee-work environment manifest as a state of action readiness (Frijda, 1987), where employees are motivated to destabilize and modify their current events with their work environment (see Lazarus, 1991;

Lazarus & Folkman, 1984). Anger is positively related to an urge to punish or deviate against the work environment (Hall & Dhanani, 2023; Idris & Dollard, 2011; Patton, 2022).

Stabilizing Attitudes. Stabilizing attitudes refer to a state of action readiness (Frijda, 1987) where employees are driven to maintain or enhance their current events with their work environment (see Lazarus, 1991; Lazarus & Folkman, 1984). Our research indicates that feelings of anger are negatively related to the urge to act sympathetically and proactively towards the work environment. When employees experience anger, they are less likely to exhibit harmonic (de Ruiters et al., 2020; Mroz & Allen, 2017; Mulder et al., 2014, 2016; Niemann et al., 2014; Patton, 2022; Struthers et al., 2001; Zhang et al., 2008) and supportive intentions (Mroz & Allen, 2017; Mulder et al., 2014).

Behaviors.

Destabilizing Behaviors. Destabilizing behaviors refer to efforts made by employees to change and adjust their current events with their work environment (Lazarus, 1991; Lazarus & Folkman, 1984). Anger is positively linked to actions such as antagonistic behavior (A. K. Khan et al., 2013; Mroz & Allen, 2017; Mulder et al., 2016; Struthers et al., 2001; Umbra & Fasbender, 2024; Q. Wang et al., 2018; Zong et al., 2024), counterproductive workplace behavior (Chen & Wu, 2022; A. K. Khan et al., 2013; Miranda & Welbourne, 2023; Yost et al., 2019; Yu & Duffy, 2021), confrontation (Brown & Robinson, 2011; Shepherd et al., 2023; Umbra & Fasbender, n.d.-b, 2024), reporting negative events (Hu et al., 2024), and manipulating the work environment to suit their needs (Jeong & Gong, 2024; Plückhahn, 2024; C. S. Wang et al., 2021). Interestingly, anger is also related to paradoxical prosocial behavior (Hu et al., 2024; Zhang et al., 2008, 2011) including recommending training for perpetrators, offering constructive feedback, and providing feedback.

Stabilizing Behaviors. Stabilizing behaviors are actions taken by employees to uphold or enhance their existing events with their work environment (see Lazarus, 1991; Lazarus & Folkman, 1984). Anger is often associated with decreased organizational citizenship behavior (S. Khan et al., 2022; Yost et al., 2019; Yu & Duffy, 2021), reduced prosocial behavior (Chen & Wu, 2022; Niemann et al., 2014; Struthers et al., 2001; Sufi et al., 2023), positive responses (Shepherd et al., 2023), and diminished efforts to restore harmony (Li et al., 2023).

Mitigative Behaviors. Mitigative behaviors refer to actions taken by employees to lessen or prevent negative impacts of the negative events they experience (see Lazarus, 1991; Lazarus & Folkman, 1984). Anger appears to be positively linked to impression management (Gao & Lin, 2023; Zong et al., 2024), but more research is needed to determine the directionality between anger and avoidant (A. K. Khan et al., 2013; S. Khan et al., 2022; Sufi et al., 2023; Tata, 2002; Umbra & Fasbender, n.d.-b) or ignoring behaviors (Shepherd et al., 2023).

Cardiovascular Fitness. Cardiovascular fitness in the employee-work environment is an objective measure of an employee's physical health and well-being (see Weiss & Cropanzano, 1996). Our research suggests a positive relationship between anger and cardiovascular fitness in employees (Jdanova & Carmona, 2024; Koohkan et al., 2021; Schilling et al., 2020).

Performance. Performance in the employee-work environment is a key indicator of an employee's ability to generate value, including factors such as job performance, self-efficacy, task performance, goal attainment, and overall functionality in the workplace (Gooty et al., 2014; Koohkan et al., 2021; Lei & Kaplan, 2023; Reio & Callahan, 2004; Umbra & Fasbender, n.d.-a; Zhu et al., 2022). Our research indicates a negative relation between anger and employee performance.

Quantitative Synthesis (Meta-Analysis)

Meta-Correlations

Effect Size Heterogeneity. Table 1 presents the statistics demonstrating the heterogeneity of effect sizes. Despite observing small to moderate relative effect size heterogeneity among the included studies, as indicated by the relatively small I^2 values (Kepes et al., 2023), the overall heterogeneity of effect sizes is high, evidenced by the high τ^2 and Q -values. This suggests that a random effects model was more appropriate than a fixed effects model for our analysis.

Antecedents. Table 1 also provides a comprehensive overview of the effect sizes and confidence in the evidence regarding the relationships between various variables and state anger. Our analysis supports the findings of our qualitative synthesis, indicating that factors such as injustice, mistreatment by supervisors or others, and job demands are positively associated with anger. Additionally, while motivational incongruence shows a trend toward a positive relationship with anger, it does not reach statistical significance.

Furthermore, our study reveals a positive relationship between anger and appraisals of blame, specifically in terms of accountability, controllability, fault, and maliciousness. On the other hand, innocence appraisals do not significantly relate to anger levels. We also observe that appraisals of employee-perpetrated negative events and environment-perpetrated positive events, along with subcategories such as justice, social support, positive organizational culture, motivational congruence, and job resources, are negatively related to anger.

Moreover, we found that employee- and environment-level variables are not typically associated with increased levels of anger in the workplace. However, exceptions include traits such as negative affectivity, trait anger, occupational tenure, time elapsed since an incident occurred, and labeling a policy as feminist (compared to non-feminist), all linked to higher levels of anger. Conversely, traits like resilience, age, power or hierarchical position within the company, and an individual-based reward system (as opposed to a team-based one) during a negative event are associated with lower levels of anger.

Table 1
Meta-Correlations

Construct	k	N	r	SD	r	CILL	CIUL	τ^2	Q	p(Q)	I ²	Fsk(1) ^a	Fsk(2) ^b
Antecedents													
Event-Level Variables													
Negative workplace event (environment-perpetrated)	43	9898	0.35*	0.03	0.30	0.30	0.41	0.03	39.69	0.43	0.00%	1569	22 628
Injustice	6	1056	0.26*	0.05	0.16	0.16	0.36	0.01	8.30	0.86	39.79%	11	259
Mistreatment by supervisor	12	2991	0.31*	0.05	0.21	0.21	0.41	0.03	13.74	0.75	19.94%	60	1607
Mistreatment by others	19	4705	0.45*	0.03	0.39	0.39	0.51	0.01	16.87	0.47	0.00%	869	9633
Motivational incongruence	2	207	0.42	0.22	-0.01	0.86	0.09	0.01	1.00	0.68	0.00%	0	32
Job demands	6	1167	0.22*	0.04	0.14	0.14	0.31	0.01	4.28	0.49	0.00%	18	335
Negative workplace event (employee-perpetrated)	2	351	-0.24*	0.06	-0.37	-0.11	0.01	0.01	1.00	0.68	0.00%	2	39
Blame appraisal	13	2899	0.35*	0.07	0.21	0.49	0.06	0.06	6.69	0.12	0.00%	92	854
Accountability	9	2072	0.36*	0.09	0.20	0.53	0.06	0.06	4.11	0.15	0.00%	43	1356
Controllability	5	1000	0.33*	0.11	0.12	0.54	0.06	0.06	3.24	0.48	0.00%	6	275
Fault	4	600	0.57*	0.04	0.49	0.66	0.00	0.00	3.60	0.69	16.62%	30	347
Maliciousness	3	563	0.10	0.07	-0.04	0.25	0.02	0.02	2.54	0.72	21.32%	0	10
Innocence	5	1513	-0.04	0.05	-0.13	0.06	0.01	0.01	4.29	0.63	6.68%	0	8
Justification	2	970	-0.04	0.10	-0.24	0.17	0.02	0.02	1.00	0.68	0.00%	0	15
Benevolent motive	3	543	-0.04	0.07	-0.17	0.10	0.01	0.01	2.09	0.65	4.36%	0	5
Positive workplace event	22	5001	-0.25*	0.03	-0.30	-0.20	0.01	0.01	76.27	1.00	72.47%	110	14
Justice	7	1990	-0.30*	0.07	-0.45	-0.16	0.04	0.04	10.42	0.89	42.42%	9	408
Social support	3	494	-0.19*	0.06	-0.30	-0.08	0.01	0.01	3.27	0.80	38.79%	2	59
Positive organizational culture	4	1446	-0.14*	0.04	-0.21	-0.06	0.01	0.01	14.97	1.00	79.96%	0	0
Motivational Congruence	7	1093	-0.32*	0.07	-0.45	-0.18	0.03	0.03	16.87	0.99	64.44%	6	315
Job resources	4	525	-0.20*	0.05	-0.30	-0.09	0.01	0.01	2.70	0.56	0.00%	5	65
Future expectancy (unfavorable)	3	741	-0.04	0.04	-0.12	0.04	0.00	0.00	1.54	0.54	0.00%	0	0
Employee-Level Variables													
Traits													
Positive affectivity	5	837	-0.08	0.05	-0.19	0.02	0.01	0.01	6.27	0.82	36.19%	0	15
Negative affectivity	12	2451	0.31*	0.05	0.22	0.40	0.02	0.02	13.41	0.73	17.98%	80	1423
Negative affect	10	2320	0.32*	0.05	0.23	0.42	0.02	0.02	11.26	0.74	20.07%	53	1113
Emotional volatility	2	131	0.26	0.14	-0.02	0.53	0.04	0.04	1.00	0.68	0.00%	0	13
Anger	6	1094	0.45*	0.07	0.31	0.58	0.03	0.03	5.03	0.59	0.64%	26	692

Table 1
Meta-Correlations (Continued)

Construct	k	N	r	SD r	CI LL	CI UL	τ^2	Q	p(Q)	I ²	Fsk(1) ^a	Fsk(2) ^b
Interpersonal competence	3	344	-0.14	0.12	-0.38	0.09	0.04	2.79	0.75	28.22%	0	42
Resilience	2	418	-0.22*	0.06	-0.34	-0.11	0.01	1.00	0.68	0.00%	2	50
Social desirability	3	852	-0.12	0.09	-0.30	0.06	0.03	1.51	0.53	0.00%	0	2
Commitments	7	1894	0.05	0.04	-0.03	0.13	0.01	16.43	0.99	63.49%	0	0
Organization	5	1577	0.03	0.04	-0.06	0.12	0.01	6.94	0.86	42.40%	0	0
Occupation	2	265	0.18	0.16	-0.14	0.50	0.05	1.00	0.68	0.00%	0	4
Values												
Moral identity	2	220	0.07	0.14	-0.21	0.34	0.04	1.00	0.68	0.00%	0	0
Feminism	3	1623	0.08	0.07	-0.06	0.22	0.01	2.29	0.68	12.48%	0	12
Socio-demographics												
Gender (male; female)	24	7819	0.00	0.01	-0.02	0.03	0.00	139.05	1.00	83.46%	0	0
Age	22	6481	-0.04*	0.01	-0.07	-0.02	0.00	42.71	1.00	50.83%	13	63
Education	5	1077	0.05	0.04	-0.02	0.12	0.01	12.42	0.99	67.79%	0	0
Marriage status (not married; married)	3	491	0.02	0.03	-0.03	0.08	0.00	1.53	0.53	0.00%	0	0
Power/Hierarchical position	10	2087	-0.12*	0.04	-0.19	-0.05	0.01	22.83	0.99	0.99%	5	50
Tenure												
Organizational	7	1216	0.03	0.02	-0.01	0.07	0.00	9.24	0.84	35.10%	0	21
Occupational	3	242	0.04*	0.02	0.00	0.08	0.00	2.98	0.77	32.81%	2	4
Weekly working hours	4	734	0.04	0.03	-0.02	0.09	0.00	5.94	0.89	49.47%	0	0
Salary/income	4	280	-0.01	0.07	-0.14	0.13	0.02	2.85	0.59	0.00%	0	0
Job sector (public; private)	2	399	0.06*	0.02	0.01	0.11	0.00	1.00	0.68	0.00%	1	9
Environment-Level Variables												
Perpetrator												
Gender (male; female)	3	900	-0.01	0.07	-0.14	0.12	0.01	5.80	0.94	65.51%	0	13
Time passed since perpetration	3	931	0.07*	0.02	0.03	0.11	0.00	3.34	0.81	40.12%	2	37
Organization												
Reward system (team-based; individual-based)	3	373	-0.25*	0.03	-0.31	-0.20	0.00	2.01	0.63	0.55%	6	71
Policy labeling (non-feminist; feminist)	3	1623	0.06*	0.01	0.04	0.08	0.00	1.98	0.63	0.00%	4	74
Co-Occurring Emotions												
Positive Emotions	29	6956	-0.26*	0.03	-0.31	-0.20	0.02	74.72	1.00	62.53%	193	4959
Joviality	13	2709	-0.21*	0.04	-0.28	-0.14	0.01	44.75	1.00	73.18%	17	136

Table 1
Meta-Correlations (Continued)

Construct	k	N	r	SD r	CI LL	CI UL	τ^2	Q	p(Q)	I ²	Fsk(1) ^a	Fsk(2) ^b
Pride	6	1946	-0.27*	0.06	-0.39	-0.15	0.02	8.51	0.87	41.23%	8	246
Self-assurance	2	384	-0.14	0.08	-0.29	0.02	0.01	1.00	0.68	0.00%	0	16
Serenity	3	743	-0.29*	0.10	-0.49	-0.09	0.03	2.55	0.72	21.47%	2	142
Attentiveness	6	1576	-0.45*	0.07	-0.59	-0.32	0.03	5.10	0.60	2.04%	26	1036
Curiosity	2	333	0.17*	0.02	0.12	0.21	0.00	0.04	0.16	0.00%	2	27
Negative Emotions	41	9859	0.42*	0.05	0.33	0.51	0.08	40.09	0.53	0.22%	748	17 623
Disgust	2	468	0.76*	0.04	0.68	0.84	0.00	0.60	0.56	0.00%	2	184
Envy	2	231	0.07	0.18	-0.29	0.44	0.07	1.00	0.68	0.00%	0	0
Fear	21	5661	0.57*	0.06	0.45	0.68	0.07	16.14	0.29	0.00%	493	14 770
Sadness	14	3519	0.47*	0.05	0.38	0.56	0.03	10.16	0.32	0.00%	303	5352
Guilt	9	1561	0.04	0.02	-0.01	0.09	0.00	36.47	1.00	78.07%	0	7
Shame	6	1610	0.34*	0.08	0.19	0.50	0.04	8.18	0.85	38.84%	8	427
Strain	9	1360	0.37*	0.05	0.28	0.46	0.01	10.08	0.74	20.67%	57	1132
Outcomes												
Attitudes												
Deformation-oriented (Deviance/Punishment intention)	4	1942	0.50*	0.12	0.26	0.74	0.06	2.68	0.56	0.00%	6	836
Stabilizing	9	2142	-0.44*	0.03	-0.50	-0.38	0.01	10.01	0.74	20.08%	171	2194
Sympathetic intention	9	2142	-0.45*	0.04	-0.53	-0.37	0.01	9.31	0.68	14.08%	134	2222
Prosocial intention	2	460	-0.30*	0.08	-0.46	-0.15	0.01	1.00	0.68	0.00%	2	63
Behaviors												
Deformation-oriented (environment-directed)	30	7432	0.35*	0.04	0.27	0.42	0.04	27.14	0.44	0.00%	580	9340
Antagonistic behavior	7	1897	0.48*	0.05	0.38	0.59	0.02	4.01	0.32	0.00%	90	1472
Counterproductive workplace behavior	7	1890	0.21*	0.03	0.16	0.27	0.00	7.60	0.73	21.06%	39	663
Direct-confrontational coping	5	861	0.41*	0.09	0.23	0.60	0.04	4.30	0.63	6.97%	9	370
Indirect-confrontational coping	3	598	0.62*	0.09	0.45	0.79	0.02	2.16	0.66	7.57%	5	280
Reporting negative workplace event	3	373	0.47*	0.08	0.32	0.62	0.01	1.79	0.59	0.00%	5	128
Environmental exploitation	5	1850	0.10	0.06	-0.01	0.21	0.02	2.74	0.40	0.00%	2	48
Paradoxical prosocial behavior	3	634	0.45*	0.10	0.26	0.63	0.03	2.08	0.65	3.85%	4	191
Destabilizing (employee-directed)	6	882	0.15*	0.05	0.06	0.25	0.01	14.91	0.99	66.46%	2	31
Self-blame	2	294	0.14	0.18	-0.22	0.50	0.07	1.00	0.68	0.00%	0	0
Reflection/Learning	2	432	0.08	0.05	-0.02	0.18	0.00	1.00	0.68	0.00%	0	10

Table 1
Meta-Correlations (Continued)

Construct	k	N	r	SD r	CILL	CIUL	τ^2	Q	p(Q)	I ²	Fsk(1) ^a	Fsk(2) ^b
Stabilizing	13	2395	-0.23*	0.04	-0.31	-0.15	0.02	18.69	0.90	35.81%	42	571
Prosocial behavior	5	1085	-0.13*	0.06	-0.24	-0.02	0.01	10.97	0.97	63.54%	0	0
Organizational citizenship behavior	5	994	-0.20*	0.05	-0.29	-0.11	0.01	6.66	0.84	39.91%	6	203
Restoration efforts	2	351	-0.17*	0.07	-0.30	-0.03	0.01	1.00	0.68	0.00%	1	24
Positive response	2	294	0.09	0.50	-0.89	1.07	0.50	1.00	0.68	0.00%	0	0
Mitigative	9	2313	0.05	0.05	-0.05	0.15	0.02	13.34	0.90	40.01%	0	67
Avoidant behavior	5	1421	0.11	0.08	-0.06	0.27	0.03	5.10	0.72	21.62%	0	25
Impression management	2	598	0.11*	0.04	0.03	0.19	0.00	1.00	0.68	0.00%	1	32
Ignoring negative workplace event	2	294	-0.15	0.10	-0.34	0.05	0.02	1.00	0.68	0.00%	0	12
Cardiovascular fitness	3	341	0.10*	0.03	0.04	0.16	0.00	2.14	0.66	6.36%	3	20
Performance	9	2226	-0.22*	0.08	-0.38	-0.06	0.06	8.46	0.61	5.46%	6	151

Note. Fsk = fail-safe k. ^a Rosenthal (1979)/Orwin (1983) method. ^b Rosenberg (2005) method. See the supplementary materials for the trim-fill coefficients. * $p < .05$.

Co-Occurring Emotions. Considering the theoretical co-occurring emotions of anger, various negative emotional states such as disgust, fear, sadness, shame, and strain are positively linked to anger. However, the affective states of envy and guilt do not show a positive relationship with anger. Positive emotions and their subcategories, including joviality, pride, serenity, and attentiveness, demonstrate a negative relationship with anger. Self-assurance did not reach a significant negative correlation with anger. Notably, the positive emotion of curiosity was found to be positively related to anger.

Outcomes. Examining anger's theoretical outcomes, it is evident that attitudes are related to the manifestation of anger. Destabilizing attitudes have a positive relationship with anger, while stabilizing attitudes, which encompass sympathetic and prosocial intentions, show a negative relationship with anger.

This pattern extends to behavioral constructs. Destabilizing behaviors such as antagonistic behavior, counterproductive workplace behavior, and confrontational coping strategies are positively related to anger. Additionally, behaviors such as reporting negative events and paradoxical prosocial behavior show a positive relationship with anger. However, environmental exploitation does not reach a significant positive relation with anger.

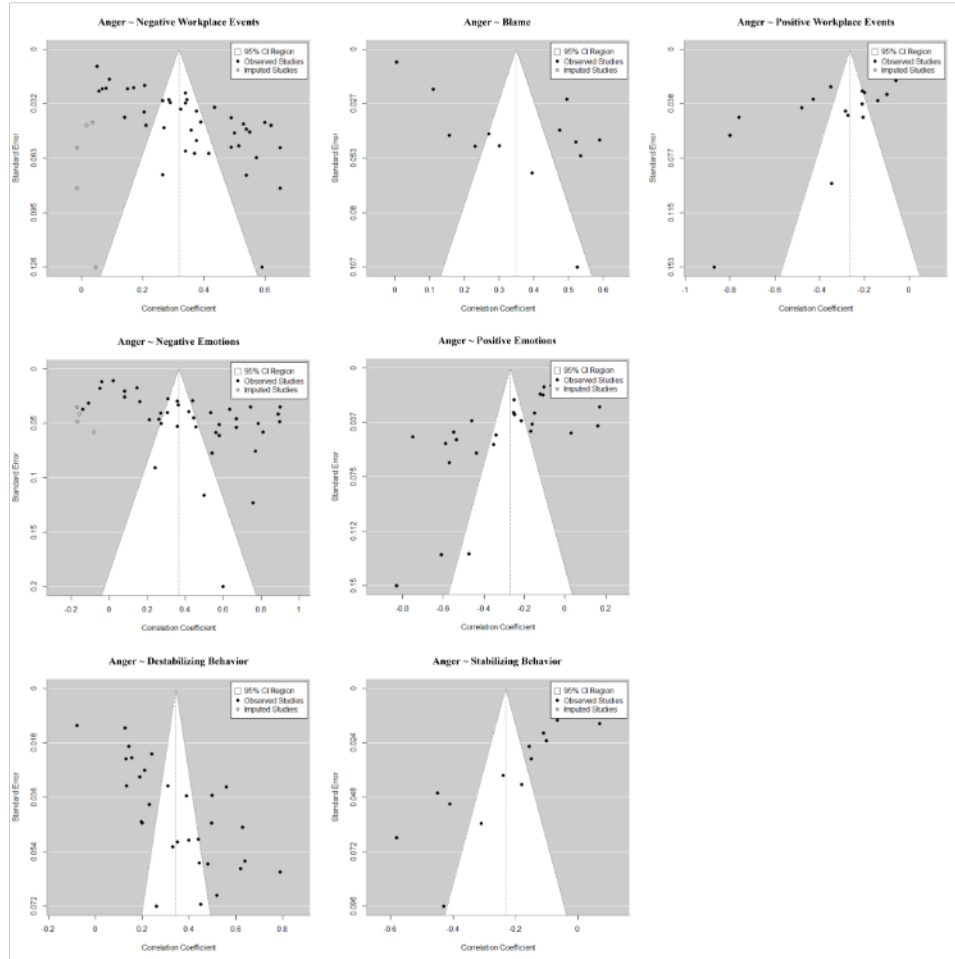
Employee-directed behaviors, which fall under the destabilizing category, also show a positive relationship with anger. Interestingly, the subcategories of self-blame and reflective learning within employee-directed behaviors do not seem to be related to anger.

Furthermore, stabilizing behaviors such as prosocial behavior, organizational citizenship behavior, and restoration efforts have a positive relationship with anger, whereas positive responses do not show any relationship with anger. It is important to note that only impression management within mitigative behaviors is positively related to anger. Additionally, our findings suggest that anger is positively associated with cardiovascular fitness and negatively associated with performance.

Publication Bias & Robustness Analyses. Figure 4 presents the trim-and-fill funnel plots of our central meta-correlational analyses of the relations between anger and environment-directed negative and positive event appraisals, as well as environment-directed, deformation, and stabilizing behaviors. The funnel plots indicate that our analyses could be strongly biased by publication bias. Therefore, robustness analyses, such as trim-and-fill analyses, were conducted. The trim-and-fill estimates of our meta-correlations³ mostly aligned with the untrimmed and unfilled estimates, with some exceptions. The robust analyses showed that the appraisal of motivational incongruence gained a positive significant relation with anger, while the appraisal of a positive organizational culture and enacting prosocial behavior lost their previous significant negative relations with anger. Finally, gender gained a significant positive relation with anger, indicating that females seem to be angrier within negative workplace events than males.

³The detailed analysis results can be found in the supplementary materials. It is crucial to note that trim-fill analyses can only be conducted with random effects models if the number of studies exceeds two (Viechtbauer, 2010)

Figure 4
Funnel Plots for Main Meta-Correlations



Meta-Structural Equation Modeling

Our study utilized structural equation modeling to examine the relationships between negative and positive workplace events, anger, and destabilizing and stabilizing behaviors. Due to potential publication bias, we focused on the trim-and-fill estimates of the main relations, specifically with anger. To analyze the data, we conducted a systematic review and extraction of effect sizes to fill in the correlation matrix for our structural equation model. Strong correlations were found between positive and negative emotions and anger, prompting us to include them as control variables in our analyses of deformation and stabilizing behavior. Despite this adjustment, the results of our analysis remained consistent.

The meta-correlation matrix presented in Table 2 provides the foundation for our analysis.⁴ From this matrix, we derived unstandardized meta coefficient estimates and standard errors of the direct and indirect effects, depicted in Tables 3 and 4, respectively. Our hypothesized model presented with excellent fit ($\chi^2 = 5.577$, $df = 1$, $p = 0.018$, $CFI = 1.00$, $SRMR = .03$).

Our findings support most of the hypotheses tested in our study. Specifically, we found that the experience of a negative event was positively related to anger (Hypothesis 1a; $E(\beta) = 0.239$, $SE = 0.052$, 95% $CI [0.138, 0.340]$, $p < .001$), while a blame appraisal was also positively related to anger (Hypothesis 1b; $E(\beta) = 0.304$, $SE = 0.051$, 95% $CI [0.204, 0.405]$, $p < .001$). Conversely, we found that the experience of a positive event was negatively related to anger (Hypothesis 1c; $E(\beta) = -0.242$, $SE = 0.051$, 95% $CI [-0.342, -0.143]$, $p < .001$). Additionally, we found that negative emotions were positively related to anger (Hypothesis 2a; $E(r) = 0.383$, $SE = 0.050$, 95% $CI [0.285, 0.480]$, $p < .001$). However, positive emotions were not negatively related to anger (Hypothesis 2b; $E(r) = -0.078$, $SE = 0.054$, 95% $CI [-0.183, 0.027]$, $p = .143$).

Furthermore, anger was positively related to destabilizing behavior (Hypothesis 3a; $E(\beta) = 0.302$, $SE = 0.057$, 95% $CI [0.189, 0.415]$, $p < .001$) and negatively related to stabilizing behavior (Hypothesis 3b; $E(\beta) = -0.317$, $SE = 0.054$, 95% $CI [-0.423, -0.211]$, $p < .001$). Our results also indicated that anger was positively related to destabilizing behavior via the experience of a negative event (Hypothesis 4a; $E(\text{indirect effect}) = 0.072$, $SE = 0.021$, 95% $CI [0.031, 0.113]$, $p = .001$), and negatively related to stabilizing behavior via the experience of a negative event (Hypothesis 4b; $E(\text{indirect effect}) = -0.076$, $SE = 0.021$, 95% $CI [-0.117, -0.035]$, $p < .001$). Furthermore, we found that anger was positively related to destabilizing behavior via a blame appraisal (Hypothesis 4c; $E(\text{indirect effect}) = 0.092$, $SE = 0.023$, 95% $CI [0.046, 0.138]$, $p < .001$), and negatively related to stabilizing behavior via a blame appraisal (Hypothesis 4d; $E(\text{indirect effect}) = -0.096$, $SE = 0.023$, 95% $CI [-0.142, -0.051]$, $p < .001$). Finally, we found that anger was negatively related to destabilizing behavior via the experience of a positive event (Hypothesis 4e; $E(\text{indirect effect}) = -0.073$, $SE = 0.021$, 95% $CI [-0.114, -0.033]$, $p < .001$), and positively related to stabilizing behavior via the experience of a positive event (Hypothesis 4f; $E(\text{indirect effect}) = 0.077$, $SE = 0.021$, 95% $CI [0.036, 0.117]$, $p < .001$).

⁴Due to the small sample size, we had to set the correlations between blame and positive workplace events, as well as between blame and positive emotions, to zero. However, since these relationships were not included in our hypothesized model, this constraint should not significantly impact our overall findings or interpretations.

Table 2
Meta-Correlation Matrix

Variables	1.	2.	3.	4.	5.	6.	7.	8.
1. Anger	1							
2. Negative emotions	0.367	1						
3. Positive emotions	-0.270	-0.203	1					
4. Negative events	0.319	0.244	-0.219	1				
5. Blame	0.351	-0.123	0.000	0.187	1			
6. Positive events	-0.265	-0.092	0.503	-0.095	0.000	1		
7. Destabilizing behavior	0.345	0.072	0.297	0.225	0.291	-0.090	1	
8. Stabilizing behavior	-0.231	0.084	0.510	-0.142	-0.114	0.092	-0.219	1

Note. $k = 2 - 43$. $N = 294 - 9,898$. Relations with less than two studies were constrained to zero.

Table 3
Unstandardized Meta-Coefficient Estimates and Standard Errors of Direct Effects

Variables	Anger		Negative emotions		Positive emotions		Deformation-oriented behavior		Sustainment-oriented behavior	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Negative events	0.239*	0.052	0.270*	0.057	-0.179*	0.05	0.192*	0.050	-0.040	0.047
Blame	0.304*	0.051	-0.174*	0.057	0.033	0.05	0.152*	0.052	0.159*	0.050
Positive events	-0.242*	0.051	-0.066	0.056	0.486*	0.05	-0.272*	0.054	-0.402*	0.051
Anger							0.302*	0.057	-0.317*	0.054
Negative emotions							0.022	0.052	0.332*	0.050
Positive emotions							0.562*	0.054	0.685*	0.051

Note. $N = 294$. * $p < .05$

Table 4
Unstandardized Meta-Coefficient Estimates and Standard Errors of Indirect Effects

Indirect effects	Test of Mediation		
	Estimate	CI LL	CI UL
Negative events → Anger → Destabilizing behavior	0.072*	0.031	0.113
Negative events → Anger → Stabilizing behavior	-0.076*	-0.117	-0.035
Blame → Anger → Destabilizing behavior	0.092*	0.046	0.138
Blame → Anger → Stabilizing behavior	-0.096*	-0.142	-0.051
Positive events → Anger → Destabilizing behavior	-0.073*	-0.114	-0.033
Positive events → Anger → Stabilizing behavior	0.077*	0.036	0.117

Note. $N = 294$. * $p < .05$. Negative and positive emotions were included as control variables. 95% confidence intervals shown.

Discussion

Our meta-analytic review on state anger in the workplace offers significant theoretical insights. By developing a conceptual framework grounded in multiple emotion theories, we synthesized a wide range of literature to provide a comprehensive understanding of anger within professional environments. Our rigorous empirical scrutiny through meta-analytical techniques aimed to gain a holistic perspective on anger's manifestations in the workplace. The following sections delve into the implications of our findings for the broader fields of organizational behavior and psychology.

Theoretical Implications

One significant theoretical implication of our research is its enhancement of the conceptual clarity surrounding state anger and its manifestations in workplace environments. Our synthesis establishes a robust and adaptable conceptual foundation for understanding workplace anger, which will be invaluable for future researchers. They can use this framework to empirically test their assumptions about workplace anger and further refine our theoretical understanding of its intricate dynamics. Importantly, we demonstrate that positive workplace events can influence anger. Traditionally, anger has been associated with negative events (Lazarus, 1991; Weiss & Cropanzano, 1996). However, our findings challenge this conventional view by revealing an inverse relationship between anger and positive events, such as fair behavior among colleagues. This suggests that positive events may mitigate feelings of anger. Consequently, our research indicates that current theoretical models (e.g., Weiss & Cropanzano, 1996) may not be sufficiently detailed to fully predict anger experiences in workplace environments. By using our conceptually clear model as a starting point, future research can refine and expand these models, ensuring a more comprehensive understanding of workplace anger dynamics.

Our meta-analytic approach systematically uncovered consistent patterns and contextual variables that influence anger. By examining a wide range of empirical studies, we identified the nuanced ways situational factors uniquely contribute to anger responses. This comprehensive synthesis allows us to evaluate whether current theoretical reasoning about anger is supported or falsified, paving the way for more refined theoretical insights. Among other findings, our research underscores the importance of considering blame within current theories, particularly Affective Events Theory (Weiss & Cropanzano, 1996). The appraisal of blame appears to play a crucial role in predicting anger, as suggested by appraisal theories (Frijda, 1987; Lazarus, 1991; Roseman, 1984). Integrating blame and other accountability appraisals into Affective Events Theory could significantly enhance its explanatory power concerning workplace anger.

Furthermore, the varying relationships between anger and its associated emotions offer valuable theoretical insights, particularly through a more segmented analysis of emotions. While anger is positively related to negative emotions overall, it does not align with every subcategory in this manner, such as envy and guilt. Similarly, anger is negatively associated with many subcategories of positive emotions except for self-assurance and even shows

a positive link to curiosity. These findings suggest that moving beyond the traditional dichotomy of emotions as solely negative or positive (Lazarus, 1991; Russell & Carroll, 1999; Weiss & Cropanzano, 1996) could be beneficial. This approach would increase the conceptual clarity of emotion categories by focusing on specific blended emotions within the subcategories of negative and positive emotions, providing a more nuanced understanding of anger and other emotions within workplace environments.

Finally, our findings reveal significant theoretical implications regarding the link between anger and stabilizing workplace attitudes and behaviors. Our research indicates that anger not only positively relates to destabilizing attitudes and behaviors but also inversely relates to stabilizing ones. This discovery suggests that anger could mitigate stabilizing attitudes and behaviors in the workplace, separate from or in addition to its amplifying effect on destabilizing attitudes and behaviors. This conceptual segmentation was previously unconsidered in theoretical models. Therefore, our results imply that the current segmentation of attitudes and behaviors in relation to emotions, particularly anger, is insufficient in existing organizational (e.g., Weiss & Cropanzano, 1996) and emotion models (e.g., Frijda, 1987; Lazarus, 1991; Roseman, 1984). Consequently, our proposed model, with its nuanced segmentation, offers greater explanatory power and refines the conceptual clarity of anger dynamics in workplace environments.

Practical Implications

Our research reveals that anger is linked to a decrease in job performance throughout a workday. This observation holds practical value, suggesting two possible implications. Either anger causes a decline in job performance, indicating that organizations should minimize anger to enhance overall performance, or a decrease in job performance leads to increased anger due to frustration in task completion (Lazarus, 1991). Organizations should address job task issues to prevent a rise in anger levels.

Another practical implication is the positive relationship between anger and short-term increases in cardiovascular fitness. This contrasts with the negative impact of anger on long-term cardiovascular health (Keltikangas-Järvinen et al., 1996; Strike & Steptoe, 2004). Our findings suggest that anger may temporarily enhance cardiovascular fitness, raising the potential for artificially inducing anger in certain environments, such as military or sports settings, to improve physical performance. However, ethical considerations must be carefully evaluated before exploring such practices.

Limitations and Future Research Directions

One limitation of our study is the inability to establish causality due to the research design (Doty & Glick, 1998). Future research should focus on conducting experimental studies to investigate anger in work environments, allowing for a more comprehensive analysis. Accumulating a sufficient body of research could lead to a meta-analysis that synthesizes and enhances our understanding of workplace anger. To adhere to ethical guidelines, vignette studies would be particularly valuable. Beyond depicting different scenarios through text, it

would also be beneficial to conduct these studies using audio and video materials, as well as augmented or virtual reality tools (Aguinis & Bradley, 2014).

Another limitation is the potential publication bias. As discussed in the previous sections regarding funnel plots, there is a high likelihood of publication bias. Although we attempted to address this issue through trim-fill analyses and fail-safe coefficients, the small number of studies in certain relationships prevented us from calculating more reliable coefficients. More research on anger in work environments is crucial to enhance the reliability of our findings.

Our analysis revealed a notable absence of stable environmental factors associated with workplace anger in the reviewed studies. Despite the focus on employees, organizational variables were scarce. This presents an opportunity for future research to explore the intricate relationship between environmental factors and anger in work settings. Investigating how these variables impact anger levels in employees could offer valuable insights for enhancing our understanding of anger in different organizations. For example, a future study could use vignette studies to examine how leadership styles impact an employee's propensity to express anger in a destabilizing manner. The leadership styles (e.g., transformative or transactional; Sarros & Santora, 2001) would vary between the vignettes, and each respondent would answer in a random order within a within-person design. This approach would allow for gauging the differences in the influences of leadership styles on the observed relationships.

Researchers should prioritize conducting experimental studies to delve into the underlying reasons for anger in workplace environments. This approach would allow researchers to improve the internal validity of our existing knowledge base. Future researchers could focus on compiling more experimental vignette studies, given their high internal and external validity (Doty & Glick, 1998). This will enable future researchers to contribute to the literature through a follow-up meta-analysis that exclusively includes experimental findings on anger in work settings.

Conclusion

In conclusion, workplace anger remains a complex and debated issue within the organizational sciences. Our research aimed to provide a more comprehensive understanding of the theoretical antecedents, co-occurring emotions, and outcomes of anger in the workplace. By synthesizing previous studies and highlighting areas of inter-study consensus and disagreement, we hope to have contributed to the ongoing discussion on this important subject.

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Chapter 2:
Advancing Our Understanding of Workplace Anger

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The Path to Antagonism is Paved with Moral Superiority: Relations between Colleague-Directed Moral Superiority, Moral Emotions, and Workplace Antagonism

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This article explores the factors that lead colleagues to develop antagonistic attitudes towards each other and engage in antagonistic behaviors in the workplace. Drawing on affective events theory and research from the philosophical sciences, a conceptual model is developed with a focus on colleague-directed moral superiority as a key factor driving antagonism, with moral emotions such as anger and disgust playing a role in this process. Two studies were conducted to test the model: a 10-week longitudinal field observation (Study 1; involving 190 employees and 1,545 week-observations) and a vignette field experiment (Study 2; with 506 employees and 1,012 vignette-observations). The data was analyzed through multilevel Bayesian structural equation modeling. The results support the assumptions outlined in the conceptual model, suggesting that organizational theories should consider incorporating moral-cognitive constructs to better understand antagonistic attitudes and behaviors between colleagues.

Keywords: Moral Superiority, Anger, Disgust, Antagonism, Workplace

Colleague-directed antagonism, manifested through antagonistic attitudes and behaviors towards colleagues in the workplace (Lazarus, 1991; see also Miller & Lynam, 2019; Potegal et al., 2010), is widely recognized as detrimental to organizational health and productivity (Judge et al., 2006; Seago, 1996; Selden & Downey, 2012). Despite extensive research on its adverse effects, the underlying reasons for its emergence remain poorly understood. Given the significant negative impact on key organizational outcomes, a thorough investigation into the root causes of colleague-directed antagonism is crucial for its regulation in the future.

The issue of colleague-directed antagonism has drawn the attention of researchers across diverse disciplines, potentially owing to its damaging repercussions on organizational effectiveness (Dionisi et al., 2012; Hershcovis & Barling, 2010b, 2010a). This phenomenon has been linked to decreased productivity (Colligan & Higgins, 2006; Hutton & Gates, 2008; Smokler & Malecha, 2011) and adverse perceptions of workplace health (Kaukiainen et al., 2001; Leiter et al., 2015; Sprigg et al., 2019) within and across organizations. Evidently, proactive measures to address and regulate colleague-directed antagonism seem to be imperative for organizational success. Nevertheless, effective intervention necessitates a comprehensive understanding of the origins of this phenomenon. What drives colleagues to harbor antagonistic attitudes towards one another? What motivates them to engage in

antagonistic behaviors? These are critical questions that remain unanswered within the current body of knowledge.

Our current study aims to address these unanswered questions by developing a conceptual model with theoretical foundations derived from affective events theory (Weiss & Cropanzano, 1996) and research from the philosophical sciences (Jensen, 2015; Rozin et al., 1999; Shweder et al., 1997). In our model, we propose one of the primary drivers for colleague-directed antagonism in the workplace. After establishing our theoretical framework, we test our model through two studies. Study 1, a longitudinal field observation lasting 10 weeks, examines the dynamic relationships between colleague-directed antagonism and our proposed antecedents. Once empirical evidence is established, we aim to replicate the results of Study 1 in Study 2, a vignette field experiment.

In this context, our current research aims to contribute to existing knowledge in three key ways. Firstly, we seek to outline a potential factor leading to colleague-directed antagonism (see Szabó et al., 2017): colleague-directed moral superiority. Colleague-directed moral superiority involves an individual perceiving a moral gap between their own behavior and that of their colleagues, believing that they act more morally (Szabó et al., 2017). While one could argue that being more ethical than colleagues may improve organizational success (Dwi Widayani et al., 2020; Kim & Thapa, 2018; Singh & Misra, 2021), it is important to consider that this perception could also relate to negative emotions (see Lazarus, 1991). Perceptions of moral superiority may be associated with negative affect, which can lead to antagonistic attitudes and behaviors. Therefore, it is plausible that colleague-directed moral superiority could exacerbate colleague-directed antagonism through the mediation of negative affect towards colleagues.

Our second contribution involves examining which negative affective responses may be related to perceptions of colleague-directed moral superiority. To investigate this relationship, we delve into the field of emotions that are typically associated with morality, known as “moral emotions” (Harkness & Hitlin, 2014; Rozin et al., 1999). Among these moral emotions, anger (a negatively valenced and arousing emotion occurring along an attack motivation; Lazarus, 1991) and disgust (occurring along an extermination motivation; see Lazarus, 1991) are two commonly mentioned negatively valenced emotions that are directed towards others (Rozin et al., 1999). Therefore, we aim to explore whether perceptions of colleague-directed moral superiority are related to colleague-directed anger and disgust.

Finally, considering that anger and disgust directed towards colleagues are negatively valenced and other-directed (Frijda, 1987; Lazarus, 1991; Roseman, 2013), these emotions may be key factors in colleague-directed antagonism, as such attitudes and behaviors towards colleagues often reflect these same valence and directionality (Lazarus, 1991; see also Miller & Lynam, 2019; Potegal et al., 2010). Therefore, our final contribution is to investigate the relationship between colleague-directed anger and disgust and colleague-directed antagonism.

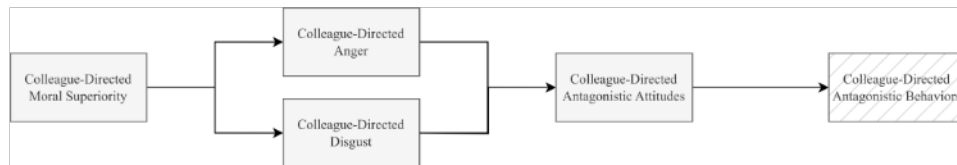
Theoretical Background and Hypothesis Development

To understand how perceptions of colleague-directed moral superiority may impact colleague-directed antagonism, it is crucial to review pertinent literature that explores the relationships between employees’ perceptions, emotions, attitudes, and behaviors in the workplace. In this connection, the literature that is particularly relevant to our current research includes affective events theory (Weiss & Cropanzano, 1996) and theoretical research on morality perceptions outlined by Shweder et al. (1997), Rozin et al. (1999), and Jensen (2015).

Affective Events Theory

Affective events theory seeks to explain why individuals experience specific emotions and behaviors in the workplace by examining the interconnected relationships between employee perceptions, emotions, attitudes, and behaviors (Weiss & Cropanzano, 1996). The theory posits that an employee’s perceptions of events at work can trigger emotional reactions, which in turn influence attitudes and lead to changes in behaviors. For instance, if an employee interprets workplace events negatively, they are likely to respond with negative emotions, especially towards the individual they deem responsible. This negative affect towards the colleague is thought to result in a shift in attitudes towards them, ultimately leading to behaviors that correspond with these negative attitudes, as exemplified by our conceptual model presented in Figure 1.

Figure 1
Conceptual Model



Note. Solid boxes indicate constructs examined in both Study 1 and Study 2. Hashed boxes indicate constructs examined only in Study 2.

However, one aspect that the theory still lacks is a practical explanation of why individuals develop antagonistic attitudes towards others at work and subsequently enact antagonistic behaviors, or in other words, what makes negative workplace events “negative.” This is where additional theoretical research on morality perceptions becomes relevant (Jensen, 2015; Rozin et al., 1999; Shweder et al., 1997).

Theoretical Research on Morality Perceptions

If we were to survey 1,000 employees who have experienced workplace antagonism directed towards their colleagues, we would likely receive a wide range of explanations for why they believe this occurred. One common explanation could perhaps be attributed to negative workplace events between the individual and their colleague (Weiss & Cropanzano, 1996), with the colleague bearing the responsibility for these events (Lazarus, 1991). However, the specific reasons behind these negative events can vary significantly. It is possible that there was an injustice (Harkness & Hitlin, 2014; Jensen, 2015; Rozin et al., 1999), or that the colleague behaved irresponsibly towards the individual, or that some other incident occurred that caused the individual to harbor negative emotions and attitudes towards their colleague and potentially even enact those. So what could all these situations have in common, making them all perceptible as negative and conducive for antagonism in the first place?

In this regard, we argue that a common reason behind all negative events faced by an individual and the subsequent antagonism can be traced back to a single underlying issue (see Jensen, 2015; Rozin, Lowery, et al., 1999; Shweder et al., 1997): the existence of a moral discrepancy. Such a discrepancy arises when an event is viewed as straying from the societal norms that an individual adheres to (see Rozin, Lowery, et al., 1999; Shweder et al., 1997), causing a negative interpretation of the event that may provoke antagonism in some situations. In essence, when there is a discrepancy between one's envisioned outcome of an event based on one's own presumed actions and the actions of others in reality, it can result in the perception of a negative event and subsequent antagonism.

For a moral discrepancy to occur, it must arise from at least one of four possible scenarios. A moral discrepancy is only noticed by A if (see Jensen, 2015; Shweder et al., 1997): (1) A acts more morally than B than A would anticipate, (2) A acts less morally than B than A would anticipate, (3) B acts more morally than A than A would anticipate, or (4) B acts less morally than A than A would anticipate. Simply put, we can infer that A will only perceive a moral discrepancy if either their actions are more morally superior or inferior to B's as expected by the societal norms A has internalized, or if B's actions are more morally inferior or superiors to A's as expected by A.

Given that we focus on colleague-directed antagonism, it is logical to assume that in a workplace situation involving B-directed antagonism, A is more likely to behave morally superior to B (or conversely, that B behaves morally inferior to A), as the opposite scenario would likely lead to less punitive and more penitent attitudes and behaviors towards B (Lazarus, 1991; Roseman, 1984). However, this raises the question of whether we perceive moral discrepancies based on our own behavior or the behavior of others. While we can acknowledge the latter proposition, as immoral behavior by others appears to be punished based on their actual behavior rather than our own (see Criminal Law Act, 1977; United States Code: Title 18, 2004), we argue that the former proposition may hold more validity upon deeper investigation.

As human beings, we tend to align our behaviors with our personal moral beliefs (Jensen, 2015; Shweder et al., 1997). We typically only engage in actions that do not conflict with our moral framework. If we consider antagonistic attitudes and behaviors towards others as

violations of moral principles (see Jensen, 2015; Shweder et al., 1997), then it would seem that either antagonism is rare in the world, or individuals are constantly going against their own moral codes. The latter scenario appears more likely.

However, if individuals are continuously acting in opposition to their moral beliefs, one might wonder why they do not experience psychological distress all the time (Festinger, 1957). The answer may lie in their ability to rationalize their behavior (see Harvey et al., 2017). It is possible that they justify their antagonistic attitudes and behaviors by convincing themselves that they are behaving in a more morally upright manner than another person. This sense of moral superiority transforms their antagonism into a form of “righteous antagonism” (see Lindebaum & Geddes, 2016; Tripp & Bies, 2010), where their actions are viewed as justified by their moral principles.

Our main proposition is that a focal person’s perception of their moral superiority over their colleagues can lead to the development of antagonistic attitudes and behaviors towards the respective colleagues. However, in order to integrate our assumptions with the theoretical framework of affective events theory, we may not want to simply argue that colleague-directed moral superiority directly causes colleague-directed antagonism (see Weiss & Beal, 2005). Rather, in alignment with the theoretical framework of affective events (Weiss & Cropanzano, 1996), emotions play a significant role in this process, a point we address next.

Colleague-Directed Moral Superiority and Emotional Responses

According to affective events theory, negative workplace events are linked to negative emotions experienced by individuals (Weiss & Cropanzano, 1996). Although the theory itself does not specify which specific negative emotions may be involved, we can infer potential emotions based on factors like arousal, directionality, and motivational tendencies related to antagonism (Lazarus, 1991; Roseman, 1984; see also Russell & Carroll, 1999). Therefore, the emotions associated with negative workplace events are likely to be highly arousing, directed towards others, and aimed at instigating change in response to workplace events (Frijda, 1987; Lazarus, 1991).

Upon reviewing theoretical literature on emotions (Frijda, 1987; Lazarus, 1991; Roseman, 1984), we find that anger and disgust best align with these attributes. Consequently, we suggest that in situations involving colleague-directed antagonism, the emotions most closely associated with negative workplace events and thus perceptions of colleague-directed moral superiority are anger and disgust. Hence, we propose the following hypotheses to be tested:

Hypothesis 1a: *Colleague-directed moral superiority is positively related to colleague-directed anger.*

Hypothesis 1b: *Colleague-directed moral superiority is positively related to colleague-directed disgust.*

Colleague-Directed Emotional Responses and Antagonistic Attitudes

Having established a connection between colleague-directed moral superiority and negative emotions such as anger and disgust, it is essential to delve into how these emotions are correlated with colleague-directed antagonistic attitudes. According to affective events theory (Weiss & Cropanzano, 1996), negative emotions are closely tied to negative attitudes. Thus, one would expect that feelings of anger and disgust are linked to antagonistic attitudes towards colleagues.

However, the key question is what makes anger and disgust specifically associated with antagonistic attitudes, as opposed to other negative attitudes towards colleagues (Gendron & Barrett, 2009; Mason & Capitanio, 2012; Russell et al., 2011). The explanation may lie in the motivational tendencies behind anger and disgust. Anger may drive individuals to antagonistically approach the colleague, while disgust could motivate more indirect actions aimed at terminating the relationship.

Both of these motivational tendencies mirror antagonistic attitudes in terms of their negativity, arousal levels, focus on others, and goals of initiating change (Frijda, 1987; Lazarus, 1991; Potegal et al., 2010). Therefore, it is probable that colleague-directed anger and disgust are linked to colleague-directed antagonistic attitudes. This sets the stage for the formulation of further hypotheses to be tested in our current research:

Hypothesis 2a: *Colleague-directed anger is positively related to colleague-directed antagonistic attitudes.*

Hypothesis 2b: *Colleague-directed disgust is positively related to colleague-directed antagonistic attitudes.*

The Indirect Relation Between Colleague-Directed Moral Superiority and Antagonistic Attitudes

Based on our exploration of a potential connection between colleague-directed moral superiority and emotions such as anger and disgust, as well as the relation between anger and disgust with colleague-directed antagonistic attitudes, we are now able to suggest a potential indirect relationship between colleague-directed moral superiority and colleague-directed antagonistic attitudes. This allows us to investigate the initial part of our conceptual model pertaining to the link between colleague-directed moral superiority and colleague-directed antagonism. This idea is further reinforced by the principles of affective events theory (Weiss & Cropanzano, 1996), which suggest that employee attitudes are procedurally impacted by emotions in response to workplace situations. Building on this foundation, we have formulated hypotheses to be tested in our current research:

Hypothesis 3a: *Colleague-directed moral superiority is positively related to colleague-directed antagonistic attitudes via colleague-directed anger.*

Hypothesis 3b: *Colleague-directed moral superiority is positively related to colleague-directed antagonistic attitudes via colleague-directed disgust.*

Colleague-Directed Antagonistic Attitudes and Antagonistic Behaviors

After laying the theoretical groundwork in the initial phase of our study on colleague-directed moral superiority and antagonism, we now turn our attention to the second phase, focusing on antagonistic behaviors directed towards colleagues. Affective events theory posits a clear connection between employee attitudes and behaviors - attitudes significantly impact behaviors (Weiss & Cropanzano, 1996). In the context of our study, having antagonistic attitudes is expected to lead to antagonistic behaviors. This relationship is further supported by the motivational tendencies associated with antagonistic attitudes (Frijda, 1987; Lazarus, 1991; Roseman, 1984), such as the inclination to approach colleagues antagonistically and the desire to terminate interactions with colleagues one harbors antagonistic attitudes towards. These motivations are likely to drive behaviors that reflect these sentiments (Lazarus, 1991; Weiss & Cropanzano, 1996). Therefore, we predict a direct relation between colleague-directed antagonistic attitudes and behaviors, as these attitudes are likely to materialize in actions that demonstrate behavioral antagonism towards colleagues. As such, we propose the following hypothesis to be tested in our current research:

Hypothesis 4: *Colleague-directed antagonistic attitudes are positively related to colleague-directed antagonistic behaviors.*

The Serial Indirect Relation Between Colleague-Directed Moral Superiority and Antagonistic Behaviors

Now that we have established a potential connection between antagonistic attitudes and antagonistic behaviors directed towards colleagues, we are in a position to explore the link between colleague-directed moral superiority and colleague-directed antagonistic behavior. This helps us test whether perceptions of moral superiority over colleagues are indeed related to engaging in antagonistic behaviors towards them. Building on our previous hypotheses, we propose that perceptions of colleague-directed moral superiority lead to antagonistic behaviors through a chain of emotions including anger and disgust, as well as through the development of antagonistic attitudes. This leads us to put forth our final hypotheses for testing in our current research:

Hypothesis 5a: *Colleague-directed moral superiority is positively related to colleague-directed antagonistic behavior via colleague-directed anger and further via colleague-directed antagonistic attitudes.*

Hypothesis 5b: *Colleague-directed moral superiority is positively related to colleague-directed antagonistic behavior via colleague-directed disgust and further via colleague-directed antagonistic attitudes.*

Transparency and Openness

We have preregistered our hypotheses, studies, and analysis plans on the Open Science Framework, which can be accessed via the following URLs: https://osf.io/5dshm/?view_only=77b0d8497e52402ebe17c95ee54b6a38 (Study 1); https://osf.io/4t9um/?view_only=618dd88240d246bdb107b6cc4074a0e6 (Study 2). We will make the data summaries and analysis codes available in the following directory upon journal publication: https://osf.io/5cdbs/?view_only=229937db85b0410fa0ff43a04a901675. The scales and vignettes in Study 2 were partially developed and enhanced concurrently with AI-powered language processors. Study 1 was part of a larger research study, with a data transparency table pertaining to the current and planned studies outlined in Appendix A.

Overview of Studies

Our current research comprises two studies. Study 1, a longitudinal field observation, aims to determine the existence of a general relationship between our proposed constructs. Given its quasi-exploratory nature, only the initial portion of our conceptual model (specifically focusing on colleague-directed moral superiority and colleague-directed antagonistic attitudes) is explored in this study. Study 2, a vignette field experiment, aims to replicate the findings of Study 1 and further examine the assumptions outlined in our conceptual model regarding colleague-directed moral superiority and colleague-directed antagonistic behavior.

Study 1: Longitudinal Field Study

Method

Selection and Procedure

We used an experience-sampling approach to collect data. We selected full-time employees between 18 and 67 years old who start their workday between 7 a.m. and 9 a.m. and maintain contact with at least five colleagues throughout the workweek. We set these selection criteria to ensure that participants had frequent contact with various colleagues, which would enable us to accurately capture the natural within-person fluctuations of our study variables (Lazarus, 1991). We contracted a certified panel provider to gather employee data across ten consecutive weeks in Germany. We sent questionnaires out to participants every Wednesday and every Friday at 10:00 a.m. To maintain data quality (Burchett et al., 2023), we included attention checks (e.g., "Please select 'Strongly disagree' if you're paying attention") in our survey, disqualifying participants who did not pass these checks. We collected data from 190 employees, resulting in 1,545 employee-week observations, surpassing the experience sampling sample size standards established in the literature (Gabriel et al., 2019). Of the participants, 53% were male, 46% were female, and 1% identified as diverse, with an age range of 20 to 63 years ($M = 42.74$, $SD = 8.36$), an

organizational tenure range of 1 to 34 years ($M = 12.47, SD = 8.57$), and a weekly working schedule ranging from 35 to 65 hours ($M = 39.85, SD = 3.96$).

Measures

We utilized the Brislin (1970) methodology for back-to-back translation to translate items from English to German. Except for any specified alterations, the response options for each scale were within the range of 1 (not at all) to 5 (extremely). We adapted scales to the study context by adding the phrase “This week, . . .” to each item while emphasizing one’s colleagues as the targets with the inclusion of “[. . .] my colleagues [. . .].” We used 1-item measures to reduce participant burden, given our intense study design (Gabriel et al., 2019), while keeping the conceptual fit of the items intact (Lazarus, 1991). We took great care in ensuring the reliability and validity of the 1-item measures. To achieve this, we carefully selected items from established scales that were similarly used in previous research (Schilling et al., 2020; Szabó et al., 2017; see also Elo et al., 2003) and conducted post-analyses to verify that similar constructs had convergent correlations, while dissimilar constructs had discriminant correlations (Rönkkö & Cho, 2020).

Colleague-Directed Moral Superiority (Wednesday Survey). We measure colleague-directed moral superiority with a modified item derived from a scale developed by Szabó et al. (2017). The item inquires, “This week, I have acted more morally than my colleagues.”

Colleague-Directed Anger (Wednesday Survey). We measure colleague-directed anger using a modified item from a scale developed by Umbra & Fasbender (2023). The item inquires, “This week, I felt anger towards my colleagues.”

Colleague-Directed Disgust (Wednesday Survey). We assess colleague-directed disgust using an adapted item inspired from a scale developed by Watson & Clark (1994). The item inquires, “This week, I felt repulsion towards my colleagues.”

Colleague-Directed Antagonistic Attitudes (Friday Survey). We utilize an item adapted from a scale developed by Watson & Clark (1994) to assess colleague-directed antagonistic attitudes. The item in question reads: “This week, I felt hostile towards my colleagues.” We have adopted the German translations of this item as presented by Grünh et al. (2010).

Controls. During the Wednesday surveys, we account for the previous degrees of colleague-directed antagonistic attitudes, which should help us consider the autoregressive effects of such an attitude throughout the workweek (Gabriel et al., 2019). Additionally, to account for demographic differences, we also control for gender and age (Gabriel et al., 2019). Our hypothesized results were consistent irrespective of whether we included or excluded these control variables.

Analytical Strategy and Data Diagnostics

We employed R version 4.2.2. for data preparation (R Core Team, 2022) and Mplus version 8.4 for data analysis (Muthén & Muthén, 2017). The multilevel structure of employee-week observations nested within employees required us to use multilevel modeling (Hayes, 2006) with random intercepts and slopes (Hamaker & Muthén, 2020). We used Bayesian inference to account for data non-normality, outliers, and potential model intractability (Asparouhov & Muthén, 2021; Depaoli, 2021). We employed a Gibbs sampler algorithm with two Markov chains over 3,200 iterations with an 1.02 Gelman-Rubin potential scale reduction factor (Gelman et al., 2013). We double-checked model convergence via the inspection of trace and autocorrelation plots (Depaoli, 2021; Finch & Bolin, 2017). We presented the model estimates with the median as a point estimate and the 95% highest posterior density credibility intervals (Kruschke et al., 2012). We used diffuse priors¹ to interpret the parameters as having been estimated via traditional maximum likelihood (cf. Depaoli, 2021). We included missing data in the model estimation, given multilevel modeling's robustness to incomplete or missing data (Finch & Bolin, 2017). We applied group mean centering to the predictor variable moral superiority (Curran & Bauer, 2010) while accounting for its direct effect on antagonistic attitude (Kline, 2015). We did not remove outliers (Grubbs, 1950) due to the algorithm's robustness (Asparouhov & Muthén, 2021; Finch & Bolin, 2017). We included only participants who worked during the week in the level-1 employee-work observations. We observed no deviation from theoretical and evidence-based sampling standards in the data analysis (Cullen & Frey, 1999; Delignette-Muller & Dutang, 2015; Gabriel et al., 2019).

Results and Discussion

Preliminary Findings

We present the statistical data for the main variables in Table 1. The findings indicated that the participants reported low levels of colleague-directed moral superiority, anger, disgust, and antagonistic attitudes. All variables exhibited high intraclass-correlation coefficients, with significant variance on both levels. Between-employee variance surpassed within-employee variance throughout.

¹ $v, \lambda, \beta, \alpha \sim N(0, \infty)$; $\theta \sim IG(-1, 0)$; $\psi \sim IW(0, -p - 1)$; see Muthén & Muthén, 2017, p. 775).

Table 1
Study 1: Means, Standard Deviations, Interclass Correlation Coefficients, Reliabilities, and Correlations Among the Focal Variables

Variables	M	SD _{Level-2}	SD _{Level-1}	ICC	1	2	3	4	5	6	7
1. Moral superiority _{T1}	2.08	0.98	0.78	0.56		0.50*	0.55*	0.57*	0.46*	-0.12*	-0.28*
2. Anger _{T1}	1.56	0.71	0.60	0.54	0.28*		0.94*	0.95*	0.96*	-0.03	-0.20*
3. Disgust _{T1}	1.40	0.64	0.55	0.54	0.23*	0.54*		0.97*	0.92*	-0.07	-0.19*
4. Antagonistic attitudes _{T1}	1.46	0.67	0.59	0.53	0.23*	0.49*	0.48*		0.93*	-0.03	-0.26*
5. Antagonistic attitudes _{T2}	1.48	0.71	0.55	0.56	0.07*	0.25	0.18*	0.28*		0.02	-0.21*
6. Gender _{T0}	1.47	0.53									0.13
7. Age _{T0}	42.74	8.64									

Note. $N_{Level-2} = 190$, $N_{Level-1} = 1,545$. M = composite mean of factor indicators. ICC = Intraclass correlation coefficient. Gender = (1) male, (2) female, (3) diverse. We calculated the ICC as $SD_{Level-2} / (SD_{Level-2} + SD_{Level-1})$. Level-2 correlations are above the diagonal. Level-1 correlations are below the diagonal. * $p < .05$.

Table 2
Study 1: Unstandardized Coefficient Estimates and Posterior Standard Deviations of Direct Effects

Variables	Anger _{T1}		Disgust _{T1}		Antagonistic attitudes _{T2}	
	Estimate	SD	Estimate	SD	Estimate	SD
Level-2						
Gender _{T0}	0.009	0.107	-0.063	0.094	0.065	0.094
Age _{T0}	-0.016*	0.007	-0.013*	0.006	-0.017*	0.006
Level-1						
Moral superiority _{T1}	0.228*	0.038	0.157*	0.035	-0.019	0.025
Anger _{T1}					0.102*	0.049
Disgust _{T1}					0.030	0.053
Antagonistic attitudes _{T1}					0.155*	0.057

Note. $N_{\text{Level-2}} = 190$, $N_{\text{Level-1}} = 1,545$. Gender = (1) male, (2) female, (3) diverse. * $p < .05$.

Hypotheses Testing

Our study utilized Bayesian multilevel path analysis to examine both direct and indirect effects. Table 2 displays the direct effects, confirming that colleague-directed moral superiority is positively associated with anger and disgust. Specifically, we found significant positive relationships between colleague-directed moral superiority and anger ($E(\gamma) = 0.228, E(\sigma) = 0.038, 95\% CI [0.153, 0.302], p < 0.001$) as well as disgust ($E(\gamma) = 0.157, E(\sigma) = 0.035, 95\% CI [0.092, 0.228], p < 0.001$), supporting Hypotheses 1a and 1b.

Furthermore, our analysis revealed a significant positive association between colleague-directed anger and antagonistic attitudes, supporting Hypothesis 2a ($E(\gamma) = 0.102, E(\sigma) = 0.049, 95\% CI [0.005, 0.194], p = 0.040$). However, we did not find a significant positive relationship between colleague-directed disgust and antagonistic attitudes, which did not support Hypothesis 2b ($E(\gamma) = 0.029, E(\sigma) = 0.053, 95\% CI [-0.081, 0.125], p = 0.576$).

Regarding indirect effects (refer to Table 3), we identified a significant positive indirect relationship between colleague-directed moral superiority and antagonistic attitudes mediated by anger, supporting Hypothesis 3a ($E(\text{indirect effect}) = 0.022, E(\sigma) = 0.012, 95\% CI [0.001, 0.046], p = .040$). However, there was no significant positive indirect relationship between colleague-directed moral superiority and antagonistic attitudes via disgust, which did not support Hypothesis 3b ($E(\text{indirect effect}) = 0.004, E(\sigma) = 0.008, 95\% CI [-0.012, 0.021], p = 0.576$).

In summary, our study results imply that individuals who perceive themselves as morally superior are more likely to experience anger and disgust towards those they view as morally inferior. Additionally, we discovered a connection between feeling anger towards colleagues and harboring antagonistic attitudes towards them. However, we did not find a substantial correlation between feelings of disgust and these attitudes. Lastly, our results suggest that differences in moral behaviors between an individual and their colleagues may relate to a more antagonistic attitude towards those seen as less morally righteous.

While these pieces of evidence provide preliminary support for the relationship between our proposed constructs, they are subject to limitations that hinder their interpretability. One primary concern is that our findings can only be considered correlational, as they were obtained from an observational study design rather than an experimental one. Therefore, it would be beneficial to replicate our results in a field experiment. We now turn to the undertaking of such a replication.

Table 3
Study 1: Unstandardized Coefficient Estimates and Credibility Intervals of Indirect Effects

Indirect effects	Test of Mediation		
	Estimate	CI LL	CI UL
Moral superiority _{T1} → Anger _{T1} → Antagonistic attitudes _{T2}	0.022*	0.001	0.046
Moral superiority _{T1} → Disgust _{T1} → Antagonistic attitudes _{T2}	0.004	-0.012	0.021

Note. $N_{\text{Level}2} = 190$, $N_{\text{Level}1} = 1,545$. All control variables were included. * $p < .05$.

Study 2: Vignette Experiment

Method

Selection and Procedure

To assess the internally valid relationships between the variables in our study, we conducted a vignette study with full-time employees aged 18 to 66 who have regular contact with their colleagues. These selection criteria were chosen to ensure that our participants interacted frequently with their colleagues at work, creating a realistic setting for our vignette scenarios. We enlisted a certified panel provider to collect data from employees in the United Kingdom. To maintain data quality (Burchett et al., 2023), we included attention checks (e.g., "Please select 'Strongly disagree' if you're paying attention") in our survey, disqualifying participants who did not pass these checks. We conducted a pre-test with 50 participants. After the pre-test, we gathered new data from 506 employees, resulting in a total of 1,012 employee-vignette observations. The participants consisted of 50% male and 50% female individuals, with ages ranging from 21 to 66 years ($M = 39.38, SD = 10.45$), organizational tenure ranging from less than one to 47 years ($M = 8.09, SD = 8.17$), and weekly working hours ranging from 32 to 66 ($M = 39.47, SD = 4.81$).

Measures

Manipulated Variables. We have included our vignettes in Appendix B. In brief, each scenario required participants to envision themselves in a situation where they needed to report their worked hours to the human resource department alongside a colleague. The department would then determine payment for each individual. To manipulate colleague-directed moral superiority, we adjusted the vignettes to either demonstrate that both the participant and their colleague falsified their reports (Vignette 1), or that only the colleague falsified their report (Vignette 2). We assumed a moral equilibrium in Vignette 1, as both parties were behaving similarly in terms of morality/immorality.² Therefore, the manipulation in Vignette 2 should, in comparison to Vignette 1, illustrate moral superiority in favor of the participant.

Manipulation Check. To evaluate the success of our manipulation of colleague-directed moral superiority, we administered a manipulation check. Participants were tasked with indicating who they believed acted more morally in the given scenario. Response choices ranged from -5 (indicating Alex) to 5 (indicating themselves). Our results indicated the effectiveness of our manipulation ($t(1008) = -23.269, p < 0.001$)

Measured Variables.

²This assumption seems supported by our results, as they show that colleague-directed moral superiority had a median of 0 in the first vignette, indicating a complete moral equilibrium.

Colleague-Directed Anger. We measure colleague-directed anger with four items adapted from Umbra and Fasbender (2023). A sample item is “In this situation, I would feel angry towards Alex” ($\omega = 0.98$). The response options for ranged from -5 (Strongly disagree) to 5 (Strongly agree).

Colleague-Directed Disgust. We measure colleague-directed disgust with four items adapted from Chung et al. (2022). A sample item is “In this situation, I would be disgusted by Alex” ($\omega = 0.97$). The response options for ranged from -5 (Strongly disagree) to 5 (Strongly agree).

Colleague-Directed Antagonistic Attitudes. We measure colleague-directed antagonistic attitudes with five items inspired by Watson and Clark (1994). A sample item is “In this situation, I would feel antagonistic towards Alex” ($\omega = 0.96$). The response options for ranged from -5 (Strongly disagree) to 5 (Strongly agree).

Colleague-Directed Antagonistic Behaviors. We measure colleague-directed antagonistic behaviors with five items inspired by Watson and Clark (1994). A sample item is “In this situation, I would behave antagonistically towards Alex” ($\omega = 0.95$). The response options for ranged from -5 (Strongly disagree) to 5 (Strongly agree).

Controls. Given that our study focused on sensitive topics, specifically morality and antagonism, we aimed to ensure high response quality by incorporating a social desirability scale developed by Stöber (2001), which consists of 17 items. An example item from the scale is “I take out my bad moods on others now and then” ($\omega = 0.76$), with response options ranging from 1 (true) to 2 (false). Additionally, we included the participant’s gender and age as control variables to account for potential demographic effects. We also asked participants to indicate which gender they assigned to the colleague in the vignettes to consider any response differences that may arise from gender assignment. Our hypothesized results remained consistent regardless of whether these controls were included or excluded.

Analytical Strategy and Data Diagnostics

We utilized the same analytical approach and data diagnostic techniques as in Study 1. Our data analysis adhered closely to theoretical and evidence-based sampling norms (Cullen & Frey, 1999; Delignette-Muller & Dutang, 2015; Gabriel et al., 2019), and we observed no deviations from these standards.

Results and Discussion

Preliminary Findings

We present the statistical data for the main variables in Table 4. The findings indicate that participants reported low levels of colleague-directed anger, disgust, as well as antagonistic attitudes and behaviors. All variables displayed moderate intraclass-correlation coefficients,

with significant variance at both levels. Between-participant variance exceeded within-participant variance overall.

We performed confirmatory factor analyses to evaluate the validity of our proposed factor structure. The results presented in Table 5 indicate that the proposed model fits the data well. Furthermore, we tested additional models to analyze discriminant validity, with results showing that our proposed model outperformed the alternatives.

Hypotheses Testing

Our study utilized Bayesian multilevel structural equation modeling to examine both direct and indirect effects. Table 6 displays the direct effects, indicating a significant positive relationship between colleague-directed moral superiority and anger ($E(\gamma) = 1.601, E(\sigma) = 0.094, 95\% CI [1.419, 1.787], p < 0.001$) and disgust ($E(\gamma) = 1.032, E(\sigma) = 0.083, 95\% CI [0.871, 1.196], p < 0.001$), supporting Hypotheses 1a and 1b. Furthermore, our analysis revealed a significant positive link between colleague-directed anger and antagonistic attitudes, supporting Hypothesis 2a ($E(\gamma) = 0.557, E(\sigma) = 0.034, 95\% CI [0.489, 0.623], p < 0.001$). We also found a significant positive connection between colleague-directed disgust and antagonistic attitudes, supporting Hypothesis 2b ($E(\gamma) = 0.173, E(\sigma) = 0.044, 95\% CI [0.088, 0.262], p < 0.001$).

Regarding indirect effects (refer to Table 7), we identified a significant positive indirect relationship between colleague-directed moral superiority and antagonistic attitudes mediated by anger, supporting Hypothesis 3a ($E(\text{indirect effect}) = 0.890, E(\sigma) = 0.074, 95\% CI [0.747, 1.036], p < 0.001$). Additionally, there was a significant positive indirect relationship between colleague-directed moral superiority and antagonistic attitudes via disgust, also supporting Hypothesis 3b ($E(\text{indirect effect}) = 0.178, E(\sigma) = 0.048, 95\% CI [0.087, 0.276], p < 0.001$).

In Study 2, we further explored the relationships of our constructs from Study 1 with antagonistic behaviors. We observed a significant positive relation between colleague-directed antagonistic attitudes and antagonistic behaviors, supporting Hypothesis 4 ($E(\gamma) = 0.316, E(\sigma) = 0.055, 95\% CI [0.207, 0.425], p < 0.001$). Additionally, we found a significant positive serially-mediated indirect relationship between colleague-directed moral superiority and antagonistic behaviors mediated by anger and further through antagonistic attitudes, supporting Hypothesis 5a ($E(\text{indirect effect}) = 0.280, E(\sigma) = 0.054, 95\% CI [0.177, 0.390], p < 0.001$). Furthermore, there was a significant positive serially mediated indirect relationship between colleague-directed moral superiority and antagonistic behaviors via disgust and further through antagonistic attitudes, supporting Hypothesis 5b ($E(\text{indirect effect}) = 0.055, E(\sigma) = 0.018, 95\% CI [0.023, 0.094], p < 0.001$).

Table 4
 Study 2: Means, Standard Deviations, Interclass Correlation Coefficients, Reliabilities, and Correlations Among the Focal Variables

Variables	M	SD _{Level-2}	SD _{Level-1}	ICC	1	2	3	4	5	6	7	8	9
1. Moral superiority	1.50					-0.18	-0.15	-0.18	-0.15	-0.08	-0.16	0.05	-0.06
2. Anger	5.23	0.86	2.87	0.23	0.52*	(0.98)	0.85*	0.87*	0.81*	0.05	-0.12	-0.14*	-0.11
3. Disgust	4.17	1.40	2.46	0.36	0.46*	0.78*	(0.97)	0.75*	0.69*	-0.06	-0.11*	-0.07	-0.02
4. Antagonistic attitudes	4.75	1.07	2.60	0.29	0.51*	0.87*	0.77*	(0.96)	0.94*	0.11*	-0.12*	-0.11*	-0.08
5. Antagonistic behaviors	4.04	1.17	2.17	0.35	0.43*	0.76*	0.73*	0.80*	(0.95)	0.05	-0.21*	-0.07	-0.06
6. Social desirability	1.37	0.20								(0.76)	-0.02	-0.14*	-0.07
7. Gender	1.50	0.50										-0.14*	0.16*
8. Age	39.38	10.45											0.06
9. Colleague gender	1.45	0.95											

Note. $N_{\text{Level-2}} = 506$, $N_{\text{Level-1}} = 1,012$. M = composite mean of factor indicators. ICC = Intraclass correlation coefficient. Moral superiority = (1) Vignette 1, (2) Vignette 2. Gender = (1) male, (2) female. Colleague gender: (1) male, (2) female, (3) both, (4) neither. We calculated the ICC as $SD_{\text{Level-2}} / (SD_{\text{Level-2}} + SD_{\text{Level-1}})$. Level-2 correlations are above the diagonal. Level-1 correlations are below the diagonal. Omega reliabilities are on the diagonal. * $p < .05$.

Table 5
Study 2: Confirmatory Factor Analyses Models' Fit Indices

CFA Models	χ^2	<i>df</i>	$\Delta\chi^2(\Delta df)$	CFI	TLI	RMSEA	AIC	BIC
Hypothesized model	945.234	258	$p < 0.001$	0.975	0.970	0.051	62 766.630	63 268.438
Alternative model 1 ^a	6669.074	270	$p < 0.001$	0.768	0.738	0.098	68 466.470	68 909.241
Alternative model 2 ^b	2645.863	264	$p < 0.001$	0.914	0.900	0.094	64 455.259	64 927.549
Alternative model 3 ^c	2234.077	264	$p < 0.001$	0.929	0.917	0.086	64 043.473	64 515.763
Alternative model 4 ^d	4572.422	268	$p < 0.001$	0.844	0.822	0.126	66 373.819	66 826.430
Alternative model 5 ^e	5223.082	268	$p < 0.001$	0.821	0.795	0.135	67 024.479	67 477.090

Note. $N_{\text{Level-2}} = 214$; $N_{\text{Level-1}} = 1,611$. The statistical significance of the model comparison between alternative and hypothesized models is assessed by $\Delta\chi^2(\Delta df)$.

^a All indicators load on the same factor.

^b Indicators of anger and disgust load on the same factor.

^c Indicators of antagonistic attitudes and behaviors load on the same factor.

^d Indicators of anger and disgust as well as antagonistic attitudes load on the same factor.

^e Indicators of anger and disgust as well as antagonistic behaviors load on the same factor.

Table 6
Study 2: Unstandardized Coefficient Estimates and Posterior Standard Deviations of Direct Effects

Variables	Anger		Disgust		Antagonistic attitudes		Antagonistic behaviors	
	Estimate	SD	Estimate	SD	Estimate	SD	Estimate	SD
Level-2								
Social desirability	0.590	0.422	-0.325	0.411	0.910*	0.409	0.548	0.380
Gender	0.019	0.207	-0.180	0.213	-0.030	0.208	-0.319	0.194
Age	-0.017	0.009	-0.015	0.010	-0.015	0.009	-0.015	0.009
Colleague gender	0.590	0.422	-0.325	0.411	-0.072	0.113	-0.018	0.106
Level-1								
Moral superiority	1.601*	0.094	1.032*	0.083	0.280*	0.071	0.055	0.069
Anger					0.557*	0.034	0.156*	0.041
Disgust					0.173*	0.044	0.164*	0.044
Antagonistic attitudes							0.316*	0.055

Note. $N_{\text{Level-2}} = 506$, $N_{\text{Level-1}} = 1,012$. Gender = (1) male, (2) female. Colleague gender: (1) male, (2) female, (3) both, (4) neither. * $p < .05$.

Table 7
Study 2: Unstandardized Coefficient Estimates and Credibility Intervals of Indirect Effects

Indirect effects	Test of Mediation			
	Estimate	CI LL	CI UL	CI UL
Moral superiority → Anger → Antagonistic attitudes	0.890*	0.747	1.036	1.036
Moral superiority → Disgust → Antagonistic attitudes	0.178*	0.087	0.276	0.276
Moral superiority → Anger → Antagonistic attitudes → Antagonistic behaviors	0.280*	0.177	0.390	0.390
Moral superiority → Disgust → Antagonistic attitudes → Antagonistic behaviors	0.055*	0.023	0.094	0.094

Note. $N_{Level2} = 506$, $N_{Level1} = 1,012$. All control variables were included. * $p < .05$.

Our results again suggest that perceiving oneself as morally superior to colleagues may contribute to colleague-directed antagonism. It appears that moral emotions, specifically anger and disgust, play a crucial role in mediating this relationship. These emotions are closely associated with feelings of moral superiority and hostile attitudes and behaviors towards colleagues. While these results are intriguing, a deeper discussion is necessary to fully understand their implications. We turn to this discussion now.

General Discussion

In this study, we sought to address the critical questions of what leads colleagues to develop antagonistic attitudes towards each other and what influences their engagement in antagonistic behaviors. To achieve this, we developed a conceptual model based on affective events theory (Weiss & Cropanzano, 1996) and research from the philosophical sciences (Jensen, 2015; Rozin et al., 1999; Shweder et al., 1997). Our hypothesis suggested that colleague-directed moral superiority is a key factor driving antagonism in the workplace, with moral emotions such as anger and disgust playing a role in this process. After establishing our theoretical framework, we conducted two studies to test our model. Study 1, a 10-week longitudinal field observation, explored the dynamic relationships between colleague-directed antagonism and the proposed antecedents. Building upon the findings of Study 1, we replicated the results in Study 2, a vignette field experiment. Overall, our results support most of the assumptions outlined in our conceptual model. Considering these results, we now delve deeper into the implications of our studies.

Theoretical Implications

Our findings suggest that colleague-directed moral superiority may contribute to colleague-directed antagonism, although the impact does not appear to be direct. The direct effects of colleague-directed moral superiority on colleague-directed attitudes and behaviors were generally small and insignificant, except for a significant effect on colleague-directed attitudes in Study 2. This indicates that while perceptions of colleague-directed moral superiority are linked to colleague-directed antagonism, the relationship is not straightforward.

That said, our results demonstrate that in both studies, colleague-directed moral superiority and the moral emotions of anger and disgust were consistently significant. Both anger and disgust were closely associated with moral superiority, suggesting that individuals who perceive themselves as more moral may experience these negative and arousing emotions towards those they see as inferior. Thus, anger and disgust as moral emotions appear to be closely intertwined with cognitive appraisals of morality.

Additionally, the significance of these colleague-directed moral emotions extends to their relationship with antagonistic attitudes and behaviors. We found that both anger and disgust were strongly related to these attitudes and behaviors in both studies, with the exception of a non-significant relationship between colleague-directed disgust and antagonistic attitudes in Study 1. This suggests that anger, in particular, plays a crucial role in fostering antagonism

in workplaces, while colleague-directed disgust may also contribute to this phenomenon, albeit to a lesser extent than anger.

Overall, our findings indicate that while perceptions of colleague-directed moral superiority do not directly lead to colleague-directed antagonism, there is a strong positive relationship between these constructs mediated by the moral emotions of anger and disgust. This suggests that cognitive perceptions, especially those related to morality, are unlikely to directly cause antagonistic behaviors in workplaces, but rather, the occurrence of antagonism may be facilitated by moral emotions such as anger and disgust, triggered by perceptions of moral superiority.

Practical Implications

Our research suggests that organizations and their members have three main options for addressing antagonistic attitudes and behaviors among colleagues in the workplace. The first option is to prevent perceptions of moral superiority from arising in the first place. Organizational culture and team dynamics can contribute to feelings of moral superiority (see Yip et al., 2018), and research has shown that increased competition can escalate morality-related social comparisons (Szabó et al., 2017). To address these issues, leaders may consider implementing interventions that discourage negative comparisons among team members, such as promoting humility in the workplace (Lavelock et al., 2014).

The second option focuses on regulating the connection between one's perception of colleagues' moral superiority and the moral emotions of anger and disgust towards those colleagues. One possible intervention could be to control how blame is attributed for the moral shortcomings of colleagues, as this plays a crucial role in inciting feelings of anger and disgust (Frijda, 1987; Lazarus, 1991). Promoting an organizational culture that tolerates occasional moral lapses among colleagues (see Van Dyck et al., 2005; Weinzimmer & Esken, 2017), while actively addressing and preventing persistent issues with such behavior, may prove beneficial.

The third option focuses on regulating the connection between colleague-directed feelings of anger and disgust, and colleague-directed antagonism. Perceptions of moral superiority are already established at this stage, and emotions are in full force. Therefore, the perhaps best way to regulate the relations between colleague-directed moral emotions and colleague-directed antagonism is through the regulated expression of anger and disgust. It may be beneficial to familiarize organizational staff with emotion-coping strategies that are minimally destructive for organizational cohesion, and potentially beneficial for such cohesion. One option could be to communicate to employees that the expression of anger and disgust is tolerated, as long as it is communicated in a calm and constructive manner (see Folkman et al., 1986; Hershcovis et al., 2018; Linden et al., 2003). By following this approach, conflicts between colleagues could potentially be solved effectively and quickly without harming relationships.

Practical Implications

For the interpretation of the results of our individual studies, it is important to consider the limitations that may constrain the implications drawn from these studies. Firstly, self-report measures were used in both studies, potentially introducing common-method bias in our coefficients (Podsakoff et al., 2003). Future researchers interested in either building upon or replicating our results should consider incorporating objective measures (such as heart-frequency or skin conductance) and other-report measures (like reports from colleagues) in their studies.

It is also worth noting that colleague-directed moral superiority and emotions were measured on the same day in our studies, which may have introduced error variance in the coefficients derived from Study 1 (Trull & Ebner-Priemer, 2009). Future studies may benefit from measuring these variables in a time-lagged manner. Additionally, random sampling of measures throughout the workweek could help capture variance in observed constructs that may have been missed in our time-based sampling design.

Furthermore, Study 1 results can only be considered correlational due to the observational study design, lacking internal validity (Doty & Glick, 1998). Therefore, caution should be taken in drawing causal inferences from the results of Study 1, especially considering the use of 1-item measures.

While Study 2 attempted to address the limitations of Study 1 through a vignette field experiment, it is important to note that experimental approaches are still susceptible to confounding factors. External effects that were not controlled for, such as room temperature or time of day, may have influenced participants during sampling times. Replicating the results of Study 2 in a laboratory setting could thus provide further insights.

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Future Research Directions

Our study results suggest avenues for future research. One direction worth exploring is investigating moderators that influence whether an individual feels anger or disgust towards their colleagues. One possible starting point for this inquiry could involve consulting cognitive perspectives on emotions, as the relationship between cognition and various emotions is central to their theories. For example, many cognitivists (Frijda, 1987; Lazarus, 1991; Roseman, 1984) agree to some extent that an appraisal of changeability determines whether an individual experiences anger (when the situation is changeable) or disgust (when the situation is not changeable) towards another person after appraising a moral discrepancy.

Another potential area for future research to consider is the relationship between colleague-directed moral discrepancies, emotions, and antagonism, with a unique twist. In this scenario, the focal individual perceives that the moral discrepancy favors their colleagues, leading them to believe they are acting less morally than their peers. Building on previous research by Rozin et al. (1999), which outlined a potential connection between other-directed moral emotions such as anger and disgust with self-directed moral emotions like guilt and shame, we propose investigating the links between colleague-directed moral inferiority, moral emotions of guilt and shame, and colleague-directed antagonism.

Conclusion

Antagonism among colleagues has been widely acknowledged as detrimental to organizational health and productivity (Judge et al., 2006; Seago, 1996; Selden & Downey, 2012). Our research has revealed a relevant cause explaining its development: the perception of colleague-directed moral superiority. Given the pioneering nature of our research and the substantial negative consequences on essential organizational outcomes, it is crucial to further investigate the root causes of colleague-directed antagonism in future studies. This comprehensive research is essential for effectively addressing and controlling this issue within workplaces.

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Appendices

Appendix A: Data Transparency Table

The collected data for Study 1 is part of a larger research project. The current manuscript is one of two currently planned publications from this data set. The research aims of the two planned publications are fundamentally different from each other. The submitted manuscript reports the relation between perceptions of moral superiority, anger and disgust, as well as antagonistic attitudes, whereas the second manuscript examines the relations between age identity, perceived similarity, oneness, friendship, as well as civil engagement, tolerance, and support giving. Further, there is no overlap with regard to any main variables.

Variables	MS 1 (STATUS = current)	MS 2 (STATUS = planned)
Moral superiority	(Predictor)	
Anger	(Mediator)	
Disgust	(Mediator)	
Antagonistic attitudes	(Outcome)	
Gender	(Control)	
Age	(Control)	
Age identity		(Predictor)
Perceived similarity		(Predictor)
Perceived oneness		(Predictor)
Friendship		(Predictor)
Civil engagement		(Outcome)
Tolerance		(Outcome)
Support giving		(Outcome)

Appendix B: Vignettes

Baseline module

Dear participant,

Imagine you and your colleague Alex have to report your working hours to the human resources department. The amount of your salary depends on how many hours you report. The amount of Alex's salary depends on how many hours they report. The human resources department does not verify the reports for accuracy. The relationship between you and Alex is neutral and collegial.

Under these assumptions, the following happens now:

Vignette 1

Before you both submit your reports, you notice that Alex has falsified their report by reporting more hours than they actually worked. At the same time, you must admit that you have also reported more hours in your report than you actually worked.

Vignette 2

Before you both submit your reports, you notice that Alex has falsified their report by reporting more hours than they actually worked. You honestly report the actual hours you worked.

Forget Not That Our Errand is Just: The Relations Between Moral Transgressions, Experiences of Immorality, Moral Emotions and Regulatory Behaviors at Work

Robin Umbra and Ulrike Fasbender
University of Hohenheim

This paper investigates interpersonal regulation mechanisms in work environments through two studies that utilize a conceptual model based on affective events theory. Study 1 involved 125 German full-time workers who reported on 777 interactions with their colleagues on a weekly basis over a month via an ego-centric network approach. The study focused on immoral interactions, emotional responses, and regulatory actions taken towards colleagues. Results showed a link between colleague-perpetrated immoral workplace interactions and feelings of anger towards the offending colleague, related to punitive regulatory actions towards that colleague. In contrast, participant-perpetrated immoral interactions were associated with feelings of guilt towards the victimized colleague, related to penitent regulatory actions towards that colleague. The perception of injustice significantly influenced how immoral interactions were perceived by participants. These findings were replicated in Study 2, which used experimental vignettes on a sample of 302 British full-time workers. Overall, this research emphasizes the importance of expanding affective events theory to enhance the understanding of interpersonal regulation and underscores the need for organizations to prioritize morality and justice within workplaces.

Keywords: Immorality, Anger, Guilt, Interpersonal Regulation, Justice

Interpersonal regulation functions as a crucial mechanism that upholds social norms and prevents chaos in various aspects of our lives (Fitzsimons & Finkel, 2010; Ryan et al., 2005; Zaki & Williams, 2013). Whether on an individual, familial, or societal level, interaction regulation with others helps shape our behavior to align with societal expectations (Holmes, 2002; Lang & Heckhausen, 2006; Schlenker & Weigold, 1992). While there is extensive research on interpersonal regulation in public settings (Cloitre et al., 2002; Niven et al., 2009; Swerdlow & Johnson, 2022), there appears to be a gap in understanding how these dynamics play out in our everyday work environments. Given the amount of time we spend interacting with our colleagues in the workplace (Endrejat et al., 2018; Henderson & Argyle, 1985; Pettinger, 2005), it may be vital to examine how interpersonal interactions are regulated in this context. These interactions among colleagues are seemingly often overlooked but may have a profound impact on our behavior at work. By delving into how interpersonal regulation operates in the workplace, we may gain insights into how such mechanisms play out within work environments.

Previous theoretical and empirical research in the field of interpersonal regulation has greatly influenced our current understanding of group dynamics (Holmes, 2002; Lang & Heckhausen, 2006; Schlenker & Weigold, 1992). This research has provided valuable insights into the concept of interpersonal regulation, suggesting that it is a mechanism employed by groups to enhance their survival (Darwin, 1859, 1872). It is assumed that deviant members within a group pose a threat to the overall wellbeing of the group, which necessitates the development of regulation tools to maintain conformity. Through evolution, groups have developed various strategies and mechanisms to regulate their members and ensure group cohesion (Darwin, 1859; Henrich & Boyd, 2001). This evolutionary process may have influenced our predisposition to punish deviant individuals within our societies (Goodkin, 1966; Henrich & Boyd, 2001; Ulmer & Johnson, 2017), as a means of enforcing norms and promoting conformity. This background knowledge provides us with a better understanding of the regulatory behaviors and actions that are commonly used to enforce conformity within social groups.

Despite significant advancements in understanding interpersonal regulation, there are still gaps in our knowledge when it comes to the underlying mechanisms and reasons for such regulatory behaviors within workplaces. One pressing question that emerges is the motivation behind why we feel the need to punish deviant colleagues within our own organizations. Is it simply a normative response aimed at preserving group conformity, or are there deeper psychological mechanisms at play? Moreover, it is essential to question whether interpersonal regulation always plays out as one individual penalizing another, or if there is potential for self-regulation among colleagues who have erred. In addition, examining the rationale behind our impulse to punish deviant colleagues is crucial. What criteria do we use to gauge the seriousness of their transgressions and validate our punitive actions (i.e., behaviors aimed to punish)? Is our decision related to a perceived threat to the collective well-being of the group, or may there also be a moral underpinning to our judgments?

Despite significant advancements in understanding interpersonal regulation, there are still gaps in our knowledge when it comes to the underlying mechanisms and reasons for such regulatory behaviors within workplaces. One pressing question that emerges is the motivation behind why we feel the need to punish deviant colleagues within our own organizations. Is it simply a normative response aimed at preserving group conformity, or are there deeper psychological mechanisms at play? Moreover, it is essential to question whether interpersonal regulation always plays out as one individual penalizing another, or if there is potential for self-regulation among colleagues who have erred. In addition, examining the rationale behind our impulse to punish deviant colleagues is crucial. What criteria do we use to gauge the seriousness of their transgressions and validate our punitive actions (i.e., behaviors aimed to punish)? Is our decision related to a perceived threat to the collective well-being of the group, or may there also be a moral underpinning to our judgments?

In this manuscript, we aim to address these three key questions through the lens of affective events theory (Weiss & Cropanzano, 1996). This theoretical framework seems well-suited to our research goals, as it explores the relations between interpersonal interactions,

emotions, and regulatory behavior. Our study involves developing a conceptual model based on this theory and testing it with a sample of full-time workers from various industries in a field observation using an ego-centric network approach (Study 1). To gather data, we will ask participants about their weekly interactions with two colleagues over the course of a month. Specifically, we will inquire about any instances of immoral treatment they have experienced or engaged in, their emotional responses to their colleagues, and whether they engaged in forms of punitive or penitent actions (i.e., behavior aimed to do penance for past behavior) towards their colleagues during the workweek. Following this observational field study, we aim to replicate our results in a field experiment (Study 2).

Through our research on interpersonal regulation, we take a comprehensive three-pronged approach to understanding the dynamics behind regulatory behaviors in the workplace. Moving beyond a simple assumption of group conformity (Darwin, 1859; Henrich & Boyd, 2001), we suggest that acts of immorality among colleagues are closely tied to moral emotions (Harvey et al., 2017; Roberts, 2003; Russell & Giner-Sorolla, 2011), particularly feelings of anger (a negative and arousing emotion felt with an urge to antagonistically approach another individual; Lazarus, 1991), which are related to punitive actions. By delving into the psychological mechanisms that drive interactions within interpersonal relationships, our study aims to provide a deeper insight into why employees may feel the need to regulate behaviors they perceive as immoral. As such, through our investigation into the connection between moral emotions and punitive regulatory behaviors, we seek to illuminate the complex dynamics at play in workplace relationships.

Furthermore, our research aims to explore the concept of regulating immoral behaviors in the workplace through penitent action. We seek to contribute to the ongoing discussion about how self-regulation intersects in workplace settings (Dose & Klimoski, 1995; Hart, 2010; Hutchinson, 2009) by examining whether interpersonal regulation within workplaces always involves one individual penalizing another, or if there is potential for self-regulation among colleagues who have committed an immorality. Specifically, we are interested in investigating whether employees who have committed self-appraised immoral acts towards their colleagues will demonstrate penitent actions towards the victimized colleagues, a connection that we assume is intersected by feelings of guilt (a negative and arousing emotion felt with an urge to atone for one's actions perpetrated towards another individual; Lazarus, 1991). By addressing these questions, we hope to lay the foundation for future studies on this topic and shed light on the dynamics of intrapersonal regulation within work environments.

Finally, in our investigation of interpersonal regulation in the workplace, we seek to uncover the motivations behind punitive or penitent actions. We argue that these actions stem from a specific set of criteria that define certain interactions in the workplace as immoral. Rather than solely attributing immorality to actions that pose a threat to the collective well-being, we propose a more comprehensive perspective. We suggest that interactions are deemed immoral when they violate the fundamental principles within our personal moral framework (Shweder et al., 1997). To delve deeper into this concept, we plan to expand the scope of affective events theory to include evaluations of moral transgressions associated with immoral workplace interactions. Our objective is to identify which of these moral

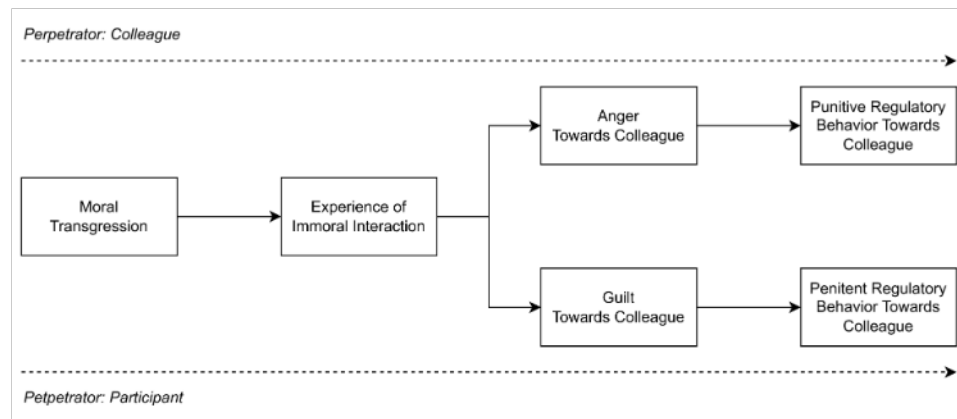
transgressions are related to experiences of immorality in professional environments. By examining these nuances, we aim to better understand the underlying motivations driving punitive and penitent regulatory behaviors in the workplace, and how they are linked to judgements of moral transgressions.

Theoretical Background and Hypotheses Development

Affective Events Theory

Affective events theory is a framework within organizational theories that aims to elucidate the connections between workplace interactions, emotions, and regulatory behaviors (Weiss & Cropanzano, 1996). The central tenet of the theory posits that the way in which employees interpret workplace events, whether as positive or negative, is what triggers emotional reactions and subsequent regulatory behaviors. When employees experience positive interactions at work, they are more likely to feel positive emotions, which in turn lead to positive regulatory behaviors in the workplace. Conversely, negative interactions are associated with negative emotions, which can manifest in negative regulatory behaviors. In essence, affective events theory suggests that the way employees perceive interactions in the workplace is related to their emotions and regulatory behavior within the organizational setting, as shown in our conceptual model in Figure 1.

Figure 1
Conceptual Model



Interactions and Immorality at Work

Affective events theory is a well-validated and explored theory in the organizational sciences, but it seems to fall short when it comes to explaining negative workplace interactions

(see Weiss & Beal, 2005). In our current research, we suggest that negative workplace events can be classified as interactions perceived as immoral by employees (Jensen, 2015). Immorality, in this context, refers to behaviors that violate the employee's moral framework. These immoral behaviors are seen as "incorrect" by the employee, considering the specific circumstances at hand.

Immoral Interactions and Moral Emotions at Work

Based on affective events theory (Weiss & Cropanzano, 1996), which suggests that negative workplace interactions are linked to negative emotions, it stands to reason that immoral workplace actions would also relate to negative moral emotions. Anger, a primary moral emotion tied to the appraisals of holding others accountable for negative interactions (Lazarus, 1991; Miranda & Welbourne, 2023), may be particularly relevant in this context. Therefore, it is plausible to suggest that immoral workplace interactions could also be related to feelings of anger in employees. Both our internal research and existing literature (Potegal et al., 2010; Russell & Giner-Sorolla, 2011) support the idea that experiences of immoral behavior in the workplace are linked to feelings of anger. Building on this evidence, we propose the hypothesis that assessments of immoral workplace interactions committed by another towards oneself are positively correlated with feelings of anger in employees:

Hypothesis 1: *The experience of immoral workplace interactions perpetrated by a colleague towards oneself is positively related to feeling anger towards that colleague.*

Upon examining the potential for self-regulation among colleagues who have committed an immorality, we found that affective events theory lacks an introspective perspective to examine such a possibility (Weiss & Cropanzano, 1996). As a result, we turned to cognitivist accounts of emotion in order to enhance our theoretical understanding (Frijda, 1987; Lazarus, 1991; Moors et al., 2013). While both affective events theory and cognitivist accounts suggest that negative experiences of interpersonal interactions are related to negative emotions, cognitivist accounts take it a step further by acknowledging that such experiences can be directed at oneself, resulting in internally directed negative emotions. For instance, anger is seen as an other-directed emotion that stems from an experience of immorality committed by another, while guilt is a self-directed emotion that arises from an experience of immorality committed by oneself. Guilt is specifically defined as an emotion tied to holding oneself accountable for a negative interaction. Existing empirical research has shown that experiences of immoral behavior in the workplace can indeed be linked to feelings of guilt (Harvey et al., 2017; Li et al., 2023; Szabó et al., 2017). Based on this evidence, we propose the hypothesis that assessments of immoral workplace interactions committed by oneself towards another are positively correlated with feelings of guilt in employees:

Hypothesis 2: *The experience of immoral workplace interactions perpetrated by oneself towards a colleague is positively related to feeling guilt towards that colleague.*

Moral Emotions and Regulatory Behaviors at Work

Affective events theory suggests that negative emotions in the workplace are related to negative regulatory behaviors, but it does not specify which regulatory behaviors these are (Weiss & Cropanzano, 1996). In order to better understand this connection, it may be helpful to consider cognitivist perspectives on emotion (Frijda, 1987; Lazarus, 1991). One key concept in cognitivist accounts of emotion is action readiness, which is similar to the idea of attitude shifts in affective events theory. Action readiness refers to the internal motivational state that relates to individuals behaving in a certain way. While these motivations may not always be visible externally, they can provide valuable insights into why employees act in certain ways.

With that being said, anger is closely linked to a state of readiness to take action in an antagonistic manner (Lazarus, 1991). This state of antagonistic approach can be seen as a psychosomatic shift within an employee, prompting them to confront the colleague responsible for an immoral workplace incident. The employee may feel compelled to mete out punishment in an effort to enforce what they believe to be appropriate regulatory behavior. Therefore, it can be inferred that feelings of anger are likely to drive an employee towards seeking retribution against a colleague involved in a negative workplace interaction.

According to cognitive accounts of emotion (Frijda, 1987; Lazarus, 1991; Roseman, 2013), retributive acts connected to feelings of anger often manifest as aggression. Aggression can be categorized into two sub-categories (Archer, 2004; Archer & Coyne, 2005; Bryant & Smith, 2001): indirect and direct. Indirect aggression involves covert regulatory behaviors against the target, such as guilt induction (making others feel guilty; Forrest et al., 2005), malicious humor (using sarcastic humor against others) and social exclusion (excluding others from groups; see also Berry et al., 2023). In contrast, direct aggression involves overt regulatory behaviors directed at the anger-provoking target, such as general hostile behavior (Verona et al., 2008), verbal aggression (using speech to aggress against others; Verona et al., 2008), relational aggression (aggressing against others by harming their relationships with others), passive-rational aggression (openly dismissing others, akin to passive-aggressiveness), and snitching (reporting the target's misconduct to others; Berry et al., 2023). As such, it would be reasonable to assume that feeling anger towards a colleague would be positively related to engaging in such punitive actions towards that colleague.

Based on our internal research and existing literature (Fitness, 2000; Lindebaum & Geddes, 2016; Potegal et al., 2010), it indeed appears that feelings of anger may be linked to punitive regulatory behaviors towards others. Therefore, we tentatively put forward the hypothesis that experiencing anger towards a colleague is positively linked to an increase in punitive actions taken against them:

Hypothesis 3: *Feeling anger towards a colleague is positively related to enacting punitive regulatory behavior towards that colleague, including (a) guilt induction, (b) malicious humor, (c) social exclusion, (d) general hostile behavior, (e) verbal aggression, (f) relational aggression, (g) passive-rational aggression, and (h) snitching on that colleague.*

Analogous reasoning may perhaps be applied to the experience of guilt in the workplace. Guilt often fosters a sense of accountability and a desire to make amends for one's immoral behavior (Lazarus, 1991). This motivational shift encourages employees to acknowledge and rectify their errors in a negative workplace interaction. Consequently, employees may feel compelled to correct their behavior and repent for their unethical actions.

According to cognitive accounts of emotion (Frijda, 1987; Lazarus, 1991; Roseman, 2013), feelings of guilt are typically related to repentant regulatory behaviors, such as publicly atoning for wrongs committed. These regulatory behaviors can range from apologizing (see Li et al., 2023), making amends (see Aquino et al., 2006), seeking forgiveness (see Sandage et al., 2000), taking responsibility for one's actions (see Mergler & Shield, 2016), to self-snitching (disclosing one's misconduct to others as a means of self-punishment; see Berry et al., 2023).

Drawing from this perspective, it would be reasonable to assume that experiencing guilt towards a colleague corresponds with engaging in reparative actions towards them. By synthesizing our internal research and relevant literature (Ayoko, 2016; Goodstein et al., 2016; Mu & Bobocel, 2019), it indeed appears that feelings of guilt are associated with performing penitent acts towards others. Therefore, we tentatively propose that feeling guilty towards a colleague correlates with an increase in penitent actions directed towards them:

Hypothesis 4: *Feeling guilt towards a colleague is positively related to enacting penitent actions towards that colleague, including (a) apologizing, (b) amends-making, (c) forgiveness-seeking, (d) responsibility-taking, and (e) snitching on oneself.*

The Indirect Relations between Immoral Workplace Interactions and Regulatory Behaviors

In order to further delve into the theoretical relations surrounding punitive and penitent regulatory behaviors towards colleagues at work, it is essential to revisit our theoretical foundation. Affective events theory (Weiss & Cropanzano, 1996) and the cognitive additions we have incorporated (Frijda, 1987; Lazarus, 1991; Roseman, 2013) both highlight the process nature of the constructs we are examining. Therefore, it is crucial to explore how appraisals of immoral interactions, emotions, and regulatory behaviors are all intertwined in workplace settings. Considering the direct effects that were previously hypothesized, and logically deducing their products, we propose the following mediation hypotheses:

Hypothesis 5: *The experience of immoral workplace interactions perpetrated by a colleague towards oneself is positively related to enacting punitive regulatory behavior*

(Hypotheses 3 a–h) towards that colleague via feeling anger towards that colleague.

Hypothesis 6: *The experience of immoral workplace interactions perpetrated by oneself towards a colleague is positively related to enacting penitent regulatory behavior (Hypotheses 4 a–e) towards that colleague via feeling guilt towards that colleague.*

Moral Transgression Conditions

In our exploration of determining immorality within workplace interactions, we found that existing theories such as affective events theory (Weiss & Cropanzano, 1996) and cognitivist accounts of emotion (Frijda, 1987; Lazarus, 1991; Roseman, 2013) did not provide a clear theoretical foundation for our goal of examining the criteria we use to gauge the seriousness of moral transgressions. Therefore, we turned to morals-oriented conceptual models for guidance. One such model that we found to be particularly helpful is the CAD-model (Shweder et al., 1997).

The CAD-model provides insight into the relationship between an individual's moral framework and their perceptions of immorality. The core moral principles of (C)ommunity, (A)utonomy, and (D)ivinity play a significant role in shaping these perceptions. Community-related constructs focus on qualities such as responsibility, industriousness, competence, respect, generosity, and moderation in interactions with others (see Jensen, 2015; Oatley, 2010; Shweder et al., 1997). Autonomy-related constructs emphasize justice and ensuring that others are given the freedom they deserve. Meanwhile, divinity-related constructs encompass cleanliness, beauty, serenity, and humility. In the context of immoral workplace interactions, it is important to consider the corresponding vices to these virtues. The vices associated with these virtues would thus include irresponsibility, sloth, incompetence, disrespect, stinginess, greed, injustice, autonomy restriction, pollution, uglification, wrath, and vanity.

The conceptualization of these vices as moral transgressions should allow us to examine their relationship with general appraisals of immoral workplace interactions (see Harkness & Hitlin, 2014; Jensen, 2015). This may provide insight into the criteria we use to assess immorality. These criteria should play a crucial role in affective events theory (Shweder et al., 1997), preceding the actual appraisal of workplace interactions (Weiss & Cropanzano, 1996). However, the lack of previous empirical evidence on the directionality of this relationship prompts us to explore how it manifests in workplace settings (but see Rozin et al., 1999). Therefore, our research question aims to investigate the directionality of the relationship between vices as moral transgressions and general appraisals of immoral workplace interactions:

Research Question: *What is the relation between moral transgressions and experiences of immorality in interpersonal interactions at work?*

Transparency and Openness

Our hypotheses, studies, and analysis plan have been preregistered on the Open Science Framework at URLs: https://osf.io/cmfx/?view_only=03445ac2f0314707ad5f07ceab409d19 (Study 1); https://osf.io/3pr6v/?view_only=f9f9c2f0f56744ac9906c367b4e667ef (Study 2). Upon journal publication, supplementary materials, data summary and analysis code will be accessible in the following directory: https://osf.io/hmv3z/?view_only=fb20086c840746c1a4c3f183a505eaaa. The hypotheses for Study 1 were not again pre-registered in Study 2. The scales and vignettes in Study 2 were partially developed and enhanced concurrently with AI-powered language processors.

Study 1: Ego-Centric Social Network Field Observation

Method

Selection and Procedure

Our study aimed to explore the natural fluctuations in various variables among full-time employees aged 18 to 67, working a minimum of 30 hours per week. A diverse range of participants was recruited through student networks (see Burmeister et al., 2020, and Fasbender et al., 2021), and appropriate consent was obtained from all individuals. To ensure the robustness of our study, we adopted a longitudinal within-person approach (Gabriel et al., 2019).

Participants were incentivized with gift vouchers to fill out weekly questionnaires each Friday evening until Sunday for five weeks. Data collection took place between March and June 2024. Consistent with previous research (Ohly et al., 2010; Xia et al., 2021), we observed a high compliance rate for the weekly surveys, with a 10.71% dropout rate and a compliance rate of at least 62.16%. In total, data was collected from 125 employees, resulting in 241 employee-colleague observations and 777 employee-colleague-week observations, surpassing typical experience sampling sample size standards (Gabriel et al., 2019). The majority of participants were female (60.08%), followed by males (39.20%). The summary statistics for age (range = 19 to 67 years, $M = 37.42$, $SD = 14.09$), general work experience (range = 0 to 52 years, $M = 17.32$, $SD = 14.72$), organizational tenure (range = 0 to 41 years, $M = 10.22$, $SD = 10.96$), and weekly working schedule (range = 30 to 60 hours, $M = 39.58$, $SD = 5.28$) exhibited variability among participants. The participants were employed across a variety of industries including education and teaching (17.60%), manufacturing (14.40%), public administration (8.80%), and other miscellaneous industries (19.20%).

Participants reported on one to two colleagues individually as part of our egocentric-social network approach (Meisel et al., 2013). Colleagues of the participants consisted of predominantly male (57.30%), followed by female (42.70%) individuals. The age range of colleagues was 17 to 65 years ($M = 41.74$, $SD = 12.76$). The participants and colleagues had worked together for a duration ranging from less than one to 34 years ($M = 5.59$, $SD = 6.84$).

Additionally, 37.76% of colleagues held supervisory positions, while 53.94% were coworkers, and 4.98% subordinated to the participants.

Measures

In our study, we employed the Brislin (1970) methodology for back-to-back translation to convert items from English to German. If not indicated otherwise, the response options for each scale ranged from 1 (completely disagree) to 5 (completely agree), with adjustments made as needed. To tailor the scales to our study context, we added the phrase “This week at work, . . .” to each item if not stated otherwise, focusing on colleagues as the targets. In order to streamline the process and reduce participant burden, we utilized 1-item measures that maintained the original item’s conceptual integrity while minimizing complexity, where possible (Gabriel et al., 2019). We prioritized the reliability and validity of these measures by selecting items with strong face validity and conducting post-analyses to confirm their alignment with established constructs used in previous studies (Rönkkö & Cho, 2020).

Moral Transgressions (Colleague- and Participant-Perpetrated). We measure colleague- and participant-perpetrated moral transgressions with 12 items adapted from Jensen (2015), Shweder et al. (1997), Oatley (2010), and Rozin et al. (1999). The items are (for colleague-perpetrated moral transgressions; analogous to participant-perpetrated moral transgressions) “[COWORKER NAME] has not fulfilled their responsibilities towards me.” (Irresponsibility), “[COWORKER NAME] has exhibited laziness or sluggishness in their interactions with me.” (Sloth), “[COWORKER NAME] has behaved incompetently towards me.” (Incompetence), “[COWORKER NAME] has not shown me the respect I deserve.” (Disrespect), “[COWORKER NAME] has behaved stingy towards me.” (Stinginess), “[COWORKER NAME] has behaved greedily towards me.” (Greed), “[COWORKER NAME] has acted unfairly towards me.” (Injustice), “[COWORKER NAME] has limited my freedom of choice.” (Autonomy restriction), “[COWORKER NAME] has polluted my environment through their presence or their behavior.” (Pollution), “[COWORKER NAME] has made my environment uglier through their presence or their behavior.” (Uglification), “[COWORKER NAME] has displayed anger towards me.” (Wrath), “[COWORKER NAME] has behaved arrogantly towards me.” (Vanity).

Experience of Immoral Workplace Interactions (Colleague- and Participant-Perpetrated). We measure the experience of a colleague- and participant-perpetrated immoral workplace interactions with one item adapted from Szabó et al. (2017). The item is (for colleague-perpetrated immoral workplace interactions; analogous to participant-perpetrated immoral workplace interactions) “[COWORKER NAME] has acted immorally towards me.”

Anger (Colleague-Directed). We measure colleague-directed anger with one item adapted from Umbra & Fasbender (2023). The item is “I have felt angry towards [COWORKER NAME].”

Guilt (Colleague-Directed). We measure colleague-directed guilt with one item adapted from Chung et al. (2022). The item is “I have felt guilty towards [COWORKER NAME].”

Punitive Regulatory Behavior (Colleague-Directed).

Guilt Induction. We measure colleague-directed guilt induction with one item adapted from Forrest et al. (2005). The item is “I have tried to influence [COWORKER NAME] by making them feel guilty.”

Malicious Humor. We measure colleague-directed malicious humor with one item adapted from Forrest et al. (2005). The item is “I have made fun of [COWORKER NAME] in public.”

Social Exclusion. We measure colleague-directed social exclusion with one item adapted from Forrest et al. (2005). The item is “I have omitted [COWORKER NAME] from conversations on purpose.”

General Hostile Behavior. We measure colleague-directed general hostile behavior with one item adapted from Watson & Clark (1994). The item is “I have behaved hostile towards [COWORKER NAME].”

Verbal Aggression. We measure colleague-directed verbal aggression with one item adapted from Verona et al. (2008). The item is “I have argued with [COWORKER NAME].”

Relational Aggression. We measure colleague-directed relational aggression with one item adapted from Verona et al. (2008). The item is “I have told my coworkers to stop liking [COWORKER NAME].”

Passive-Rational Aggression. We measure colleague-directed passive-rational aggression with one item adapted from Verona et al. (2008). The item is “I have openly dismissed [COWORKER NAME]’s opinions.”

Snitching. We measure colleague-directed snitching with one item adapted from Berry et al. (2023). The item is “I have reported the immoral behavior of [COWORKER NAME] towards me to others (e.g., coworkers, supervisors, etc.).”

Penitent Regulatory Behavior (Colleague-Directed).

Apologizing. We measure colleague-directed apologizing with one item adapted from Li et al. (2023). The item is “I have apologized to [COWORKER NAME] for my immoral behavior towards them.”

Amends-Making. We measure colleague-directed amends-making with one item adapted from Aquino et al. (2006). The item is “I have tried to make amends to [COWORKER NAME] for my immoral behavior towards them.”

Forgiveness-Seeking. We measure colleague-directed forgiveness-seeking with one item adapted from Sandage et al. (2000). The item is “I have asked for forgiveness by [COWORKER NAME] for my immoral behaviors towards them.”

Responsibility-Taking. We measure colleague-directed responsibility-taking with one item adapted from Mergler & Shield (2016). The item is “I have taken responsibility for my immoral behavior towards [COWORKER NAME].”

Self-Snitching. We measure colleague-directed self-snitching with one item adapted from Berry et al. (2023). The item is “I have reported my immoral behavior towards [COWORKER NAME] to others (e.g., coworkers, supervisors, etc.).”

Controls. In order to address the potential underreporting of experiences for immoral workplace interactions, both colleague- and participant-perpetrated, we took measures to ensure comprehensive data collection in our study. One such measure included the incorporation of a specific item in the weekly questionnaire for participants to indicate whether they believed the immoral behavior exhibited by their colleague or themselves was justified (Harvey et al., 2017; Lazarus, 1991). This allowed us to control for the possibility that individuals may not report such interactions if they feel they were warranted. Furthermore, we recognized the importance of considering the dyadic relationship between the participant and their colleagues in our analysis (Karppinen et al., 2023). To account for this, we included items in the baseline questionnaire that assessed the participants’ organizational, professional, and interpersonal relationships with their colleagues, as well as the length of time they had been working together (Methot et al., 2016). Additionally, we made sure to control for demographic factors by including the age and gender of the participants’ colleagues in our analysis (Dietz & Fasbender, 2021). This allowed us to rule out any potential effects that may have been driven by these demographics. Our hypothesized relations remained consistent regardless of whether these control variables were included or excluded from the analysis.

Moral Justification for Immoral Workplace Interactions (Colleague- and Participant-Perpetrated). We measure moral justification for immoral workplace interactions with one item adapted from Detert et al. (2008). The item is (for moral justifications for colleague-perpetrated immoral workplace interactions; analogous to moral justifications for participant-perpetrated immoral workplace interactions) “This week at work, I have thought that the behavior by [COWORKER NAME] towards me has been justified.”

Organizational Relationship. We measure organizational relationship by asking participants how their colleagues relate to them organizationally. The item is “In what position is [COWORKER NAME] within your organization and how do they relate to you?”. The response options are (1) “[COWORKER NAME] is my superior.”, (2) “[COWORKER NAME] is my subordinate.”, (3) “[COWORKER NAME] is my colleague.”, (4) “[COWORKER NAME] is working in a different department.”, (5) “[COWORKER NAME] is my business

partner.”, (6) “[COWORKER NAME] is my client.”, (7) “[COWORKER NAME] is my supplier”, (8) “[COWORKER NAME] is an external advisor/consultant.”

Professional Relationship. We measure professional relationship with one item adapted from Bridge & Baxter (1992). The item is “Think about your professional relationship with [COWORKER NAME] ... In general, how would you describe your professional relationship with [COWORKER NAME]?” The scale response options range from 1 = We have a mere professional relationship to 5 = We have a very personal relationship.

Interpersonal Relationship. We measure interpersonal relationship with one item adapted from Bridge & Baxter (1992). The item is “Think about your interpersonal relationship with [COWORKER NAME] ... In general, how would you describe your interpersonal relationship with [COWORKER NAME]?” The scale response options range from 1 = We are enemies to 5 = We are close friends.

Interpersonal Tenure. We measure interpersonal tenure by asking participants how long they have been working together with each colleague. The item is “How many years have you been working with [COWORKER NAME]?”

Colleague’s Age. We measure colleague’s age by asking participants about the age of each of their colleagues. The item is “How old is [COWORKER NAME]? (Try to estimate if you are unsure).”

Colleague’s Gender. We measure colleague’s gender by asking participants which gender each of their colleagues belongs to. The response options are (1) male, (2) female, and (3) diverse.

Analytical Strategy and Data Diagnostics

In our study, we utilized R version 4.2.2 (R Core Team, 2022) for data preparation and Mplus version 8.4 (Muthén & Muthén, 2017) for data analysis. The data had a complex multilevel structure (Hayes, 2006), with interactions (Level-1; employee-colleague-week observations) nested within colleagues (Level-2; employee-colleague observations) nested within employees (Level-3). This required us to use 3-level multilevel modeling with random intercepts and slopes (Hamaker & Muthén, 2020). To address data non-normality, outliers, and potential model intractability, we employed Bayesian inference with a Gibbs sampler algorithm and a Gelman-Rubin potential scale reduction factor of 1.02 with two Markov chains over 91,400 iterations (Asparouhov & Muthén, 2021; Gelman et al., 2013). We ensured convergence by examining trace and autocorrelation plots (Depaoli, 2021).

Our point estimates were based on the median, and we reported 95% highest posterior density credibility intervals (Kruschke et al., 2012). We used diffuse priors¹ to interpret parameters similar to maximum likelihood estimation (cf. Depaoli, 2021). Missing data were

¹ $\nu, \lambda, \beta, \alpha \sim N(0, \infty); \theta \sim IG(-1, 0); \psi \sim IW(0, -p - 1; \text{see Muthén \& Muthén, 2017, p. 775}).$

included in model estimation, given the robustness of multilevel modeling to incomplete or missing data (Finch & Bolin, 2017). We used a maximum likelihood estimator for analyzing summary statistics.

We applied group mean centering to predictor variables (see Muthén & Muthén, 2017) and accounted for the direct effect of all predictors on all outcome variables in mediation analyses. Outliers were retained in the analysis due to the algorithm's robustness (Grubbs, 1950; see also Asparouhov & Muthén, 2021; Finch & Bolin, 2017). We only included data from participants who worked during the week in the Level-1 observations, and our data analysis adhered to theoretical and evidence-based data quality standards (Cullen & Frey, 1999; Delignette-Muller & Dutang, 2015; Gabriel et al., 2019).

Results

Preliminary Findings

In Table 1, we present the descriptive statistics of our focal variables. Our analysis revealed high intraclass-correlation coefficients and significant variance at all levels, supporting our choice to employ multilevel modeling. We found that the variances were almost evenly distributed across each level.

Hypotheses Testing

Hypothesis 1 was supported, given that we found that the experience of immoral workplace interactions perpetrated by a colleague towards oneself was positively related to feeling anger towards that colleague ($E(\beta) = 0.497, E(\sigma) = 0.070, 95\% CI [0.363, 0.637], p < .001$).

Hypothesis 2 was supported, given that we found that the experience of immoral workplace interactions perpetrated by oneself towards a colleague was positively related to feeling guilt towards that colleague ($E(\beta) = 0.381, E(\sigma) = 0.057, 95\% CI [0.270, 0.491], p < .001$).

Hypotheses 3 a–h were supported, given that we found that feeling anger towards a colleague was positively related to enacting guilt induction (Hypothesis 3a; $E(\beta) = 0.253, E(\sigma) = 0.031, 95\% CI [0.191, 0.312], p < .001$), malicious humor (Hypothesis 3b; $E(\beta) = 0.231, E(\sigma) = 0.032, 95\% CI [0.168, 0.293], p < .001$), social exclusion (Hypothesis 3c; $E(\beta) = 0.166, E(\sigma) = 0.034, 95\% CI [0.100, 0.232], p < .001$), general hostile behavior (Hypothesis 3d; $E(\beta) = 0.275, E(\sigma) = 0.028, 95\% CI [0.220, 0.331], p < .001$), verbal aggression (Hypothesis 3e; $E(\beta) = 0.258, E(\sigma) = 0.034, 95\% CI [0.194, 0.326], p < .001$), relational aggression (Hypothesis 3f; $E(\beta) = 0.160, E(\sigma) = 0.029, 95\% CI [0.106, 0.218], p < .001$), passive-rational aggression (Hypothesis 3g; $E(\beta) = 0.200, E(\sigma) = 0.043, 95\% CI [0.115, 0.283], p < .001$), and snitching (Hypothesis 3h; $E(\beta) = 0.243, E(\sigma) = 0.033, 95\% CI [0.180, 0.308], p < .001$) towards that colleague.

Table 1
Study 1: Means, Standard Deviations, Interclass Correlation Coefficients, Reliabilities, and Correlations Among the Focal Variables

Variables	M	SD _{Level-3}	SD _{Level-2}	SD _{Level-1}	ICC	1	2	3	4	5	6	7	8	9	10
Perpetrator: Colleague															
1. Experience of immoral interaction	1.62	0.51	0.43	0.64	0.32										
2. Anger	1.65	0.55	0.51	0.69	0.31	0.39*									
3. Guilt induction	1.30	0.31	0.26	0.55	0.28	0.33*	0.43*								
4. Malignous humor	1.31	0.31	0.31	0.56	0.26	0.30*	0.39*	0.69*							
5. Social exclusion	1.30	0.30	0.33	0.52	0.26	0.31*	0.33*	0.71*	0.63*						
6. General hostile behavior	1.30	0.28	0.31	0.54	0.25	0.37*	0.48*	0.75*	0.67*	0.59*/0.56*					
7. Verbal aggression	1.37	0.30	0.34	0.58	0.24	0.36*	0.45*	0.62*	0.54*	0.57*	0.62*				
8. Relational aggression	1.25	0.28	0.25	0.50	0.27	0.36*	0.37*	0.73*	0.66*	0.74*	0.71*	0.68*			
9. Passive-rational aggression	1.45	0.38	0.35	0.65	0.28	0.32*	0.34*	0.55*	0.48*	0.57*	0.59*	0.58*			
10. Snitching	1.61	0.58	0.34	0.69	0.36	0.32*	0.46*	0.53*	0.43*	0.41*	0.51*	0.46*	0.50*		
Perpetrator: Participant															
1. Experience of immoral interaction	1.51	0.44	0.32	0.60	0.32										
2. Guilt	1.39	0.37	0.29	0.58	0.30	0.49*									
3. Apologizing	1.92	0.71	0.10	0.79	0.44	0.20*	0.29*	0.30*/0.89*	0.41*/0.81*	0.33*/0.74*	0.43*/0.72*	0.40*/0.96*	0.40*/0.92*		
4. Amends-making	1.90	0.70	0.12	0.80	0.43	0.23*	0.32*	0.78*	0.97*/0.90*	0.99*/0.88*	0.95*/0.77*	0.64*/0.93*	0.64*/0.93*		
5. Forgiveness-seeking	1.89	0.71	0.09	0.79	0.45	0.24*	0.33*	0.70*	0.78*	0.99*/0.96*	0.91*/0.78*	0.61*/0.88*	0.62*/0.92*		
6. Responsibility-taking	1.97	0.66	0.24	0.86	0.38	0.21*	0.24*	0.66*	0.58*	0.53*	0.93*/0.76*	0.61*/0.88*	0.62*/0.92*		
7. Self-switching	1.54	0.52	0.21	0.68	0.37	0.48*	0.46*	0.34*	0.30*	0.29*	0.29*	0.23*	0.23*	0.41*	

Note. $N_{\text{Level-3}} = 125$, $N_{\text{Level-2}} = 239$, $N_{\text{Level-1}} = 775$. M = mean. ICC = Intraclass correlation coefficient. PD = participant-directed. CD = colleague-directed. We calculated the ICC as $SD_{\text{Level-3}} / (SD_{\text{Level-3}} + SD_{\text{Level-2}} + SD_{\text{Level-1}})$. Level-3 correlations are listed above the diagonal, followed by a slash and the Level-2 correlations. Level-1 correlations are displayed below the diagonal.

* $p < 0.05$.

Hypotheses 4 a–e were supported, given that we found that feeling guilt towards a colleague was positively related to enacting apologizing (Hypothesis 4a; $E(\beta) = 0.255$, $E(\sigma) = 0.069$, 95% CI [0.134, 0.401], $p < .001$), amends-making (Hypothesis 4b; $E(\beta) = 0.325$, $E(\sigma) = 0.071$, 95% CI [0.190, 0.468], $p < .001$), forgiveness-seeking (Hypothesis 4c; $E(\beta) = 0.286$, $E(\sigma) = 0.070$, 95% CI [0.149, 0.424], $p < .001$), responsibility-taking (Hypothesis 4d; $E(\beta) = 0.235$, $E(\sigma) = 0.075$, 95% CI [0.081, 0.383], $p = .002$), and self-snitching (Hypothesis 4e; $E(\beta) = 0.235$, $E(\sigma) = 0.037$, 95% CI [0.163, 0.308], $p < .001$) towards that colleague.

Hypotheses 5 a–h were supported, given that feeling anger towards a colleague mediated the positive relationship between the experience of immoral workplace interactions enacted by that colleague towards oneself and enacting guilt induction (Hypothesis 5a; $E(\text{indirect effect}) = 0.125$, $E(\sigma) = 0.024$, 95% CI [0.080, 0.173], $p < .001$), malicious humor (Hypothesis 5b; $E(\text{indirect effect}) = 0.114$, $E(\sigma) = 0.023$, 95% CI [0.071, 0.161], $p < .001$), social exclusion (Hypothesis 5c; $E(\text{indirect effect}) = 0.081$, $E(\sigma) = 0.021$, 95% CI [0.043, 0.125], $p < .001$), general hostile behavior (Hypothesis 5d; $E(\text{indirect effect}) = 0.136$, $E(\sigma) = 0.024$, 95% CI [0.090, 0.186], $p < .001$), verbal aggression (Hypothesis 5e; $E(\text{indirect effect}) = 0.127$, $E(\sigma) = 0.025$, 95% CI [0.080, 0.179], $p < .001$), relational aggression (Hypothesis 5f; $E(\text{indirect effect}) = 0.079$, $E(\sigma) = 0.019$, 95% CI [0.045, 0.117], $p < .001$), passive-rational aggression (Hypothesis 5g; $E(\text{indirect effect}) = 0.098$, $E(\sigma) = 0.026$, 95% CI [0.050, 0.151], $p < .001$), and snitching (Hypothesis 5h; $E(\text{indirect effect}) = 0.120$, $E(\sigma) = 0.024$, 95% CI [0.076, 0.168], $p < .001$) towards that colleague.

Hypotheses 6 a–e were supported, given that feeling guilt towards a colleague mediated the positive relationship between the experience of immoral workplace interactions enacted by oneself towards that colleague and enacting apologizing (Hypothesis 6a; $E(\text{indirect effect}) = 0.096$, $E(\sigma) = 0.030$, 95% CI [0.044, 0.161], $p < .001$), amends-making (Hypothesis 6b; $E(\text{indirect effect}) = 0.122$, $E(\sigma) = 0.033$, 95% CI [0.062, 0.189], $p < .001$), forgiveness-seeking (Hypothesis 6c; $E(\text{indirect effect}) = 0.107$, $E(\sigma) = 0.031$, 95% CI [0.049, 0.171], $p < .001$), responsibility-taking (Hypothesis 6d; $E(\text{indirect effect}) = 0.088$, $E(\sigma) = 0.032$, 95% CI [0.028, 0.154], $p < .001$), and self-snitching (Hypothesis 6e; $E(\text{indirect effect}) = 0.235$, $E(\sigma) = 0.037$, 95% CI [0.163, 0.308], $p < .001$) towards that colleague.

Research Question Testing

Regarding moral transgressions committed by a colleague against oneself, our findings indicate that only injustice ($E(\beta) = 0.224$, $E(\sigma) = 0.082$, 95% CI [0.069, 0.393], $p = .004$) and wrath ($E(\beta) = 0.236$, $E(\sigma) = 0.123$, 95% CI [0.005, 0.501], $p(\text{one-sided}) = .03$) are positively associated with experiencing workplace interactions as immoral. Conversely, when examining moral transgressions committed by oneself against a colleague, we observed that only injustice ($E(\beta) = 0.301$, $E(\sigma) = 0.068$, 95% CI [0.171, 0.433], $p < .001$) and

irresponsibility ($E(\beta) = 0.197$, $E(\sigma) = 0.065$, 95% *CI* [0.075, 0.325], $p = .006$) were positively related to experiencing workplace interactions as immoral.

Discussion

Our results have provided strong support for all of our hypotheses. It appears that immoral behaviors among colleagues are closely linked to moral emotions, particularly feelings of anger which are related to punitive regulatory behavior. Our research also emphasizes the importance of addressing the regulation of immoral behaviors in the workplace through penitent action, as our study revealed that colleagues can engage in self-regulation related to acts of immorality. Additionally, our exploration of interpersonal regulation in the workplace has uncovered some early insights into the motivations behind punitive or penitent regulatory actions. These actions seem to be based on specific criteria that define certain interactions in the workplace as immoral, particularly injustices.

While this study serves as a solid foundation for further exploration into interpersonal regulation, it is important to note its limitations, particularly the correlational design utilized. Therefore, it would be beneficial to confirm our findings through an experimental field study, where we can test our hypotheses based on the knowledge gained from this initial study. This will be the next phase of our research.

Study 2: Experimental Vignette Study

Hypotheses and Constructs

After having uncovered tentative evidence indicating a link between injustice transgressions and perceptions of immoral workplace interactions, it would be advisable to incorporate this relationship into our hypotheses. Since justice transgressions are presumed to occur prior to appraisals of immoral workplace interactions (Lazarus, 1991; Shweder et al., 1997; Weiss & Cropanzano, 1996), it is important to establish a new set of hypotheses with justice transgressions as their focal point.

Additionally, due to limitations in study volume, our investigation of punitive and penitent regulatory behaviors will be limited to those with the strongest links to corresponding emotions, such as anger and guilt. Therefore, our focus for punitive regulatory behavior will be on guilt induction, malicious humor, and social exclusion, while for penitent regulatory behavior, we will concentrate on apologizing, making amends, and seeking forgiveness. Expanding on our current theoretical framework, we suggest the following hypotheses to be examined in Study 2, in conjunction with those proposed in Study 1:

Hypothesis 7: *Injustice transgressions perpetrated by a colleague towards oneself are positively related to the experience of immoral workplace interactions perpetrated by a colleague towards oneself.*

Hypothesis 8: *Injustice transgressions perpetrated by oneself towards a colleague are positively related to the experience of immoral workplace interactions perpetrated by oneself towards that colleague.*

Hypothesis 9: *Injustice transgressions perpetrated by a colleague towards oneself are positively related to feeling anger towards that colleague via the experience of immoral workplace interactions perpetrated by that colleague towards oneself.*

Hypothesis 10: *Injustice transgressions perpetrated by oneself towards a colleague are positively related to feeling guilt towards that colleague via the experience of immoral workplace interactions perpetrated by oneself towards that colleague.*

Hypothesis 11: *Injustice transgressions perpetrated by a colleague towards oneself are positively related to enacting punitive regulatory behavior (a: guilt induction; b: malicious humor; c: social exclusion) towards that colleague via the experience of immoral workplace interactions perpetrated by that colleague towards oneself and further via feeling anger towards that colleague.*

Hypothesis 12: *Injustice transgressions perpetrated by oneself towards a colleague are positively related to enacting penitent regulatory behavior (a: apologizing; b: amends-making; c: forgiveness-seeking) towards that colleague via the experience of immoral workplace interactions perpetrated by oneself towards that colleague and further via feeling guilt towards that colleague.*

Method

Selection and Procedure

To replicate the quasi-causal relationships among the constructs identified in Study 1, we conducted a vignette study involving full-time employees aged 18 to 66 who have regular interactions with their coworkers. These specific selection criteria were implemented to ensure a representative sample of the working population and to present participants with realistic scenarios in our vignettes. Data was gathered from employees in the United Kingdom through a certified panel provider. In order to maintain data quality (Burchett et al., 2023), we included attention checks in our survey (e.g., “Please select ‘-2’ if you’re paying attention”), with participants who failed two checks being disqualified.

An initial pre-test was conducted with 64 individuals, followed by data collection from 302 new participants, resulting in a total of 604 employee-vignette observations. The participant demographic consisted of 50.70% male and 49.30% female individuals, with ages ranging from 21 to 66 years ($M = 37.81$, $SD = 10.82$), general work experience ranging from less than one to 50 years ($M = 17.15$, $SD = 11.16$), organizational tenure varying from less than one to 37 years ($M = 6.99$, $SD = 6.85$), and weekly working hours

ranging from 31 to 66 ($M = 39.01$, $SD = 4.06$). The participants were employed across a variety of industries including IT and communication (14.90%), education and teaching (11.59%), health (11.26%), and other miscellaneous industries (15.89%).

Measures

We utilized multiple-item measures in Study 2. Unless specified otherwise, the response options for each scale ranged from -3 (Strongly disagree) to 3 (Strongly agree).

Manipulated Variables. Each vignette scenario required participants to imagine themselves in a situation where they and their colleague, Alex, have been working together on a project for quite some time, maintaining a neutral and collegial relationship (see Appendix A). When it came time to present their results to their boss, the boss was very pleased with the presentation and offered a raise to the person who contributed the most to the project. Both the participant and Alex were aware that they both equally contributed to the project.

To manipulate moral transgressions of injustice, we adjusted the vignettes to show either both the participant and Alex acknowledging the equal effort put into the project and stating in front of everyone that they both played an equal part in its completion, or one of them falsely claiming in front of everyone that they were the primary contributor to the project, while the other truthfully stated that both played an equal part. Depending on who falsely claimed to have done most of the work, we established scenarios where either Alex (Colleague-perpetrated injustice transgression) or the participant (Participant-perpetrated injustice transgression) committed the injustice transgression.

Manipulation Check. To assess the effectiveness of our manipulation of moral transgressions related to injustice, we incorporated a manipulation check into our study. Participants were asked to rate the extent to which they felt they had been treated unjustly by Alex, as well as the extent to which they felt they had treated Alex unjustly. Our results showed that our manipulation was successful in both colleague-perpetrated ($t(553.37) = -54.809$, $p < 0.001$) and participant-perpetrated ($t(588.23) = -60.223$, $p < 0.001$) instances of injustice.

Measured Variables.

Experience of Immoral Workplace Interactions (Colleague- and Participant-Perpetrated). We measure the experience of a colleague- and participant-perpetrated immoral workplace interactions with six items adapted from and inspired by Szabó et al. (2017). A sample item is (for colleague-perpetrated immoral workplace interactions; analogous to participant-perpetrated immoral workplace interactions) “In this situation, I would think that Alex acted immorally towards me” ($\omega = 1.00/\omega = 1.00$).

Anger (Colleague-Directed). We measure colleague-directed anger with four items adapted from Umbra & Fasbender (2023). A sample item is “In this situation, I would feel angry towards Alex” ($\omega = 1.00$).

Guilt (Colleague-Directed). We measure colleague-directed guilt with four items adapted from Chung et al. (2022). A sample item is “In this situation, I would feel guilty towards Alex” ($\omega = 0.98$).

Malicious Humor (Colleague-Directed). We measure colleague-directed malicious humor with six items adapted from Forrest et al. (2005). A sample item is “Following this situation, I would use sarcasm to insult Alex” ($\omega = 0.95$).

Social Exclusion (Colleague-Directed). We measure colleague-directed social exclusion with six items adapted from Forrest et al. (2005). The item is “Following this situation, I would exclude Alex from a group” ($\omega = 0.97$).

Apologizing (Colleague-Directed). We measure colleague-directed apologizing with four items adapted from Li et al. (2023). A sample item is “Following this situation, I would apologize to Alex” ($\omega = 0.99$).

Amends-Making (Colleague-Directed). We measure colleague-directed amends-making with four items adapted from Aquino et al. (2006). A sample item is “Following this situation, I would try to make amends to Alex” ($\omega = 0.99$).

Forgiveness-Seeking (Colleague-Directed). We measure colleague-directed forgiveness-seeking with four items adapted from Sandage et al. (2000). A sample item is “Following this situation, I would seek forgiveness from Alex” ($\omega = 0.96$).

Controls. To mitigate data bias in our study, we included a 17-item social desirability scale developed by Stöber (2001). An example question from the scale is “I take out my bad moods on others now and then” ($\omega = 0.76$). Responses are measured on a scale from 1 (true) to 2 (false). Additionally, we controlled for participants’ gender and age to address any potential demographic effects in our analysis. Furthermore, to address any effects related to the gender assignment for Alex, we asked participants to indicate which gender they assigned to Alex at the end of the study. Our hypothesized relations remained consistent regardless of whether these control variables were included or excluded from the analysis.

Analytical Strategy and Data Diagnostics

We primarily employed the same analytical approach and data diagnostic techniques as in Study 1, apart from utilizing a 2-level multilevel model (vignettes nested within participants) and not group-mean centering our vignette variable, given its categorical nature. Our data analysis found no deviations from theoretical and evidence-based sampling norms (Cullen & Frey, 1999; Delignette-Muller & Dutang, 2015; Gabriel et al., 2019).

Results

Preliminary Findings

In Table 2, we provide the descriptive statistics of our main variables. Our analysis showed high intraclass correlation coefficients and significant variance at all levels, which justified our decision to use multilevel modeling. The variances were evenly distributed across each level.

In order to ensure the incremental construct validity of our proposed factor structure, we conducted confirmatory factor analyses. Our proposed factor structure aligned well with the data. Additionally, alternative models were found to be less compatible with the data compared to our hypothesized model. Therefore, these results suggest that our factor structure has incremental construct validity.

Hypotheses Testing

Hypothesis 1 was supported, given that we found that the experience of immoral workplace interactions perpetrated by a colleague towards oneself was positively related to feeling anger towards that colleague ($E(\gamma) = 0.910$, $E(\sigma) = 0.031$, 95% *CI* [0.840, 0.962], $p < .001$).

Hypothesis 2 was supported, given that we found that the experience of immoral workplace interactions perpetrated by oneself towards a colleague was positively related to feeling guilt towards that colleague ($E(\gamma) = 0.911$, $E(\sigma) = 0.044$, 95% *CI* [0.823, 0.998], $p < .001$).

Hypotheses 3 a–c were supported, given that we found that feeling anger towards a colleague was positively related to enacting guilt induction (Hypothesis 3a; ($E(\gamma) = 0.280$, $E(\sigma) = 0.046$, 95% *CI* [0.191, 0.370], $p < .001$), malicious humor (Hypothesis 3b; ($E(\gamma) = 0.431$, $E(\sigma) = 0.083$, 95% *CI* [0.268, 0.595], $p < .001$), and social exclusion (Hypothesis 3c; ($E(\gamma) = 0.333$, $E(\sigma) = 0.075$, 95% *CI* [0.185, 0.479], $p < .001$) towards that colleague.

Hypotheses 4 a–c were supported, given that we found that feeling guilt towards a colleague was positively related to enacting apologizing (Hypothesis 4a ($E(\gamma) = 0.755$, $E(\sigma) = 0.071$, 95% *CI* [0.625, 0.900], $p < .001$), amends-making (Hypothesis 4b; ($E(\gamma) = 0.670$, $E(\sigma) = 0.095$, 95% *CI* [0.480, 0.860], $p < .001$), and forgiveness-seeking (Hypothesis 4c; ($E(\gamma) = 0.582$, $E(\sigma) = 0.086$, 95% *CI* [0.427, 0.767], $p < .001$) towards that colleague.

Hypotheses 5 a–c were supported, given that feeling anger towards a colleague mediated the positive relationship between the experience of immoral workplace interactions enacted by that colleague towards oneself and enacting guilt induction (Hypothesis 5a; ($E(\text{indirect effect}) = 0.252$, $E(\sigma) = 0.042$, 95% *CI* [0.170, 0.335], $p < .001$), malicious humor (Hypothesis 5b; ($E(\text{indirect effect}) = 0.388$, $E(\sigma) = 0.077$, 95% *CI* [0.237, 0.539], $p < .001$), and social exclusion (Hypothesis 5c; ($E(\text{indirect effect}) = 0.300$, $E(\sigma) = 0.069$, 95% *CI* [0.166, 0.433], $p < .001$) towards that colleague.

Table 2
Study 2: Means, Standard Deviations, Intraclass Correlation Coefficients, Reliabilities, and Correlations Among the Focal Variables

Variables	M	SD _{Level-2}	SD _{Level-1}	ICC	1	2	3	4	5	6
Perpetrator: Colleague										
1. Moral transgression (Injustice)	3.81	0.18	2.67	0.06	0.93*	0.27*	0.16	-0.68	-0.67	-0.66
2. Experience of immoral interaction	3.63	0.10	2.61	0.04	0.90*	(1.00)	0.54	0.14	0.08	0.15
3. Anger	2.35	0.64	1.08	0.37	0.70*	0.96*	(1.00)	0.20	0.22	0.37
4. Guilt induction	1.93	0.42	1.62	0.21	0.57*	0.75*	0.78*	(0.94)	0.87*	0.93*
5. Malicious humor	2.41	0.36	1.85	0.16	0.68*	0.63*	0.66*	0.85*	(0.95)	0.96*
6. Social Exclusion						0.74*	0.76*	0.88*	0.83*	(0.97)
Perpetrator: Participant										
1. Moral transgression (Injustice)						0.78*	0.86*	-0.06	-0.25	-0.10
2. Experience of immoral interaction	3.93	0.12	2.73	0.04	0.94*	(1.00)	0.90*	0.20	0.10	0.00
3. Guilt	3.93	0.21	2.57	0.07	0.90*	0.96*	(0.98)	0.15	-0.08	0.11
4. Apologizing	4.06	0.00	2.61	0.00	0.88*	0.94*	0.96*	(0.99)	0.41	0.42*
5. Amends-making	4.34	0.05	2.36	0.02	0.81*	0.87*	0.89*	0.92*	(0.99)	0.66*
6. Forgiveness-seeking	3.28	0.04	2.47	0.01	0.85*	0.91*	0.92*	0.93*	0.86*	(0.96)

Note. $N_{\text{Level-2}} = 302$; $N_{\text{Level-1}} = 604$. M = composite mean of factor indicators. ICC = Intraclass correlation coefficient. We calculated the ICC as $SD_{\text{Level-2}} / (SD_{\text{Level-2}} + SD_{\text{Level-1}})$. Level-2 correlations are listed above the diagonal. Level-1 correlations are displayed below the diagonal. Omega reliabilities are listed on the diagonal. * $p < .05$

Hypotheses 6 a–c were supported, given that feeling guilt towards a colleague mediated the positive relationship between the experience of immoral workplace interactions enacted by oneself towards that colleague and enacting apologizing (Hypothesis 6a; $E(\textit{indirect effect}) = 0.686, E(\sigma) = 0.072, 95\% \textit{ CI } [0.552, 0.833], p < .001$), amends-making ($E(\textit{indirect effect}) = 0.610, E(\sigma) = 0.090, 95\% \textit{ CI } [0.428, 0.787], p < .001$), and forgiveness-seeking ($E(\textit{indirect effect}) = 0.530, E(\sigma) = 0.082, 95\% \textit{ CI } [0.378, 0.700], p < .001$) towards that colleague.

Hypothesis 7 was supported, given that we found that injustice transgressions perpetrated by a colleague towards oneself were positively related to the experience of immoral workplace interactions perpetrated by a colleague towards oneself ($E(\gamma) = 5.414, E(\sigma) = 0.093, 95\% \textit{ CI } [5.234, 5.600], p < .001$).

Hypothesis 8 was supported, given that we found that injustice transgressions perpetrated by oneself towards a colleague were positively related to the experience of immoral workplace interactions perpetrated by oneself towards that colleague ($E(\gamma) = 5.089, E(\sigma) = 0.086, 95\% \textit{ CI } [4.921, 5.257], p < .001$).

Hypothesis 9 was supported, given that we found that injustice transgressions perpetrated by a colleague towards oneself were positively related to feeling anger towards that colleague via the experience of immoral workplace interactions perpetrated by that colleague towards oneself. ($E(\textit{indirect effect}) = 4.875, E(\sigma) = 0.175, 95\% \textit{ CI } [4.538, 5.228], p < .001$).

Hypothesis 10 was supported, given that we found that injustice transgressions perpetrated by oneself towards a colleague are positively related to feeling guilt towards that colleague via the experience of immoral workplace interactions perpetrated by oneself towards that colleague ($E(\textit{indirect effect}) = 4.633, E(\sigma) = 0.236, 95\% \textit{ CI } [4.184, 5.108], p < .001$).

Hypotheses 11 a–c were supported, given that we found that injustice transgressions perpetrated by a colleague towards oneself were positively related to enacting guilt induction (Hypothesis 11a; $E(\textit{indirect effect}) = 1.364, E(\sigma) = 0.229, 95\% \textit{ CI } [0.923, 1.820], p < .001$), malicious humor (Hypothesis 11b; $E(\textit{indirect effect}) = 2.102, E(\sigma) = 0.417, 95\% \textit{ CI } [1.274, 2.914], p < .001$), and social exclusion (Hypothesis 11c; $E(\textit{indirect effect}) = 1.621, E(\sigma) = 0.372, 95\% \textit{ CI } [0.905, 2.357], p < .001$) towards that colleague via the experience of immoral workplace interactions perpetrated by that colleague towards oneself and further via feeling anger towards that colleague.

Hypotheses 12 a–c were supported, given that we found injustice transgressions perpetrated by a colleague towards oneself were positively related to enacting apologizing (Hypothesis 12a; $E(\textit{indirect effect}) = 3.493, E(\sigma) = 0.369, 95\% \textit{ CI } [2.804, 4.250], p < .001$), amends-making (Hypothesis 12b; $E(\textit{indirect effect}) = 3.102, E(\sigma) = 0.462, 95\% \textit{ CI } [2.186, 4.018], p < .001$), and forgiveness-seeking (Hypothesis 12c; $E(\textit{indirect effect}) = 2.698, E(\sigma) = 0.419, 95\% \textit{ CI } [1.920, 3.565], p < .001$) towards that colleague via the experience of immoral workplace interactions perpetrated by that colleague towards oneself and further via feeling anger towards that colleague.

Discussion

Once again, our results have strongly supported all of our testable hypotheses. It is evident that immoral behaviors among colleagues are closely tied to moral emotions, especially feelings of anger, which are associated with punitive regulatory behavior. Additionally, our findings emphasize the significance of addressing the regulation of immoral conduct in the workplace through penitent action, as Study 2 again revealed that employees can engage in self-regulation pertaining to acts of immorality. These actions appear to be intertwined with moral transgressions against justice. Remarkably, our results from Studies 1 and 2 indicate a degree of intercultural agreement between German and British cultures on this matter. That said, given the extensive nature of our research, it would be valuable to summarize and discuss the implications of our current studies for further research. This will be the focus of our next sections.

General Discussion

The focus of this paper was to investigate the dynamics of interpersonal regulation mechanisms in work environments via two studies. To achieve this objective, we developed a conceptual model based on affective events theory and tested it with a group of full-time workers from various industries via an ego-centric network approach in Study 1. Participants were asked about their interactions with two colleagues on a weekly basis over the span of a month. Specifically, we inquired about instances of immoral treatment they had either experienced or engaged in, their emotional reactions towards their colleagues, and whether they took punitive or penitent regulatory action towards their colleagues during the workweek. Our findings revealed a positive relation between colleague-perpetrated immoral workplace interactions and feelings of anger towards the transgressing colleague, leading to various punitive regulatory actions against them. Conversely, participant-perpetrated immoral workplace interactions related to feelings of guilt towards the victimized colleague, resulting in various penitent actions towards them. Additionally, the perception of an injustice seemed to relate to whether participants appraised an immoral workplace interaction, regardless of whether they were colleague- or participant-perpetrated. These findings were robustly replicated in our experimental field study in Study 2.

Theoretical Implications

Our research indicates that immoral behaviors among colleagues are closely tied to moral emotions (Harvey et al., 2017; Roberts, 2003; Russell & Giner-Sorolla, 2011), particularly feelings of anger which often relate to punitive regulatory actions. This offers insight into why employees may feel the need to regulate behaviors they perceive as unethical in the workplace. Furthermore, our study suggests a potential extension of affective events theory to incorporate immoral workplace incidents, potentially classifying them under negative workplace events. This broader perspective enhances the theory's ability to elucidate the link between negative workplace events and moral emotions, specifically anger. In summary,

our findings highlight the importance of considering the interplay between interpersonal morality assessments, moral emotions, and punitive regulatory behaviors in order to gain a deeper understanding of the complex dynamics within workplace relationships.

Our research findings highlight the significance of addressing the regulation of immoral behaviors in the workplace through penitent regulatory action, emphasizing the importance of self-regulation in such settings. While interpersonal regulation in the workplace typically involves one individual penalizing another (see Goodkin, 1966; Henrich & Boyd, 2001; Ulmer & Johnson, 2017), our study uncovered that colleagues can also engage in self-regulation related to acts of immorality. Specifically, individuals who have committed immoral acts toward their colleagues tend to exhibit penitent regulatory behaviors towards the victimized parties, likely driven by feelings of guilt. These findings underscore the need to understand the dynamics of intrapersonal regulation within work environments. Expanding upon affective events theory, our results suggest the inclusion of self-initiated immoral workplace events and the affective response of guilt to negative workplace events. Additionally, colleague-focused penitent regulatory behaviors are aspects that warrant further exploration within affective events theory.

Finally, our investigation into interpersonal regulation in the workplace has brought to light some initial insights into the motivations behind punitive or penitent regulatory actions. It appears that these actions are rooted in a specific set of criteria that dictate certain interactions in the workplace as being immoral. It seems that moral transgressions, particularly those related to the injustice within an individual's moral framework (Shweder et al., 1997), play a significant role in determining whether an interaction is viewed as immoral in a work setting. By having delved into these complexities, we aim to offer future researchers a deeper understanding of the underlying factors that drive punitive and penitent regulatory behaviors in the workplace, and how they are connected to judgments of moral transgressions.

Practical Implications

One practical implication derived from our study is the importance of justice in interpersonal interactions. Leaders should focus on creating a just climate within their organization. This includes ensuring that organizational policies provide high levels of interactional, procedural, and distributive justice (Aquino et al., 2006; Barclay & Skarlicki, 2009; Khattak et al., 2019).

Leaders should also work on increasing the moral sensitivity (Arnaud, 2010) of employees and the organizational culture as a whole. This involves making people aware of what constitutes immoral behavior and fostering a better understanding of how to address such behavior. It is also important to educate employees on which interpersonal behaviors may require tolerance instead of being labeled as immoral.

Another aspect to consider is increasing the sensitivity of guilt felt by employees when they engage in immoral behaviors. Emphasizing the importance of integrity in their work tasks may help employees understand the potential harm their actions may cause to colleagues

and others. However, it is essential to consult ethics review boards before implementing such an approach due to its controversial nature.

Limitations

When interpreting the results of our studies, it is crucial to acknowledge the limitations that may impact the conclusions drawn. One such limitation is the reliance on self-reported measures in Study 1 and Study 2, which could have introduced common method bias (Podsakoff et al., 2003). To address this issue, future studies should consider measuring the assumed constructs in a time-sequential manner. Additionally, researchers could incorporate other-report study design components to mitigate the influence of common method bias, such as having participants and their colleagues report on their common moral transgressions and immoral workplace interactions on one day, emotions on the next day, and regulatory behaviors on the following day.

Furthermore, as Study 1 was observational in nature, it is important to note that the results do not establish causality (Doty & Glick, 1998). There is a possibility that the assumed relations may be reversed, indicating that emotions such as anger could lead to the perception of workplace interactions as immoral (post-hoc justification). As a result, alternative explanations contributing to the observed relations cannot be discounted. Conducting experimental studies to test these assumptions, such as manipulating perceptions of immorality within workplace interactions, could help determine if they indeed result in heightened levels of anger and guilt.

Moreover, our time-based sampling strategy in Study 1 may have had limitations due to the potential for recall biases (Trull & Ebner-Priemer, 2009). To address this issue, researchers may want to consider constraining the sampling timeframe or implementing a random sampling strategy by setting prompts to occur at different times during the workweek.

Lastly, while our use of 1-item measures in Study 1 could be regarded as appropriate given the careful selection of items with strong face validity and considering our study design (Fisher & To, 2012; Gabriel et al., 2019; Ohly et al., 2010), future studies may benefit from using three or more items per construct measured to enhance internal reliability.

Future Research Directions

Our study highlights the potential for future research to delve deeper into the social network dynamics among colleagues within workplace. One avenue for exploration is the examination of how punitive and penitent regulatory behaviors influence the responses of colleagues, including whether they lead to a cessation of the immoral behavior, acceptance of an apology, or even a punitive or penitent response. To fully understand these dynamics, future studies should take a dyadic approach, gathering information on the appraisals, emotions, and regulatory behaviors of both parties involved in the interaction. This approach could provide valuable insights into the complexities of social networks within workplace environments.

Another potential future research direction that could further enhance our understanding of the dynamics influencing the relationships identified in our study involves a more in-depth exploration of individual-level and organization-level variables. These variables, such as personality traits (Lazarus, 1991), values, commitments, supervisor leadership styles (Lee et al., 2021), and organizational policies (Hart, 2010), could play a role in our proposed relations. To delve deeper into this aspect, future research could benefit from longitudinal studies that span over several years. This long timeframe would enable researchers to capture any subtle changes in these typically stable constructs. As such, by analyzing the variance within our proposed relationships, considering the varying degrees of individual- and organization-level variables, researchers could gain valuable insights into which specific traits, supervisor styles, and organizational policies may be effective in encouraging employees to speak out against unethical conduct. Moreover, this research could also shed light on means that may prevent employees from engaging in such behavior in the first place.

Conclusion

In conclusion, it appears that interpersonal regulation plays a significant role in maintaining conformity within workplaces. Future research will be needed to fully understand how this mechanism impacts social and organizational norms, and whether it ultimately helps prevent chaos within organizations. However, it seems that colleagues often attempt to regulate each other's behavior in order to uphold their own expectations of moral conduct in the workplace, particularly in situations involving injustice.

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Appendices

Appendix A: Vignettes

Prologue

Imagine the following:

You and your colleague, Alex, have been working together on a project for quite some time, maintaining a neutral and collegial relationship. When it comes time to present your results to your boss, they are very pleased with the presentation and offer a raise to the person who contributed the most to the project. However, both you and Alex are aware that you both equally contributed to the project. This creates a dilemma as to how to proceed with the offer of the raise.

Under these circumstances, the following happens now:

Vignette 1

Both of you acknowledge the equal effort put into the project and state in front of everyone that you both played an equal part in its completion.

Vignette 2

Even though both of you are aware of the equal contribution made to the project, Alex falsely claims in front of everyone that they were the primary contributor to the project. You, on the other hand, truthfully state in front of everyone that you both played an equal part in its completion.

Vignette 3

Even though both of you are aware of the equal contribution made to the project, you falsely claim in front of everyone that you were the primary contributor to the project. Alex, on the other hand, truthfully states in front of everyone that you both played an equal part in its completion.

Epilogue

After both you and Alex share your views in front of everyone, you and Alex return to work. In light of this exchange, we would like to gather your thoughts on the following questions:
[. . .]

The Interaction Discrepancy Model: A Theoretical Framework for Understanding Person-Environment Interactions

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This manuscript introduces the Interaction Discrepancy Model (IDM), a theoretical framework designed to enhance our understanding of person-environment interactions. Traditional models often overlook the dynamic, iterative, and feedback-driven nature of these interactions, typically focusing on episodic and isolated psychological processes and conscious mechanisms. The IDM addresses these limitations by integrating the dynamics of cognitive, affective, and behavioral processes at both conscious and non-conscious levels. The model outlines an eight-stage process: (1) perception, (2) interaction construal, (3) verification, (4) congruence/discrepancy, (5) appraisal, (6) autoregulatory response, (7) action plan, and (8) feedback. This comprehensive approach seeks to explain the varied responses observed in empirical research and real-life scenarios. The IDM's applicability extends across multiple contexts, including aggression, delinquency, conflict management, and industrial-organizational psychology, emphasizing the critical role of perceived discrepancies in triggering affective and behavioral responses. By incorporating contextual factors and providing a structured framework for falsifiability, the IDM offers a robust tool for future research and practical applications. This model significantly advances the theoretical literature on person-environment interactions, providing a holistic understanding that captures the complexity of human experience.

Keywords: Interaction Discrepancy Model (IDM), Person-Environment Interactions, Conceptual Framework, Theoretical Model Development

Person-environment interactions, encompassing exchanges between persons and other people, animals, inanimate objects, and abstract concepts (American Psychological Association, 2024), are fundamental to human experience. Despite their importance (Blau, 1964; Higgins, 1987; Lazarus, 1991), these interactions' dynamic nature remains poorly understood (Campos et al., 2011; Cottingham, 2024; Fischer & van Kleef, 2010). This manuscript presents a novel conceptual framework aimed at incrementally enhancing our understanding of the dynamic interactions between individuals and their environments. Grasping these interactional dynamics is essential for predicting the outcomes of such interactions and identifying ways to influence them for the betterment of humanity (Dillon et al., 2011; Halperin, 2014; Maroney & Gross, 2014).

Numerous theoretical models have explored these interactions (Blau, 1964; Frese & Zapf, 1994; Hacker, 1985; Lazarus, 1991; Roseman, 1984; Scherer, 2009; Vroom, 1964; Weiss & Cropanzano, 1996), yet they often come with limitations to capture their full dynamics

(see Karstedt, 2016; Kuppens, 2015; Schoebi & Randall, 2015). Typically, these models treat interactions as episodic and static (e.g., Vroom, 1964; Weiss & Cropanzano, 1996), overlooking their continuous, iterative, and feedback-driven nature (Hollenstein, 2015). Additionally, they usually focus on one or two psychological processes (cognition, affect, behavior) at a time, neglecting the complexity of interactions involving all three processes (e.g., Blau, 1964; Vroom, 1964; Weiss & Cropanzano, 1996). When all three are considered, it is often to a limited degree, leaving scholars to question how such explanations can account for the diversity in cognitive, affective, and behavioral responses observed in empirical research (Pessoa, 2010; Scherer, 2013; Umbra & Fasbender, 2024). Furthermore, current models typically focus on conscious processes (e.g., Blau, 1964; Higgins, 1987; Vroom, 1964), disregarding recent empirical developments that highlight the role of non-conscious processes (Frijda, 2009; Mallon & Nichols, 2011; Winkielman, 2010). Thus, while existing frameworks have advanced our understanding of person-environment interactions, their fragmented approach underscores the need for a holistic model to address these limitations.

To address these aspects, we propose the Interaction Discrepancy Model (IDM). This model integrates prior theoretical and empirical research to create a more holistic understanding of person-environment interactions, accounting for their dynamic nature. The IDM outlines an eight-stage process: (1) perception of person-environment interaction, (2) interaction construal, (3) verification process, (4) congruence/discrepancy, (5) appraisal process, (6) autoregulatory response, (7) action plan, and (8) feedback. This process aims to explain the dynamic, iterative, and feedback-driven nature of these interactions, incorporating the interplay of cognitive, affective, and behavioral processes at both conscious and non-conscious levels.

The IDM seeks to answer different key questions: How do person-environment interactions unfold and evolve (Boiger & Mesquita, 2012)? Why and how do these interactions lead to (or fail to do so) a wide range of cognitive, affective, and behavioral responses and adaptations (Horberg et al., 2011; Izard, 2011; Packard & Schultz, 2023)? How do cognitive, affective, and behavioral processes within a person-environment interaction influence each other (Castelfranchi & Miceli, 2009; Harré, 2009; Helm, 2009)? By systematically addressing these questions, the IDM aims to provide a robust conceptual framework that deepens our understanding of the dynamics inherent in person-environment interactions and lays the groundwork for future scientific and practical applications (Picard, 2010).

Our work aims to make three significant contributions to the theoretical literature on person-environment interactions. First, we integrate and advance propositions from traditional theoretical models (Blau, 1964; Frese & Zapf, 1994; Hacker, 1985; Lazarus, 1991; Roseman, 1984; Scherer, 2009; Vroom, 1964; Weiss & Cropanzano, 1996) to account for the dynamic, iterative, and feedback-driven nature of person-environment interactions, addressing the question of how these interactions unfold and evolve (Boiger & Mesquita, 2012). We propose an eight-stage process model that starts with the perception of person-environment interaction, followed by interaction construal, verification process, detection of discrepancies, appraisal process, autoregulatory responses, action plan, and ends with a feedback loop that influences the initial stages until certain conditions are met. This model

aims to provide researchers with a more holistic understanding of the dynamic, iterative, and feedback-driven nature of person-environment interactions.

Second, we elucidate the complex interplay of cognitive, affective, and behavioral processes in person-environment interactions to explain why and how these interactions (fail to) lead to a wide range of cognitive, affective, and behavioral responses and adaptations (Horberg et al., 2011; Izard, 2011; Packard & Schultz, 2023). We propose that these responses and adaptations occur to reconcile current interactions (Is-State) with expected interactions (Ought-State), aligning or improving current interactions with expected ones. This reconciliation occurs through a dynamic, iterative, and feedback-driven process involving the perception, appraisal, and response to discrepancies. The central proposition of the IDM is that the perception of discrepancies in person-environment interactions prompts persons to deploy cognitive, affective, and behavioral processes to address these discrepancies.

Third, we integrate recent empirical developments in neuroscience and cognitive psychology (e.g., Gazzaley & Nobre, 2012; Kozhevnikov et al., 2007; Nie et al., 2017) to elucidate the complex interplay of conscious and non-conscious mechanisms within person-environment interactions (Frijda, 2009; Mallon & Nichols, 2011; Winkielman, 2010). We propose that these processes are influenced by both overt and subliminal sensory perceptions and feedback responses, which direct changes in cognitive, affective, and behavioral processes. This aims to provide researchers with a more holistic understanding of how cognitive, affective, and behavioral processes within person-environment interactions influence each other.

Literature Review

Review of Existing Models

Person-environment interactions have been extensively explored through various traditional models, including models of cognitive appraisal (Lazarus, 1991; Roseman, 1984; Scherer, 2009), self-discrepancy (Higgins, 1987), social exchange (Blau, 1964), expectancy-value (Vroom, 1964), affective events (Weiss & Cropanzano, 1996), and action regulation (Hacker, 1985; Frese & Zapf, 1994). These models have advanced our understanding of these interactions but also have limitations that restrict the inferences drawn from them.

Cognitive Appraisal Models

Cognitive appraisal models, such as those proposed by Lazarus (1991), Roseman, (1984), and Scherer (2009), assert that person-environment interactions involve an iterative interplay of cognition, affect, and behavior. These models posit that the cognitive assessment of a person-environment interaction leads to an emotional response, which in turn guides behavior aimed at coping with the favorable or unfavorable states resulting from the interaction. However, these models often treat psychological processes beyond cognition (and sometimes affect) to a limited degree, constraining their ability to account for the diversity in affective, and behavioral responses observed in empirical research (Umbra & Fasbender, 2024).

Therefore, cognitive appraisal models require theoretical extension to address the wide range of behavioral responses and adaptations documented in empirical research.

Self-Discrepancy Models

Self-discrepancy models, such as those proposed by Higgins (1987), highlight the iterative and feedback-driven nature of person-environment interactions, focusing on perceived discrepancies between a person's actual, ideal, and ought selves. However, these models fall short in addressing the dynamic nature of person-environment interactions, given that discrepancies between a person's actual, ideal, and ought selves are long-term processes that are unlikely to change quickly. Additionally, these models often constrain their treatment of adaptational processes to the conscious level, disregarding recent empirical developments highlighting the role of non-conscious processes. Therefore, self-discrepancy models require theoretical extension to address the dynamic nature of person-environment interactions and the role of non-conscious processes.

Social Exchange Models

Social exchange models, such as those proposed by Blau (1964), emphasize the dynamic and iterative interplay of cognition and behavior to maximize the benefit derived from person-environment interactions. However, these models often neglect the role of affective responses and adaptations observed in empirical studies and constrain their treatment of interaction processes to the conscious level. Therefore, social exchange models require theoretical extension to address the wide range of affective responses and adaptations observed in empirical studies and the role of non-conscious processes.

Expectancy-Value Models

Expectancy-value models, such as those proposed by Vroom (1964), assert that person-environment interactions involve a dynamic interplay of cognition, affect (specifically its motivational component), and behavior. These models posit that the cognitive assessment of an expected person-environment interaction determines the motivational states and subsequent behaviors. However, these models often conceptualize person-environment interactions as episodic and static, addressing the wide range of affective behavioral responses and adaptations only to a limited degree. Additionally, these models typically constrain their treatment of interaction processes to the conscious level. Therefore, expectancy-value models require theoretical extension to address the iterative and feedback-driven nature of person-environment interactions and the role of non-conscious processes.

Affective Events Models

Affective events models, such as those proposed by Weiss and Cropanzano (1996), assert that person-environment interactions involve a dynamic interplay of cognition, affect, and behavior. These models posit that the cognitive assessment of a person-environment

interaction leads to an emotional response, which guides behavior aimed at coping with the interaction's outcomes. However, these models often treat person-environment interactions as episodic and static, neglecting their iterative and feedback-driven nature. Additionally, these models typically constrain their treatment of interaction processes to the conscious level. Therefore, affective events models require theoretical extension to address the iterative and feedback-driven nature of person-environment interactions and the role of non-conscious processes.

Action Regulation Models

Action regulation models, such as those proposed by Hacker (1985) and expanded by Frese and Zapf (1994), assert that person-environment interactions involve a dynamic, iterative, and feedback-driven interplay of cognition, affect, and behavior. However, these models often constrain themselves to task-related processes and neglect the wide range of affective responses and adaptations observed in empirical studies, particularly positive emotions. Additionally, these models typically constrain their treatment of interaction processes to the conscious level. Therefore, action regulation models require theoretical extension to address the broad scope of potential contexts of person-environment interactions and the role of non-conscious processes.

Summary

While traditional models have significantly advanced our understanding of person-environment interactions, each one has its limitations. Cognitive appraisal models have limitations in addressing the full spectrum of behavioral responses and adaptations observed in empirical research (Lazarus, 1991; Roseman, 1984; Scherer, 2009). Self-discrepancy models overlook the dynamic nature of these interactions and the influence of non-conscious processes (Higgins, 1987). Social exchange models have some issues covering the range of affective responses and adaptations found in studies, nor the role of non-conscious processes (Blau, 1964). Expectancy-value models seem to miss the iterative and feedback-driven aspects of person-environment interactions, as well as the role of non-conscious processes (Vroom, 1964). Similarly, affective events models do not sufficiently address these iterative and feedback-driven elements (Weiss & Cropanzano, 1996). Finally, action regulation models seem to lack the scope to encompass the varied contexts of person-environment interactions and the influence of non-conscious processes (Hacker, 1985; Frese & Zapf, 1994). These shortcomings necessitate the development of a novel conceptual model, such as the Interaction Discrepancy Model, to comprehensively address the complexity of person-environment interactions.

Theoretical Integration and Extension

The Interaction Discrepancy Model (IDM) builds on these foundational theoretical models by integrating their strengths and addressing their limitations. By synthesizing these

established theoretical concepts, the IDM provides a more holistic and dynamic perspective on person-environment interactions.

The IDM incorporates appraisal processes from cognitive appraisal models as a core component (Lazarus, 1991; Roseman, 1984; Scherer, 2009). It adopts the rationale behind the relationship between these appraisal processes and affective and behavioral responses, while extending these models to better account for the diverse responses observed in empirical research.

The IDM also integrates the discrepancy detection and resolution processes from self-discrepancy models (Higgins, 1987). It expands on how these processes are resolved and addresses the dynamic nature of person-environment interactions, extending the treatment of adaptation processes to the unconscious level.

Additionally, the IDM incorporates benefit-directed processes from social exchange models (Blau, 1964). It adopts the rationale behind achieving these benefits and extends the models to include the role of affective responses and adaptations at the non-conscious level.

From expectancy-value models, the IDM integrates the rationale that assessments of expected person-environment interactions determine motivational states and subsequent behaviors (Vroom, 1964). It extends these models to address the wide range of affective and behavioral responses and adaptations on both conscious and non-conscious levels.

The IDM also draws from affective events models concerning the relationships between person-environment interactions, affective responses, and behavioral responses (Weiss & Cropanzano, 1996). It extends these models to address the iterative, feedback-driven nature of person-environment interactions and the role of non-conscious processes.

Finally, the IDM incorporates dynamic, iterative, and feedback-driven processes from action regulation models (Hacker, 1985; Frese & Zapf, 1994). It extends these models to address the broad scope of potential contexts for person-environment interactions and the role of non-conscious processes.

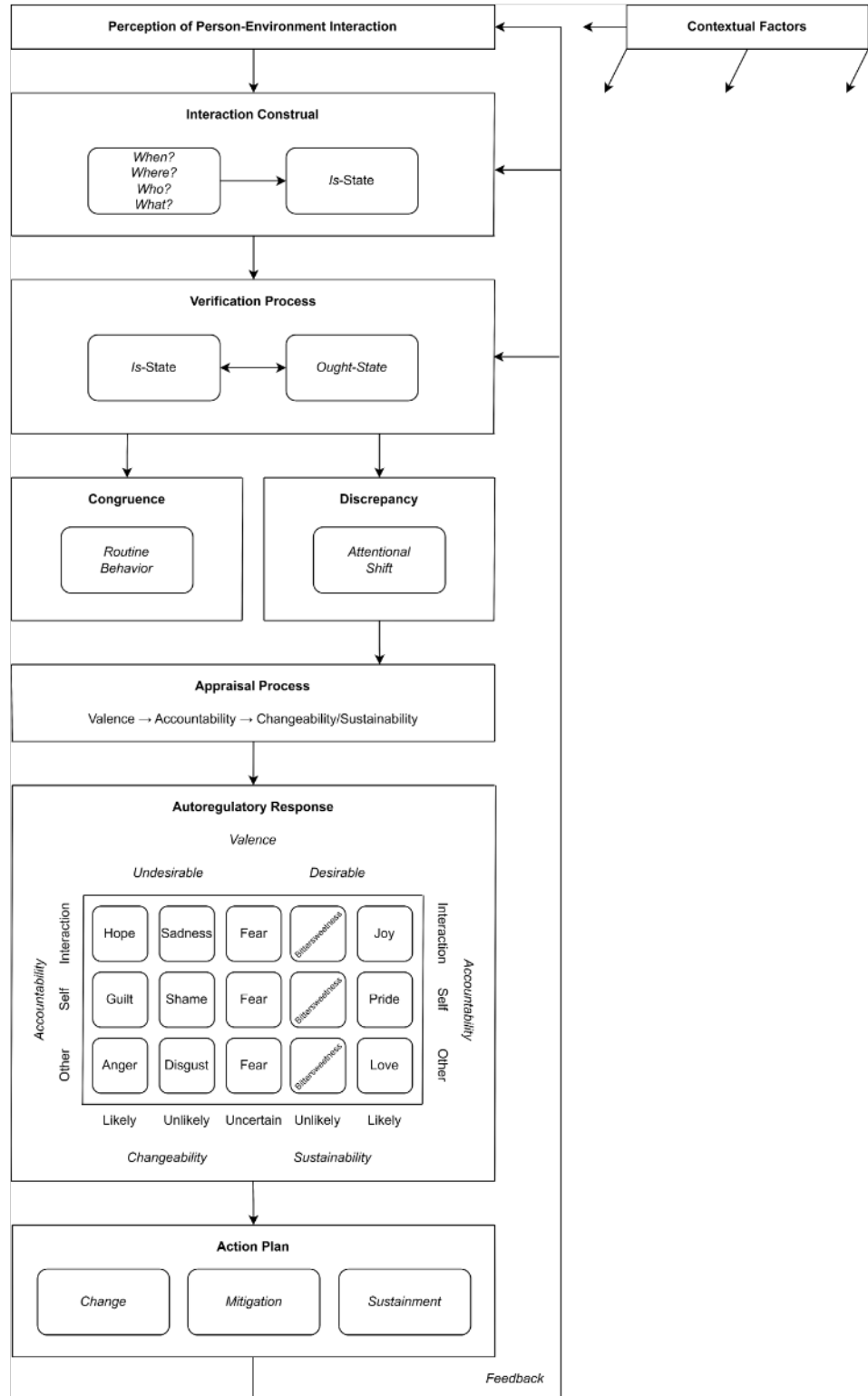
Theoretical Framework

The Interaction Discrepancy Model (IDM) provides a detailed framework for understanding and managing person-environment interactions. The model identifies eight critical stages in the interaction process: perception of person-environment interaction, interaction construal, verification process, congruence/discrepancy, appraisal process, autoregulatory response, action plan, and feedback. Contextual factors also influence these stages. This section explores each stage in detail to enhance our understanding of these processes (see Figure 1).

Stage 1: Perception of Person-Environment Interaction

The perception of person-environment interactions, whether occurring individually or concurrently, forms the foundation of the IDM and encompasses both conscious and non-conscious processes. Conscious interactions involve active engagement with one's surroundings, whether initiated by the person or the environment. For example, a

Figure 1
Interaction Discrepancy Model (IDM)



person might deliberately focus on specific environmental aspects, altering their sensory experience or mental state. Non-conscious interactions, conversely, occur without the person's awareness, such as the nervous system's automatic adjustments to maintain balance or detect environmental changes. These interactions set the stage for noticing and addressing discrepancies, defining the dynamic and iterative nature of person-environment interactions. Therefore, our proposition is that the perception of person-environment interactions, involving both conscious and non-conscious processes and changes initiated by either the individual or the environment, forms the foundation of interactions between individuals and their environments (*Proposition 1*). Prior research on sensory perception (Engel et al., 2001; Proulx et al., 2014; Stein & Stanford, 2008) and environmental psychology (Saarimäki, 2021; Schreuder et al., 2016; Spence, 2020) supports this proposition.

Stage 2: Interaction Construal

Interaction construal involves forming a comprehensive mental picture of the interaction based on data collected from initial person-environment interactions. This stage focuses on organizing data into a coherent framework without interpretation. For instance, observing a snow fox in a snowy landscape raises questions about timing, location, participants, and plot, helping to build a clear mental representation of the interaction. Therefore, our proposition is that following the perception of person-environment interactions, persons form a comprehensive mental picture of these interactions by organizing data into a coherent framework without interpretation (*Proposition 2*). Research on cognitive frameworks supports this proposition (Gazzaley & Nobre, 2012; Kozhevnikov et al., 2007; Nie et al., 2017).

Stage 3: Verification Process

The verification process involves comparing the current interaction (Is-State) with the expected interaction (Ought-State) to identify discrepancies within the current person-environment interaction (see also Higgins, 1987). This comparison considers context-specific factors such as timing, location, participants, and plot. By evaluating these elements without judgment, persons can determine whether the current interaction aligns with expectations or deviates from them, setting the stage for further cognitive and emotional processing. Therefore, our proposition is that after forming a comprehensive mental picture of interactions, individuals compare these current interactions (Is-State) with expected interactions (Ought-State) to identify discrepancies, considering context-specific factors such as timing, location, participants, and plot, all without interpretation (*Proposition 3*). This proposition is supported by research on cognitive processes (Evans & Stanovich, 2013; Gigerenzer & Gaissmaier, 2011; Sunstein, 2005).

Stage 4: Congruence and Discrepancy

This stage examines whether the current interaction matches the expected interaction. Congruence occurs when there is alignment, allowing routine behavior to continue without

additional cognitive effort. Discrepancy, however, prompts persons to address the mismatch, focusing their attention on addressing the discrepancy. Understanding the alignment or misalignment between the Is-State and Ought-State is critical for subsequent responses. Notably, this stage still proceeds without interpretation. Therefore, our proposition is that after comparing current interactions (Is-State) with expected interactions (Ought-State), a person either continues routine behavior without additional cognitive effort if there is congruence or focuses on the misaligned person-environment interaction if there is a discrepancy, all without interpretation (*Proposition 4*). Research on cognitive dissonance (Festinger, 1957) and related concepts supports this proposition (Elliot & Devine, 1994; Harmon-Jones, 2000; van Veen et al., 2009).

Stage 5: Appraisal Process

The appraisal process evaluates identified discrepancies through a structured four-step method: assessing the valence of the discrepancy based on its moral desirability (Jensen, 2015; Shweder et al., 1997), determining responsibility, evaluating changeability or sustainability, and synthesizing these evaluations into an overall appraisal outcome. For example, a desirable discrepancy might be assessed for its potential to be sustained, while an undesirable one is evaluated for its likelihood of change. These appraisals guide the person's subsequent responses. Therefore, our proposition is that after shifting attention towards a discrepancy within a person-environment interaction, individuals evaluate the identified discrepancies using a structured four-step method: assessing the valence based on moral desirability, determining responsibility, evaluating changeability or sustainability, and synthesizing these evaluations into an overall appraisal outcome (*Proposition 5*). Research on appraisal processes supports this proposition (Ellsworth, 2013; Scherer, 2009; Siemer et al., 2007).

Stage 6: Autoregulatory Response

Following the appraisal outcome, both modulatory and motivational changes manifest (Frijda, 1987), culminating in observable autoregulatory responses. These responses, in their latent form, are identified as emotions. For example, appraising an undesirable yet changeable discrepancy attributed to the environment may lead to an increased heart rate (modulatory component) and an urge for retribution (motivational component; Lazarus, 1991), collectively forming the emotion of anger. The degree to which the components of the appraisal outcome are expressed determines the variation in autoregulatory responses, potentially resulting in emotional blends. The larger the discrepancy, the stronger is the autoregulatory response and the corresponding emotion. Therefore, our proposition is that following the appraisal outcome, modulatory and motivational changes occur, regulated by the expressions and combinations of the appraisal components, forming the latent construct we identify as an emotion (*Proposition 6*). This proposition is corroborated by research on intrapersonal regulation (Kreibig, 2010; Lang & Bradley, 2010; Roseman, 2013).

Response Categorization

Table 1 provides a detailed breakdown of the relationship between the components of the appraisal outcome and the ensuing autoregulatory responses. The categorization within the table is based on previous research on appraisal theory (Roseman, 1984; Frijda, 1987; Lazarus, 1991).

Valence represents the internal moral value associated with a discrepancy (Shweder et al., 1997). It is categorized as either desirable, indicating a positive moral value, or undesirable, indicating a negative moral value.

Accountability refers to the source of responsibility for a discrepancy and is divided into three categories (Roseman, 1984): self, where the individual takes personal responsibility; other, where responsibility is attributed to other people; and interaction, where responsibility is attributed to the interaction between the individual and the environment or others.

Changeability pertains only to undesirable discrepancies and indicates the perceived likelihood that the situation can be changed. It is classified as likely, implying a high probability of change; unlikely, implying a low probability of change; and uncertain, indicating an ambiguous or unknown likelihood of change.

Sustainability pertains only to desirable discrepancies and refers to the ability to maintain or sustain a change over time. It is categorized as likely, implying a high probability of sustaining; unlikely, implying a low probability of sustaining; and uncertain, indicating an ambiguous or unknown likelihood of sustaining.

Undesirable Discrepancies with Likely Changeability

When an undesirable discrepancy with likely changeability is attributed to another person, modulatory and motivational changes activate the autonomic nervous system and prompt a retributive response. This combined output forms the observed construct, while the latent construct is termed "Anger." Similarly, if the discrepancy is attributed to oneself, these changes activate the autonomic nervous system and elicit a penitent response, encapsulated by the latent construct "Guilt." For discrepancies attributed to the interaction, these changes again activate the autonomic nervous system and induce a prospective response, represented by the latent construct "Hope."

Undesirable Discrepancies with Unlikely Changeability

When an undesirable discrepancy with unlikely changeability is attributed to another person, modulatory and motivational changes inhibit the autonomic nervous system and provoke a terminative response, encapsulated by the latent construct "Disgust." If the discrepancy is attributed to oneself, these changes inhibit the autonomic nervous system and lead to an isolative response, captured by the latent construct "Shame." For discrepancies attributed to the interaction, the same changes inhibit the autonomic nervous system and result in a conservative response, represented by the latent construct "Sadness."

Table 1
Input and Output Factors of the Appraisal Process

Valence	Input Factors				Output Factors			
	Accountability	Changeability	Sustainability	Modulation	Motivation	Latent Construct		
Undesirable	Other	Likely		Excitation	Retributive	Anger		
Undesirable	Self	Likely		Excitation	Penitent	Guilt		
Undesirable	Interaction	Likely		Excitation	Prospective	Hope		
Undesirable	Other	Unlikely		Inhibition	Terminative	Disgust		
Undesirable	Self	Unlikely		Inhibition	Isolative	Shame		
Undesirable	Interaction	Unlikely		Inhibition	Conservative	Sadness		
Undesirable	Other	Uncertain		Excitation	Preparative	Fear		
Undesirable	Self	Uncertain		Excitation	Preparative	Fear		
Undesirable	Interaction	Uncertain		Excitation	Preparative	Fear		
Desirable	Other		Uncertain	Excitation	Preparative	Fear		
Desirable	Self		Uncertain	Excitation	Preparative	Fear		
Desirable	Interaction		Uncertain	Excitation	Preparative	Fear		
Desirable	Other		Likely	Excitation	Affiliative	Love		
Desirable	Self		Likely	Excitation	Exhibitive	Pride		
Desirable	Interaction		Likely	Excitation	Maintaining	Joy		
Desirable	Other		Unlikely	Inhibition	Reflective	Bittersweetness		
Desirable	Self		Unlikely	Inhibition	Reflective	Bittersweetness		
Desirable	Interaction		Unlikely	Inhibition	Reflective	Bittersweetness		

Discrepancies with Uncertain Outcomes

When encountering discrepancies with uncertain outcomes, whether characterized by undesirable changeability or desirable sustainability, the response pattern remains consistent across various attributions of accountability. In each scenario—whether the discrepancy is attributed to another person, oneself, or the interaction—modulatory and motivational changes trigger the autonomic nervous system and induce a preparative stance, encapsulated by the latent construct “Fear.” Therefore, regardless of the nature of the discrepancy or its attribution, the preparative response characterized by “Fear” remains uniformly consistent.

Desirable Discrepancies with Likely Sustainability

When a desirable discrepancy with likely sustainability is attributed to another person, modulatory and motivational changes activate the autonomic nervous system and prompt an affiliative response, encapsulated by the latent construct “Love.” If the discrepancy is attributed to oneself, these changes activate the autonomic nervous system and lead to an exhibiting response, represented by the latent construct “Pride.” For discrepancies attributed to the interaction, the same changes activate the autonomic nervous system and result in a maintaining response, captured by the latent construct “Joy.”

Desirable Discrepancies with Unlikely Sustainability

When a desirable discrepancy with unlikely sustainability is attributed to another person, oneself, or the interaction, modulatory and motivational changes inhibit the autonomic nervous system and prompt a reflective response. This integrated response is consistently encapsulated by the latent construct “Bittersweetness.”

Stage 7: Action Plan

The Action Plan stage involves developing and implementing a strategy to address the identified discrepancy. This strategy is guided by the psychological component of the autoregulatory response, which provides direction, and supported by the physiological component of the autoregulatory response, which provides physical adaptation. The action plan can include change-oriented responses to reduce the discrepancy, mitigation-oriented responses to lessen its impact, or sustainment-oriented responses to maintain beneficial discrepancies. Successful implementation of the action plan is crucial for managing the discrepancy effectively. Therefore, our proposition is that following the autoregulatory response, individuals develop and implement strategies to address identified discrepancies, guided by the motivational changes and supported by the modulatory changes, using change-oriented, mitigation-oriented, or sustainment-oriented actions (*Proposition 7*). Research on interpersonal regulation supports this proposition (Folkman et al., 1986; Fredrickson, 2001; Gross, 2015).

Stage 8: Feedback

The Feedback stage captures the outcomes of the action plan, providing insights into its effectiveness in addressing the discrepancy. By observing the effects on person-environment interactions and evaluating changes in the perceived interaction, persons can determine whether the discrepancy has been managed as expected. This feedback informs the management of current and future interactions, creating a dynamic and iterative process aimed at reconciling the Is-State with the Ought-State. Therefore, our proposition is that following the enactment of the action plan, individuals evaluate changes in person-environment interactions to determine if the discrepancies have been managed as expected (*Proposition 8*). Research on feedback mechanisms supports this proposition (Barsade, 2002; Cialdini & Goldstein, 2004; Van Kleef et al., 2004).

The feedback can correlate with the experience of positive or negative affect, depending on whether the discrepancy has been managed as expected. Successful management of the discrepancy may result in positive affect, such as satisfaction or relief. Conversely, if the discrepancy persists or worsens, negative affect, such as frustration or disappointment, may occur. This affective response further influences the management of current and future interactions. Therefore, our proposition is that during the evaluation of the action plan's effectiveness, individuals experience positive or negative affect based on their interpretation of whether the discrepancy has been managed as expected. Successful management leads to positive affect, while persistent or worsening discrepancies result in negative affect (*Proposition 9*). Research on feedback processes supports this proposition (Fischer et al., 2021; Höpfner & Keith, 2021; Taylor, 1991).

Contextual Factors

It is essential to recognize that each stage is also influenced by various contextual factors, including, but not limited to, between-interaction factors such as self-regulation and knowledge (Gross, 2014; Baumeister & Vohs, 2004), between-person factors such as genetics (Lazarus, 1991), epigenetics, moral frameworks, personal experiences, socialization/culture, personality traits, and sociodemographic factors, as well as between-environment factors such as environmental demands (Bakker & Demerouti, 2007; Morgeson & Humphrey, 2006), resources, constraints, and other interactions the person is involved in. These contextual factors not only directly impact each stage (e.g., determine their expression) but also act as moderators between stages (e.g., determine whether one stage follows after another). Therefore, our proposition is that each stage and its corresponding propositions are influenced by contextual factors—between-interaction, between-person, and between-environment—which can directly impact each stage and act as moderators between stages (*Proposition 10*). Research in intrapersonal regulation (Gross, 2015; Ochsner & Gross, 2005; Vohs & Heatherton, 2000), developmental and personality psychology (Deary et al., 2009; Hughes et al., 2020; Webster & Ward, 2011), and industrial-organizational psychology (Fisher et al., 2014; Grandey & Diamond, 2010; Oldham & Fried, 2016) support this proposition.

Core Proposition

In summary, the Interaction Discrepancy Model (IDM) posits that the dynamic and iterative process of person-environment interactions is defined by persons continuously striving to reconcile discrepancies between their current interactions (Is-State) and their expected interactions (Ought-State). This reconciliation occurs through a dynamic, iterative process involving the perception, appraisal, and response to these discrepancies.

Discussion**Critique of the Model*****Strengths of the Interaction Discrepancy Model***

The Interaction Discrepancy Model (IDM) presents several strengths, significantly advancing current theoretical models that explain person-environment interactions. Firstly, it adeptly predicts the dynamic, iterative, and feedback-driven nature of these interactions. By integrating the inherent characteristics of these interactions, the IDM aligns more closely with empirical evidence and lay observations.

The structured eight-stage approach of the IDM provides a detailed explanation of the latent mechanisms underlying person-environment interactions. This structure not only enhances our understanding but also allows for straightforward tests of falsifiability, strengthening its position as a robust explanatory framework.

Additionally, the IDM elucidates the complex interplay of cognitive, affective, and behavioral processes, explaining the varied cognitive, affective, and behavioral responses and adaptations observed in empirical research and daily life. This detailed approach offers a structured understanding of how these processes interact, capturing the wide variety of person-environment interactions.

Moreover, the IDM highlights the importance of non-conscious processes alongside conscious ones. This comprehensive view aligns with recent developments in neuroscience and cognitive psychology (e.g., Gazzaley & Nobre, 2012; Kozhevnikov et al., 2007; Nie et al., 2017), reinforcing both the academic and practical applicability of the model.

Finally, one of the IDM's key strengths is its applicability across a wide range of contexts. It recognizes that person-environment interactions extend beyond interpersonal dynamics to include interactions with animals, inanimate objects, and abstract concepts. This broad applicability enhances the model's relevance and utility in diverse fields.

Limitations of the Interaction Discrepancy Model

Currently, the model may not apply to interactions among entities larger than individuals, such as groups or societies. Although the propositions in our model could potentially extend to these collective levels, a collective is different than the sum of its individual members (R. F. Baumeister et al., 2016). Consequently, factors like group dynamics may influence interactions at these levels, which are not captured by the current version of the IDM.

Furthermore, the IDM may encounter the same issue as other component process models (Scherer, 2009; Lazarus, 1991): the stages outlined in the IDM might occur in a different order. While prior research supports the assumption that these stages occur in the specified sequence (Scherer, 2000, 2009), the order may vary within and between person-environment interactions, between persons, and between different environments.

Applications

The Interaction Discrepancy Model (IDM) has extensive applications due to its broad applicability to various person-environment interactions. Notably, the model can significantly contribute to research on aggression, delinquency, and crime. Traditional theories in these areas often attribute antisocial behaviors to stable constructs such as personality traits and sociodemographic factors (e.g., socioeconomic status, neighborhood environment, family violence, substance abuse; (Meyer et al., 2024; Ullman et al., 2024; Weinberger, 2023). While we acknowledge the importance of these factors, our model emphasizes the substantial role of perceptions in triggering antisocial behaviors. Unlike existing models, the IDM suggests that such behaviors originate from a perceived discrepancy between an individual's current interactions and their expected interactions. Consequently, aggression, delinquency, and crime are seen as responses to address these perceived discrepancies, aligning with research that indicates antisocial behaviors often have a moral justification (Burn & Brown, 2006; Harvey et al., 2017; Loza, 2007). Thus, it may be more effective to focus on modifying the perceptions and cognitive frameworks of individuals exhibiting antisocial behaviors rather than solely addressing their environmental contexts.

The IDM can also be applied to the study of conflict management, encompassing intra-group conflicts (e.g., group cohesion within organizational teams), inter-group conflicts (e.g., deadlock between political parties), intra-national conflicts (e.g., civil wars), and international conflicts (e.g., bilateral or proxy wars). Traditional models in this field often suggest that conflicts arise from competition over resources or deep-seated animosities (Burelli, 2021; Ross, 1986; Wendt, 1987). In contrast, our model proposes that hostilities primarily stem from perceived (moral) discrepancies, where at least one party holds another party responsible for an undesirable discrepancy. The aggrieved party attempts to rectify this discrepancy through belligerent actions. For instance, anger may drive retributive actions (e.g., suppression) when the discrepancy is perceived as changeable, such as in cases of separatism (Hagendoorn et al., 2008; Sharan, 2020; van Leeuwen & Mashuri, 2013). Conversely, disgust may drive (ex-)terminative actions (e.g., executions, genocides) when the discrepancy is perceived as unchangeable, such as differences in faith, nationality, or race (Bezo & Maggi, 2015; Seidman, 2013; Trevor-Roper, 2000).

Moreover, the IDM is applicable to personality psychology. The model suggests that individuals with certain personalities perceive person-environment interactions differently from those without such personalities. For example, individuals high in the dark tetrad traits (narcissism, Machiavellianism, psychopathy, and sadism) may perceive others' actions as violating their moral frameworks while viewing their behaviors as morally justified.

This perception divergence explains the antisocial behaviors commonly observed in these individuals (Book et al., 2015; Furnham et al., 2013; Harrison et al., 2018).

The IDM also has significant applications in psychopathology and psychotherapy. It implies that addressing only the symptomatology of psychopathologies, particularly mood disorders (American Psychiatric Association, 2022), is insufficient for reducing suffering. Instead, it is crucial to focus on and adapt patients' perceptions and cognitive frameworks regarding their interactions with their environments. This approach also aligns with the principles of cognitive-behavioral therapies (A. C. Butler et al., 2006; Hofmann et al., 2012; Kazantzis et al., 2018).

Furthermore, the IDM can be effectively applied to the research areas of Industrial-Organizational psychology and organizational behavior. Our model provides compelling rationales for explaining why employees exhibit behaviors that align with organizational goals, such as organizational citizenship behavior (LePine et al., 2002; Ocampo et al., 2018; Podsakoff et al., 2000), which may result from a perceived sustainable discrepancy attributed to the organization and mediated by a autoregulatory response akin to the latent construct of love. Conversely, it also explains behaviors that conflict with organizational goals, such as counterproductive workplace behavior (Carpenter et al., 2020; Marcus et al., 2013; Wiernik & Ones, 2018), which may arise from a perceived changeable and undesirable discrepancy attributed to the organization and mediated by a autoregulatory response akin to the latent construct of anger. Additionally, the model elucidates why routine activities at work are sometimes performed with minimal cognitive and emotional responses and adaptations (see Eagle & Pentland, 2009), which may be due to a perceived congruence between current and expected interactions.

Future Research Directions

Our model presents several avenues for future research. Firstly, it is imperative to test the propositions outlined in this manuscript for internal validity. To potentially falsify the IDM (Popper, 1959), a multi-stage study could be conducted. Participants would be randomly assigned to different conditions based on the discrepancy between their current interaction and an expected interaction (desirable, undesirable, likely changeable, unlikely to change, uncertain outcomes, and a control group with no discrepancy). Following this assignment, each stage of the IDM could be tested consecutively. Participants could be exposed to various discrepancy conditions, and their perceptive and sensory responses could be monitored to test the proposition of Stage 1. It is crucial that the conditions are tailored to each participant, as reactions are subjectively relevant. The proposition of Stage 2 could be tested by evaluating the coherence and accuracy of the cognitive frameworks participants construct of the interactions. Stage 3 could be tested by asking participants about their perceived discrepancy condition and comparing it to their assigned condition. Stage 4 could be tested by observing whether participants in the discrepancy condition exhibit increased attentional focus on the discrepancy, while the control group continues routine behavior. Stage 5 could be tested by comparing the initially assumed appraisal components (valence, responsibility, changeability/sustainability) based on the initial discrepancy condition with

the appraisal components the participant actually reported. Stage 6 could be tested by matching the appraisal outcomes with observed modulatory and motivational changes, measured through biomarkers and self-report surveys, and verifying whether the expected autoregulatory responses occur. Stage 7 could be tested by observing whether change-oriented emotions lead to change-oriented behaviors, mitigation-oriented emotions lead to mitigation-oriented behaviors, and sustainment-oriented emotions lead to sustainment-oriented behaviors. Stage 8 could be tested by manipulating the interaction with different types of feedback induction (overt, subliminal, control group with no feedback) and varying the success of the action plan (successful, unsuccessful, uncertain), then observing affective changes via self-report surveys and changes in Stages 1, 2, and 3 in the new interaction cycle. Finally, the influence of contextual factors could be examined by varying the degree to which participants are permitted to use self-regulation strategies and observing the impact on the mechanisms outlined in the IDM. Additionally, measuring participants' predispositions and analyzing how these dispositions affect the IDM mechanisms would provide further insights. Exposing persons to different environments with varying levels of demands, resources, and constraints, and then assessing the impact on the IDM mechanisms, would also contribute to a comprehensive understanding of these contextual factors. It is advisable to initially test these propositions in an isolated and sequential manner. Any inconsistencies identified during these tests should be addressed, the model adjusted accordingly, and the entire 8-stage sequence subsequently tested. This approach would enable researchers to verify the internal validity of the Interaction Discrepancy Model (IDM) and its currently specified sequence of stages.

Finally, it is crucial to test the IDM's propositions within collectives rather than individuals (E. A. Butler & Gross, 2009; Smith & Mackie, 2015; Thonhauser, 2022). This could involve examining how groups or societies interact with their environments and assessing whether these interactions significantly differ from those of individuals. Analysing the role of group dynamics in these interactions may provide particularly insightful findings.

Conclusion

Person-environment interactions have been the cornerstone of human experience, shaping our lives in profound ways. Despite their undeniable importance, the dynamic nature of these interactions has remained largely elusive. We aspire to change that. Through our proposed model, we aim to elucidate a rationale of how these interactions evolve, why they result in various cognitive, emotional, and behavioral responses, and how these processes influence each other. With every step forward, we move closer to deeper understanding of person-environment interactions.

Transparency and Openness

To prepare this manuscript, the authors generated a complete first draft with the help of ChatGPT, based on their provided conceptual model (IDM), which was used to train, prime,

and configure the GPT. The authors then extensively revised and built upon this initial draft to create a new manuscript, resulting in the present work.

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Chapter 3:
Managing Workplace Anger Constructively

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The Daily Relations Between Workplace Anger, Coping Strategies, Work Outcomes, and Workplace Affiliation

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This study examines the daily relations among workplace anger, coping strategies, work outcomes, and employee dispositions using a conceptual framework based on affective events theory and cognitive perspectives on emotions. A sample of 214 full-time employees took part in a two-week study, contributing 1,611 daily observations through an experience sampling approach. Contrary to the assumption that workplace anger always detrimentally relates to work outcomes, the results showed a nonsignificant relation between workplace anger and workplace resource depletion, as well as a positive link between workplace anger and goal achievement. These relations were dependent on the coping strategies used by employees in response to anger-inducing situations, as well as their attitudes toward workplace affiliation. These findings suggest the need to expand affective events theory to include coping strategies as a mediator between affective responses and work outcomes. They also highlight the importance of integrating employee-level factors into organizational research models.

Keywords: Workplace Anger, Ruminative and Confrontative Coping, Resource Depletion, Goal Attainment, Workplace Affiliation Disposition

Facilitators of workplace resource depletion, defined as a psychosomatic state characterized by diminished working memory and self-regulation abilities at the workplace (R. F. Baumeister et al., 1998), as well as threats to workplace goal attainment, defined as the daily progress towards or achievement of employees' work-related goals (Sheldon & Elliot, 1999), 1999), pose risks to the sustainable functioning of organizations and the societal system (Mohr, 1973; Sekaran & Snodgrass, 1989). Therefore, it is essential for organizations to address factors that could either contribute to or impede these work outcomes (Godkin & Allcorn, 2008; Morrison & Milliken, 2000). One such factor could be workplace anger. Workplace anger refers to an arousing negative emotion experienced when someone has wronged either oneself or those close to oneself (Kant et al., 2013; Lazarus, 1991; Schwarzmüller et al., 2016). It has often been perceived as the opposite of rationality in organizations (Ashkanasy & Dorris, 2017; see also Pham, 2007) and is adversely associated with various work outcomes (Booth et al., 2017; Callister et al., 2017; Gibson et al., 2009). However, it is worth questioning whether the assumption that workplace anger and work outcomes are always adversely related.

Historically, workplace anger has been adversely associated with work outcomes (see Jäger et al., 2017; Wong et al., 2017; but see also Schmitt et al., 2019), a concept that is supported by organizational behavior theories. Affective events theory (Weiss & Cropanzano, 1996), for instance, suggests that negative emotions, such as anger, can facilitate disadvantageous and impede advantageous work outcomes. This theoretical perspective is further supported by empirical research, which consistently shows a adverse relation between negative emotions and work outcomes (Wong et al., 2017). Nevertheless, it is important to consider potential limitations in theoretical frameworks and empirical studies, which may warrant further exploration.

In exploring the limitations of current conceptual models in understanding the relation between workplace anger and work outcomes, it is evident that a significant gap exists in the lack of consideration of anger's coping strategies, such as ruminative (excessive internal pondering about an anger-inducing situation; Li et al., 2019) and confrontative coping (openly and antagonistically addressing an anger-inducing situation; Folkman et al., 1986). While affective events theory and empirical research have laid valuable foundations for the organizational sciences, they seem to often miss to address the role of these and other coping strategies in managing emotions in the workplace (e.g., Carlson et al., 2011; Glasø et al., 2010; Wegge et al., 2006). This oversight becomes particularly striking when compared to alternative frameworks, such as cognitivist accounts of emotion (Lazarus, 1991; Frijda, 1987; Moors et al., 2013), which highlight the importance of coping mechanisms in daily working life. It would thus seem reasonable to assume that how individuals cope with anger at work could intersect the relation between their anger and their work outcomes. However, further research is needed to validate this assumption and determine if coping strategies indeed play a substantial role in the connection between workplace anger and work outcomes. Furthermore, while existing research has focused on the influence of organization- and supervisor-level factors on the relation between emotions and work outcomes, there is a noticeable gap in the empirical literature when it comes to examining employee-level constructs, such as dispositions (cf. Glasø et al., 2010; Wegge et al., 2006), within the framework of affective events theory (Weiss & Cropanzano, 1996). This lack of research is significant because alternative theoretical models rooted in cognitivist accounts of emotions also highlight the importance of individual differences in understanding emotions in the workplace. As such, a key question arises regarding whether the relation between workplace anger and work outcomes is consistent for all employees or indeed varies based on their unique dispositions. For instance, an individual's workplace affiliation disposition, which pertains to their inherent desire to be part of a team or group at work (Yagil & Medler-Liraz, 2017), could play a critical role in how they cope with workplace anger and, subsequently, relate to their work outcomes. In light of this, it is crucial to delve deeper into such employee-level factors within appraisal theory to gain a comprehensive understanding of how it impacts the relations between workplace anger and work outcomes.

As such, our primary objective in this manuscript is to examine the intricate relations between workplace anger and work outcomes, taking into account the potential role of coping strategies and individual differences. To achieve this objective, we have devised a conceptual model based on affective events theory (Weiss & Cropanzano, 1996) and enhancements

from cognitivist accounts of emotion (Lazarus, 1991; Frijda, 1987; Moors et al., 2013). Our conceptual model assumes that workplace anger can be disadvantageously associated with work outcomes, but also considers the possibility that this relation may be advantageous under certain circumstances. These circumstances include the coping strategies employed to address workplace anger and the individual differences that may exist among employees. To test our conceptual model, we will gather data from a sample of full-time employees across various industries over a two-week period. Data will be collected each workday using a time-lagged experience-sampling methodology.

Through our current work, we aim to make a significant contribution to the existing literature in three key areas. Firstly, we seek to investigate the assumption of affective events theory (Weiss & Cropanzano, 1996) and cognitivist accounts of emotion (Lazarus, 1991; Frijda, 1987; Moors et al., 2013) regarding the relation between workplace anger and work outcomes, such as work-related resource depletion. While both theories suggest a negative link between workplace anger and resource depletion, empirical evidence supporting this claim is still lacking. By delving into affective events theory and cognitivist accounts of emotions, we aim to clarify the true nature of this relation in work environments. Therefore, our objective is to test the validity of these theories in explaining the connections between workplace anger and resource depletion.

Moreover, we aim to make a theoretical contribution by examining the differing assumptions about the relation between workplace anger and goal attainment in affective events theory (Weiss & Cropanzano, 1996) and cognitivist accounts of emotions (Lazarus, 1991; Frijda, 1987; Moors et al., 2013). We suggest that the discrepancy in these assumptions may stem from the lack of emphasis on coping strategies in affective events theory compared to cognitivist accounts of emotions, which prioritize coping strategies. Our hypothesis is that coping strategies associated with workplace anger can significantly influence the relation between workplace anger and goal attainment. By incorporating coping strategies such as ruminative coping (excessive internal pondering about an anger-inducing situation; Li et al., 2019) and confrontative coping (openly and antagonistically addressing an anger-inducing situation; Folkman et al., 1986) into our conceptual model, we aim to explore how these strategies may impact the relation between workplace anger and goal attainment.

Finally, our study aims to examine the impact of individual differences on the relation between workplace anger and work outcomes. Previous research has overlooked employee-level factors within the context of affective events theory. To address this gap, we include the core human disposition of workplace affiliation in our conceptual model (Ryan & Vansteenkiste, 2023). This disposition is in line with the interaction-oriented theoretical frameworks of affective events theory and cognitivist accounts, suggesting that it may influence the interconnectedness of workplace anger, coping strategies, and work outcomes. By investigating employee-level factors through the lens of affective events theory, we strive to gain a better understanding of the importance of individual differences within this theoretical framework.

Theoretical Background and Hypotheses Development

Affective Events Theory

Affective events theory is an affect-centered theory from the organizational sciences that focuses on the relation between emotions arising from workplace situations and the work outcomes that are expected to result from these emotions (Weiss & Cropanzano, 1996). According to the theory, emotions and work outcomes typically have similar valences. Positive emotions are likely to lead to positive work outcomes, while negative emotions are likely to lead to negative work outcomes. The theory also suggests that employee-level factors, such as dispositions, are important in understanding this relation. However, the specific impact of dispositional factors on the relation between emotions and work outcomes has not been extensively researched and remains a theoretical assumption at this time. It is worth noting that affective events theory does not expressively address the role of coping mechanisms within its theoretical framework.

Cognitivist Accounts of Emotions and Intertheoretical Discourse

Cognitivist accounts of emotions challenge the notion of affective events theory that emotions and work outcomes always align in terms of valence. Cognitivist accounts propose that an employee's coping strategies mediate the valence of an emotion onto the valence of a workplace outcome (Frijda, 1987; Lazarus, 1991; Moors et al., 2013). Two main coping strategies typically available to employees in such situations are emotion-focused coping and problem-focused coping (Lazarus, 1991).

Emotion-focused coping involves managing one's emotions through internal thought regulation processes, while problem-focused coping entails actively addressing the situation itself (Lazarus, 1991). Cognitivist accounts of emotions suggest that regardless of the initial emotion triggered by the situation, emotion-focused coping tends to have a negative mediating effect on the relation between emotions and work outcomes (Folkman et al., 1986; Lazarus, 1991; Roseman, 2013). In contrast, problem-focused coping is believed to have a positive mediating effect on this relation. Empirical evidence seems to support these assumptions regarding the mediating role of coping strategies in the relation between emotions and work outcomes (Baker & Berenbaum, 2007; Boyd et al., 2009; Carver, 2006).

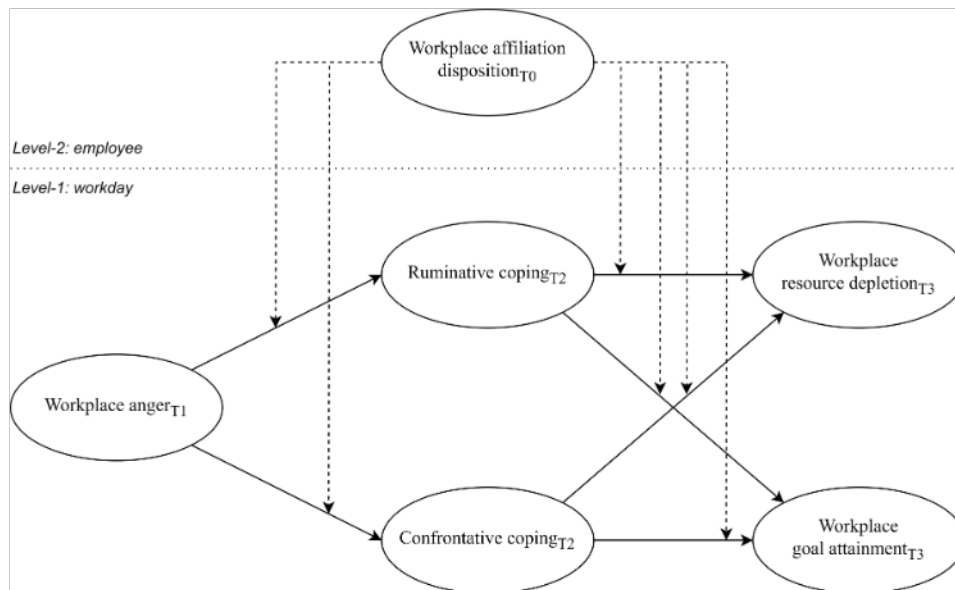
Cognitivist accounts of emotion align with affective events theory in recognizing the significance of individual differences (Lazarus, 1991; Frijda, 1987; Moors et al., 2013), such as dispositions, in the link between emotions and work outcomes. However, there is a difference in perspective between the two theories. While affective events theory suggests that dispositions directly impact the relation between emotions and work outcomes (Weiss & Cropanzano, 1996), cognitivist accounts propose that dispositions impact this relation indirectly (Lazarus, 1991; Frijda, 1987; Moors et al., 2013).

According to cognitivist accounts of emotion, dispositions affect the mediation path between emotions and coping strategies of employees, as well as the mediation path between coping strategies and work outcomes (Lazarus, 1991; Frijda, 1987; Moors et al., 2013).

In contrast, affective events theory suggests that individual differences impact the direct relation between emotions and work outcomes (Weiss & Cropanzano, 1996). This means that in cognitivist accounts, the connections between emotions and coping strategies, as well as coping strategies and work outcomes, are moderated by dispositions. On the other hand, affective events theory maintains that only the direct link between emotions and work outcomes is moderated by dispositions (Weiss & Cropanzano, 1996).

In summary, affective events theory and cognitivist accounts of emotion offer different theoretical assumptions when it comes to the relation between emotions and work outcomes. Affective events theory suggests a same-valenced and direct link between emotions and work outcomes, with employee dispositions playing a significant role in shaping this direct relation (Weiss & Cropanzano, 1996). On the other hand, cognitivist accounts of emotion propose that coping strategies play a mediator role in concluding the relation between emotions and work outcomes, with employee dispositions presumably also impacting this relation (Lazarus, 1991; Frijda, 1987; Moors et al., 2013). We will now delve deeper into these discrepancies and their possible resolutions, following the procedural structure of our conceptual model depicted in Figure 1.

Figure 1
Conceptual Model



A Case for Workplace Anger

In light of the conflicting perspectives presented by different theoretical frameworks, it is crucial to establish which framework better aligns with evidence regarding their assumptions. One emotion that holds significance in workplace settings and may provide insight in this regard is anger. Anger (an arousing negative emotion that is experienced when someone has wronged either oneself or those close to oneself; Lazarus, 1991) seems to be a particularly fitting emotion for our investigation because it is commonly viewed as a negative emotion (Lazarus, 1991; Weiss & Cropanzano, 1996), suggesting, according to affective events theory (Weiss & Cropanzano, 1996), that it should have a detrimental impact on work outcomes. However, from a cognitivist perspective (Lazarus, 1991; Frijda, 1987; Moors et al., 2013), anger is also seen as an adaptive emotion due to its coping strategies, implying a potentially positive relation with work outcomes. Therefore, in this manuscript, our focus will be on exploring the relation between anger in the workplace (referred to as workplace anger) and work outcomes.

The Cases for Workplace Resource Depletion and Workplace Goal Attainment

Building on the argument above, it is important to identify specific work outcomes that we can use to test our two theoretical frameworks. Workplace resource depletion, a psychosomatic state characterized by diminished working memory and self-regulation abilities at the workplace (R. F. Baumeister et al., 1998), and workplace goal attainment, the progress towards or achievement of work-related goals (Sheldon & Elliot, 1999), seem to stand out as suitable work outcomes for our analysis. Not only are they crucially important for organizations (Kiresuk et al., 2014; Mohr, 1973; Sekaran & Snodgrass, 1989), but they also highlight a significant discrepancy between our two theoretical perspectives in terms of their relation to workplace anger.

According to affective events theory (Weiss & Cropanzano, 1996), workplace resource depletion, as a negative work outcome, should be positively related to anger, which is considered a negative emotion. Cognitivist perspectives of emotion seem to support this view, as all emotions and coping strategies must, by their nature, be related to higher resource depletion (Lazarus, 1991; Vohs & Baumeister, 2011; Vohs & Heatherton, 2000).

However, this intertheoretical alignment disappears when we consider workplace goal attainment. This positive work outcome should be inversely related to anger according to affective events theory (R. F. Baumeister et al., 1998; Weiss & Cropanzano, 1996). In contrast, cognitivist perspectives on emotion (Lazarus, 1991; Frijda, 1987; Moors et al., 2013) suggest that the relation between workplace anger and goal attainment could be either negative or positive, depending on the employee's coping strategies.

Given these intertheoretical alignments and discrepancies, our study will focus on exploring the connections between workplace anger and workplace resource depletion and goal attainment, due to its theoretical and practical relevance. With this focus in mind, we will now delve into the reasons why such intertheoretical discrepancies might exist and propose our hypotheses accordingly.

The Relations Between Workplace Anger and Coping Strategies

We have established that the anticipated results may differ when viewed through competing theoretical frameworks. Specifically, we argue that the variation in these results can be attributed to the differing emphasis placed on coping strategies in affective events theory (Weiss & Cropanzano, 1996) compared to cognitivist theories of emotions (Frijda, 1987; Lazarus, 1991; Moors et al., 2013). While cognitivist theories highlight coping strategies as crucial elements, affective events theory tends to downplay their importance (Weiss & Cropanzano, 1996). Therefore, our assumption suggests that coping strategies associated with workplace anger may significantly impact the direction of the relation between workplace anger and workplace resource depletion, as well as goal attainment. In essence, coping strategies could determine whether this connection is positive or negative. To further explore this hypothesis, we will examine the potential role of coping strategies in shaping the link between workplace anger and workplace resource depletion, as well as goal attainment.

According to cognitivist theories, employees can employ either emotion-focused coping or problem-focused coping strategies to handle situations that trigger emotions in the workplace (Lazarus, 1991). Emotion-focused coping involves internally regulating emotions, while problem-focused coping involves taking action to address the situation that caused the emotion. Emotion-focused coping strategies related to anger often involve excessive internal rumination about the anger-inducing situation, known as ruminative coping (Folkman et al., 1986; Folkman & Lazarus, 1985; Lazarus, 1991). On the other hand, problem-focused coping strategies associated with anger typically involve directly confronting the anger-inducing situation, referred to as confrontative coping. Based on this, we propose the following two hypotheses to be tested:

Hypothesis 1: *There is a positive relation between workplace anger and (a) ruminative coping as well as (b) confrontative coping.*

The Relations Between Coping Strategies and Work Outcomes

The relation between coping strategies, specifically ruminative and confrontative coping, and workplace resource depletion is well-established, as there is consensus across various theories that any type of regulation, whether directed towards others or oneself, depletes internal resources (R. F. Baumeister et al., 1998; Lazarus, 1991; Weiss & Cropanzano, 1996). Therefore, we hypothesize that both primary anger coping strategies, ruminative and confrontative coping, are positively related with workplace resource depletion. Though initially grounded in theory, empirical evidence supports the idea that these relations are as expected (see Keltikangas-Järvinen et al., 1996; Vohs & Heatherton, 2000). Therefore, we suggest testing the following hypotheses:

Hypothesis 2: *There is a (a) positive relation between ruminative coping and workplace resource depletion as well as a (b) positive relation between confrontative coping and workplace resource depletion.*

However, as mentioned previously, this theoretical alignment breaks down when examining the relation between coping strategies and workplace goal achievement. Specifically, cognitivist views suggest that, in general, using emotion-focused coping may impede goal achievement, while utilizing a problem-focused coping strategy can be advantageous to achieve goals (see Folkman et al., 1986; Lazarus, 1991; Roseman, 2013). This notion is supported by empirical evidence (Baker & Berenbaum, 2007; Boyd et al., 2009; Carver, 2006).

In our assertion, we propose that the relation between coping strategies and workplace goal attainment should follow a similar pattern. Therefore, it is crucial to explore the coping strategies associated with anger in the workplace. With this understanding, it is reasonable to hypothesize that ruminative coping may negatively relate to workplace goal attainment, while confrontative coping may have a positive relation.

The dichotomy between emotion-focused coping and confrontative coping lies in their abilities to change the anger-inducing situation (Lazarus, 1991; Lazarus & Folkman, 1984). Emotion-focused coping may change how an employee subjectively interprets a situation, but it does not objectively change the situation itself. In contrast, confrontative coping has the potential to directly change the anger-inducing situation. Unresolved anger-inducing situations can lead to employees expending cognitive resources on managing their emotions rather than focusing on workplace goals (see also Baumeister & Vohs, 2004; Vohs & Heatherton, 2000). Problem-focused coping that addresses or resolves the anger-inducing situation can free up cognitive resources for employees to focus on their goals.

Empirical evidence suggests that ruminative self-focus, which could be regarded as a characteristic of ruminative coping (see Frijda, 1987), is negatively related to goal attainment (Moberly & Watkins, 2009), while approach behavior, a component of confrontative coping (Lazarus, 1991), is positively associated with goal attainment (Brodscholl et al., 2007). As such, along with our theoretical rationale, we propose the following hypotheses:

Hypothesis 3: *There is a (a) negative relation between ruminative coping and workplace goal attainment as well as a (b) positive relation between confrontative coping and workplace goal attainment.*

The Indirect Relations Between Workplace Anger and Work Outcomes

So far, we have examined the assumed direct relations between our theoretical constructs. However, it is important to note that both affective events theory and cognitive accounts of emotions suggest a procedural nature of these relations and constructs. As our main focus in this paper is to determine if the relation between workplace anger and work outcomes is consistently positive when taking coping strategies into account, it is important

to investigate this in a more detailed manner. Therefore, we plan to explore the indirect effects between workplace anger and work outcomes through the use of coping strategies. Building upon the hypotheses we have developed regarding their direct effects, we propose four mediation hypotheses to be tested in our research:

Hypothesis 4: *There is a (a) positive relation between workplace anger and workplace resource depletion via ruminative coping as well as a (b) positive relation between workplace anger and workplace resource depletion via confrontative coping.*

Hypothesis 5: *There is a (a) negative relation between workplace anger and workplace goal attainment via ruminative coping as well as a (b) positive relation between workplace anger and workplace goal attainment via confrontative coping.*

A Case for Workplace Affiliation Dispositions

As we compare the core assumptions of different theoretical frameworks and their alignment with empirical evidence, it is important to also consider the validity of their auxiliary assumptions. One key aspect to consider is the moderating impact of employee dispositions on the assumed relations. This is especially crucial as it illuminates another significant theoretical discrepancy between affective events theory and cognitivist accounts of emotion (Lazarus, 1991; Frijda, 1987; Moors et al., 2013). Essentially, in cognitivist accounts, the relations between emotions and coping strategies, and between coping strategies and work outcomes, are moderated by employee dispositions. In contrast, affective events theory argues that only the direct link between emotions and work outcomes is moderated by employee dispositions (Weiss & Cropanzano, 1996).

To assert the incremental validity of the two theoretical frameworks, we may want to consider examining a distinct disposition to test our theoretical assumptions with. Workplace affiliation (an inherent desire to be part of a team or group at work; Yagil & Medler-Liraz, 2017) seems to be a promising choice for this analysis as it seems to be regarded as a disposition in both frameworks (Lazarus, 1991; Weiss & Cropanzano, 1996), has a strong association with anger due to anger's contrary affiliative nature (Lazarus, 1991; Weiss & Cropanzano, 1996; see also Oatley, 2009), and is a distinct and measurable (Yagil & Medler-Liraz, 2017) construct. Thus, our research will concentrate on investigating the role of workplace affiliation in moderating the connections between workplace anger, coping strategies, and workplace resource depletion as well as goal attainment. This leads us to formulate and subsequently investigate the following research question:

Research Question: *How does an employee's workplace affiliation disposition impact the relations between workplace anger, coping strategies, and workplace resource depletion as well as goal attainment?*

Methodological Congruence

In order to address the challenges of methodological incongruence in the organizational sciences (Thurston et al., 2008), our research aims to align our methodology closely with the nature of our theoretical constructs to minimize any potential misfit that may arise. One key consideration in this alignment is the temporal volatility of our constructs. Constructs such as workplace anger, workplace resource depletion and goal attainment, and coping strategies like ruminative and confrontative coping are likely to fluctuate daily (Lazarus, 1991; Weiss & Cropanzano, 1996), while a workplace affiliation disposition tends to change less rapidly. Furthermore, considering our theoretical frameworks that suggest a procedural relation between workplace anger, coping strategies, and workplace resource depletion as well as goal attainment (Lazarus, 1991; Weiss & Cropanzano, 1996), it is also vital to select a methodological approach that can capture this sequential nature.

We identified a daily time-lagged experience-sampling approach as a suitable option, as it can accommodate the differing volatilities of our constructs and the procedural relations we assume (Gabriel et al., 2019; Ohly et al., 2010; Trull & Ebner-Priemer, 2009). While this approach offers the advantage of increased external validity (Findley et al., 2021), concerns about internal validity and causality may arise. However, given the partly exploratory nature of our research, we consider that using an experience-sampling approach would provide the most significant theoretical and practical insights.

Method

Transparency and Openness

We preregistered our hypotheses, study, and analysis plan on the Open Science Framework, accessible at https://osf.io/3tdwv/?view_only=30658bc72bc743e28775dd6876cce1d5. The data summary and analysis code will also be available in the same directory upon journal publication. Informed consent was acquired from every participant prior to data collection.

Selection and Procedure

The research conducted in this study was ethically approved by the committee at authors' university. Our goal was to obtain a diverse sample of employed adults who worked a minimum of 30 hours per week, with the exclusion of employees under 18 or over 67 years old. By recruiting participants through student networks, we utilized a comparable approach to Burmeister et al. (2020) and Fasbender et al. (2021), thereby gaining a wide variety of participants from different networks. To capture changes in participants' experiences, we utilized an experience sampling format over ten consecutive workdays (Gabriel et al., 2019). As an incentive for participation, participants received gift vouchers. Surveys were sent to participants at three specific times daily: 9:30 a.m. (morning survey; at work), 12:30 p.m. (noon survey; at work), and 3:30 p.m. (evening survey; at work). Data collection occurred between May and December 2022. Our study's attrition rate was consistent with previous

research (Ohly et al., 2010; Xia et al., 2021), with a 9% dropout rate and a 68% compliance rate for daily surveys. We observed no significant effects of gender or age on attrition rates.

Sample Characteristics

A total of 1,611 observations were collected on the employee-day experiences of 214 participants. The average number of observations per employee was 7.53. This sample size exceeds the standard experience sampling standards outlined by Gabriel et al. (2019). Of the participants, 60% were female, with an average age of 34.83 years ($SD = 13.08$) and a weekly work schedule of 39.26 hours ($SD = 4.80$). Their average general work experience was 15.08 years ($SD = 12.95$), and they had been with their organization for an average of 9.23 years ($SD = 9.87$). Of the participants, 26% held leadership positions, while 74% performed office duties. Additionally, 26% performed non-office tasks, and 66% worked in an office environment. Furthermore, 13% worked from home, 11% at customers', and 10% in public locations. Regarding company size, 58% worked in large companies, 16% in medium-sized firms, 15% in small businesses, and 11% in micro-companies. Lastly, 17% worked in banking, finance, and insurance, 16% in production/manufacturing, 10% in public administration, 9% in healthcare, 7% in IT and communications, 6% in craft trades, 6% in education and training, 5% in retail/wholesale trade, 3% in energy and water supply, 2% in catering/hospitality, 2% in transportation, less than 1% in agriculture and forestry, less than 1% in science, and 16% in other industries.

Sample Characteristics

The translation of the measurement scales from English to German was conducted using the back-translation method described by Brislin (1970). Unless otherwise stated, a 5-point Likert scale was utilized, with response options ranging from 1 (indicating strong disagreement) to 5 (indicating strong agreement). Our selection of items was determined by considering factor loading matrices and theoretical congruence while prioritizing the minimization of participant burden by keeping the number of items low (Gabriel et al., 2019). We adapted the scale to the workplace and the study context by adding "Today at work, . . ." to each item.

Workplace Anger (Morning Survey)

To assess workplace anger, we utilized four items from Spielberger et al.'s (1983) scale, whereby participants were asked to indicate their present experience of anger. An example statement was, "Right now, I feel angry." The internal consistency of this scale was high, with a McDonald's Omega (ω ; McDonald, 1999; see also Geldhof et al., 2014) value of .95.

Ruminative Coping (Noon Survey)

Ruminative coping was evaluated using the 3-item scale developed by Li et al. (2019). An example of a sample item was, "Throughout my workday today, I could not stop thinking about an event that made me angry." The scale exhibited a high level of reliability ($\omega = .95$).

Ruminative Coping (Noon Survey)

We evaluated confrontative coping utilizing a scale developed by Folkman et al. (1986). A sample item is, "Today at work, since the beginning of my workday, I stood my ground and fought for what I wanted" ($\omega = .76$).

Workplace Resource Depletion (Evening Survey)

We employed a set of three items derived from Lanaj et al.'s (2014) scale to monitor workplace resource depletion. One of the sample questions included in this set was, "Today at work, since filling out the last questionnaire, my mind has felt unfocused" ($\omega = .87$).

Workplace Goal Attainment (Evening Survey)

To guarantee the precision of measuring workplace goal attainment, we have integrated the two items from Judge et al.'s (2005) goal attainment scale and added one item ("Today at work, since filling out the last questionnaire, I achieved my goals at work"), ensuring a minimum of three items. The scale had an omega value of $\omega = .91$.

Workplace Affiliation Disposition (Baseline Survey)

In the baseline survey, we utilized the 4-item scale developed by Van Yperen et al. (2014) to measure the participant's workplace affiliation disposition. An example item from the scale reads, "I am a person who feels the need to feel like they are part of a team or group at work." ($\omega = .86$).

Controls

Drawing on our theoretical framework, we posit that the experience of negative affect in the morning, such as sadness or anxiety, may impact how employees employ coping strategies later in the day (Lazarus, 1991; Weiss & Cropanzano, 1996). To gauge these morning affects, we utilized a scale deployed by Sonnentag et al. (2008; see also Watson et al., 1988) that assessed negative affect, achieving a solid internal consistency with a McDonald's omega of .92. We determined that our results remained consistent regardless of whether we included or excluded controls, with one exception. The moderation effect of workplace affiliation dispositions on the relation between confrontative coping and goal attainment was found to be borderline non-significant ($E(\text{moderation effect}) = .15$, 95% CI $[-.001, .330]$, $p = .05$). In this connection, we will be reporting the results of our controlled effects moving forward.

Analytical Strategy and Data Diagnostics

In our study, we conducted data preparation using R version 4.2.2 (R Core Team, 2022) and data analysis using Mplus version 8.4 (Muthén & Muthén, 2017). The dataset consisted of multiple observations for each employee (Hayes, 2006), prompting us to utilize 2-level multilevel modeling with random intercepts and slopes (Hamaker & Muthén, 2020). Due to the presence of non-normality, model complexity, and outliers, we employed Bayesian inference in our analysis (Asparouhov & Muthén, 2021; Depaoli, 2021).

We utilized the Gibbs sampler algorithm with a 1.02 Gelman-Rubin potential scale reduction factor (Gelman et al., 2013) and ran two Markov chains for 50,700 iterations. To ensure convergence, we visually inspected trace and autocorrelation plots. Our model estimates were presented using the median as a point estimate, with diffuse priors¹ used for parameter interpretation similar to traditional maximum likelihood estimation (cf. Depaoli, 2021). Missing data were included in our model estimation (Finch & Bolin, 2017).

Group-mean centering of the predictor variable was automatically applied through confirmatory factor analysis (see Muthén & Muthén, 2017). Outliers were retained in our analysis (Grubbs, 1950; see also Asparouhov & Muthén, 2021; Finch & Bolin, 2017). For level-1 observations, only participants who worked during specific sampling time intervals, as measured in each questionnaire, were included. We included the direct effect of workplace anger on workplace resource depletion and goal attainment, which adhered to the guidelines provided by Kline (2015).

Data diagnostics revealed no abnormalities in data quality (Cullen & Frey, 1999; Delignette-Muller & Dutang, 2015; Gabriel et al., 2019). The mean percentage of missing responses across variables was 23.68%, with specific rates of 16.60% for workplace anger, 25.60% for ruminative and confrontative coping, and 26.90% for workplace goal attainment and resource depletion.

Results

Preliminary Analyses

The descriptive statistics for the focal variables are presented in Table 1. Results indicate that the participants exhibited low levels of workplace anger, ruminative coping, confrontative coping, and workplace resource depletion while presenting moderate levels of workplace goal attainment. Notably, all variables displayed significant variance on both levels, with a near-equal spread.

¹ $\nu, \lambda, \beta, \alpha \sim N(0, \infty)$; $\theta \sim IG(-1, 0)$; $\psi \sim IW(0, -p - 1)$; see Muthén & Muthén, 2017, p. 775).

Table 1
Means, Standard Deviations, Interclass Correlation Coefficients, Reliabilities, and Correlations Among the Focal Factors

Variables	M	SD _{Level-2}	SD _{Level-1}	ICC	1	2	3	4	5	6
1. Workplace anger _{T1}	1.42	0.56	0.63	0.47	(0.95)	0.80*	0.77*	0.57*	-0.39*	0.01
2. Ruminative coping _{T2}	1.57	0.65	0.72	0.47	0.43*	(0.95)	0.81*	0.60*	-0.34*	-0.04
3. Confrontative coping _{T2}	1.99	0.30	0.39	0.43	0.22*	0.39*	(0.76)	0.52*	-0.31*	-0.02
4. Workplace resource depletion _{T3}	2.13	0.60	0.58	0.51	0.07	0.13*	0.08*	(0.87)	-0.61	0.00
5. Workplace goal attainment _{T3}	3.64	0.59	0.58	0.50	-0.08*	-0.10*	-0.01	-0.33*	(0.91)	-0.02
6. Workplace affiliation disposition _{T0}	3.29	0.90			0.01	-0.04	-0.02	0.00	-0.02	(0.86)

Note. $N_{\text{Level-2}} = 214$, $N_{\text{Level-1}} = 1,611$. M = composite mean of factor indicators. ICC = Intraclass correlation coefficient. We calculated the ICC as $SD_{\text{Level-2}} / (SD_{\text{Level-2}} + SD_{\text{Level-1}})$. Omega reliabilities are in parentheses on the diagonal. Level-2 correlations are above the diagonal. Level-1 correlations are below the diagonal. * $p < .05$

We assessed the factor structure through confirmatory factor analyses (see Table 2). We employed both maximum likelihood and Bayesian estimators to verify the results. The hypothesized factor structure demonstrated a satisfactory level of fit. To confirm the discriminant validity of this structure, we also conducted CFAs for alternative models. The outcomes revealed that the alternative models exhibited a significantly poorer fit to the data than the hypothesized model.

Hypotheses Testing

We present the results of our Bayesian structural equation modeling analyses for the direct and indirect effects in Tables 3 and 4, respectively. Support was found for Hypothesis 1a, as workplace anger was positively associated with ruminative coping ($E(\gamma) = 0.392, E(\sigma) = 0.080, 95\% CI [0.224, 0.539], p < 0.001$). Similarly, support was found for Hypothesis 1b, with workplace anger positively related to confrontative coping ($E(\gamma) = 0.191, E(\sigma) = 0.036, 95\% CI [0.124, 0.266], p < 0.001$).

In line with Hypothesis 2a, ruminative coping was found to be positively related to workplace resource depletion ($E(\gamma) = 0.108, E(\sigma) = 0.039, 95\% CI [0.033, 0.185], p = 0.004$). However, contrary to Hypothesis 2b, confrontative coping showed no positive association with workplace resource depletion ($E(\gamma) = 0.032, E(\sigma) = 0.079, 95\% CI [-0.121, 0.190], p = 0.674$).

Support for Hypothesis 3a was found, indicating a negative relation between ruminative coping and workplace goal attainment ($E(\gamma) = -0.070, E(\sigma) = 0.035, 95\% CI [-0.142, -0.002], p = .046$). Hypothesis 3b was not supported, as confrontative coping did not show a positive relation with workplace goal attainment ($E(\gamma) = 0.075, E(\sigma) = 0.075, 95\% CI [-0.069, 0.227], p = 0.288$).

Support was found for Hypothesis 4a, revealing a positive relation between workplace anger and workplace resource depletion via ruminative coping ($E(\text{indirect effect}) = 0.041, E(\sigma) = 0.017, 95\% CI [0.012, 0.079], p = 0.004$). Hypothesis 4b was not supported, as workplace anger was not positively related to workplace resource depletion via confrontative coping ($E(\text{indirect effect}) = 0.006, E(\sigma) = 0.015, 95\% CI [-0.024, 0.037], p = 0.674$).

Hypothesis 5a was supported, showing a negative relation between workplace anger and workplace goal attainment via ruminative coping ($E(\text{indirect effect}) = -0.026, E(\sigma) = 0.015, 95\% CI [-0.060, -0.001], p = .046$). Hypothesis 5b was not supported, as workplace anger was not positively related to workplace goal attainment via confrontative coping ($E(\text{indirect effect}) = 0.014, E(\sigma) = 0.015, 95\% CI [-0.013, 0.045], p = 0.288$).

Table 2
Confirmatory Factor Analyses Models' Fit Indices

CFA Models	χ^2	df	$\Delta\chi^2(\Delta df)$	CFI	TLI	RMSEA	SRMR _{Level-1}	SRMR _{Level-2}	AIC	BIC
Hypothesized model	560.712	249	$p < 0.001$	0.979	0.974	0.028	0.031	0.064	44 790.518	45 420.518
Alternative model 1 ^a	8487.574	277	$p < 0.001$	0.453	0.388	0.136	0.198	0.204	52 661.380	53 140.610
Alternative model 2 ^b	1232.438	258	$p < 0.001$	0.935	0.922	0.048	0.061	0.069	45 444.244	46 025.782
Alternative model 3 ^c	4308.056	271	$p < 0.001$	0.731	0.692	0.096	0.153	0.253	48 493.862	49 005.400

Note. $N_{Level-2} = 214$; $N_{Level-1} = 1,611$. The statistical significance of the model comparison between alternative and hypothesized models is assessed by $\Delta\chi^2(\Delta df)$.

^a All indicators load on the same factor.

^b Indicators of confrontation and rumination load on the same factor.

^c Indicators of workplace anger, ruminative coping, and confrontative coping load on the same factor.

Table 3
Unstandardized Coefficient Estimates and Posterior Standard Deviations of Direct Effects

Variables	Ruminative coping _{T2}		Confrontative coping _{T2}		Workplace resource depletion _{T3}		Workplace goal attainment _{T3}	
	Estimate	SD	Estimate	SD	Estimate	SD	Estimate	SD
Level-2								
Workplace affiliation disposition _{T0}	-0.045	0.046	-0.006	0.024	0.008	0.048	-0.017	0.048
Level-1								
Workplace anger _{T1}	0.392*	0.080	0.191*	0.036	0.038	0.046	-0.074	0.042
Ruminative coping _{T2}					0.108*	0.039	-0.070*	0.035
Confrontative coping _{T2}					0.032	0.079	0.075	0.075
Workplace affiliation disposition _{T0}								
x Workplace anger _{T1}	-0.013	0.089	0.003	0.034				
x Ruminative coping _{T2}					-0.136*	0.040	-0.021	0.036
x Confrontative coping _{T2}					0.135	0.082	0.154*	0.078

Note. $N_{\text{Level-2}} = 214$, $N_{\text{Level-1}} = 1,611$. * $p < .05$

Table 4
Unstandardized Coefficient Estimates and Posterior Standard Deviations of Indirect Effects

Indirect effects	Test of conditional effects		
	Estimate	CI LL	CI UL
Workplace anger _{T1} → Ruminative coping _{T2} → Workplace resource depletion _{T3}	0.041*	0.012	0.079
Workplace anger _{T1} → Confrontative coping _{T2} → Workplace resource depletion _{T3}	0.006	-0.024	0.039
Workplace anger _{T1} → Ruminative coping _{T2} → Workplace goal attainment _{T3}	-0.026*	-0.060	-0.001
Workplace anger _{T1} → Confrontative coping _{T2} → Workplace goal attainment _{T3}	0.014	-0.016	0.045

Note. $N_{Level2} = 214$, $N_{Level1} = 1,611$. Estimate = unstandardized parameter estimate of indirect effect. CI LL = lower limit of 95% credibility interval. CI UL = upper limit of 95% credibility interval. * $p < .05$

Exploratory Analyses

Table 5 presents the results of our analyses on the conditional effects. Our study found that the relation between ruminative coping and workplace resource depletion was moderated by an employee's workplace affiliation disposition (*moderation effect* = -0.136 , 95% *CI* [$-0.219, -0.062$], $p < 0.001$). Our results indicate that the relation between ruminative coping and workplace resource depletion was significant for low (-1 standard deviation; *simple slope* = $.245$, 95% *CI* [$0.138, 0.359$], $p < 0.001$) and but not high ($+1$ standard deviation; *simple slope* = $-.029$, 95% *CI* [$-0.138, 0.079$], $p = 0.590$) expressions of an employee's workplace affiliation disposition. The difference between the slopes was significant (*difference* = -0.273 , 95% *CI* [$-0.437, -0.123$], $p < 0.001$).

Similarly, the relation between workplace anger and workplace resource depletion via ruminative coping was significant for low (-1 standard deviation; *conditional effect* = 0.093 , 95% *CI* [$0.043, 0.159$], $p < 0.001$) but not high ($+1$ standard deviation; *conditional effect* = $-.011$, 95% *CI* [$-0.057, 0.031$], $p = 0.590$) expressions of an employee's workplace affiliation disposition. The difference between the slopes was significant (*difference* = -0.104 , 95% *CI* [$-0.192, -0.040$], $p < 0.001$). The corresponding region of significance plots, presented in Figures 2 and 3, show that the relation between ruminative coping and workplace resource depletion as well as the relation between workplace anger and workplace resource depletion via ruminative coping did become non-significant with values of a workplace affiliation disposition of equal to or greater than 0.240 standard deviations above the sample mean, while becoming negative and significant with values of a workplace affiliation disposition of equal to or greater than 2.080 standard deviations above the sample mean.

Our results also showed that the relation between confrontative coping and workplace goal attainment was moderated by an employee's workplace affiliation disposition (*moderation effect* = 0.154 , 95% *CI* [$0.005, 0.316$], $p = 0.042$). Our results indicate that the relation between confrontative coping and workplace goal attainment was still insignificant for low (-1 standard deviation; *simple slope* = -0.077 , 95% *CI* [$-0.293, 0.129$], $p = 0.452$) but not high ($+1$ standard deviation; *simple slope* = 0.229 , 95% *CI* [$0.022, 0.458$], $p = 0.032$) expressions of an employee's workplace affiliation disposition. The difference between the slopes was significant (*difference* = 0.308 , 95% *CI* [$0.010, 0.631$], $p = 0.042$).

Table 5
Unstandardized Coefficient Estimates and Credibility Intervals of Conditional Effects

Effects	Test of conditional effects		
	Estimate	CI LL	CI UL
Ruminative coping _{T2} → Workplace resource depletion _{T3}			
Unconditional direct effect	0.108*	0.033	0.185
Conditional direct effect upon low (−1 SDs) workplace affiliation disposition _{T0}	0.245*	0.138	0.359
Conditional direct effect upon high (+1 SDs) workplace affiliation disposition _{T0}	−0.029	−0.138	0.079
Difference of high and low workplace affiliation disposition _{T0}	−0.273*	−0.437	−0.123
Workplace anger _{T1} → Ruminative coping _{T2} → Workplace resource depletion _{T3}			
Unconditional indirect effect	0.041*	0.012	0.079
Conditional indirect effect upon low (−1 SD) workplace affiliation disposition _{T0}	0.093*	0.043	0.159
Conditional indirect effect upon high (+1 SD) workplace affiliation disposition _{T0}	−0.011	−0.057	0.031
Difference of high and low workplace affiliation disposition _{T0}	−0.104*	−0.192	−0.040
Confrontative coping _{T2} → Workplace goal attainment _{T3}			
Unconditional direct effect	0.075	−0.069	0.227
Conditional direct effect upon low (−1 SD) workplace affiliation disposition _{T0}	−0.077	−0.293	0.129
Conditional direct effect upon high (+1 SD) workplace affiliation disposition _{T0}	0.229*	0.022	0.458
Difference of high and low workplace affiliation disposition _{T0}	0.308*	0.010	0.631
Workplace anger _{T1} → Confrontative coping _{T2} → Workplace goal attainment _{T3}			
Unconditional indirect effect	0.014	−0.016	0.045
Conditional indirect effect upon low (−1 SD) workplace affiliation disposition _{T0}	−0.014	−0.056	0.025
Conditional indirect effect upon high (+1 SD) workplace affiliation disposition _{T0}	0.043*	0.004	0.091
Difference of high and low workplace affiliation disposition _{T0}	0.058*	0.002	0.125

Note. $N_{Level2} = 214$, $N_{Level1} = 1,611$. Estimate = unstandardized parameter estimate of indirect effect. CI LL = lower limit of 95% credibility interval. CI UL = upper limit of 95% credibility interval. SDs = standard deviations. * $p < .05$

Figure 2
 Region of Significance for the Relation Between Anger-Inducing Workplace Events and Employees' Attitudes of Self-Assurance Given Varying Expressions of Approach Behavior (Interpersonal Coping)

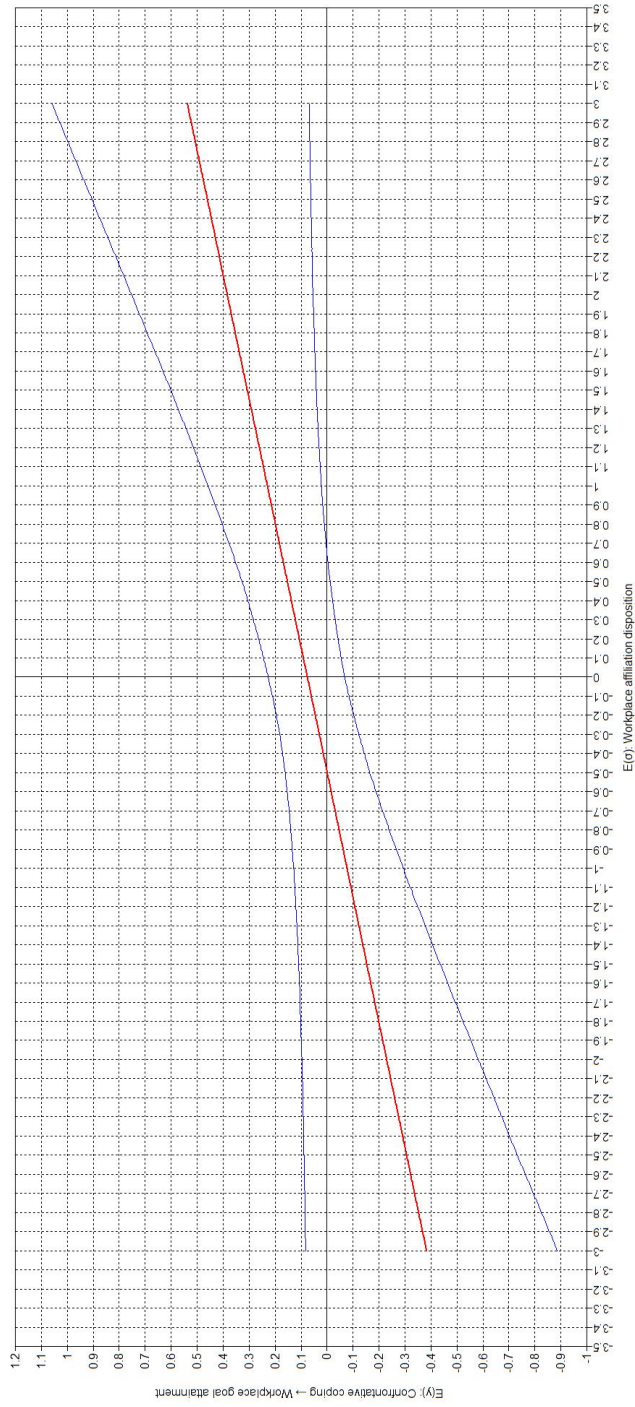
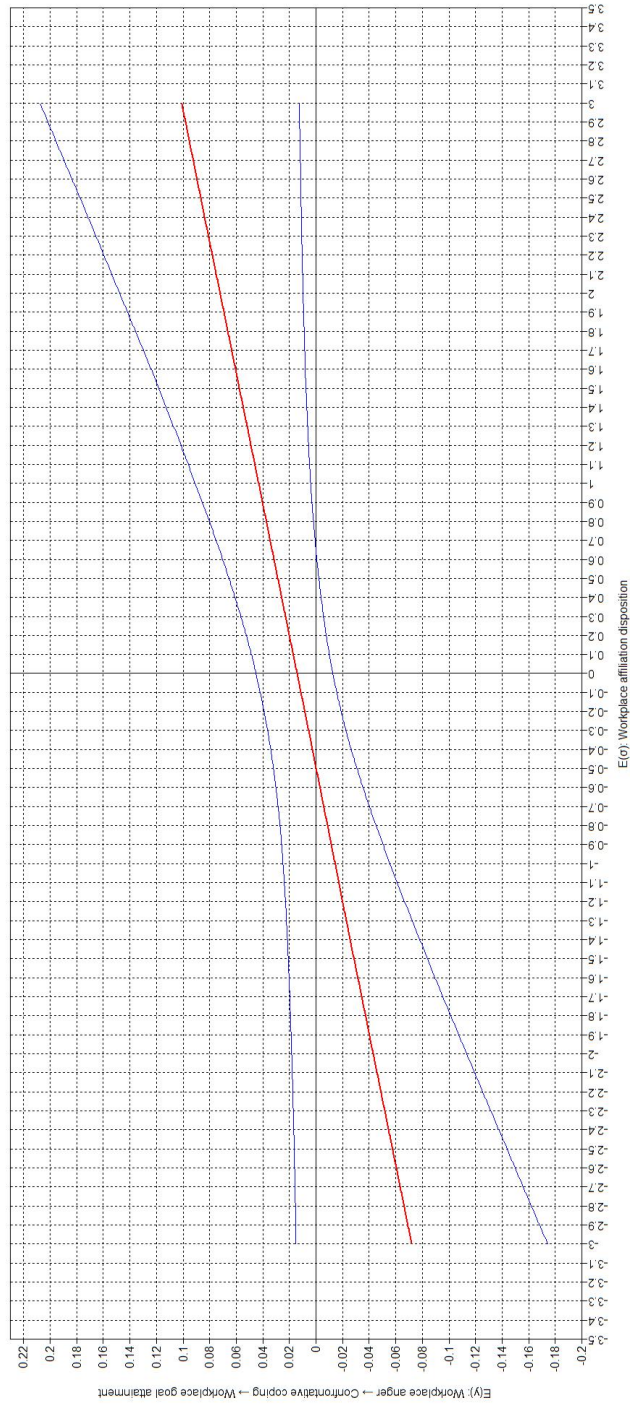


Figure 3
 Region of Significance for Cross-Level Interaction Effect of Workplace Affiliation Disposition on the Relation Workplace Anger and Workplace Resource Depletion via Ruminative Coping



Similarly, the relation between workplace anger and workplace goal attainment via confrontative coping was also still insignificant for low (-1 standard deviation; *conditional effect* = -0.014 , 95% *CI* [$-0.056, 0.025$], $p = 0.452$) but not high ($+1$ standard deviation; *conditional effect* = 0.043 , 95% *CI* [$0.004, 0.091$], $p = 0.032$) expressions of an employee's workplace affiliation disposition. The difference between the slopes was significant (*difference* = 0.058 , 95% *CI* [$0.002, 0.125$], $p = 0.042$). The corresponding region of significance plots, presented in Figures 4 and 5, show that the relation between confrontative coping and workplace goal attainment as well as the relation between workplace anger and workplace goal attainment via confrontative coping did not become negative and significant, while becoming positive and significant with values of a workplace affiliation disposition of equal to or greater than 0.640 standard deviations above the sample mean.

Discussion

In this manuscript, our primary focus was on examining the intricate relation between workplace anger, workplace resource depletion, and goal attainment while taking into account the impact of coping strategies and individual differences. Our main objective was to challenge the common belief that workplace anger always impedes work outcomes. To achieve this goal, we developed a theoretical model based on affective events theory (Weiss & Cropanzano, 1996) and insights from cognitive theories of emotions (Lazarus, 1991; Frijda, 1987; Moors et al., 2013). Our conceptual model suggests that workplace anger may be positively related to workplace resource depletion and may have negative associations with workplace goal attainment in certain situations, but could also have a positive relation with workplace goal attainment under other circumstances. Factors such as coping strategies for managing anger and individual differences among employees were taken into consideration in this model. In order to test our theoretical framework, we gathered data from a group of full-time employees across various industries using a daily time-lagged experience-sampling method over a two-week period. Contrary to previous research, our results indicated a lack of significant association between workplace anger and workplace resource depletion, as well as a positive connection between workplace anger and goal attainment, depending on the coping mechanisms employed by employees when faced with anger-triggering situations, as well as their workplace affiliations.

Figure 4
Region of Significance for Cross-Level Interaction Effect of Workplace Affiliation Disposition on the Relation Between Confrontative Coping and Workplace Goal Attainment

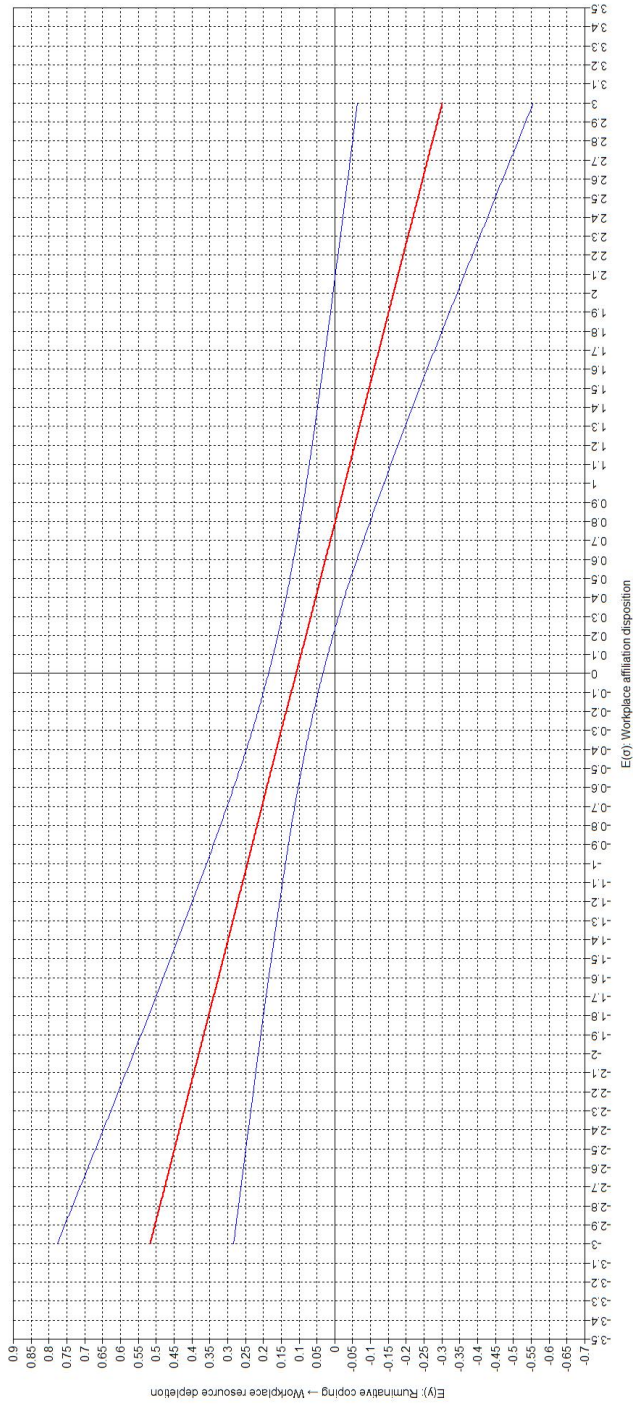
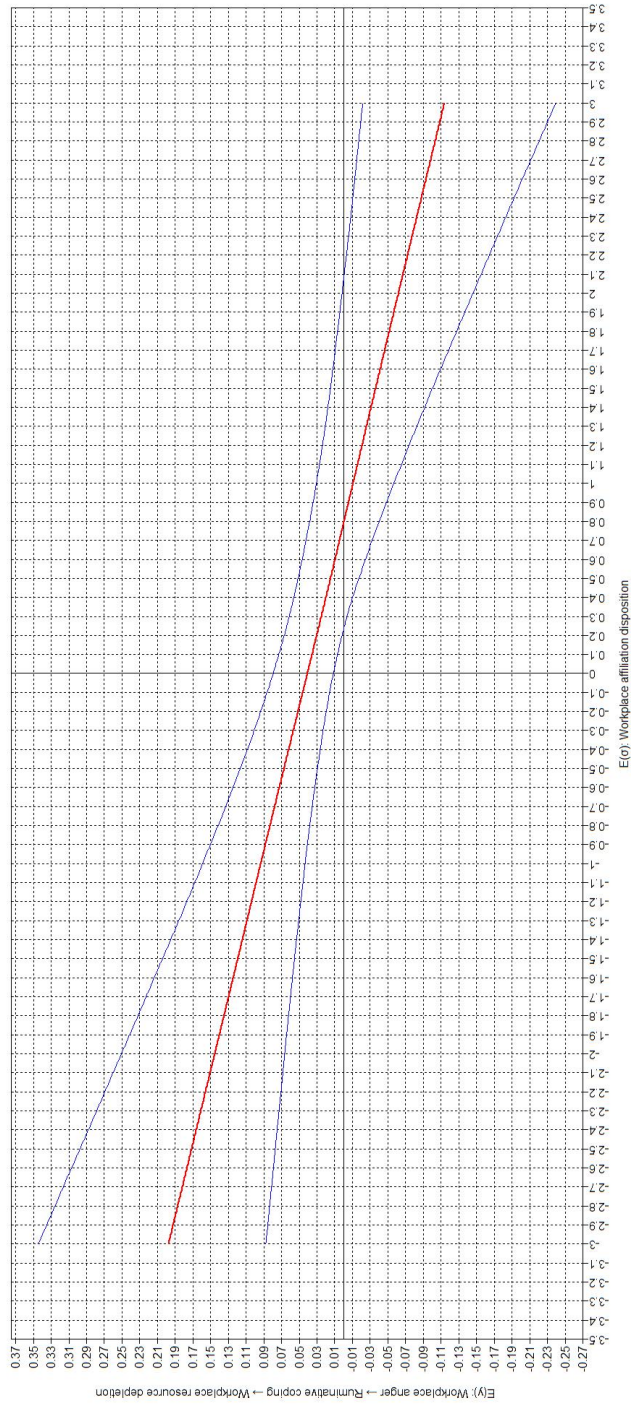


Figure 5
 Region of Significance for Cross-Level Interaction Effect of Workplace Affiliation Disposition on the Relation Workplace Anger and Workplace Goal Attainment via Confrontative Coping



Theoretical Implications

Our results have significant theoretical implications. Firstly, our findings suggest that the assumptions of affective events theory (Weiss & Cropanzano, 1996) and cognitivist accounts of emotion, which propose an adverse relation between workplace anger and resource depletion, appear to be supported by empirical evidence, although only to a limited extent. The effect size of the relation between workplace anger and resource depletion is below the threshold for a small effect ($E(\beta) = 0.041, r = 0.091$; Cohen, 1988; Gignac & Szodorai, 2016), leading us to question the practical validity of these assumptions. Additionally, as this relation was only significant when mediated by coping strategies, it is important to consider that the interplay between affective responses and work outcomes is contingent upon the intersection of these coping strategies. Therefore, it may be beneficial to integrate coping strategies into affective events theory (Weiss & Cropanzano, 1996) to provide a more comprehensive understanding of the relation between emotions and work outcomes.

The importance of integrating coping strategies into affective events theory (Weiss & Cropanzano, 1996) is further clarified when considering the various intersecting effects of coping strategies in the relation between workplace anger and work outcomes. Our research supports the concept of cognitivist accounts of emotions (Frijda, 1987; Lazarus, 1991; Moors et al., 2013) by demonstrating how various coping strategies intersect and direct the valence of the relation between workplace anger and work outcomes in different ways. Specifically, we found that the connection between workplace anger and goal attainment is significantly adverse when ruminative coping is considered but becomes negligible when confrontative coping is taken into account. This same pattern is also evident in the link between workplace anger and resource depletion. Notably, the indirect effects of workplace anger on work outcomes through confrontative coping, as well as the direct effects between confrontative coping and work outcomes, are close to zero. This suggests that the lack of significant results may not be due to a lack of statistical power, but rather indicate a practical buffering effect of confrontative coping between workplace anger and work outcomes. This highlights the interplay between coping strategies and these constructs, emphasizing the crucial role of coping strategies in the relation between workplace anger and work outcomes. Therefore, incorporating coping strategies into affective events theory (Weiss & Cropanzano, 1996) could improve our understanding of how workplace anger relates to work outcomes.

However, we also noted that the relations between workplace anger and work outcomes depended on how an employee expressed their disposition towards workplace affiliation. Prior research has not thoroughly explored individual employee-level factors within the context of affective events theory, making these findings especially significant. This disposition appears to play a crucial role in shaping the relations between workplace anger, coping strategies, and work outcomes. It is important to note that the relation between workplace anger and resource depletion through ruminative coping became insignificant when considering the interaction between a high disposition towards workplace affiliation and these coping strategies. Conversely, the relation between workplace anger and goal attainment through confrontative coping became positive and significant in the same context, aligning with principles of cognitivist theories of emotions (Lazarus, 1991). This highlights the potential

value of integrating this interaction into affective events theory (Weiss & Cropanzano, 1996), in conjunction with other theoretical propositions of constructivist accounts of emotions (Lazarus, 1991; Frijda, 1987; Moors et al., 2013), to enhance our comprehension of how affective responses are linked to work outcomes.

Practical Implications

Our study suggests that leaders may benefit from adopting a dual approach when dealing with elevated levels of anger among their employees. The first aspect of this strategy involves encouraging confrontational behavior among employees without imposing penalties. This can be achieved through providing assertiveness training to help employees confront others at work (see Abdelaziz et al., 2020; Omura et al., 2017; Speed et al., 2018).

Simultaneously, it is crucial to implement interventions that enhance workplace affiliation. Improving the quality of relations among employees by fostering workplace friendships (Methot et al., 2016; van Dick et al., 2004) or creating mutually dependent work teams (Dietz & Fasbender, 2021) should help increase the desire of employees to affiliate with one another, at least in the short term.

Our research findings suggest that the positive relation between anger and goal attainment is dependent on the interplay of assertiveness and affiliation factors. Thus, solely focusing on one type of intervention may not be as effective. Instead, implementing both assertiveness and affiliation strategies concurrently can lead to higher employee goal attainment rates, ultimately improving organizational performance on a daily basis.

Limitations

In interpreting the results of our study, it is imperative to consider its limitations. First, self-report measures may have introduced common method bias (Doty & Glick, 1998), which could compromise the validity of our findings. Therefore, it is advisable for forthcoming research efforts to integrate other-report study design components, such as those that evaluate employee dyads. This approach can help mitigate the potential bias through inter-method reliability.

Second, our time-based sampling strategy may have impacted our estimates by missing event-based variance due to fixed sampling intervals (Trull & Ebner-Priemer, 2009). We attempted to address this limitation by setting narrow sampling intervals. Nonetheless, future research could consider incorporating random survey prompts to reduce this potential bias further.

Our study did not examine the precise sources and targets of workplace anger (organizational, non-organizational, metaphysical) or the employee's situational control related to such workplace anger (Lazarus, 1991; Lazarus & Folkman, 1984; Potegal et al., 2010). This complexity was beyond the scope of our study design. Although our theoretical framework and results should still hold under these distinctions, we recommend that future researchers incorporate the sources and targets of workplace anger as well as situational control into their study designs to enhance understanding further about the mechanisms

underlying our conceptual model (see also Schwarzmüller et al., 2018, for a good starting point for this direction).

Future Research Directions

One potential direction for future research is to experimentally replicate the relations that were proposed and tested in the current paper. Our approach lacks internal validity, indicating that conducting experimental studies could help address this limitation. Vignette studies could be used by future researchers to test our assumptions and bring both internal and external validity to the assumed relations (Aguinis & Bradley, 2014).

Additionally, it may be beneficial for future research to investigate the reasons behind the impact of a workplace affiliation disposition on the relation between ruminative coping and workplace resource depletion as well as the relation between confrontative coping and workplace goal attainment. Qualitative research, such as in-depth interviews, could be utilized to uncover the underlying reasons for these associations (see Fitness, 2000). Following this, conceptual research could identify commonalities from the interviews (Locke, 2007), which could then be tested in experience-sampling studies and replicated across various business settings (Gabriel et al., 2019).

Conclusion

The primary objective of organizations is to be resourceful and achieve their goals (Mohr, 1973; Sekaran & Snodgrass, 1989). While anger has traditionally been viewed as a barrier to these objectives (see Jäger et al., 2017; Wong et al., 2017; but see also Schmitt et al., 2019), our study challenges this notion. We have found evidence suggesting that anger is not linked to resource depletion, and in fact, it can be advantageous for employees in reaching their work-related goals, especially when the individual experiencing anger is integrated within the organizational framework and well-established within it.

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Anger, Employee Attitudes, and Interpersonal Coping in the Workplace

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This study aims to enhance our understanding of anger in the workplace by further developing affective events theory. Our primary goal was to investigate how combining affective events theory with cognitivist accounts of affective events could improve our comprehension of the relationship between events that provoke anger, employee attitudes in the workplace (such as feelings of powerlessness and confidence), and strategies for dealing with anger at work. Data were collected from 220 full-time employees, who reported their daily experiences of anger at work and reflected on their attitudes at the end of each day, resulting in a total of 2,059 daily observations. The findings indicate that anger is linked to increased feelings of helplessness and reduced self-assurance in the workplace. However, assertively approaching the underlying cause of anger has the potential to turn this negative relation with self-assurance into a positive one. Given these results, our study highlights the potential gain of augmenting affective events with insights from cognitive perspectives on affective events.

Keywords: Anger, Workplace Attitudes, Interpersonal Coping, Affective Events Theory, Cognitive Theories

Affective events theory (Weiss & Cropanzano, 1996), a well-established theory within organizational sciences (Ashkanasy & Humphrey, 2011), has brought attention to the important link between emotion-inducing workplace events and employee attitudes (Weiss & Beal, 2005). However, one intriguing and underexplored aspect of this theory is its treatment of workplace events that are inducing anger, a negative and arousing affective state directed at another individual (Lazarus, 1991; Russell, 1980; Weiss & Cropanzano, 1996), and their relations with employee attitudes and coping directed towards anger-inducing colleagues (interpersonal coping). These aspects set affective events theory apart from other existing cognitivist frameworks (Moors et al., 2013), leading to questions about its relative practicality in understanding anger in the workplace. Thus, it is valuable to consider whether the assumptions of affective events theory could be augmented by other theories from the affective sciences to offer a more comprehensive theoretical foundation regarding anger in the workplace.

Previous research on affective events theory has laid an important foundation for our current study on anger within workplace settings. This research has shown that anger plays a significant role in interpersonal coping and leader-member exchange (Cropanzano et al., 2016; Domagalski & Steelman, 2005; Weiss & Beal, 2005). Therefore, the relationship

between anger-inducing workplace events and workplace behavior appears to be somewhat established based on our current knowledge.

That said, in exploring anger-inducing workplace events within affective events theory (Weiss & Cropanzano, 1996), it may be crucial to acknowledge the existing research gaps that currently hinder our understanding of the impact of anger on employee attitudes. While it is widely accepted that anger can influence workplace behavior (Cropanzano et al., 2016; Domagalski & Steelman, 2005), the specific connections between anger and employee attitudes remain underexplored. This lack of comprehensive research raises questions about the extent to which anger is linked to attitudes in the workplace. Additionally, when comparing the assumptions of affective events theory (Weiss & Cropanzano, 1996) regarding the relationship between anger-inducing workplace events and employee attitudes with other theoretical frameworks, significant disparities become evident. Affective events theory posits that anger-inducing events should only be associated with negative employee attitudes, a premise that could be debated by supporters of alternative theoretical frameworks (see Moors et al., 2013). This dissension highlights the need to evaluate how affective events theory aligns with other theoretical perspectives concerning this relationship and whether an intertheoretical integration may result in a better understanding of these dynamics. Moreover, while the impact of anger-inducing workplace events on interpersonal coping is recognized as significant (see Weiss & Beal, 2005), research on the role of interpersonal coping in managing anger-inducing events is scarce. This gap in knowledge impedes our ability to grasp how interpersonal coping may impact the connections between anger-inducing workplace events and their theoretical outcomes, such as employee attitudes. In light of these challenges, a more cohesive approach is imperative to address these three critical questions and advance our understanding of the intricate interplay between anger-inducing workplace events, employee attitudes, and interpersonal coping.

As such, our primary objective is to explore the complex dynamics within affective events theory related to anger-inducing workplace events, employee attitudes, and interpersonal coping by addressing these three key questions. To accomplish this, we will construct a conceptual model that amalgamates principles from affective events theory (Weiss & Cropanzano, 1996) with other theoretical perspectives (see Moors et al., 2013) to ensure its comparability and testability. Specifically, this conceptual model will scrutinize the connections between anger-inducing workplace events, the negative employee attitude of helplessness (an attitudinal state characterized by perceptions of discouragement, hopelessness, and loneliness; Albani et al., 2005; see Lazarus, 1991), the positive employee attitude of self-assurance (an attitudinal state characterized by perceptions of confidence, strength, and vigor; Watson et al., 1988; Watson & Clark, 1994), as well as the interpersonal coping constructs of approach and avoidance behavior (Elliot, 2006; Elliot & Thrash, 2002; Linden et al., 2003). These constructs serve aim to elucidate the varying theoretical frameworks' perspectives on how employee attitudes and interpersonal coping intersect with anger-inducing workplace events. To gather data for our study, we will enlist participants to provide daily accounts of their anger and interpersonal coping experiences throughout their workday, as well as report on their attitudes of helplessness and self-assurance by day's end.

Through the analysis of these responses, we aim to gain a deeper insight into the connection between anger-inducing workplace events, employee attitudes, and interpersonal coping.

To contribute to the existing literature, we have developed a three-pronged approach. Firstly, we will examine the assumption of affective events theory concerning the connection between negative workplace events, especially those that evoke anger, and negative employee attitudes. Specifically, we will investigate how events in the workplace that trigger anger may be associated with employee attitudes of helplessness. By conducting this investigation, we aim to evaluate the core assumption of affective events theory in its application to understanding anger in the workplace. Secondly, we will examine the debated issue of whether negative workplace interactions, such as those involving anger, can also be associated with positive employee attitudes. By contrasting the assumptions of affective events theory (Weiss & Cropanzano, 1996) with other theoretical perspectives such as cognitivist accounts of affective events (see Moors et al., 2013), we seek to determine whether anger-inducing events may also be positively linked to positive employee attitudes like self-assurance. This investigation aims to elucidate the theoretical disagreements and assess how affective events theory positions itself among alternative frameworks regarding these dynamics.

Finally, our study will delve into the role of interpersonal coping in addressing anger-inducing events in the workplace. Specifically, we will explore how approach and avoidance behaviors towards colleagues, considered key coping strategies in anger management (see Potegal et al., 2010), impact the relationship between workplace events that trigger anger and employees' attitudes of helplessness and self-assurance. This analysis aims to shed light on how these behaviors may contribute to or clarify discrepancies between current theoretical frameworks. Ultimately, our goal is to bridge the gap in knowledge regarding how interpersonal coping impacts the link between anger-inducing events at work and their potential effects on employee attitudes.

Theoretical Background and Hypotheses Development

In the upcoming sections, we will provide an overview of affective events theory (Weiss & Cropanzano, 1996) and elaborate on alternative theoretical frameworks (Moors et al., 2013) that we will be utilizing in our manuscript. We will then use these frameworks to formulate hypotheses concerning the relationship between anger-inducing workplace events and employee attitudes of helplessness and self-assurance. Additionally, we will explore how approach and avoidance behaviors serve as moderators in regulating these relationships. This will lead us to pose the research question of how these interpersonal coping strategies impact the dynamics between our primary constructs.

Affective Events Theory

Affective events theory (Weiss & Cropanzano, 1996) is rooted in the organizational sciences and posits a relationship between workplace events, emotions, and employee attitudes. Negative workplace events, perceived as harmful or threatening by employees, are linked to negative emotions, which in turn are associated with negative employee attitudes.

Conversely, positive workplace events, viewed as beneficial or goal-facilitative by employees, are tied to positive emotions, which are related to positive employee attitudes. This suggests that the valence of workplace events, emotions, and employee attitudes are likely aligned. However, whether negative workplace events related to anger can also be linked to positive employee attitudes remains unclear and is a subject of current research.

Cognitivist Accounts of Affective Events

Cognitive accounts of affective events in the workplace (Moors et al., 2013), rooted in cognitive sciences (Scherer, 2009), emphasize the relationship between workplace interactions, emotions, and employee motivations. When employees perceive workplace events as obstructing their goals, they tend to experience negative emotions, which in turn are related to a change in psychosomatic states (Lazarus, 1991; Roseman, 2013; Scherer, 2009). Conversely, when workplace events are perceived as facilitating their goals, employees experience positive emotions, leading to a shift in their psychosomatic states as well. This suggests that the valence of an emotion is closely tied to how an employee appraises the event in terms of goal obstruction or facilitation. Cognitivist accounts also suggest that the psychosomatic aspects of negative emotions may be directed towards the person responsible for the negative workplace event, leading to negative attitudes towards the perpetrator. However, cognitivist accounts also propose that employees themselves may maintain a positive attitude overall, as a somewhat positive mindset is induced to overcome a goal obstruction.

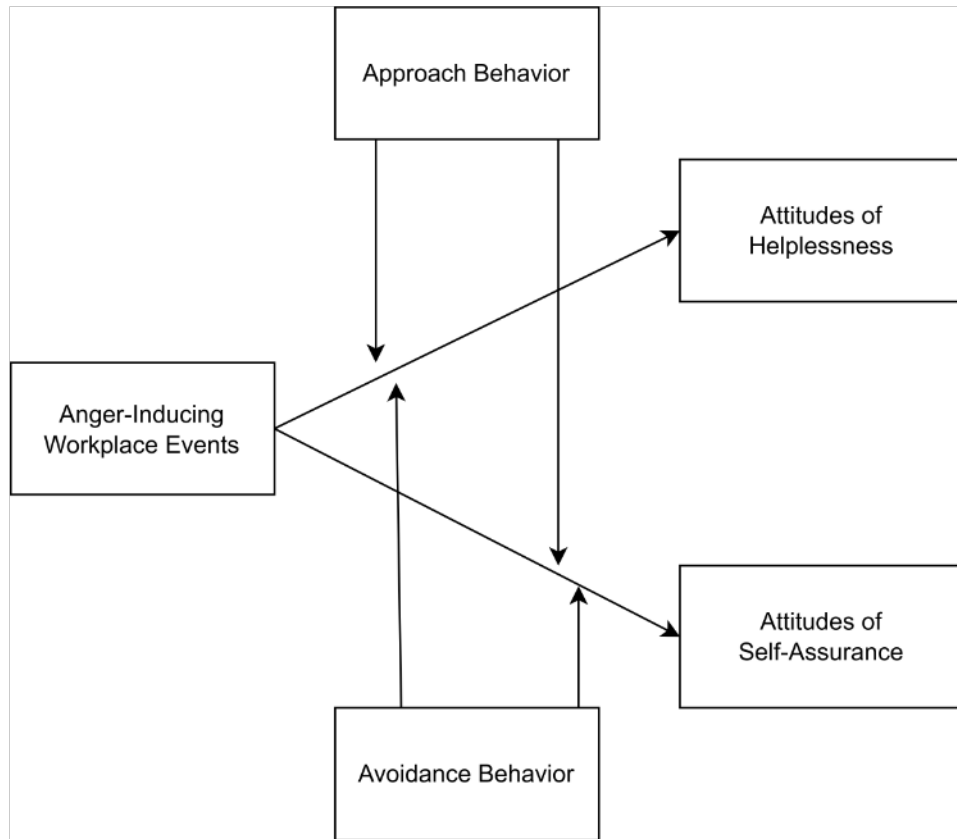
Anger-Inducing Workplace Events and Negative Employee Attitudes

Looking at the theoretical frameworks of affective events theory and cognitivist accounts (Moors et al., 2013), it is clear that there is a consensus on the relationship between anger-inducing workplace events and negative employee attitudes. Affective events theory posits that negative workplace events, such as those that are inducing anger, should be related to negative employee attitudes. This is echoed in cognitivist accounts (Moors et al., 2013), which highlight the general link between anger and negative attitudes towards others. Therefore, it seems plausible to assume that anger-inducing workplace events are positively related to negative employee attitudes.

In conducting a study on negative employee attitudes, it may be essential to clearly define the specific attitudinal state under examination to ensure the results obtained are both externally valid and relevant (see Locke, 2007; Popper, 1959; Shepherd & Suddaby, 2017). For our study, we have chosen to focus on the attitudinal state of helplessness (characterized by perceptions of discouragement, hopelessness, and loneliness; Albani et al., 2005; see Lazarus, 1991), as it is a distinct and measurable negative attitude commonly observed in employees (Sparr & Sonnentag, 2008; Stengård et al., 2017). Helplessness has been widely studied and empirically linked to anger in various contexts (Lazarus, 1991; Rochman & Diamond, 2008; Watson & Clark, 1994), providing a solid theoretical and empirical foundation for our research. Our decision to focus on helplessness in our research is also

strategic, as it serves as a theoretical contrast to the more positive attitude of self-assurance (characterized by perceptions of confidence, strength, and vigor; Watson et al., 1988; Watson & Clark, 1994), which we will delve into later. By closely examining these two interconnected attitudinal states, we aim to explore the extent to which anger-inducing workplace events are related to both negative and positive employee attitudes, as shown in our conceptual model in Figure 1. This approach should enable us to address our three key questions comprehensively and effectively.

Figure 1
Conceptual Model



Based on the consensus among different theories (Moors et al., 2013) and the initial research findings (Lazarus, 1991; Rochman & Diamond, 2008; Watson & Clark, 1994), we propose that workplace events that induce anger in employees are closely associated with negative employee attitudes. Specifically, we assume that these events are related to attitudes of helplessness among employees. Thus, our hypothesis states that there is a

direct link between anger-inducing workplace events and employees' attitudes of helplessness:

Hypothesis 1: *Anger-inducing workplace events are positively related to employees' attitudes of helplessness.*

Anger-Inducing Workplace Events and Positive Employee Attitudes

In the previous section, our theorizing was facilitated by intertheoretical agreement, but going forward, this may change as we delve deeper into the complex issue of negative workplace interactions and their potential relations with employee attitudes. One of the central questions we aim to address in this manuscript is whether events that elicit anger can also be related to positive employee attitudes. To explore this question, we will contrast the assumptions of affective events theory (Weiss & Cropanzano, 1996) with other theoretical perspectives such as cognitivist (Moors et al., 2013) accounts of affective events. By doing so, we hope to determine whether anger-inducing events can indeed be associated with positive employee attitudes, such as self-assurance. Additionally, we seek to elucidate any theoretical disagreements that may arise from these contrasting perspectives and assess how affective events theory positions itself among these alternative frameworks in understanding the complexities of workplace dynamics.

Looking at affective events theory alone, we might assume that there should be no relationship between anger-inducing workplace events and employees' attitudes of self-assurance (Weiss & Cropanzano, 1996). This assumption would align with the notion that only positive events in the workplace are typically associated with positive employee attitudes. However, there are a couple of issues with this assumption that need to be addressed. Firstly, it is unlikely that anger-inducing workplace events and positive employee attitudes are completely unrelated, as affective events are often connected to attitudes that are opposite in valence (Behnke et al., 2023). While this relation may not have a strong theoretical basis, it is worth considering in our analysis. Furthermore, anger as an affective state is unique in that it has negative valence, high arousal, and an approach motivation dimension (Elliot & Thrash, 2002, 2010; Russell & Carroll, 1999). This uniqueness suggests that the relationship between anger and attitudes may differ from that of other negative emotions. Considering these complexities, it is clear that we cannot rely solely on affective events theory to understand the relationship between anger-inducing workplace events and positive employee attitudes. Therefore, we must turn to alternative theoretical frameworks for additional insights and perspectives.

Cognitivist accounts of affective events suggest that negative emotions in the workplace may be directed towards the person responsible for the negative event, relating to negative attitudes towards the perpetrator (Lazarus, 1991; Roseman, 2013; Scherer, 2009). However, on the flip side, these accounts also propose that employees may maintain an overall positive attitude, as a positive mindset is likely induced to overcome obstacles. When considering general attitudes about/at work, this latter perspective seems to align more closely with our focus. As such, according to cognitivist accounts, anger-inducing events

in the workplace may relate to psychosomatic states characterized by approach tendencies, feelings of power, and even aggression. These states are inherently positively related to an attitude of self-assurance (Lazarus, 1991; Roseman, 2013). Therefore, cognitivist theories suggest that anger-inducing workplace events could potentially be positively linked to employees' attitudes of self-assurance.

Based on the lack of a theoretical foundation in affective events theory regarding anger-inducing workplace events and employees' attitudes of self-assurance, as well as the support from cognitivist accounts of affective events, it is likely that there is a positive relationship between these events and employees' attitudes of self-assurance. Empirical evidence suggests that anger is linked to risk-taking behavior (Baumann & DeSteno, 2012; Habib et al., 2015; Park & Lee, 2011), which is a behavior including self-assurance that involves engaging in actions with potentially high costs but also high benefits (see Byrnes et al., 1999). While this evidence is indirect and tentative, the addition of the consensus across theories supports the hypothesis that anger-inducing workplace events may be positively related to attitudes of self-assurance among employees:

Hypothesis 2: *Anger-inducing workplace events are positively related to employees' attitudes of self-assurance.*

In summary, if our research shows a positive relationship between the two constructs, it would indicate the potential need to expand on affective events theory (Weiss & Cropanzano, 1996) for better understanding workplace anger, possibly incorporating insights from cognitivist perspectives (Moors et al., 2013). Conversely, a negative relationship would challenge affective events theory and necessitate adjustments to align with our findings. However, if there is no significant relationship between the two constructs with adequate statistical power, it would suggest that affective events theory may not need substantial revision in explaining the connections between workplace anger triggers and associated factors.

That said, although we have a hypothesis that could indicate the need for incremental adaptation of our theoretical frameworks, it is important to consider that this incrementality is seen as relative and dichotomous. To fully address our second key question, we must examine the strength of the relationship between anger-inducing workplace events and employees' attitudes of self-assurance (Hanel & Mehler, 2019; Lakens, 2013). This will be achieved through effect size comparisons in our analytical section and a discussion of both the relative evidence and magnitude of the evidence in our discussion section.

Anger-Inducing Workplace Events, Employee Attitudes, and Interpersonal Coping

Some may wonder why our theoretical frameworks differ in their assumptions and why different results would be expected from our analysis. We believe this difference may arise from the varying focuses on interpersonal coping within the examined frameworks. Upon closer examination, we find that interpersonal coping is not adequately addressed within affective events theory (Weiss & Beal, 2005; Weiss & Cropanzano, 1996), whereas they hold

significant importance in both cognitivist accounts (Gross, 2014; Moors et al., 2013). It is plausible that these interpersonal coping constructs may play a role in determining whether we observe a positive, negative, or no relationship between anger-inducing workplace events and employees' attitudes of self-assurance. Let us explore this possibility further.

Research in the organizational and psychological sciences has not thoroughly explored the relationship between interpersonal coping, anger-inducing workplace events, and employee attitudes. However, insights from affective neuroscience and clinical psychology may shed light on this issue. Affective neuroscience studies have shown that left-hemisphere activation, linked to approach behaviors (Fetterman et al., 2013; Harmon-Jones et al., 2003, 2010), is associated with positive attitudes (cf. Gainotti, 2019; Killgore & Yurgelun-Todd, 2007; Ross & Gainotti, 2021), while right-hemisphere activation, linked to avoidance behaviors (Fetterman et al., 2013; Harmon-Jones et al., 2003, 2010), is associated with negative attitudes (cf. Gainotti, 2019; Killgore & Yurgelun-Todd, 2007; Ross & Gainotti, 2021). Similarly, clinical psychology research suggests that an approach-oriented strategy towards stressors is related to positive attitudes (Craske et al., 2014; Ferrando & Selai, 2021; Markowitz et al., 2015), while avoidance is related to the exacerbation of certain psychopathologies and thus positively related to negative attitudes (Holtforth, 2008; Holtforth et al., 2005; Wollburg & Braukhaus, 2010). Considering that anger is an affective state with an approach motivation dimension (Elliot & Thrash, 2002, 2010; Russell & Carroll, 1999), it is likely that interpersonal coping, specifically in terms of approach and avoidance behaviors, plays a crucial role in determining whether an emotion-inducing workplace event is related to positive or negative employee attitudes.

In light of the potential intertheoretical discrepancy resulting from interpersonal coping, it is crucial for us to thoroughly investigate this factor in order to accurately interpret our findings. As such, delving deeper into this aspect would offer valuable insight. This prompts us to pose the following research question:

Research Question: *How does interpersonal coping, particularly approach and avoidance behaviors, in response to anger-inducing workplace events, impact the relationship between these events and employees' attitudes of helplessness and self-assurance?*

Method

Transparency and Openness

We preregistered our study on the Open Science Framework at https://osf.io/3xck2/?view_only=1915ccdb5c494c4697112e9205aa7495. Our hypotheses and analysis plan are included. The data summary and analysis code will be available upon journal publication.

Selection and Procedure

Our study recruited a diverse range of participants through student networks (see Burmeister et al., 2020, and Fasbender et al., 2021, for a similar approach). Appropriate consent was obtained from all participants. To accurately capture the natural fluctuations in our study variables, we used experience sampling (Gabriel et al., 2019). We selected full-time employees aged 18 to 67 who worked at least 35 hours per week. Participants were incentivized with gift vouchers and asked to complete daily questionnaires three times a week (on Mondays, Wednesdays, and Fridays) and twice a day (work start questionnaire: 2 hours after work start; work end questionnaire: 1 hour before work end) for five weeks, in addition to a baseline survey. Data collection occurred between November and December 2023. Our study was consistent with previous research in terms of attrition rates, with a 5.98% dropout rate and a compliance rate of at least 65.50% for daily surveys (Ohly et al., 2010; Xia et al., 2021). We collected data from 220 employees, resulting in 2,059 employee-day observations, exceeding common experience sampling sample size standards (Gabriel et al., 2019). Of the participants, 54% were female, 46% were male, and less than one percent identified as diverse. The age range was 19 to 61 years ($M = 34.85, SD = 13.65$). The participants' general work experience ranged from less than one to 45 years ($M = 14.84, SD = 13.59$). The organizational tenure range was less than one to 42 years ($M = 8.18, SD = 9.84$). Finally, the weekly working schedule ranged from 35 to 60 hours ($M = 40.48, SD = 4.23$). The participants worked in diverse industries, such as manufacturing (13.60%), IT and communications (9.50%), transportation (8.20%), and other miscellaneous industries (22.30%).

Measures

We utilized the Brislin (1970) approach to translate English to German items, following a back-to-back translation method. To keep participant burden low, we selected items based on factor loading matrices and theoretical congruence (Gabriel et al., 2019), while also ensuring that each response option was within the range of 1 (strongly disagree) to 5 (strongly agree). To contextualize our study, we added the phrase "Today at work . . ." to each item.

Anger-Inducing Workplace Events (Work Start–Work End)

We measured anger-inducing workplace events in the work end survey with four items from Umbra & Fasbender (2023). A sample item was "Today at work, since filling out the last questionnaire, I have felt angry" ($\omega = .93$).

Attitudes of Helplessness (Work End)

We measured attitudes of helplessness in the work end survey with four items from Albani et al. (2005). A sample item was "Right now, I feel helpless" ($\omega = .89$).

Attitudes of Self-assurance (Work End)

We measured attitudes of self-assuredness in the work end survey with four items from Grünh et al. (2010). A sample item was “Right now, I feel confident” ($\omega = .91$).

Interpersonal Coping: Approach and Avoidance Behavior (Work End)

In the work end survey, we assessed approach and avoidance behavior using three items each, which were taken from Linden et al. (2003). These items were presented only to those participants who have reported at least some levels of anger (i.e., larger than 3 on a scale from 1 to 5) in the same questionnaire. The respondents were then asked to describe how they dealt with work-related situations that caused them anger since the last questionnaire. For instance, a sample item for approach behavior was, “I let things cool off a little and then talked to the angering person about what happened” ($\omega = .72$). Conversely, a sample item for avoidance behavior was, “I left the situation and tried to forget the whole incident” ($\omega = .74$).

Controls

We have considered the possibility of attitudes of helplessness and self-assurance being influenced by past measurements (Gabriel et al., 2019). To estimate the impact of anger on these variables, we measured them in the work start survey and controlled for them ($helplessness_{T1}[\omega] = .85$; $self - assurance_{T1}[\omega] = .89$).

To address the potential variance originating from different triggers of anger (see Gabriel et al., 2019; Lazarus, 1991; Schwarzmüller et al., 2018), we included a multiple-choice response question in the work end survey asking about the trigger for the situations that caused anger at work since the work start questionnaire. We asked whether the triggers were supervisors, coworkers, customers, or something miscellaneous. Similarly, to account for the variance stemming from the cognitive appraisal of controllability of anger-inducing situations (Lazarus, 1991), we asked participants in the work end survey about the degree of control they had over resolving/improving the situations that made them angry. The response anchors ranged from 1 = not control at all to 4 = very much control. In both cases, participants received these questions only when they indicated elevated anger levels in the same questionnaire.

We utilized two three-item scales taken from Kemper et al. (2014) to measure social desirability in the baseline survey to counteract social desirability biases (Crowne & Marlowe, 1960). An example of a question from the subscale social desirability (exaggerating positive qualities) is “Even if I am feeling stressed, I am always friendly and polite to others” ($\omega = .61$). An example of a question from the subscale social desirability (understating negative qualities) is “In an argument, I always remain objective and stick to the facts” ($\omega = .65$). The scale’s response options range from 1 = Does not apply at all to 5 = Applies

completely. Finally, we measured gender (male; female; diverse) in the baseline survey to account for gender differences (Lazarus, 1991).¹

Analytical Strategy and Data Diagnostics

For this study, we used R version 4.2.2. (R Core Team, 2022) to prepare our data and Mplus version 8.4 (Muthén & Muthén, 2017) to analyze it. We had many employee-day observations for each employee (Hayes, 2006), so we used multilevel modeling with random intercepts and slopes for our hypothesized effects (Hamaker & Muthén, 2020). This method allowed us to account for the structure of our data. We used Bayesian inference to account for non-normality and outliers (Asparouhov & Muthén, 2021; Depaoli, 2021). To do this, we used the Gibbs sampler algorithm with a 1.10 Gelman-Rubin potential scale reduction factor (Gelman et al., 2013) and two Markov chains over 8,000 iterations.² We also checked our results using trace and autocorrelation plots. Finally, we presented our model estimates with the median as a point estimate. As our model was very complex, we used piecemeal estimation. First, we estimated our hypothesized effects, and then we estimated the direct and interaction effects for all anger-induced coping strategies separately.

We used diffuse priors³ to interpret our parameters similar to traditional maximum likelihood estimation (cf. Depaoli, 2021), and we included missing data in our model estimation (Finch & Bolin, 2017). We automatically applied group-mean centering to the predictor variable via confirmatory factor analysis (see Muthén & Muthén, 2017). We did not remove outliers (Grubbs, 1950; see also Asparouhov & Muthén, 2021; Finch & Bolin, 2017). For the level-1 employee-day observations, we only included participants who worked during that specific day (which we inquired both in the work start and work end questionnaires). Our data diagnostics showed no deviation from theoretical and experience-based sampling standards (Cullen & Frey, 1999; Delignette-Muller & Dutang, 2015; Gabriel et al., 2019).

In our study, we performed effect size conversion to estimate and compare the magnitude of effect sizes, following the methodology outlined by Peterson & Brown (2005). We then interpreted the effect sizes using benchmarks provided by Cohen (1988; see also Gignac & Szodorai, 2016; Paterson et al., 2016).

¹Our findings did not change whether we included or excluded these control variables.

²The results for our hypotheses and interaction effects remained consistent when estimating with the more conservative 1.05 Gelman-Rubin potential scale reduction factor.

³ $v, \lambda, \beta, \alpha \sim N(0, \infty)$; $\theta \sim IG(-1, 0)$; $\psi \sim IW(0, -p - 1)$; see Muthén & Muthén, 2017, p. 775).

Results

Preliminary Findings

The descriptive statistics of our key variables are illustrated in Table 1. All the measured constructs showed low levels of prevalence, except for a moderate degree of attitudes of self-assurance. Moreover, we observed high intraclass-correlation coefficients and significant variance on both levels, which confirms our initial decision to use multilevel modeling. We also found that the variance was almost equally distributed throughout.

We ensured that the factor structure was thoroughly evaluated by conducting confirmatory factor analyses (CFAs) using maximum likelihood estimators, depicted in Table 2. The results confirmed that the hypothesized factor structure had a good level of fit. To further verify the discriminant validity of the structure, we carried out constrained CFAs. The findings revealed that the constrained models did not fit the data as well as the hypothesized model.

Hypotheses Testing

The findings from our Bayesian multilevel structural equation modeling analysis are presented in Table 3. Supporting our initial assumption, Hypothesis 1 was supported by our results. We found that anger-inducing workplace events related positively with attitudes of helpless at the end of the workday ($E(\gamma) = 0.10$, $E(\sigma) = 0.02$, 95% *CI* [0.06, 0.14], $p < .001$). However, the results did not support Hypothesis 2 as we discovered that anger-inducing workplace events anger were negatively associated with attitudes of self-assurance at the end of the workday ($E(\gamma) = -0.08$, $E(\sigma) = 0.03$, 95% *CI* [-0.14, -0.01], $p = .02$), which was contrary to the positive relation that we proposed.

The results of the study also showed that there is a small to medium effect size between anger-inducing workplace events and employees' attitudes of helplessness, with a fully standardized beta-coefficient of $E(\gamma) = 0.23$ and a correlation coefficient of $r = 0.32$. On the other hand, there is a small effect size between anger-inducing workplace events and employees' attitudes of self-assurance, with a fully standardized beta-coefficient of $E(\gamma) = -0.12$ and a correlation coefficient of $r = -0.14$.

Research Question Testing

The findings of our moderation analyses are displayed in Table 3. We found no evidence of approach behavior moderating the relationship between anger-inducing workplace events and attitudes of helplessness, nor did we find any moderation effects of avoidance behavior on the relationships between anger-inducing workplace events and attitudes of helplessness or self-assurance. Nevertheless, our inquiry has demonstrated that the connection between anger-inducing workplace and attitudes of self-assurance has significantly increased when approach behavior has increased ($E(\text{moderation effect}) = 0.15$, $E(\sigma) = 0.06$, 95% *CI* [0.04, 0.25], $p = .004$).

Table 1
Means, Standard Deviations, Interclass Correlation Coefficients, Reliabilities, and Correlations Among the Focal Variables

Variables	M	SD _{Level-2}	SD _{Level-1}	ICC	1	2	3	4	5
1. Anger-inducing workplace events _{T1-2}	1.70	0.57	0.77	0.42	(0.93)	0.19	0.23	0.58*	-0.06
2. Approach behavior _{T1-2}	2.46	0.71	0.56	0.56	0.01	(0.72)	0.37*	0.04	0.29*
3. Avoidance behavior _{T1-2}	2.10	0.41	0.31	0.57	0.10	0.10	(0.74)	0.44*	-0.12
4. Attitudes of helplessness _{T2}	1.55	0.62	0.58	0.51	0.32*	0.01	-0.05	(0.89)	-0.38*
5. Attitudes of self-assurance _{T2}	3.31	0.67	0.74	0.47	-0.14*	0.16	0.07	-0.40*	(0.91)

Note. $N_{Level-2} = 220$, $N_{Level-1} = 2,059$. All control variables are included. M = composite mean of factor indicators. ICC = Intraclass correlation coefficient. We calculated the ICC as $SD_{Level-2} / (SD_{Level-2} + SD_{Level-1})$. Level-2 correlations are above the diagonal. Level-1 correlations are below the diagonal. * $p < .05$.

Table 2
Confirmatory Factor Analyses Models' Fit Indices

CFA Models	χ^2	df	$\Delta\chi^2(\Delta df)$	CFI	TLI	RMSEA	AIC	BIC
Hypothesized model	1879.09	1053		0.94	0.93	0.02	70 406.00	71 655.86
Constrained model 1 ^a	7741.34	1111	$p < 0.05$	0.48	0.45	0.05	77 380.89	78 304.20
Constrained model 2 ^b	3265.19	1067	$p < 0.05$	0.83	0.81	0.03	72 290.14	73 461.18
Constrained model 3 ^c	3199.15	1067	$p < 0.05$	0.83	0.82	0.03	72 255.47	73 426.50

Note. $N_{\text{Level-2}} = 220$, $N_{\text{Level-1}} = 2,059$. All control variables are included. The statistical significance of the model comparison between constrained and hypothesized models is assessed by $\Delta\chi^2(\Delta df)$.

^a All indicators are constrained to load on the same factor.

^b Indicators of anger-inducing workplace events and attitudes of helplessness are constrained to load on the same factor.

^c Indicators of anger-inducing workplace events and attitudes of self-assurance are constrained to load on the same factor.

Table 3
Unstandardized Coefficient Estimates and Posterior Standard Deviations of Direct Effects

Variables	Attitudes of helplessness _{T2}		Attitudes of self-assurance _{T2}	
	Estimate	SD	Estimate	SD
Level-2				
Gender _{T0}	0.11*	0.05	-0.17*	0.08
Social desirability (pos) _{T0}	-0.28*	0.16	0.18	0.29
Social desirability (neg) _{T0}	-0.02	0.07	0.02	0.14
Level-1				
Attitudes of helplessness _{T1}	0.39*	0.06		
Attitudes of self-assurance _{T1}			0.39*	0.05
Anger-inducing workplace events _{T1-2}	0.10*	0.02	-0.08*	0.03
Approach behavior _{T1-2}	-0.02	0.02	-0.10	0.06
Avoidance behavior _{T1-2}	-0.02	0.03	0.06	0.06
Anger-inducing workplace events _{T1-2} x Approach behavior _{T1-2}	-0.03	0.03	0.16*	0.06
Anger-inducing workplace events _{T1-2} x Avoidance behavior _{T1-2}	0.002	0.02	0.06	0.06
Anger target _{T1-2} (supervisor)	0.03	0.06	-0.14	0.12
Anger target _{T1-2} (coworker)	-0.08	0.07	0.02	0.16
Anger target _{T1-2} (customers)	0.01	0.05	0.01	0.11
Anger target _{T1-2} (miscellaneous)	0.04	0.06	-0.07	0.13
Situational control _{T1-2}	-0.03	0.03	0.07	0.06

Note. $N_{\text{Level-2}} = 220$, $N_{\text{Level-1}} = 2,059$. Social desirability (pos) = Social desirability (exaggerating positive qualities). Social desirability (neg) = Social desirability (understating negative qualities). * $p < .05$.

To inspect the effect of approach behavior on the relation between anger-inducing workplace events and attitudes of self-assurance, we conducted a simple slope difference test. The results, presented in Table 4, indicate that the negative relation between anger-inducing workplace events and attitudes of self-assuredness became stronger when approach behavior was low ($-1SD$; $E(\text{simple slope}) = -0.23$, $E(\sigma) = 0.06$, 95% $CI [-0.33, -0.11]$, $p < .001$), while it was no longer significant when approach behavior was high ($+1SD$; $E(\text{simple slope}) = 0.08$, $E(\sigma) = 0.07$, 95% $CI [-0.06, 0.20]$, $p = .28$). The difference between the two conditions was significant ($E(\text{difference}) = 0.31$, $E(\sigma) = 0.11$, 95% $CI [0.08, 0.50]$, $p = .004$). To determine the significance of the impact of approach behavior on the relation between anger-inducing workplace events and attitudes of self-assurance, we plotted a Johnson-Neyman graph, presented in Figure 2. The corresponding data indicate that the relation between anger-inducing workplace events and attitudes of self-assurance was negative and significant for approach behavior values less than or equal to 0.098 standard deviations above the sample mean, as well as positive and significant for approach behavior values greater than or equal to 2.581 standard deviations above the sample mean.

Discussion

Our research has focused on enhancing the understanding of anger in the workplace through affective events theory (Weiss & Cropanzano, 1996). To achieve this goal, we developed a comprehensive conceptual model that combines theoretical frameworks from affective events theory and cognitive theories of affective events in professional settings (see Moors et al., 2013). Our main objective was to explore whether integrating cognitive theories of emotions into affective events theory could enhance our understanding of the connection between anger-triggering events, employee attitudes at work (specifically feelings of helplessness and self-assurance), and coping strategies in the workplace. To collect data for our study, participants were asked to document their daily experiences of anger in the workplace and reflect on their feelings of helplessness and self-assurance at the end of each day. Through the analysis of these accounts, we aim to gain a deeper understanding of how events that trigger anger at work relate employee attitudes and coping at work, and how augmenting affective events theory could provide insights into these dynamics.

Theoretical Implications

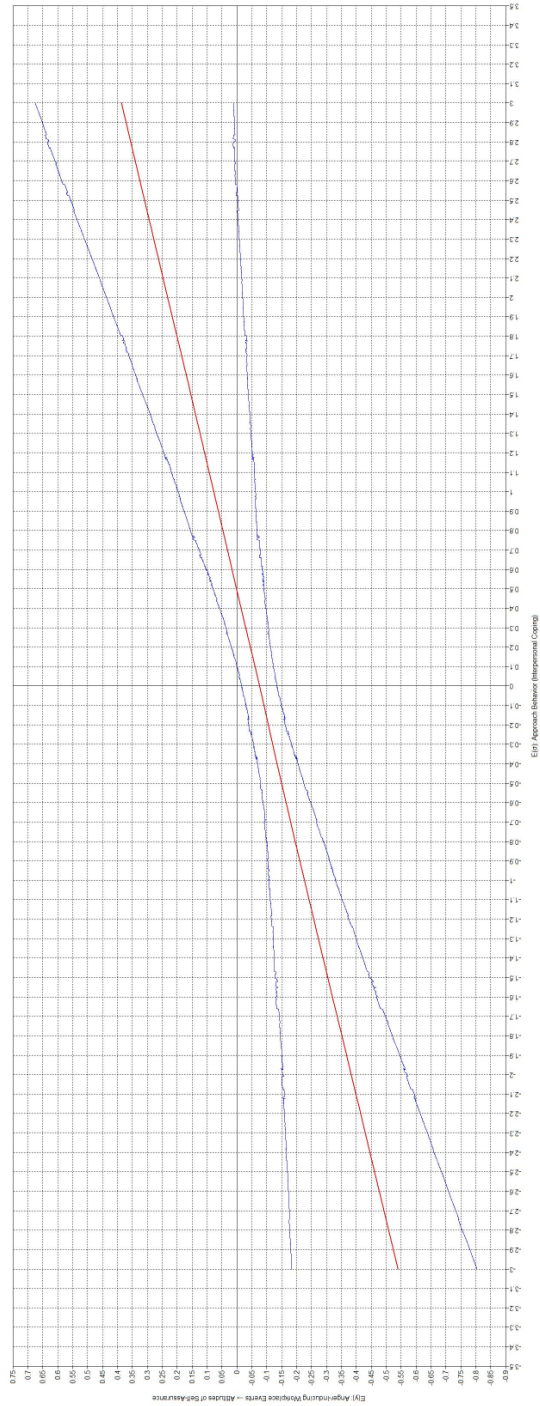
Our study provides additional support for the relative practicality of affective events theory in understanding the relationship between anger-inducing workplace events and employees' feelings of helplessness. Despite controlling for various factors such as gender, social desirability, anger target, and situational variables, we found a medium-sized effect size in this relationship. This suggests that affective events theory may be an already sufficient framework for explaining how negative workplace events are related to negative attitudes among employees.

Table 4
Simple Slope Analysis of Direct Effects

	Test of simple slopes		
	Estimate	CI LL	CI UL
Direct effects			
Approach behavior_{T1-2}			
Anger-inducing workplace events _{T1-2} → Attitudes of helplessness _{T2}			
Unconditional direct effect	0.100*	0.061	0.142
Conditional direct effect upon low (-1 SDs) approach behavior _{T1-2}	0.126*	0.067	0.185
Conditional direct effect upon high (+1 SDs) approach behavior _{T1-2}	0.076*	0.010	0.140
Difference of high and low approach behavior _{T1-2}	-0.052	-0.144	0.042
Anger-inducing workplace events _{T1-2} → Attitudes of self-assurance _{T2}			
Unconditional direct effect	-0.077*	-0.135	-0.016
Conditional direct effect upon low (-1 SDs) approach behavior _{T1-2}	-0.225*	-0.332	-0.110
Conditional direct effect upon high (+1 SDs) approach behavior _{T1-2}	0.075	-0.062	0.197
Difference of high and low approach behavior _{T1-2}	0.307*	0.079	0.498
Avoidance behavior_{T1-2}			
Anger-inducing workplace events _{T1-2} → Attitudes of helplessness _{T2}			
Unconditional direct effect	0.100*	0.061	0.142
Conditional direct effect upon low (-1 SDs) avoidance behavior _{T1-2}	0.100*	0.031	0.167
Conditional direct effect upon high (+1 SDs) avoidance behavior _{T1-2}	0.104*	0.051	0.159
Difference of high and low avoidance behavior _{T1-2}	0.003	-0.083	0.094
Anger-inducing workplace events _{T1-2} → Attitudes of self-assurance _{T2}			
Unconditional direct effect	-0.077*	-0.135	-0.016
Conditional direct effect upon low (-1 SDs) avoidance behavior _{T1-2}	-0.023	-0.139	0.106
Conditional direct effect upon high (+1 SDs) avoidance behavior _{T1-2}	-0.130*	-0.235	-0.025
Difference of high and low avoidance behavior _{T1-2}	-0.110	-0.313	0.082

Note. $N_{Level-2} = 220$, $N_{Level-1} = 2,059$. All control variables were included. Estimate = unstandardized estimate of direct effect. CI LL = lower limit of 95% credibility interval. CI UL = upper limit of 95% credibility interval. * $p < .05$.

Figure 2
Region of Significance for the Relation Between Anger-Inducing Workplace Events and Employees' Attitudes of Self-Assurance Given Varying Expressions of Approach Behavior (Interpersonal Coping)



However, the sufficiency of affective events theory in understanding workplace interactions has come into question due to a possible link between negative interactions, such as anger-inducing events, and positive employee attitudes. Traditionally, affective events theory suggests that anger-inducing workplace events should only result in negative employee attitudes (Weiss & Cropanzano, 1996). However, our study has uncovered evidence that challenges this notion, highlighting an intertheoretical disagreement and stressing the need to compare affective events theory with other theoretical frameworks beyond the organizational sciences. The small effect size observed in our study further emphasizes the need for more research to grasp the relationship between anger-inducing events and positive employee attitudes. This underscores the significance of reevaluating how affective events theory fits in with other theoretical perspectives (e.g., Moors et al., 2013) and the potential necessity of adopting a more comprehensive approach. Expanding affective events theory to incorporate the recognition of cross-paths between emotions and attitudes of varying valences could provide a more nuanced understanding of workplace dynamics.

Our study highlights the importance of incorporating interpersonal coping strategies into affective events theory. This theoretical construct is currently not adequately addressed in affective events theory (Weiss & Beal, 2005; Weiss & Cropanzano, 1996) yet seems to play a significant role in shaping the relationship between emotions and attitudes. We specifically discovered that workplace events that induce anger can have both a negative and positive relation with employees' attitudes of self-assurance, which challenges traditional assumptions in affective events theory. The shift in these relationships appears to be driven by interpersonal coping strategies, providing further evidence against the current framework of affective events theory. Therefore, it is recommended that interpersonal coping strategies be integrated as moderators within the affective events theory framework, similar to how Gross (2014) included them in their emotion regulation framework.

Practical Implications

Our study highlights the importance of leaders recognizing the potential consequences of penalizing followers for expressing their anger assertively. When followers avoid approaching the source of their anger (e.g., out of fear of punishment), their self-assurance levels seem to decrease as well. On the other hand, when employees use approach behaviors to address anger-inducing workplace events, they tend to maintain higher attitudes of self-assurance. Therefore, leaders should avoid punishing employees for using approach behaviors to manage their anger.

Additionally, our findings suggest that the approach behaviors employees use to cope with anger are not fixed and can vary widely among and within employees. This variability implies that the approach behaviors employed by employees to address anger-inducing workplace events are susceptible to change. Implementing assertiveness training may be a valuable intervention to promote positive attitudes among employees in the short term. The growing body of research on assertiveness training provides leaders with a wealth of knowledge on effective and cost-efficient ways to implement such interventions (see Abdelaziz et al., 2020; Omura et al., 2017; Speed et al., 2018).

Limitations

When interpreting the results of our study, it is crucial to consider its limitations. One such limitation is the sole reliance on self-reported measures, which may have introduced common method bias (Podsakoff et al., 2003). To mitigate this issue, we framed predictor variables as “Today at work, since filling out the last questionnaire,” and outcome variables as “Right now,” thereby constraining anger variance to be temporarily located before the variance of emotional well-being. Furthermore, we separated measurement predictor (anger-inducing workplace events) and outcome variables (attitudes of helplessness and self-assurance). However, it is important to note that future studies should consider alternative measurement time points reduce potential bias. For instance, future researchers could collect data on anger and its coping strategies on one day and emotional well-being on another day.

One limitation of our study is the lack of guarantee of causality in our study design (Doty & Glick, 1998). It is important to note that confounding variables may still be present, and experimental studies are encouraged to test our assumptions. Similar to Rochman & Diamond’s (2008) study on the relation between anger and sadness, future researchers want to investigate the relations between our constructs in within-person field experiments.

Our research using fixed sampling intervals strategy may have overlooked potential event-based variance (Trull & Ebner-Priemer, 2009). To address this limitation, we opted to customize the sampling intervals for each participant based on their individual work patterns and applied narrow sampling intervals. However, future research can benefit from incorporating random sampling prompts. This involves including random measurement times that are determined daily for each participant individually, thereby reducing the chance of missing valuable event-based variance.

Future Research Directions

Our research findings open up several avenues for future research in the field. One important question that arises is why avoidance behavior did not impact the relationships between anger-inducing workplace events and self-assurance, and to a lesser extent, the relation between anger-inducing workplace events and helplessness. Despite our theoretical expectations, we did not find any evidence to support this conclusion. Future studies with larger sample sizes may be needed to further investigate this issue and rule out the possibility of an underpowered analysis.

Another intriguing direction for future research could be exploring the relationships between positive workplace events and negative emotions. It would be interesting to investigate whether positive events could also be related to negative emotions, and whether these relationships could be either positive or negative. While there is some empirical evidence supporting the idea that positive emotions can reduce negative attitudes (Behnke et al., 2023), further research is needed to explore the possibility of positive relationships between these constructs.

Furthermore, given the findings of our study, it may be worthwhile to examine whether anger-inducing workplace events could also be related to higher job performance. It is

possible that self-assurance, which was found to be associated with anger-inducing events, could positively impact job performance (see De Jong et al., 2006; Lunenburg, 2011; Wälde & Moors, 2017). Future research could explore this potential relationship and could also investigate whether self-assurance may mediate the relationship between anger-inducing workplace events and job performance.

Conclusion

In conclusion, our study emphasizes the significance of integrating multiple theoretical frameworks in organizational and psychological sciences to enhance our understanding of anger dynamics in workplaces. By combining affective events theory and cognitivist perspectives, we were able to delve deeper into the connection between anger-provoking events in the workplace and employee attitudes. Our research also highlighted the importance of interpersonal coping, a theoretical construct insufficiently accounted for in affective events theory, in shaping these dynamics. Moving forward, it is essential to broaden existing theoretical frameworks by incorporating diverse perspectives to offer a more comprehensive insight into how anger operates within organizational settings.

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Epilogue

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As this dissertation draws to a close, the epilogue provides a final reflection on the research journey that explored the often misunderstood and mismatched emotion of anger within workplace settings. Throughout the preceding chapters, I systematically examined the fundamental characteristics of anger and its management, deepening our understanding of its essence and role in organizations. This epilogue synthesizes the key findings, discusses their theoretical and practical implications, and offers a comprehensive overview of the contributions made to both research and practice.

In this section, I will revisit the central research questions and objectives that guided this dissertation, and how they were addressed. I will then interpret the findings in the context of existing literature, highlighting how this research challenges and expands current knowledge on workplace anger. Additionally, I will discuss the practical implications of these findings for practitioners, offering recommendations for managing anger more effectively in professional environments. Finally, I will acknowledge the research's limitations and propose directions for future research.

Revisiting the Core Research Questions and Objectives

This dissertation focused on a set of fundamental research questions aimed at exploring the complex dynamics of workplace anger—an emotion often perceived predominantly negatively (Scheibe & Moghimi, 2019; Thomas, 2001; Yun & Yoo, 2021). The central questions guiding this inquiry were: What are the essential characteristics, antecedents, and outcomes of workplace anger? and which strategies can help to constructively manage anger to enhance both productivity and well-being?

To address these questions, the research was organized around three key objectives. The first objective sought to develop a foundational understanding of workplace anger by examining its core characteristics and the factors that relate to it in organizational settings. This objective was primarily tackled in the first chapter, which established the theoretical groundwork for the dissertation.

The second objective aimed to advance theoretical perspectives by exploring the role of anger within the broader context of organizational behavior, particularly its intersection with moral and justiciary considerations in the workplace. This was examined in the second chapter, where new conceptual models were introduced and empirically tested.

The third and final objective focused on identifying and evaluating constructive anger management strategies that could enhance both individual productivity and well-being. This practical focus was the centerpiece of the third chapter, where empirical studies assessed the effectiveness of various anger management techniques.

Summary of Key Findings

Findings from Chapter 1 (A Foundational Understanding of Workplace Anger)

In Chapter 1, I provided a foundational understanding of workplace anger by directly examining both state and trait anger, as well as the factors that impact and result from these emotions, drawing on the existing literature. In Manuscript 1 (*How to Capture The Rage? Development and Validation of a State-Trait Anger Scale*), I found that state anger is more narrowly conceptualized than previously theorized (c.f., Lazarus, 1991; Potegal et al., 2010), a pattern consistent across both German and American cultures. State anger was strongly associated with both direct and indirect forms of anger expression, and its occurrence in the workplace was equally influenced by the interaction between the employee and their work environment and the individual characteristics of the employee (see also Angoff, 1988; Botero, 2012; Mason & Capitano, 2012).

In contrast, trait anger, while also more narrowly conceptualized, revealed distinct differences between German and American cultures. I found that trait anger was uniquely connected to verbal aggression and had a strong relationship with state anger. Additionally, several other trait factors were associated with state anger in the workplace, as per the meta-analytical review presented in Manuscript 2 (*The Angry Employee: A Meta-Analytic Review of Workplace Anger*). Negative emotionality, longer occupational tenure, and employment in the private sector were positively correlated with state anger, whereas resilience, age, and holding higher positions within a company were negatively correlated.

I also examined the significant role that situational and workplace factors play in the experience of anger. Negative workplace events—such as acts of injustice, social mistreatment, and increased job demands—along with the attribution of blame, were positively correlated with anger. In contrast, positive workplace events, such as acts of justice, social support, and the availability of job resources, were negatively correlated with anger. Additionally, workplace environment factors, including the time elapsed since a negative event and the presence of feministic policy labeling, were positively related to anger, while individual-based reward systems were negatively related. These findings suggest that anger can be conceptualized as an emotional reaction to workplace events that are perceived negatively (see also Weiss & Cropanzano, 1996).

Furthermore, my analysis revealed that state and trait anger are closely related to hostility but remain distinct from other emotional states such as joviality, serenity, and sadness. Anger

frequently co-occurs with other negative emotions like disgust, fear, sadness, and shame, whereas positive emotions such as joviality, pride, self-assurance, serenity, and attentiveness generally show an inverse relationship with anger (see also Russell, 1980; Russell & Carroll, 1999).

The outcomes of anger in the workplace are varied and often destabilizing. I observed that anger leads to behaviors such as deviance, punishment, antagonism, counterproductive workplace behavior, hostile confrontation, and snitching (see also Geddes & Callister, 2007; Hershcovis et al., 2007). Interestingly, anger is also associated with some prosocial behaviors like constructive feedback-giving (see also Linden et al., 2003). However, it is generally negatively related to stabilizing attitudes and behaviors like sympathy, helping, organizational citizenship, and making amends. Ultimately, anger is frequently associated with a reduction in workplace performance. It is important to note that most research in this area is predicated on cross-sectional non-experimental studies, and there appears to be a presence of publication bias.

Findings from Chapter 2 (Advancing Our Understanding of Workplace Anger)

In Chapter 2, I extended the foundational insights from Chapter 1 by offering a more nuanced exploration of workplace anger, with a particular emphasis on the critical roles of morality and perceptions of injustice in shaping this emotion.

My research revealed that workplace anger frequently stemmed from perceived moral discrepancies—specifically, the divergence between employees' expectations of how interactions should occur and the reality of how they unfold (see also Shweder et al., 1997; Rozin et al., 1999). I identified these discrepancies, especially those involving issues of justice, as significant catalysts for workplace anger. When employees perceived that their coworkers' actions contravened their moral expectations of what is right and just, this perceived immorality or injustice consistently triggered anger, leading to substantial outcomes, including antagonistic attitudes and behaviors directed toward the perceived offender (see also Lindebaum & Geddes, 2016; Tripp & Bies, 2010).

While justice-related concerns emerged as the predominant triggers of workplace anger, I also found that perceptions of irresponsibility contributed to this emotion, particularly when employees believed their coworkers were neglecting responsibilities.

These findings were synthesized into a proposed eight-stage process model, which delineates anger from other emotions by examining factors such as valence, accountability, and the changeability or sustainability of perceived moral discrepancies. Within this model, I asserted that state anger primarily arises from the perception of an undesirable moral discrepancy attributed to another individual and viewed as changeable (see also Lazarus, 1991; Hacker, 1985; Higgins, 1987), while trait anger can function as a contextual factor that influences how these moral discrepancies are perceived and shapes the ensuing emotional and behavioral dynamics. By focusing on these aspects, the model reliably and logically differentiated anger from other emotions and their dynamics.

Findings from Chapter 3 (Managing Workplace Anger Constructively)

In Chapter 3, I expanded upon the theoretical and empirical foundations established in the preceding chapters by focusing on the constructive potential of anger within the workplace. This chapter investigated strategies for managing anger in ways that facilitate positive work outcomes, contrasting these with more traditional approaches that emphasize mitigation.

The findings indicated that anger management strategies aimed at addressing and rectifying discrepancies in person-environment interactions can be particularly constructive (see also Brodscholl et al., 2007; Elliot, 2006; Wollburg & Braukhaus, 2010). Specifically, when anger was channeled into change-oriented behaviors, such as confrontation or assertion, it can significantly enhance the achievement of work-related goals if coupled with certain personality traits (i.e., workplace affiliation). These behaviors were found to be more effective in advancing organizational objectives than traditional mitigation strategies, such as suppression/rumination.

Another key insight from the research was that the constructive management of anger was closely linked to improved employee well-being. Among the various strategies examined, those involving confrontation and assertion were most strongly associated with enhanced employee well-being (see also Hershcovis et al., 2018; Karppinen et al., 2023; Wollburg & Braukhaus, 2010). In contrast, strategies such as avoidance, along with those initially redacted from the present manuscript after an initial review process—namely, unregulated outward expression, suppression/rumination, diffusion, and reliance on social support—were found to be detrimental to employee well-being. These results seem to mostly hold even for different anger targets (e.g., supervisors, coworkers, customers) or different degrees of situational control.

Overall, the results showed that change-oriented anger management strategies, which focus on resolving discrepancies in person-environment interactions (e.g., confrontation, assertion), can be beneficial for both employee productivity and employee well-being. However, it is important to note that certain change-oriented behaviors, particularly those involving uncontrolled outward expressions of anger (e.g., direct anger-out), can have negative consequences for employee well-being. Additionally, mitigation-oriented strategies, including suppression/rumination, avoidance, diffusion, and social support-seeking, were found to be particularly harmful to work outcomes.

Theoretical Implications

Objective 1: Establishing a Foundational Understanding of Workplace Anger

State-Trait Perspectives on Anger

Differentiating State and Trait Workplace Anger. Understanding workplace anger requires distinguishing between its state and trait forms. State workplace anger is a temporary emotional response triggered by specific person-environment interactions within the workplace (Steyer et al., 1999). In contrast, trait workplace anger is a stable predisposition

reflecting an individual's general tendency to experience anger in similar interactions. The relationship between these forms is crucial; trait anger modulates the experience of state anger. Therefore, examining both forms together is essential to fully understand workplace anger dynamics.

Predicting Anger Experiences and Expression. Analyzing the predictive variance between state and trait factors is vital for understanding anger manifestations in the workplace (see Deffenbacher et al., 1996; Huang & Ryan, 2011; Kluemper et al., 2009). In extreme contexts, such as interpersonal violence and criminology, traits often dominate in predicting anger and aggression (see Craig et al., 2006; Miller & Lynam, 2001; Ullrich & Marneros, 2004). However, in typical workplace settings, the influence of state and trait anger is more balanced (see da Costa et al., 2020; Deffenbacher et al., 2001; Grandey et al., 2002).

The findings of my dissertation support this balanced view, indicating that both state and trait factors equally influence anger experiences and expressions in workplace settings. This aligns with the broader nature-versus-nurture debate, suggesting that behavior is shaped by both inherent traits (nature) and situational experiences (nurture; see Angoff, 1988; Botero, 2012; Mason & Capitanio, 2012). However, for individuals with extreme trait levels (e.g., a very high or low propensity for anger), trait expressions may overshadow situational influences. Therefore, my results suggest that incorporating both situational and trait characteristics into theoretical reasoning is beneficial for better representing their relative importance in different person-environment interactions.

Morality and Workplace Anger

The Role of Morality in Workplace Anger. Workplace anger seems closely tied to perceptions of moral discrepancies in person-environment interactions rather than merely negative workplace events (c.f., Weiss & Cropanzano, 1996). This indicates that anger is fundamentally linked to moral values over hedonic considerations (c.f., Russell, 2017). Moral frameworks (proxied by trait anger), shaped by core principles potentially influenced by evolutionary processes (see also Harkness & Hitlin, 2014; Henrich & Boyd, 2001; Jensen, 2015), provide a basis for interpreting interactions at work. These moral frameworks significantly impact whether and how anger is experienced. Therefore, my results suggest that incorporating concepts of morality and moral reasoning into current and future theoretical frameworks could better capture the complex dynamics of anger, and emotions more broadly, in various person-environment interactions.

The Intersection of Morality and Emotions. The interplay between morality and emotions, particularly anger, seem crucial for understanding emotional experiences and behaviors in person-environment interactions (see Harkness & Hitlin, 2014; Rozin et al., 1999; Shweder et al., 1997). Discussions on the connection between morality and emotion have been limited, especially within organizational sciences (see Ashkanasy & Humphrey, 2011). This gap may arise from conflating morality with religion (see Ferngren, 2022; Kettell, 2012; McKay & Whitehouse, 2015), which conflicts with a purely knowledge-based

research agenda. Integrating morality into the research of emotions is essential, as emotions often intertwine with moral judgments. As such, failing to consider morality could lead to an incomplete understanding of emotions and person-environment interactions, particularly in workplace contexts.

Cultural Influences on Workplace Anger

Cultural Differences in Interpreting Workplace Anger. The relationship between workplace anger and morality is further illustrated by cross-cultural differences in interpreting anger-inducing interactions. My research shows scalar invariance in how anger is perceived in anger-provoking situations between Germans and Americans, suggesting that when fundamental moral principles align across cultures, situational interpretations of anger remain consistent. However, the lack of scalar invariance in how individuals interpret their overall tendencies to anger reveals cultural differences in moral principles, leading to diverse interpretations of what constitutes a discrepancy that may elicit anger across cultural contexts (see Manuscript 1: *How to Capture The Rage? Development and Validation of a State-Trait Anger Scale*).

Culture's Role in Shaping Emotional Experiences and Expressions. While both personality traits and situational factors influence emotional experiences and expressions, cultural factors seem to also take on great importance in intercultural research on workplace anger. People from different cultures may perceive anger-inducing situations similarly, but they differ significantly in what generally provokes anger across various contexts. If personality traits are assumed to be globally distributed evenly (see Church, 2010, 2016; Terracciano & McCrae, 2006), then culture itself becomes the primary factor shaping whether individuals are more prone to feeling or expressing anger. Consequently, intercultural research on workplace anger may want to focus on nurture-related factors—cultural influences—rather than nature-based personality traits (see Angoff, 1988; Botero, 2012; Mason & Capitanio, 2012).

Definitional Challenges and the Essence of Anger

Rethinking the Definition of Emotion. A refined understanding of workplace anger involves reconsidering how emotions are defined in affective science. Theories generally agree that emotions consist of multiple distinguishable components. For instance, constructionist and basic emotion theories define emotions as combinations of bodily states characterized by valence (hedonic tone) and arousal (activation level; Ekman & Cordaro, 2011; Russell, 1980, 2017). Cognitive appraisal theories add a third component: a motivational change that forms the core of an emotional experience (Frijda, 1987; Lazarus, 1991; Moors et al., 2013).

While I align partially with these perspectives, I propose distinguishing between the conceptualization of a construct via combination and interaction. A combination implies that components are added together to form a new, observable entity, like pieces in a puzzle. An interaction, however, suggests that components are interdependent, where changes in one directly affect the others. I argue that the combination approach explains only the formation

of an autoregulatory response (i.e., observable changes in an individual's modulatory/arousal and motivational states; see also Manuscript 5: *The Interaction Discrepancy Model: A Theoretical Framework for Understanding Person-Environment Interactions*), not the emotion itself. When components—such as modulatory changes (e.g., arousal) and motivational changes—are combined, they produce a measurable autoregulatory response, similar to aggregating values to form a composite mean. In contrast, an interaction conceptualizes these components as continuously influencing one another, creating a latent construct (see Steyer et al., 1999, 2015) that can only be estimated from observable variables.

This perspective clarifies why defining emotions within affective science is challenging. A latent construct cannot be fully defined by its components alone; these only approximate the construct, not its entirety. Emotions are more than the sum of their parts; they are latent entities resistant to complete definition (see also Kreeft, 2014). Therefore, emotions should be viewed as latent constructs inferred from autoregulatory responses. Affective research should focus less on defining “emotion” and more on researching observable autoregulatory responses, which provide a tangible approximation of their more complex parent constructs (i.e., emotions).

The Valence of Anger. The valence of workplace anger is a critical aspect to consider. The debate in affective sciences revolves around whether emotions—or their autoregulatory responses—can be meaningfully categorized as “negative” or “positive” (Barrett, 2006; Gainotti, 2019; Itkes & Kron, 2019). Most theories position emotions within an affective space that ranges from negatively to positively valenced states (Lazarus, 1991; Russell & Carroll, 1999; see also James, 1884). Valence is defined by whether the bodily states associated with the emotion are experienced as undesirable or desirable, with neutral emotions (e.g., surprise) positioned at the midpoint of this spectrum (see Ekman & Cordaro, 2011).

While these theoretical perspectives are foundational, my dissertation challenges the dichotomous view of emotional valence. For instance, anger is often categorized as negative in constructionist and basic emotion frameworks (see Russell, 1980, 2017; Russell & Carroll, 1999). However, my findings show that anger can be positive in certain contexts. Similarly, appraisal perspectives generally consider anger negative because it arises from appraising a person-environment interaction as goal-obstructive. However, the “negativity” here may pertain more to the appraisal than the emotion itself (see also Frijda, 1987; Lazarus, 1991; Roseman, 2013). Some people may find anger enjoyable or use it constructively (see Andrade & Cohen, 2007; Goldsmith et al., 2012; Wagner et al., 2016), suggesting that anger can be positive. This challenges the notion of categorizing anger—or any emotion—as inherently “negative,” “positive,” or “neutral.”

Thus, I propose that anger, like all emotions, should be viewed as a non-valenced construct. Similar to appraisal theorists (Frijda, 1987; Lazarus, 1991; Roseman, 2013), I argue that valence depends solely on the appraisal process, but I emphasize a clearer distinction between the emotion and the appraisal itself. As per my theoretical model (Manuscript 5:

The Interaction Discrepancy Model: A Theoretical Framework for Understanding Person-Environment Interactions), emotions should not be classified as negative, positive, or neutral.

The Essence and Function of Workplace Anger. Workplace anger seems to be a latent, morally and hedonically non-valenced construct—an emotion (c.f., Lazarus, 1991; Roseman, 1984; Weiss & Cropanzano, 1996). It involves modulatory and motivational changes triggered by other-attributable interactions perceived as involving undesirable yet alterable moral discrepancies. This form of anger drives corrective actions to realign person-environment interactions with an individual's moral expectations. Thus, workplace anger serves a critical function in addressing perceived moral discrepancies. When these discrepancies are deemed changeable (see also Packard & Schultz, 2023), workplace anger can occur, potentially being adaptive, fostering positive changes in the work environment (see also Callister et al., 2017; Hershcovis et al., 2018). This reconceptualization suggests workplace anger should not be inherently viewed as negative; rather, it has the potential to be a constructive force depending on how it is managed.

Objective 2: Advancing Theoretical Understanding of Workplace Anger

Affective Events Models (AEM) and Emotional Dynamics

Core Mechanisms and Emotional Sequences in AEMs. Affective Events Models (AEMs) provide a framework for understanding employee behaviors by focusing on person-environment interactions, suggesting that employees' perceptions of workplace events lead to emotional reactions, which subsequently influence attitudes and behaviors (Weiss & Cropanzano, 1996; Weiss & Beal, 2005). My research supports the core mechanisms proposed by AEMs, particularly the sequence from event to affect, attitude, and behavior in the context of workplace anger as well as the importance of personality in these relations. Therefore, my results suggest that there is a procedural aspect to how people interact with their environment (see also Scherer, 2009, 2013), contrasting with a more general systems-theoretical view where all components of a person-environment interaction occur quasi-concurrently (see Lazarus, 1991; Roseman, 1984).

Refinement of Concepts within AEMs. However, my research suggests refining certain concepts within these models. For example, the concept of “negative workplace events” has been under-theorized in AEMs (Weiss & Cropanzano, 1996; Weiss & Beal, 2005). My findings provide a clearer distinction between different workplace events (e.g., instances of injustice or irresponsibility) that lead to distinct emotional responses, such as anger. This refinement enhances the models' conceptual clarity and predictive power. Therefore, my results suggest that AEMs currently lack a clear categorization of what constitutes a (negative) workplace event and indicate that aspects of moral reasoning may be crucial in defining such a categorization.

Revising Assumptions on Negative Emotions and Coping Strategies. Additionally, my research has implications for revising assumptions within AEMs, particularly the view that “negative” affective experiences inevitably lead to negative attitudes and behaviors (Weiss & Cropanzano, 1996; Weiss & Beal, 2005). The findings suggest that emotions traditionally considered negative, such as anger, can lead to positive outcomes, including increased self-assurance and goal attainment. Moreover, my research highlights the absence of coping strategies in current models, which diminishes their explanatory power. It shows that coping mechanisms, such as assertion and avoidance, significantly impact how employees feel and act within workplaces. Therefore, my results suggest that AEMs may need to incorporate both intra- and interpersonal coping strategies to better capture the cognitive, emotional, and behavioral dynamics commonly present in workplace environments.

Cognitive Appraisal Models and the Role of Appraisals in Anger

Core Components of Cognitive Appraisal Models. Cognitive Appraisal Models offer a theoretical framework for understanding emotional experiences by focusing on how individuals cognitively perceive their interactions with the environment (Lazarus, 1991; Roseman, 1984; Scherer, 2009). These models propose that emotions arise from an individual’s assessment of whether an interaction facilitates or obstructs their goals, the perceived accountability for these effects, and the possible responses. My research aligns with these models by supporting the notion that accountability (e.g., blame) is a crucial component in the cognitive appraisal process leading to anger. Therefore, my results suggest that attributing accountability to an external source is a necessary, although not sufficient, condition for experiencing anger in a person-environment interaction. This challenges organizational theoretical models that omit blame attribution as a prerequisite for anger (see Weiss & Cropanzano, 1996; Weiss & Beal, 2005) and implies that these models may need to incorporate this attribution component to better explain and predict anger dynamics in workplace settings.

Revisiting Appraisal Processes: Relevance and Changeability. However, my research diverges from traditional models by suggesting that the appraisal of “relevance” is not an inherent part of the cognitive process leading to anger (Lazarus, 1991; Roseman, 1984; Scherer, 2009). Instead, relevance functions as a preliminary step in identifying discrepancies in person-environment interactions, which may trigger subsequent emotional responses. Furthermore, my findings identify the perception of changeability as a critical differentiating factor for anger, distinguishing it from other emotions like disgust. This challenges existing appraisal theories, which typically regard changeability as a secondary appraisal that only increases the likelihood of anger. My research suggests that changeability is a necessary appraisal component for anger. This implies that appraisal theories might more accurately explain the dynamics of anger, as distinct from disgust, if the appraisal of changeability is elevated from a secondary to a primary appraisal.

Moral Frameworks and Their Impact on Cognitive Appraisals. Additionally, my research reveals that cognitive appraisals are not the sole foundation of emotional experiences;

they are intertwined with moral frameworks that shape how cognition is applied in evaluating situations. While anger is often described as stemming from an appraisal of incongruence between current events and personal goals (Lazarus, 1991; Roseman, 1984; Scherer, 2009), my findings suggest that this appraisal is more closely related to the goal of achieving moral congruence rather than well-being. My results suggest that a fundamental assumption of appraisal theories—that an assessment of changes to well-being is the universal factor guiding all person-environment interactions—may be flawed, thereby questioning the reliability of these theories in predicting cognitive, emotional, and behavioral dynamics. Instead, my findings indicate that moral congruence should potentially replace, rather than simply be added to, well-being as the core factor driving cognitive processing in person-environment interactions.

Constructionist and Basic Emotion Models: Revisiting Fundamental Assumptions

Defining Emotion within the Affective Space. Constructionist and Basic Emotion Models attempt to explain the essence of emotions by identifying their inherent properties (Russell, 1980; Russell & Carroll, 1999; Ekman & Cordaro, 2011). These models propose that emotions are constructed from two fundamental components: valence (the hedonic tone of an emotion) and activation (the arousal level). Within this framework, anger is defined as an emotion characterized by negative valence and high arousal. My research supports the placement of anger within this affective space, as posited by constructionist theories (Russell, 1980; Russell & Carroll, 1999; Ekman & Cordaro, 2011). The findings corroborate that anger is positioned near other emotions that share similar properties, such as hostility, which also exhibits negative valence and high arousal. Conversely, my findings also support the positioning of anger as being distinct from emotions defined by either non-negative valence (such as joviality and serenity) or non-high arousal (such as sadness). Therefore, my results support the assumption that emotions are constructs made up of different components, allowing them to be relatively positioned among other emotions within an affective space.

Relational Nature of Emotions and Falsifiability of Models. However, my findings also suggest that the definition of emotions within these models is inherently relational, meaning that emotions like anger can only be fully understood when compared to other emotions (Russell, 1980; Russell & Carroll, 1999; Ekman & Cordaro, 2011). This relational aspect raises questions about the empirical falsifiability of constructionist theories, as emotions are defined not in isolation but through their relative positions to other emotions within the affective space. Therefore, my results suggest that although constructionist and basic emotion theories are theoretically intriguing, they have limitations in empirical falsifiability, which constrains their theoretical validity and reliability (see also Bacharach, 1989; Popper, 1959). This suggests that caution is needed when using these theories in organizational sciences to hypothesize about emotions and their dynamics in workplace environments.

Beyond Valence and Activation: Cognitive Appraisals and Differentiation of Emotions. Furthermore, my research questions whether the fundamental components

proposed by these models—valence and activation—are indeed the most accurate descriptors of emotional experiences (Russell, 1980; Russell & Carroll, 1999; Ekman & Cordaro, 2011). The evidence implies that appraisal processes are critical to distinguishing between emotions, contrasting with constructionist perspectives that do not typically account for cognitive evaluative components in emotional differentiation. Therefore, my findings suggest that constructionist models may overlook important mechanisms that differentiate emotions, such as cognitive appraisals.

Reconsidering the Valence of Anger. Lastly, the findings challenge the assumption that emotions, including anger, are strictly valenced (Russell, 1980; Russell & Carroll, 1999; Ekman & Cordaro, 2011). Anger, traditionally classified as negatively valenced, may in some contexts exhibit characteristics associated with positive valence, such as self-assurance. Therefore, my results suggest that the valence component, as defined in constructionist and basic emotion theories, may have limitations in capturing the essence of emotions. Instead, my findings indicate that a non-valenced component, such as motivational changes, should potentially replace—rather than merely supplement—valence as a core element of emotional constructs, alongside activation.

Objective 3: Exploring Constructive Strategies for Anger Management

Reconceptualizing Anger Management as Channeling a Potentially Constructive Emotion Rather Than Mitigating a Universally Destructive Emotion

The findings of my dissertation suggest that anger management in workplace settings should not be regarded merely as a method for mitigating a universally harmful emotion. Rather, it should be viewed as a potentially constructive strategy for channeling anger, a potentially transformative emotion, in beneficial ways. Constructive anger management involves recognizing anger as a catalyst for beneficial change. Contrary to the common perception of anger as a negative emotion that must be controlled through mitigative strategies (e.g., avoidance, distraction, seeking social support) to maintain productivity and well-being (see Scheibe & Moghimi, 2019; Thomas, 2001; Yun & Yoo, 2021), a more constructive approach may lead to lasting improvements.

Rethinking Anger Management: Constructive Strategies for Enhancing Productivity and Well-Being

Effective anger management requires shifting away from the misconception that anger is inherently negative and always associated with undesirable feelings or goal obstruction (see Scheibe & Moghimi, 2019; Thomas, 2001; Yun & Yoo, 2021). This misconception often results in anger being maligned in both research and popular culture, where it is frequently linked to cases of aggression or violence (see Fitness, 2000; Glomb, 2002; Scarpa & Raine, 1997). However, this view overlooks instances where anger, when constructively managed, has served as a productive force (see Moulds et al., 2007; Porter et al., 2008). Misguided management strategies that focus on mitigating anger rather than leveraging it

constructively can be counterproductive. Instead, constructive anger management involves change-oriented behaviors such as controlled confrontation and assertiveness, which can drive improvements in productivity and well-being. Therefore, my results suggest that the current understanding of anger management in workplaces may be, at best, insufficient and, at worst, misguided. Therefore, a critical reassessment of the nature and role of anger management within organizational theories is necessary to better explain and predict the complex dynamics involved in managing workplace anger.

Practical Implications

Regulation of State and Trait Anger: The Need for Continuous Management

My results imply a need for a crucial distinction between the regulation of state anger and trait anger. State anger, characterized as a temporary emotional response (Steyer et al., 1999), can be managed effectively through targeted strategies. Conversely, trait anger, which is a stable personality characteristic, remains largely impervious to such efforts. This dichotomy indicates that while immediate expressions of anger (state anger) can be regulated, the underlying predisposition towards anger (trait anger) is resistant to change. Given the transient success of state anger regulation and the inherent stability of trait anger, effective anger management (e.g., facilitating open yet controlled interpersonal confrontation) must be regarded as a continuous process. Without sustained and consistent management efforts, individuals are likely to revert to their baseline levels of anger regulation effectiveness.

For counselors and coaches dealing with workplace anger, this research offers a practical framework for refining their interventions. The in-depth understanding of workplace anger triggers and dynamics presented in this dissertation offers professionals a research-backed rationale that overcomes previous ethical concerns having arisen from our limited knowledge of workplace anger (see American Psychiatric Association, 2022). By incorporating proactive techniques such as assertive communication and constructive confrontation (e.g., speaking up) into their counseling methods, they can more effectively address the underlying dynamics of workplace anger. This not only fulfills ethical requirements to utilize the latest research (e.g., American Psychological Association, 2017) but also enhances the practical effectiveness of their interventions, leading to more successful client outcomes and greater therapeutic impact (Bjureberg et al., 2023; Ciesinski et al., 2022; Richard et al., 2023).

Incorporating Moral and Cultural Influences in Organizational Anger Management

For effective anger management within organizations, decision-makers should prioritize addressing “immoral” workplace factors rather than merely “negative” ones (c.f., Weiss & Cropanzano, 1996). Negative workplace factors, such as extended work hours, may be perceived negatively but might not necessarily incite anger if they are not viewed as immoral or unjust. For instance, mandatory overtime may not elicit anger when it is uniformly applied to all employees, including management.

Similarly, complexities of intercultural anger management arise from varying cultural conceptualizations of morality (proxied by trait anger) and the corresponding triggers for state anger, which are shaped by distinct moral frameworks (see also Harkness & Hitlin, 2014; Henrich & Boyd, 2001; Jensen, 2015). These cultural differences significantly impact the experience of anger. In particular, an anger management strategy (e.g., facilitating confrontation) that aligns with the moral framework of one culture (e.g., German) may not be effective in another (e.g., Chinese; see House et al., 2004), potentially harming anger regulation effectiveness.

Organizational decision-makers can apply the insights from this research to significantly improve how they manage emotions within their teams. The practical application of these findings can lead to a reduction in unnecessary conflicts, safeguarding their professional reputation and enhancing organizational success. By recognizing the potential positive aspects of workplace anger, managers can implement better management practices (e.g., by listening to angry employees rather than shutting them down) that foster productivity and employee well-being. The research provides a concrete, actionable framework that decision-makers can use to strengthen their organizational decision-making, ultimately leading to more effective organizational dynamics and improved personal performance and well-being.

Constructive and Destructive Aspects of Workplace Anger

The findings suggest that anger in the workplace can have both constructive and destructive outcomes, contingent on how it is managed (see also Callister et al., 2017; Hershcovis et al., 2018). Controlled, change-oriented behaviors—such as controlled assertion and confrontation—can enhance individual productivity and well-being. In contrast, uncontrolled change-oriented behaviors, such as angry outbursts, alongside mitigation-oriented behaviors like suppression/rumination, avoidance, diffusion, and social support-seeking, tend to have detrimental effects. These maladaptive responses can lead to a decline in both productivity and well-being.

For individual employees, this research offers practical insights to better manage their own experiences of workplace anger. By implementing the strategies discussed (e.g., speaking up in a controlled manner rather than keeping quiet when anger is felt), employees can take active steps to create work environments that better suit their needs, reducing the likelihood of conflict and improving their day-to-day work experience. Employees are empowered to control their emotional responses, leading to tangible improvements in their productivity and well-being.

Limitations and Future Research Directions

The methodological approach of this research presents several strengths, particularly in terms of sample sizes and research designs. Across all studies, the sample sizes were significantly above average (Gabriel et al., 2019), enhancing the robustness of the findings. Additionally, the combination of diary studies and vignette experiments used throughout this

research contributes to both high external and internal validity (Aguinis & Bradley, 2014; Fisher & To, 2012). Moreover, the analyses employed were conducted using some of the most valid and scrutinized analytical techniques available (González-Romá & Hernández, 2017; Kruschke et al., 2012), further bolstering the reliability of the findings.

However, there are also notable limitations to the methodology. The absence of lab experiments means that while associations can be observed, complete causality cannot be definitively established for the propositions and inferences drawn (Doty & Glick, 1998). To enhance internal validity, future studies could utilize laboratory experiments where, for example, perceptions of moral discrepancies are systematically manipulated (see Falk & Heckman, 2009). This approach would allow for more accurate inferences about the causal relationships between specific morality appraisals and the experiences and expressions of anger.

Furthermore, the reliance on self-report data introduces potential biases, particularly common method bias (Podsakoff et al., 2003), which may affect the reliability of the conclusions. Future research could address this by implementing dyadic experience sampling studies (see Gabriel et al., 2019). In these studies, participants' self-reports on anger could be supplemented by reports from coworkers (e.g., about the anger expressions of the participants), thus improving the reliability of the data.

The time-based sampling strategy utilized in all experience-sampling studies also presents a limitation, as it may not have captured all relevant variance occurring between the sampled intervals, potentially impacting the reliability and validity of the findings (Trull & Ebner-Priemer, 2009). The challenges posed by time-based sampling strategies could be mitigated by employing random sampling prompts (see Trull & Ebner-Priemer, 2009). Sampling participants and their coworkers at random intervals throughout the day could capture significant variations in anger experiences and expressions that might be overlooked with traditional time-based sampling intervals.

Additionally, the potential for floor effects in analyses involving aggression is a concern (Šimkovic & Träuble, 2019), given the infrequent reporting of such behaviors (but see Archer, 2004; Lazarus, 1991; Smith & Lazarus, 1990). To address this, more targeted sampling may be necessary. For example, research could focus on populations known to experience and express higher levels of anger, such as individuals in prison or psychiatric settings (see Beijersbergen et al., 2015; Daffern et al., 2007; Posternak & Zimmerman, 2002). By conducting research on prisoner- and patient-led anger management strategies, future research could not only validate the applicability of the findings in these under-researched populations but also significantly enhance the well-being of prisoners and patients (see also Devilly et al., 2005). Future research should also aim to replicate these findings across various cultural contexts to assess their universality. Researchers could benefit from drawing on the seminal works of Hofstede & Bond (1984) and House et al. (2004) to guide their research.

While these limitations primarily highlight areas for methodological improvement, they also point to several promising avenues for future research to expand existing theoretical thinking. While all the manuscripts included in this dissertation suggest numerous avenues for future exploration, I will focus on what I consider the most significant opportunities.

Specifically, expanding the breadth of the Interaction Discrepancy Model from Manuscript 5 (*The Interaction Discrepancy Model: A Theoretical Framework for Understanding Person-Environment Interactions*), investigating social-support seeking and potentially reappraisal as maladaptive anger-coping strategies, and applying the rationale of this dissertation to more controversial topics could greatly enhance our understanding of workplace emotions, particularly anger, and their management.

First and foremost, while the Interaction Discrepancy Model I introduced in Manuscript 5 already provides a detailed explanation of how anger dynamics function within work environments, it would be valuable to refine this model to focus exclusively on workplace-specific dynamics. In this regard, the contextual factors within the model could be enhanced by incorporating organizational-level moderators, such as supervisor behavior or organizational policies (see Gerpott et al., 2020; Kalshoven et al., 2011; Wang et al., 2021), that might influence the eight-stage process outlined in the model or the interactions between stages. This refinement could significantly improve our understanding of how these contextual factors contribute to predicting and explaining specific anger dynamics in workplace settings.

Moreover, it would be worthwhile to delve deeper into the seemingly maladaptive nature of social-support seeking as an anger-induced coping strategy. As highlighted in the discussion for Manuscript 7 (*Anger, Employee Attitudes, and Interpersonal Coping in the Workplace*), the relationship between anger experiences and employee well-being appears to deteriorate when individuals attempt to manage anger-inducing situations by seeking support from confidants. This raises an intriguing question: could it be that by relying on others to manage our anger, we diminish our sense of agency, leading to decreased self-assurance and reinforcing attitudes of helplessness? This possibility deserves further exploration, especially considering that many researchers advocate for social-support seeking as a key tool for managing anger (see Devilly et al., 2005; Lench, 2004; Maan Diong et al., 2005). The results of this research suggest that this strategy might be a double-edged sword.

Similarly, this rationale could be applied to the widely regarded coping strategy of reappraisal (i.e., a voluntary or involuntary change in one's perception of a previously perceived person-environment interaction; Gangestad & Snyder, 2000). Reappraisal is often viewed as a reliable method for enhancing well-being following the experience of traditionally negative emotions, including anger (see Gross, 2014; Lazarus, 1991; Ray et al., 2008). Although I did not examine reappraisal in my studies, as it is not strictly a coping strategy directed at anger-inducing situations (since it focuses on altering the emotional response rather than addressing the underlying person-environment interaction; see Gross, 2014; Lazarus, 1991; Maroney & Gross, 2014), existing empirical research still supports its effectiveness (Bjureberg et al., 2023; Kazantzis et al., 2018; Southward et al., 2022). However, a critical issue that few researchers seem to have addressed (see Feinberg et al., 2020) is that while reappraisal may alter the anger experience, it does not objectively change the underlying anger-inducing situation. This raises concerns that people who do not express anger when they should may inadvertently worsen their circumstances (see also Aristotle, ca. 350 B.C.E./2004). Situations do not improve on their own; they change when action is taken (see also Frijda, 1987; Lazarus, 1991). Therefore, the potential destructiveness of reappraisal in the context of anger management deserves closer scrutiny in future research.

Finally, it may be both important and controversial to extend the rationale of this dissertation—that anger is often misunderstood and mismanaged in workplace settings—to other constructs closely associated with anger, such as aggression and violence (see Archer & Coyne, 2005; Hershcovis & Barling, 2010; Piquero et al., 2013). Are the roles and dynamics of aggression and violence in workplaces similarly misunderstood or mismanaged? Could they, under proper management, be inherently transformative and constructive? While these questions may seem provocative or even ethically questionable, I urge readers to consider ongoing global conflicts, which are often supported on moral grounds. Some may then argue that workplace environments should not be compared to such conflicts, but I ask: aren't parts of the armed forces and politicians employed to address exactly such issues? Regardless, addressing these questions could be one of the most important challenges of our time, and they merit serious consideration.

Concluding Remarks

I humbly offer this dissertation as a modest contribution to the ongoing quest for deeper insights into workplace anger and its effective, constructive management. With a sense of responsibility, I present this work in the hope that it serves not only the academic community but, perhaps more importantly, those in my own community who face these challenges daily.

Anger in the workplace is a familiar trial—an emotion that often leaves us grappling with its origins and uncertain about how to deal with it. My aim has been to provide insights that may help manage this powerful emotion, potentially easing the burden of daily (work) life. I hope that the insights within these pages may equip organizational members—including scholars and academics—to continue their pursuit of effective and constructive anger management. More importantly, I hope they find the courage to stand against the prevailing moral corruption, hubris and hypocrisy, thereby enhancing both their productivity and well-being, as well as that of their immediate community.

In the end, my endeavor has been to offer modest yet practical value to my contemporaries and future generations, guided by a deep gratitude to those who came before me—who watch me still. It is for them, and them alone, to judge whether I have fulfilled this quest.

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Appendix




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Educational Background

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2022 – Present
Doctor of Social Sciences (Dr. rer. soc.) – Business and Organizational Psychology

Stuttgart, 20.09.2024,

Place, date and signature

Anlage 3

Eidesstattliche Versicherung über die eigenständig erbrachte Leistung

gemäß § 18 Absatz 3 Satz 5 der Promotionsordnung der Universität Hohenheim für die Fakultäten Agrar-, Natur- sowie Wirtschafts- und Sozialwissenschaften

1. Bei der eingereichten Dissertation zum Thema

Anger: The Misunderstood and Mismanaged Workplace Emotion

.....

handelt es sich um meine eigenständig erbrachte Leistung.

2. Ich habe nur die angegebenen Quellen und Hilfsmittel benutzt und mich keiner unzulässigen Hilfe Dritter bedient. Insbesondere habe ich wörtlich oder sinngemäß aus anderen Werken übernommene Inhalte als solche kenntlich gemacht.

3. Ich habe nicht die Hilfe einer kommerziellen Promotionsvermittlung oder -beratung in Anspruch genommen.

4. Die Bedeutung der eidesstattlichen Versicherung und der strafrechtlichen Folgen einer unrichtigen oder unvollständigen eidesstattlichen Versicherung sind mir bekannt.

Die Richtigkeit der vorstehenden Erklärung bestätige ich. Ich versichere an Eides Statt, dass ich nach bestem Wissen die reine Wahrheit erklärt und nichts verschwiegen habe.

Stuttgart, 20.09.2024

Ort, Datum

Unterschrift

Anlage: Erklärung zur Verwendung generativer KI-Systeme in Dissertationen und Habilitationsschriften

Titel der Arbeit: Anger: The Misunderstood and Mismatched Workplace Emotion.

Name der Autorin / des Autors: Robin Umbra

Bei der Erstellung der Arbeit habe ich oder haben meine Ko-Autorinnen und Ko-Autoren Systeme eingesetzt, die auf generativer künstlicher Intelligenz (KI) basieren.^{1,2,3} (Bitte wählen sie genau eines der folgenden Felder aus)

- Ja
 Nein

Falls Sie „Ja“ ausgewählt haben, Füllen Sie den Rest des Formulars aus. Falls Sie „Nein“ ausgewählt haben, reicht im Folgenden die Angabe von Ort, Datum und Unterschrift.

Bei der Erstellung der Arbeit habe ich die folgenden auf generativer KI basierten Systeme benutzt:^{2,3}

1. ChatGPT
2. Grammarly

Ich erkläre weiterhin, dass ich

- mich soweit aktiv über die Leistungsfähigkeit und Beschränkungen der oben genannten KI-Systeme informiert habe, dass ich sie verantwortungsvoll einsetzen kann,
- überprüft habe, dass die mithilfe der oben genannten KI-Systeme generierten und von mir übernommenen Inhalte faktisch richtig sind,
- mir bewusst bin, dass ich als Autorin oder Autor dieser Arbeit die Verantwortung für die in ihr gemachten Angaben und Aussagen trage.
- die aus den oben angegebenen KI-Systemen übernommenen Inhalte durch meine Angaben in der untenstehenden Tabelle gekennzeichnet habe,
- mir bewusst bin, dass der Verstoß gegen die Kenntlichmachung der Nutzung generativer KI in meiner Arbeit eine Täuschung ist und zur Bewertung mit ungenügend führt.

¹ Wenn Teile der Arbeit gemeinsam mit Ko-Autorinnen oder Ko-Autoren verfasst sind, bezieht sich diese Erklärung auch auf deren Nutzung von generativer KI, sofern dies Arbeitsschritte betrifft, zu denen Sie selbst auch einen Beitrag geleistet haben. Im Fall gemeinsamer Arbeit mit Ko-Autorinnen oder Ko-Autoren müssen Sie mit Ihrer Dissertation oder Habilitationsschrift auch eine Ko-Autorenerklärung abgeben. In dieser geben Sie an, zu welchen Beitragsbereichen eines Fachartikels Sie beigetragen haben. Ob und wie in diesem Beitragsbereich mit Bezug zu Ihrer Prüfungsleistung generative KI eingesetzt wurde, müssen Sie im Folgenden nach bestem Wissen und Gewissen angeben. Hierfür müssen Sie sich bei Ihren Ko-Autorinnen und Ko-Autoren informieren. Beinhalteten Fachartikel in Ihrer Arbeit Beitragsbereiche, an denen Sie gemäß Ko-Autorenerklärung nicht beteiligt waren, muss für diese Beitragsbereiche auch keine Erklärung der Nutzung generativer KI abgegeben werden.

² Diese Erklärung gilt nicht für die Verwendung grundlegender weit verbreiteter Hilfsmittel zur Überprüfung von Rechtschreibung und Grammatik, zur Übersetzung von Texten und zur Verbesserung von Softwarequalität für Datenauswertung und Softwareprototypen.

³ Wenn Sie unsicher sind, ob eine verwendetes IT-System ein generatives KI-System ist und/oder ob Sie es angeben müssen, geben Sie es an.

Die oben genannten KI-Systeme habe ich wie im Folgenden dargestellt eingesetzt.

Beitragsbereiche	Eingesetzte(s) KI- System(e)		Beschreibung der Verwendungsweise und Einhaltung der guten wissenschaftlichen Praxis, ggf. separat nach Kapiteln der Arbeit
Entwicklung und Konzeption des Forschungsvorhabens	keine		Aber siehe auch „Andere Beiträge“.
Erhebung und Auswertung der Literaturquellen	keine		Aber siehe auch „Andere Beiträge“.
Erarbeitung, Erhebung und/oder Beschaffung der Daten	1		Im Rahmen der Manuskripte 5 (Studie 2) und 6 (Studie 2) wurden KI-gestützte Tools, einschließlich ChatGPT, zur Unterstützung bei der Generierung und Überarbeitung von Vignetten und Skalen verwendet. Diese Inhalte wurden von dem Autor sorgfältig auf ihre inhaltliche Richtigkeit, Validität und Reliabilität geprüft. Darüber hinaus wurden die erstellten Inhalte entsprechend den Richtlinien zur Einhaltung der guten wissenschaftlichen Praxis überprüft und bei Bedarf angepasst.
Aufarbeitung der Daten	keine		Aber siehe auch „Andere Beiträge“.
Auswahl der Methodik	keine		Aber siehe auch „Andere Beiträge“.
Programmierungen	1		Zur Unterstützung bei der Generierung und Optimierung von Code-Snippets, beispielsweise für Debugging-Zwecke, sowie bei der Konvertierung und Formatierung der Dissertation in LaTeX wurden KI-gestützte Tools eingesetzt. Die erstellten Inhalte und Formate wurden vom Autor sorgfältig auf Richtigkeit überprüft und bei Bedarf gemäß den Richtlinien der guten wissenschaftlichen Praxis angepasst.
Analyse/Auswertung der Daten/der Quellen	keine		Aber siehe auch „Andere Beiträge“.
Interpretation der Analyse/Auswertung und Ableitung von Schlussfolgerungen	keine		Aber siehe auch „Andere Beiträge“.
Verfassen des Manuskripts: Erstellung von Visualisierungen	keine		
Verfassen des Manuskripts: Strukturierung des Texts	1		Im Rahmen der Manuskripte 1–7 sowie des Kumulus (einschließlich Kurzzusammenfassungen und deren Übersetzungen) wurden zur (Um-)Strukturierung des Textes sowie zur Unterstützung bei diesen Prozessen unterstützende Tools verwendet. Dies umfasste insbesondere die Erstellung von Strukturierungsvorlagen sowie die (Um-)Strukturierung von Texten. Die erstellten Inhalte wurden vom Autor sorgfältig auf ihre

			Richtigkeit überprüft und bei Bedarf gemäß den Richtlinien der guten wissenschaftlichen Praxis angepasst.
Verfassen des Manuskripts: Formulierung von Text	1, 2		<p>Im Rahmen der Manuskripte 1–7 sowie des Kumulus (einschließlich Kurzzusammenfassungen und deren Übersetzungen) wurden verschiedene digitale Werkzeuge wie ChatGPT und Grammarly zur Formulierung, Erstellung und Überarbeitung von Texten sowie zur Unterstützung bei diesen Prozessen eingesetzt. Dies umfasste insbesondere die Formulierung, Erstellung und Überarbeitung von textinternen Zusammenfassungen, einschließlich Kurzzusammenfassungen, Zusammenfassungsabsätzen und -sätzen, Abstracts sowie Einleitungen für Diskussionen. Zudem wurden Recap- und Übergangssektionen formuliert und überarbeitet. Auch Umformungen, Strukturierungen und Restrukturierungen von Texten wurden vorgenommen. Darüber hinaus wurden Textentwürfe basierend auf bereits vorhandenen Inhalten und Entwürfen entwickelt und verfeinert, etwa durch Modell-Training unter Verwendung des vorhandenen Textes.</p> <p>Alle erstellten Texte wurden vom Autor sorgfältig auf inhaltliche Richtigkeit überprüft und, wo erforderlich, gemäß den Richtlinien der guten wissenschaftlichen Praxis angepasst.</p>
Verfassen des Manuskripts: Überarbeitung von Text	1, 2		<p>In den Manuskripten 1–7 und im Kumulus (einschließlich Kurzzusammenfassungen und deren Übersetzungen) wurden sprachliche Verfeinerungen, stilistische Anpassungen, Textumstrukturierungen, Textumänderungen, Vereinfachungen/Streamlining, Paraphrasierungen sowie die Umsetzung von Feedback (z. B. von Ko-Autorinnen, Peer-Reviews, Friendly Reviews) mithilfe verschiedener Tools durchgeführt. Die Texte wurden von dem Autor auf inhaltliche Richtigkeit überprüft und bei Bedarf gemäß den Richtlinien der guten wissenschaftlichen Praxis angepasst.</p>
Andere Beiträge	1		<p>Im Rahmen der Vorbereitung von Manuskript 5 wurde ein erster Entwurf des Manuskripts unter Nutzung von KI-gestützten Werkzeugen erstellt, die auf ein vom Autor bereitgestelltes konzeptionelles Modell trainiert wurden, welches den Hauptbeitrag des Manuskripts darstellt. Mithilfe dieses spezifisch trainierten Modells unterstützte die KI die Erhebung und Analyse von Literaturquellen, die Auswahl der Methodik, die Interpretation der</p>

			<p>Forschungsergebnisse sowie die Strukturierung und Formulierung des Textes. Der so entstandene Entwurf wurde von dem Autor anschließend intensiv überarbeitet und erweitert, um das finale Manuskript 5 zu erstellen.</p> <p>Ideen, Theorien und Argumente wurden zudem mit Unterstützung der KI diskutiert und weiter verfeinert, um die Klarheit und Präzision des Manuskripts zu optimieren.</p> <p>Die erstellten Inhalte wurden vom Autor auf ihre Richtigkeit überprüft und gegebenenfalls gemäß den Richtlinien der guten wissenschaftlichen Praxis angepasst.</p>
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Stuttgart, 20.09.2024,

Ort, Datum, Unterschrift



KO-AUTORENERKLÄRUNG | CO-AUTHOR STATEMENT

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How to Capture the Rage? Development and Validation of a State-Trait Anger Scale

Veröffentlichungsstatus | Publishing status:

Zur Veröffentlichung angenommen oder veröffentlicht in | accepted for publishing or published in: Journal of Personality Assessment

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- Aufarbeitung der Daten

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- Programmierungen

Programming

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Analysis/evaluation or interpretation of the data/sources and derivation of conclusions

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- Verfassen des Manuskripts - erster Entwurf

Writing of the manuscript - first draft

Anteil des Kandidaten/der Kandidatin im Beitragsbereich | Candidate share: 90%

- Verfassen des Manuskripts - Überarbeitung

Writing of the manuscript - revision

Anteil des Kandidaten/der Kandidatin im Beitragsbereich | Candidate share: 90%

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Beitragsbereiche | Contribution areas:

- Entwicklung und Konzeption des Forschungsvorhabens
Development and conception of the research project
- Erhebung und Auswertung der Literaturquellen
Collection and evaluation of literature sources
- Erarbeitung, Erhebung und/oder Beschaffung der Daten
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Unterschrift | Signature Robin Umbra:

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KO-AUTORENERKLÄRUNG | CO-AUTHOR STATEMENT

Name des Kandidaten/der Kandidatin | Name of the candidate:

Robin Umbra

Titel des Artikels | Title of the article:

The Angry Employee: A Meta-Analytic Review of Workplace Ange

Veröffentlichungsstatus | Publishing status:

Eingereicht bei | submitted to: Personnel Psychology

Anteil des Kandidaten/der Kandidatin | Candidate share:

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KO-AUTORENERKLÄRUNG | CO-AUTHOR STATEMENT

Name des Kandidaten/der Kandidatin | Name of the candidate:

Robin Umbra

Titel des Artikels | Title of the article:

The Path to Antagonism is Paved with Moral Superiority: Relations between Colleague-Directed Moral Superiority, Moral Emotions, and Workplace Antagonism

Veröffentlichungsstatus | Publishing status:

Eingereicht bei | submitted to: Journal of Business Ethics

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KO-AUTORENERKLÄRUNG | CO-AUTHOR STATEMENT

Name des Kandidaten/der Kandidatin | Name of the candidate:

Robin Umbra

Titel des Artikels | Title of the article:

Forget Not That Our Errand is Just: The Relations Between Moral Transgressions, Experiences of Immorality, Moral Emotions and Regulatory Behaviors at Work

Veröffentlichungsstatus | Publishing status:

Eingereicht bei | submitted to: Journal of Business Ethics

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Titel des Artikels | Title of the article:

The Interaction Discrepancy Model: A Theoretical Framework for Understanding Person-Environment Interactions

Veröffentlichungsstatus | Publishing status:

Eingereicht bei | submitted to: Psychological Review

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Titel des Artikels | Title of the article:

The Daily Relations Between Workplace Anger, Coping Strategies, Work Outcomes, and Workplace Affiliation

Veröffentlichungsstatus | Publishing status:

Eingereicht bei | submitted to: Journal of Organizational Behavior

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Titel des Artikels | Title of the article:

Anger, Employee Attitudes, and Interpersonal Coping in the Workplace

Veröffentlichungsstatus | Publishing status:

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