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# Predicting job performance: Antecedents of motivation and regulatory processes and the influence of individual traits - evidence from three longitudinal studies

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## Overall Summary

This cumulative dissertation addresses the impact of personal and job resources on job performance, examining the underlying psychological mechanisms. In today's fast-paced world of work, known as New Work, all actors must respond to dynamic and ever-changing situations. Employees need a specific skill set to be agile and adaptable in a constantly changing world of work. Organisations need to respond to the changing needs of employees by providing a motivating work environment, opportunities for personal development, meaningfulness and professional growth (cf. Allan et al., 2019; Ehresmann & Badura, 2018; Rehwaldt, 2017). Against this setting, it is even more important to understand how motivational and regulatory processes influence job performance, considering individual traits, personal and job resources. Because of blurred boundaries between work and personal life in today's world of work, it is crucial to consider the dynamics of prevalent processes in predicting work performance, incorporating influences from both domains. Three longitudinal studies provide a holistic perspective and shed light on the interrelationships between relevant personal traits, job and personal resources and the underlying psychological processes in predicting job performance.

The first study examines the interplay between employees' vigilance and underlying psychological processes influenced by the relationship between rest (sleep quality) and task performance during the workday. I assume that sleep quality triggers positive affective processes, initiating motivational processes (flow experience) and finally positively influencing task performance (i.e., serial mediation). Moreover, I hypothesise that vigilance is a valuable cognitive skill strengthening the positive relationship between flow experience and task performance. For this insight, 69 employees were recruited. Due to the daily fluctuating characteristics of the variables, I chose the diary study design, in which all participants received three questionnaires per day at different times over a period of ten working days. The results support all hypotheses and indicate that daily sleep quality is indirectly positively related to daily task performance via daily positive affect and daily flow experience. The interplay of vigilance and flow experience is also present in the prediction of task performance.

Specifically, when flow experience was high, employees with higher vigilance showed higher task performance, when flow experience was high, than those with lower vigilance. Study one contributes significantly to the literature and methodology by uncovering the effects of recovery processes on task performance via underlying psychological mechanisms and the influence of vigilance, which had not been previously examined.

The second study examines the interplay between employees' trait self-control and underlying psychological processes shaped by the relationship between daily reattachment to work via communication with the romantic partner and daily task performance. Hence, this study aims to investigate the triggered affective-motivational and regulatory processes in terms of their effectiveness on task performance. In addition, trait self-control is considered as a moderator in this relationship. A ten-day diary study with three measurement points per day is developed and conducted to investigate these hypotheses. In total, daily survey data could be collected and analysed from 150 employees (721 days) living in a romantic partnership. The results of study two support some hypotheses and suggest that communicative exchanges with the romantic partner about the upcoming workday initiate a reconnecting with work before it begins, leading to affective and motivational processes that favour daily job performance. Furthermore, the results demonstrate that only people with low self-control ability benefit from morning interaction with their romantic partner about the upcoming work. These findings have both practical and theoretical implications and show that actions, such as morning interactions with a romantic partner about the upcoming workday, trigger affective and motivational processes that boost daily job performance. In particular, this study expands the reattachment to work literature by considering the mental reconnection to work (reattachment to work) and the role of the romantic partner in this process.

Study three focuses on working conditions that address employees’ needs in the context of New Work. Sense of purpose, community, and self-actualisation comprise frameworks that constitute happiness at work. Happiness at work considered a key organisational resource that promotes

employee motivation. How exactly it is related to job performance, particularly extra-productive work behaviour is the subject of this study. Against this backdrop, a two-study design to examine associations between happiness at work and employees' extra-productive behaviours (adaptive performance and organisational citizenship behaviour) was conducted. The two-study design considers different target groups (newcomers and experienced employees). Both 126 newcomers (399 measurement points) and 126 experienced employees (803 daily measurement points) from different industries participated in our studies. Based on the job-demands-resources model, it was assumed that work engagement mediates the relationship between organisational happiness and adaptive performance as well as organisational citizenship behaviour. In addition, interest-taking was assumed to moderate (strengthen) the positive relationship between happiness at work and work engagement. Both studies confirm the hypothesised mediation. Interest-taking strengthens the influence of happiness at work on work engagement only for newcomers but not for experienced employees. The results of the study have both, practical and theoretical implications. They can help organisations improve the performance and motivation of all employees, regardless of their period of employment.

In summary, this cumulative dissertation provides new insights that address the challenges and realities of New Work. By uncovering the underlying psychological processes and demonstrating the interaction between these processes and individual traits, new insights for daily job performance emerge. Only longitudinal data was collected to make the assumed dynamic processes more tangible.

## Zusammenfassung

Die vorliegende kumulative Dissertation, bestehend aus drei Längsschnittstudien, befasst sich mit den Auswirkungen von persönlichen und beruflichen Ressourcen auf die Arbeitsleistung und untersucht die zugrunde liegenden psychologischen Mechanismen dieser Zusammenhänge. In der heutigen schnelllebigen Arbeitswelt, besser bekannt als New Work, müssen alle Akteure auf die dynamische Situation reagieren, um wettbewerbsfähig zu bleiben. Beschäftigte benötigen spezifische Fähigkeiten, um agil und anpassungsfähig zu sein. Organisationen hingegen müssen auf sich verändernde Bedürfnisse der Beschäftigten reagieren, indem sie ein motivierendes Arbeitsumfeld, Sinnhaftigkeit und Möglichkeiten zur persönlichen Entwicklung sowieberufliches Wachstum bieten (vgl. Allan et al., 2019; Ehresmann & Badura, 2018; Rehwaldt, 2017). Vor diesem Hintergrund ist es umso wichtiger zu verstehen, wie Motivations- und Regulationsprozesse die Arbeitsleistung unter Berücksichtigung individueller Fähigkeiten sowie persönlicher und beruflicher Ressourcen beeinflussen. Angesichts der verschwimmenden Grenzen zwischen Arbeit und Privatleben in der heutigen Arbeitswelt ist es umso wichtiger, die Dynamik der vorherrschenden Prozesse bei der Vorhersage der Arbeitsleistung zu berücksichtigen und Einflüsse aus beiden Bereichen (Arbeit und Privatleben) einzubeziehen. Die drei Studien zeigen mit ihrer ganzheitliche Perspektive wie die sich die Wechselbeziehungen zwischen relevanten persönlichen Merkmalen, beruflichen und persönlichen Ressourcen und den zugrunde liegenden psychologischen Prozessen auf die Vorhersage der Arbeitsleistung auswirken. Hierzu wurden insgesamt drei Studien durchgeführt und die Ergebnisse liefern einen Mehrwert für die aktuelle Arbeits- und Organisationsforschung, Praxis und Beschäftigte gleichermaßen, indem beispielsweise passgenaue Maßnahmen abgeleitet werden können, um ein motivierendes Arbeitssetting zu schaffen.

Die erste Studie untersucht das Zusammenspiel zwischen der Vigilanz von Beschäftigten und Arbeitsleistung unter der Berücksichtigung von zugrundeliegenden psychologischen Prozessen, die durch den Zusammenhang zwischen Erholung (Schlafqualität) und Aufgabenleistung während des

Arbeitstages ausgelöst werden. Ausgehend davon, dass die Schlafqualität positive affektive Prozesse auslöst was wiederum motivierende Prozesse in Gang setzt (Flow-Erleben), ist die Annahme, dass diese affektiv-motivationalen Prozesse sich günstig auf die Aufgabenleistung auswirken (serielle Mediation). Weiterhin wird in dieser Studie die Rolle von Vigilanz als eine wertvolle kognitive Fähigkeit in der Beziehung zwischen Flow-Erleben und Arbeitsaufgaben untersucht. Für diese Erkenntnis wurden 69 Beschäftigte rekrutiert. Aufgrund der täglich schwankenden Eigenschaften der Variablen wurde das Design einer Tagebuchstudie ausgewählt, bei der alle Teilnehmer an zehn Arbeitstagen drei Fragebögen pro Tag zu unterschiedlichen Zeiten erhielten. Die Ergebnisse unterstützen alle aufgestellten Hypothesen und zeigten, dass die tägliche Schlafqualität über den täglichen positiven Affekt und das tägliche Flow-Erleben indirekt positiv mit der täglichen Aufgabenleistung zusammenhängt. Das Zusammenspiel von Vigilanz und Flow-Erleben zeigt sich auch bei der Vorhersage der Aufgabenleistung. Insbesondere zeigten Mitarbeiter mit höherer Vigilanz eine höhere Aufgabenleistung, wenn das Flow-Erleben hoch war, als Mitarbeiter mit geringerer Vigilanz. Die erste Studie leistet einen wichtigen Beitrag zur Literatur und Methodik, indem sie die Auswirkungen von Erholungsprozessen auf die Aufgabenleistung über die zugrunde liegenden psychologischen Mechanismen und den Einfluss der Vigilanz aufdeckt.

Die zweite Studie betrachtet die Verbindung zwischen der privaten und beruflichen Domäne und fokussiert den morgendlichen Zeitpunkt des Mikro-Rollenübergangs. Das Besondere an diesem Moment ist, dass das Individuum sich zwar noch in der Freizeit befindet, mental aber schon mit der Arbeit verbunden ist. Den privaten Rahmen dehnen wir in dieser Studie aus, indem wir nicht nur die gedankliche Wiederverbindung mit der Arbeit (Reattachment to Work) betrachten, sondern auch die Rolle des romantischen Partners dabei berücksichtigen. Diese Studie zielt darauf ab, die dadurch angestoßenen affektiv-motivationalen und regulativen Prozesse genauer in ihrer Wirksamkeit auf die Aufgabenleistung zu betrachten. Zudem wird die Wirksamkeit der Selbstkontrollfähigkeit in der Rolle eines Moderators bezogen auf den Zusammenhang zwischen Reattachment to Work über die Kommunikation mit dem romantischen Partner und allen Mediatoren untersucht. Um die Annahmen

zu untersuchen, wurde eine zehntägige Tagebuchstudie mit drei Messzeitpunkten pro Tag durchgeführt. Insgesamt konnten die täglichen Erhebungsdaten von 150 Beschäftigten (721 Tage), die in einer romantischen Paarbeziehung leben, gesammelt und analysiert werden. Die Hypothesen konnten mit dieser Studie nur teilweise bestätigt werden. Die Ergebnisse deuten darauf hin, dass durch den kommunikativen Austausch mit dem romantischen Partner über den bevorstehenden Arbeitstag das mentale Wiederverbinden mit der Arbeit vor Arbeitsbeginn affektive und motivationale Prozesse in Gang gesetzt werden, die die tägliche Arbeitsleistung begünstigen. Weiterhin konnte nachgewiesen werden, dass vor allem Menschen mit einer niedrigen Selbstkontrollfähigkeit von der morgendlichen Interaktion mit dem romantischen Partner über die bevorstehende Arbeit profitieren. Diese Erkenntnisse haben sowohl praktische als auch theoretische Implikationen und zeigen, dass durch einfache Maßnahmen wie der Austausch am Morgen mit dem romantischen Partner über den bevorstehenden Arbeitstag affektive und motivationale Prozesse auslösen, die die tägliche Arbeitsleistung unterstützt.

Die dritte Studie fokussiert Arbeitsbedingungen und Bedürfnisse von Beschäftigten im Kontext von New Work. Sinnempfindung, Gemeinschaft und Selbstverwirklichung umfassen Rahmenbedingungen, die Glück bei der Arbeit darstellen. Diese Rahmenbedingungen bei der Arbeit gelten als zentrale Organisationsressource, die Mitarbeitermotivation fördert. Wie genau sie mit Arbeitsleistung, insbesondere mit extra-produktivem Arbeitsverhalten zusammenhängt, ist Gegenstand dieser Studie. Vor diesem Hintergrund wird in einem Zwei-Studien-Design der Zusammenhang zwischen organisationalem Glück und dem extra-produktiven Verhalten (adaptive Leistung und organisational citizenship behaviour (OCB)) von Beschäftigten untersucht. Das Zwei-Studien-Design zielt darauf ab unterschiedliche Zielgruppen zu berücksichtigen (Newcomer und erfahrene Beschäftigte). Sowohl 126 Newcomer (399 Messpunkte) als auch 126 erfahrenen Beschäftigte (803 tägliche Messpunkte) verschiedener Branchen nahmen an den Studien teil. Basierend auf dem Job-Demands-Resources-Modell argumentieren wir, dass Arbeitsengagement die Beziehung zwischen organisationalem Glück und adaptiver Leistung sowie OCB vermittelt. Weiterhin

gehen wir davon aus, dass die Interessenübernahmen (interest-taking) die positive Beziehung zwischen organisationalem Glück und Arbeitsengagement moderiert (verstärkt). Beide Studien bestätigen die angenommene Mediation. Interessenübernahme verstärkt den Einfluss von organisationalem Glück auf das Arbeitsengagement lediglich bei Berufsanfängern, nicht aber bei erfahrenen Beschäftigten. Diese neuen Erkenntnisse über die Beziehung zwischen organisationalem Glück und extra-produktivem Verhalten können Unternehmen dabei helfen, die Leistung und Motivation aller Beschäftigten zu verbessern, unabhängig von ihrer Dauer der Betriebszugehörigkeit.

Zusammenfassend liefert die vorliegende Dissertation neuartige Erkenntnisse bezüglich der tagesbezogenen Arbeitsprozesse, die durch die persönlichen und arbeitsbezogenen Ressourcen ausgelöst werden und in ihrer Intensität von individuellen Fähigkeiten beeinflusst werden. Zur Untersuchung dieser Erkenntnisse wurden Längsschnitt-Daten erhoben, um die angenommenen dynamischen Prozesse umfassend zu analysieren und zu verstehen.

## Table of Contents

## List of Tables

## List of Figures

## List of Abbreviation

| | |
|---|---|
| CFA | Confirmatory Factor Analysis |
| CFI | Comparative Fit Index |
| CI | Confidence/Credibility Interval |
| *df* | *Degrees of Freedom* |
| EM | Extension Memory |
| HAW | Happiness at Work |
| IBC | Intuitive Behaviour Control |
| ICC | Intraclass Correlation Coefficient |
| IM | Intentional Memory |
| JD-R Model | Job Demands-Resources Model |
| *M* | *Mean* |
| MCFA | Multilevel Confirmatory Factor Analysis |
| MCMC | Markov Chain Monte Carlo |
| *N* | *Sample Size* |
| OCB | Organisational Citizenship Behavioral |
| ORS | Object Recognition System |
| PPC | Posterior Predictive Checking |
| PPP | Posterior Predictive *p*-Value |
| PSI Theory | Personality System Interaction Theory |
| PSR | Potential Scale Reduction |
| RMSEA | Root Mean Square Error of Approximation |
| *RQ* | *Research Question* |
| RWCP | Reattachment to Work via Communication with the Romantic Partner |
| *SD* | *Standard Deviation* |

| | |
|---|---|
| SQ | Sleep Quality |
| SRMR | Standardized Root Mean Square Residual |
| TP | Task Performance |
| V | Vigilance |

# I General Introduction: Antecedents of job performance and research questions

Factors such as digitalisation and globalisation enormously changed the world of work. It has become much more fast-paced, dynamic and complex (Hackl & Wagner, 2017). The rising competitive and global work environment requires organisations in all industries to constantly respond to these dynamic and changing situations (Baard et al., 2014). This changed work environment, better known as New Work, therefore, requires a rethinking of job performance. All potential behaviours that fulfil corporate goals must be considered (Griffin et al., 2007). More specifically, it is about job performance including task performance, adaptive performance (Berg et al., 2010), and citizenship behaviour (Podsakoff et al., 2009). Moreover, keeping high-level of job performance requires specific skills and the fulfilment of employees' needs (Allan et al., 2019; Ehresmann & Badura, 2018). Individual job performance remains the most critical construct in industrial and organisational psychology (Campbell & Wiernik, 2015). Job performance is critical for both organisations and individuals. It helps organisations increase efficiency and maintain competitiveness. Individuals, in turn, benefit from greater well-being when they perform well at work. Job performance is especially high when employees are motivated (Wang & Chen, 2020) and able to self-regulate. Due to this ever-changing world environment, it is even more important to understand the complexity of daily influences of the underlying motivational and regulatory processes in predicting job performance, considering individual abilities and personal traits. Only in this way it is possible to derive adequate recommendations and consequences for practice in order to preserve good job performance in all its manifestations such as task performance, adaptive performance (Berg et al., 2010), and citizenship behaviour (Podsakoff et al., 2009).

In our fast-paced working world, the boundaries between work and private life are becoming increasingly blurred (Kumar et al., 2023). For a long time, employees have tried to view the two areas separately and find a balance between them. At least since the Corona pandemic, it has become clear

that separating these worlds has become more difficult, if not impossible (Rothan & Byrareddy, 2020). For this reason, taking a holistic approach to examine the dynamics of motivational and regulatory processes in predicting job performance by considering antecedents of job performance from both private and organisational areas is important. Personal and professional resources facilitate motivational processes that lead to high work engagement and job performance (Bakker & Demerouti, 2007; Xanthopoulou et al., 2009). In the work and organisational psychology literature, recovery and mental reattachment to work have emerged as central themes shaping the workday (Fritz et al., 2021; Sonnentag et al., 2022). Feeling vital and recovered in the morning is associated with positive work outcomes such as proactivity (Binnewies et al., 2009; Sonnentag, 2003) and job performance (Henderson & Horan, 2021).

Especially **sleep quality** produces this state of feeling vital and recovered because it replenishes important self-regulatory resources (Dewald et al., 2010; Hagger et al., 2010). In the meta-analysis by Henderson and Horan (2020), sleep quality is shown to be related to job performance. Sleep is an essential human function, supporting many psychological processes. Good sleep shows that the resources used the day before have been replenished and that there are enough resources to invest (Hobfoll, 2011). Following the conservation of resources theory and the broaden and build theory, it can be assumed that resource investment in the morning helps to target existing resources. Resource management promotes a good working mood (positive affect), which leads to building resources in the short term (broadening). In this process, cognition is broadened, and better job performance can result from increased cognitive flexibility and problem-solving ability (Fredrickson, 2004, 2013). A resource gain motivates the individual to use more resources and achieve goals (Hobfoll, 1989). This short-term resource build leads to a long-term resource build (build). Through this cycle, individuals recognize the value of resource use and their ability to acquire new resources during the workday (Fredrickson, 2004; Fritz et al., 2021; Hobfoll, 1989). However, there is little evidence or guidance on what psychological processes and in what order they underlie this relationship.

Reattachment to work promotes self-regulatory behaviours that lead to good work outcomes (Breevaart et al., 2014). Moreover, reattachment to work has a regulating aspect and promotes motivational processes. When people mentally reattach to their work in the morning, this increases their work engagement during the whole working day (Sonnentag et al., 2020; Sonnentag & Kühnel, 2016). Reattachment to work is a mental process requiring cognitive resources (Sonnentag & Kühnel, 2016). Moreover, reattachment to work includes micro-role transition (Ashforth et al., 2000). These transitions manifest as activities across role boundaries that allow individuals to move from one role to another (Ashforth et al., 2000). Although employees experience this phenomenon daily, there are only a few studies on this topic. These studies mainly focus on motivational processes triggered by reattachment to work (Fritz et al., 2021; Schleupner et al., 2023; Sonnentag & Kühnel, 2016). The extent to which reattachment to work can contribute to coping with job demands and how it relates to job performance has not yet been studied. Furthermore, the phenomenon of reattachment to work was considered as a process that individuals experience independently. The influence of the romantic partner on this process has been completely neglected in studies, although the morning before work is very often experienced together (**reattachment to work via communication with the romantic partner (RWCP)**). Hence, based on these research gaps and the importance of sleep quality and RWCP, I derived the following first research questions:

**Research question one (RQ1):** How can personal resources such as sleep quality and RWCP predict job performance and to what extent do affective-motivational and regulative processes play a role in this relationship?

Specific skills are required in employees to respond quickly and flexibly to the constantly changing world of work. These include personal skills and traits such as quick thinking in the form of rapid information processing, independence and self-control to achieve and maintain goals. Individual traits are critical to job performance and self-regulation (Johnson et al., 2018; Wehrt et al., 2020). Individual traits are, defined as "a relatively stable, consistent, and enduring internal characteristic,

derived from a pattern of behaviours, attitudes, feelings, and habits of the individual" (*APA Dictionary of Psychology*, 2007). They determine how people approach tasks, solve problems, and overcome challenges. Self-regulation describes a process in which a specific goal is pursued while, in parallel, success is monitored and ensured. (Wehrt et al., 2022). Particular **trait self-control** can be considered as a useful trait in this context (Ridder et al., 2018) because trait self-control supports people in controlling their thoughts and regulating their emotions (Baumeister et al., 1998). Thus, it helps people to pursue goals and to organize themselves. Vigilance represents another central ability. **Vigilance** is a cognitive ability described as sustained attention that can simultaneously process multiple pieces of information (Kuhl et al., 2015). Studies have shown significant individual differences in vigilance (Kuhl et al., 2015), suggesting that some individuals have an increased ability to maintain broad, non-focused sustained attention. Individuals with high vigilance are characterized by their ability to process a wealth of information while selectively directing their focus to relevant details consistent with their goals. This trait enables them to maintain a heightened state of alertness and process a wealth of information while effectively focusing on their needs and goals. More relevant to the motivational process are traits such as **interest-taking**. It reflects an individual's trait to become intensely involved with their work environment from the inside out while viewing it from an unbiased perspective (Ryan & Deci, 2006; Weinstein et al., 2012). Interest-taking depends primarily on the ability to view internal and external circumstances in an open and unbiased manner, which creates intrinsic motivation to focus on work aspects of personal interest (Weinstein et al., 2012). Individuals with heightened interest in adoption skilfully channel their enthusiasm towards job resources. Interaction between job resources and personal traits enhances work engagement (Bakker & Demerouti, 2017). These traits are crucial in translating motivation and self-regulation into concrete actions and contribute significantly to long-term success at work. Although there is already some evidence that individual traits impact employees' daily job performance it is still unclear how these specific traits interact with the antecedents sleep quality and RWCP and how they influence job performance. Therefore, I postulate the following research question:

***Research question two (RQ2):*** *To what extent can personal traits such as self-control, vigilance and interest-taking enhance the affective-motivational and regulatory processes that precede job performance?*

Moreover, the needs of employees have also changed fundamentally. They look for conditions at work that provide them with a motivating work environment, opportunities for personal development, a sense of purpose, and professional growth (Allan et al., 2019; Ehresmann & Badura, 2018). Therefore, it is critical to identify and promote factors that provide a motivating environment to improve employee motivation and job performance. Rehwaldt and Kortsch (2022) suggest that happiness at work can be a practical approach to motivating employees at work. However, this raises the question of how the promising conditions for **happiness at work** (HAW) affect job performance and what processes are set in motion. Thus, the last research questions can be derived based on the mentioned research gaps:

***Research question three (RQ3):*** *How can job resources such as happiness at work predict job performance and to what extent do affective-motivational and regulative processes play a role in this relationship?*

Answering these research questions makes theoretical contributions by providing insights into the underlying mechanisms that precede job performance. In particular, investigating the effects of sleep quality and relatedness to work on work performance and the interaction of these antecedents with personal characteristics should lead to a better understanding of the effects of these affective-motivational and self-regulatory processes. In addition, examining job resources, such as happiness at work, will provide essential insights into how organisations can increase employee motivation and performance. Overall, answering these research questions will help expand the theoretical foundation for fostering job performance and provide practical implications for designing modern work environments. To gain a deeper understanding of the complexity of the daily influences of motivational mechanisms in predicting job performance, considering individual traits, I draw on parts of the

personality system interaction (PSI) theory to explain all phenomena in a higher-level manner in the next section.

## II Purpose of the dissertation and integration of a macro-theory

The answers to the three derived research questions (RQ1-RQ3) provide a deeper understanding of the antecedents of job performance from the private and organisational spheres. Hereby, it will examine the daily motivational and regulatory processes involved in predicting job performance as a function of individual traits. Considering the PSI theory, a higher-level theory, better known as a macro theory, makes this complex interplay more tangible. It is a collective theory of volitional action control that integrates motivational, volitional, cognitive, developmental, and personality psychological theories, among others. It takes a systemic approach that explains personality functioning through the dynamic interactions among cognitive-behavioural, motivational, and affective systems (Koole et al., 2019; Kuhl, 2001).

This dissertation aims to advance work and organisational psychology knowledge by examining the affective and motivational processes and the regulatory mechanisms of job performance. Special attention is given to antecedents in the form of personal and job resources such as sleep quality, RWCP and HAW. In addition, individual traits such as vigilance, self-control and interest-taking will be analysed for their effectiveness to understand better how they may influence these affective, motivational and regulatory processes and thus affect daily job performance. More specific, the PSI theory provides a framework, that allows to explain via the interrelationships between different macrosystems and how personal and job resources such as HAW, RWCP, and sleep quality influence individual job performance. The theory highlights the importance of the interaction between personal and job resources and individual traits for affective-motivational and regulatory processes in predicting job performance. On this basis, the theory can help better understand the complex relationships between these factors at work and derive targeted interventions to improve job performance.

The PSI theory distinguishes a total of four macrosystems that are accessible via affects and their intensities. Thus, activating all system's affects plays a crucial role. Affect, in general, is described as a

momentary emotional or mood state that someone feels and arises in the form of a positive or negative expression (Breyer & Bluemke, 2016; Gable & Dreisbach, 2021). Each macro system has its function, and the interaction between these macro systems explains how, for example, goal formation and action, motivation and regulation function (Koole et al., 2019; Kuhl, 2001). In the following the four macro systems are briefly characterized and Figure1 gives an overview of the four macro systems and their core function.

(1) The **object recognition system (ORS)** is one of the elementary personality systems. When this system is activated, it sends a warning signal showing that, for example, the desired and current situations do not match. It indicates possible threats or inconsistencies. If the situation changes or the threat decreases, the negative affect is regulated, and memory access becomes possible. Therefore, it describes a kind of error zoom, which supports, e.g. the detection of discrepancies and errors quickly and systematically. Care and conscientiousness are applied here.

(2) The **intuitive behaviour control (IBC)** also belongs to the elementary personality systems. It is mainly used for intuitive, learned and routinized behavioural execution. This system is triggered by positive affect. It signals that everything is fine, sufficient resources are available, and needs are being met. IBC promotes self-motivation and spontaneity due to the presence of positive affect. However, this system lacks long-term persistence.

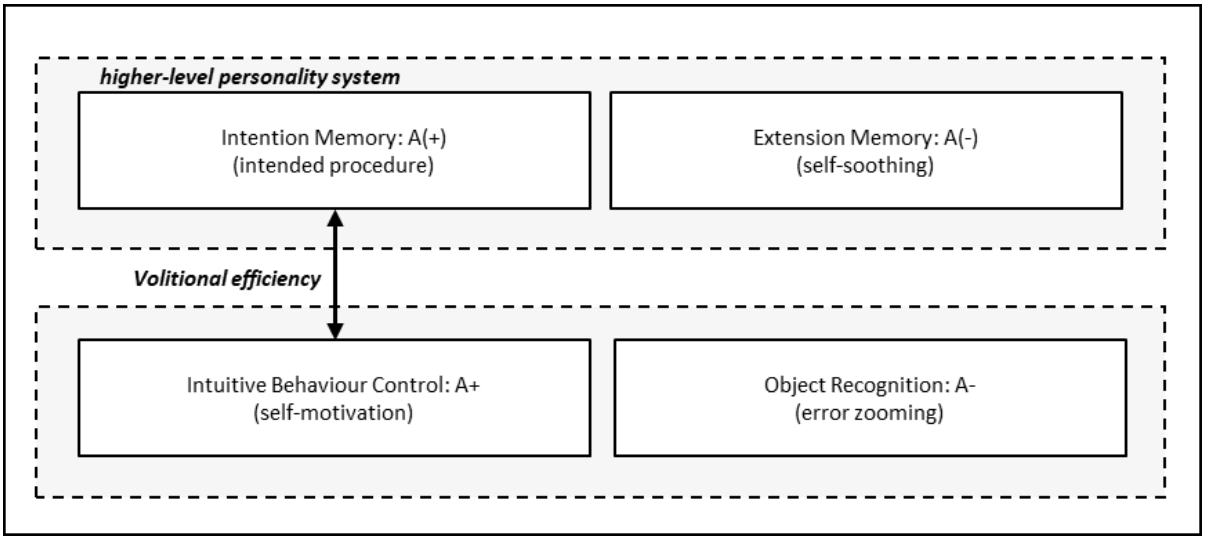
(3) **Intentional memory (IM)** is central to goal-directed action and controllable via the muted positive affect. This system can be activated when, for example, difficulties or challenges arise. As a result, the positive affect is weakened, and IM is activated. The inhibited positive affect is the focus here. IM represents a higher-level personality system. It helps people to pause. Moreover, it allows people to think about what happened to create an appropriate action plan. Then, when a positive affect arises again, this plan can be implemented.

(4) The **extension memory (EM)** processes information holistically and comprehensively, drawing on all the experiences and skills one has already experienced and learned. This highly parallel-

distributed processing is only partially consciously accessible. Among other things, it generates complex contextual feelings while simultaneously weighing inner values, needs and motives. For this reason, it is also called the system of the self. It is primarily the basis for self-calming and dealing with emotions (self-regulation). Several factors, including social resources such as high-quality relationships, can facilitate access to the system of self. High-quality relationships are characterized by personal presence, authenticity, appreciation, and empathy, as it is the case between romantic couples. Muted negative affects are responsible for the activation and usage of the EM.

**Figure 1**

*Overview and core function of all macro systems*




Even though system functioning has its own order, each system differs from person to person, increasing the complexity of PSI theory. For this reason, it is even more important to consider individual characteristics and resources in these processes. Due to the intense focus on specific states and phenomena in the individual studies, explanatory approaches of PSI theory were only used to a limited extent in some cases (see study one). Instead, other specific theories or models proved more appropriate and adequate to explain these mechanisms in individual studies (see Chapters A-C). The

decision to prefer alternative theories or models in individual cases was based on the relevance and accuracy of these approaches to the particular subjects under study.

Study one and two serve to answer the first research question regarding the antecedents of job performance in the form of sleep quality and attachment to work through communication with a romantic partner. Study three addresses the third research question by examining the influence of happiness at work on job performance. Finally, all studies address research question two as they contain helpful characteristics that influence affective-motivational and regulatory processes that precede job performance. In order to understand all phenomena and processes holistically and to contextualize all studies, a macro theory such as PSI theory is required, as the following conclusion of all studies shows.

a) Study one: Study one: A perfect beginning of a working day - how sleep quality, positive affect, flow, and trait vigilance facilitate performance at work

Based on the self-regulation theory (Baumeister et al., 2000; Vohs & Heatherton, 2000) and in line with the broaden-and-build theory (Fredrickson, 2004), the first study seeks to provide deeper insights into the psychological processes linking sleep quality to task performance. It is assumed that sleep quality promotes positive affect, which has a positive effect on flow experience, which ultimately has a positive effect on task performance. Accordingly, an affective-motivational process in the form of a serial 1-1-1 mediation is supposed. Furthermore, the moderator effect of trait vigilance on the relationship between flow experience and task performance is investigated.

Numerous studies have already demonstrated the positive relationship between sleep and positive mood. These have shown that people feel more vital and active after a restful night's sleep because their cognitive, energetic, and regulatory resources are restored (Akerstedt & Wright, 2009; Baumeister et al., 2000). Resources can be divided into personal and job resources (Demerouti & Bakker, 2023). While personal resources include social and individual resources, job resources include

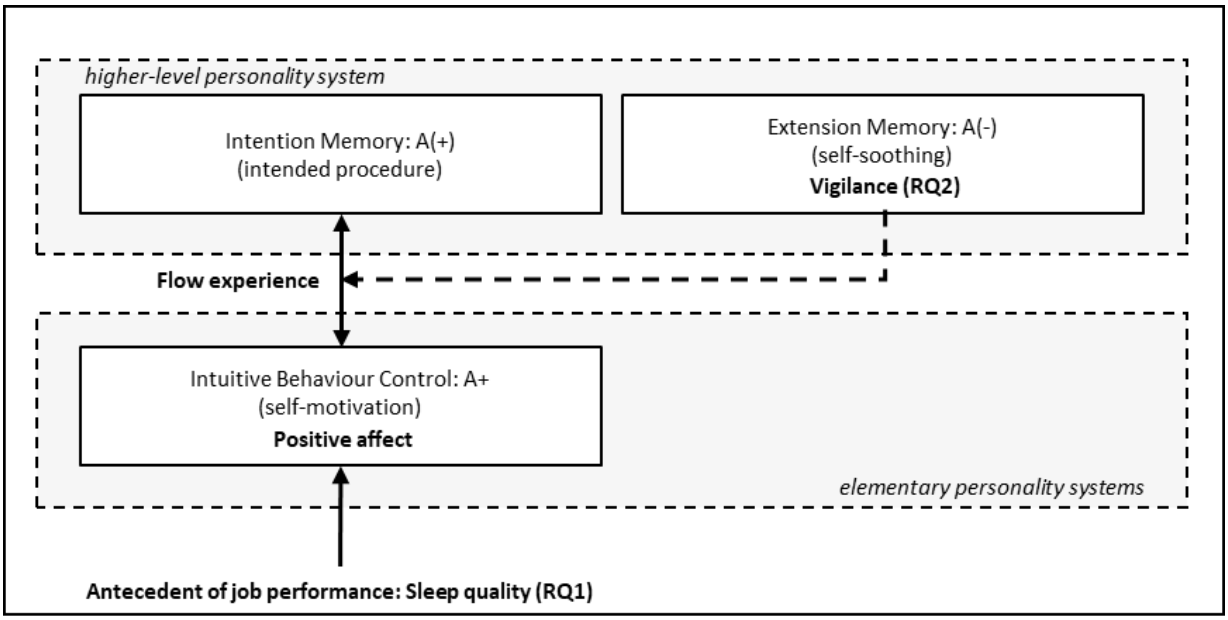
the organisational resources that enable employees to effectively perform their jobs, experience well-being and meet the demands of the workplace when they use these resources (Bakker & Demerouti, 2017, 2018; Demerouti & Bakker, 2023). Considering the PSI theory as an overarching theory of voluntary action control that integrates motivational, volitional, cognitive, developmental, and personality psychological theories, among others (Kuhl, 2001), it can be assumed that good recovery in form of sleep quality provides positive affect that facilitates the activation of the IBS which provides high levels of energy and filled resources to start the working day energized. The macrosystem IBS helps individuals enjoy positive states and respond spontaneously to external or internal stimuli. It can be described as a source of energy that suggests resource availability and stimulates motivational processes toward activity and action. (Koole et al., 2019). Activation of the IBS signals that all conditions are favourable and that active actions, which are automatic and intuitive, can now be performed because the necessary resources and motivation are available. If an employee is now confronted with work tasks that have a challenging character but are in line with the available competencies, the positive affect is dampened so that the IM can switch on. Thus, a suitable plan of action can be forged, and the success of this task activates positive affect again, which is of central importance for motivational processes such as the flow experience. The interaction of these macrosystems enables individuals to engage in a task and be highly motivated. This makes it very easy to react spontaneously and competently to a task's various demands and challenges without overthinking (Kazén et al., 2008; Kuhl, 2001; Kuhl et al., 2015). Thus, goal-directed action and motivation are promoted here so that flow experience can occur, leading to better task performance.

Even though the flow experience favours job performance, it is a state that is highly situation and task-dependent. When a challenging situation suddenly arises, this favourable moment of flow dissipates. Maintaining this affective-motivational process requires skills such as vigilance, supported by EM. **Vigilance** is a cognitive ability described as sustained attention capable of processing multiple pieces of information simultaneously (Kuhl et al., 2015). Studies have shown that there are significant individual differences in vigilance (Kleinsorge et al., 2014), suggesting that some individuals have an

increased ability to maintain broad, non-focused sustained attention. Individuals with high vigilance are characterized by their ability to process a wealth of information while selectively directing their focus to relevant details that are consistent with their goals. This trait enables them to maintain a heightened state of alertness and process a wealth of information while effectively focusing on their needs and goals. Such individuals with heightened vigilance not only exhibit improved attention, but also benefit from a broader perspective that induces optimal job performance and is most notably found in EM (Kuhl et al., 2015). Vigilance is thus able to draw on a broad pool of resources while always keeping one's interests and goals in mind. The following figure gives a visual overview of the interacting of the different macro systems.

**Figure 2**

*Overview of the interaction of the macro systems in study one*




However, when people can access well-structured and supportive external information after a restful night's sleep, they can manage their tasks more efficiently by activating affective-motivational processes. Although sleep has been extensively researched, and it is well-known that it is essential for human functioning, facilitates many psychological processes, and has far-reaching positive effects on various outcomes such as psychological well-being, self-regulation, and performance (Henderson & Horan, 2021; Chiang et al., 2014), the boundary conditions and mediating mechanisms of this

relationship have been neglected. Vigilance as a valuable trait for enhancing task performance by interacting with flow experience has not yet been investigated. By addressing these research gaps, study one provides theoretical and practical contributions in unmasking motivational and regulative processes between the assumed antecedent sleep quality of task performance and the moderating role of vigilance in this relationship (see study one in chapter A). Hence, the first study addresses RQ1 by examining the relationship between sleep quality and task performance, considering the underlying affective-motivational processes. In addition, the first study addresses RQ2 by examining vigilance and its influence on the affective-motivational processes thought to improve job performance.

b) Study two: Darling, let's talk about work! Reattachment via communication with romantic partners and its daily links to job performance

The second study provides deeper insights into the psychological processes linking RWCP to task performance. Based on the self-regulation theory (Bandura, 1991) and the episodic process model of affective influences on performance (Beal et al., 2005) is hypothesised that RWCP is related to task performance via affect (positive and negative), motivation (work engagement) and work demands (self-control demands, qualitative and quantitative workload). Furthermore, affective-motivational processes should be positively supported by the trait of self-control, which is also investigated in this study (see Chapter B).

Previous industrial and organisational psychology studies, particularly by Sonnentag and Kühnel (2016), have highlighted the importance of morning reattachment to work in shaping daily work engagement. Morning reattachment to work involves mentally preparing for the workday by focusing on upcoming work-related events, tasks, or meetings. This mental engagement facilitates the transition from non-work domains to work domains, and puts individuals in a stimulated and engaged work mood (Sonnentag & Kühnel, 2016). In the morning, just before work, a window of time opens to mark the transition into the micro-role (Ashforth et al., 2000; Sonnentag & Kühnel, 2016). This floating-

ineffective period prepares the individual to cognitively leave the private role (role exit) and assume the role of employee (role entry; Ashforth et al., 2000). However, it is very likely that it is during this period that individuals who are in a romantic couple relationship are not alone and therefore can be significantly influenced by their partners during this phase. In particular, presence and communication with the partner can play a central role in this process and influence mental preparation for work.

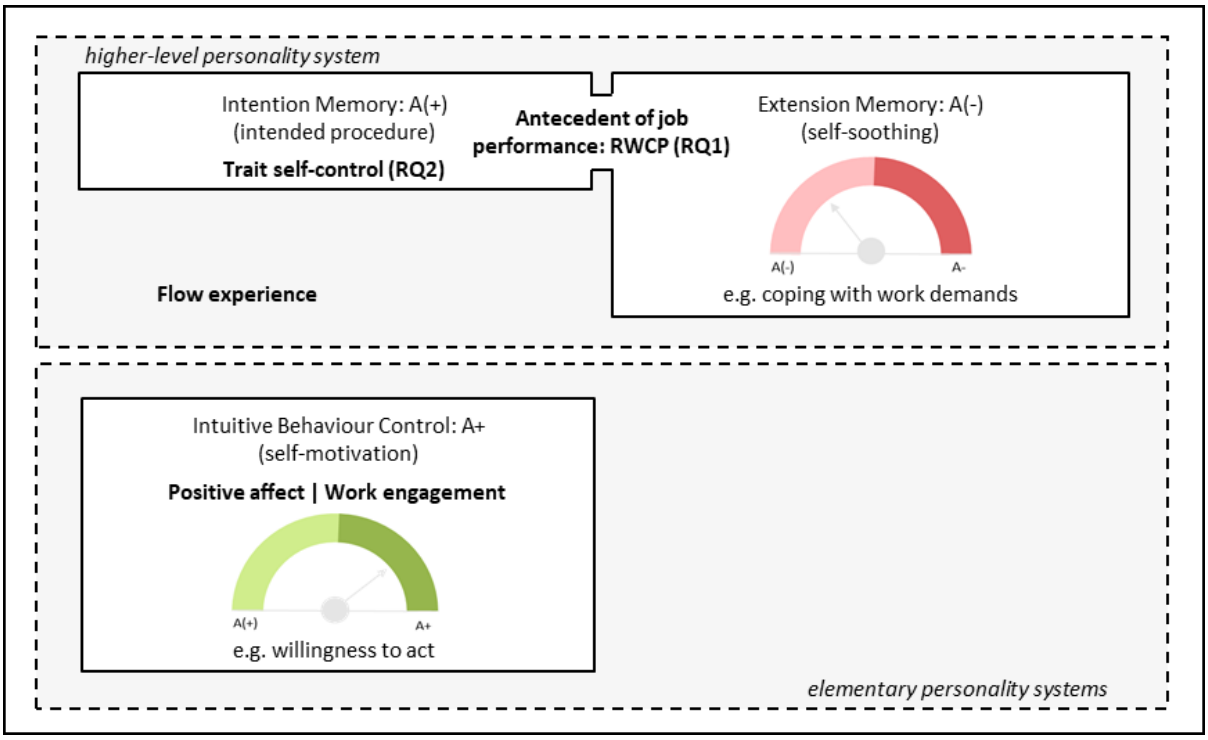
In line with the PSI theory, it becomes clear that mental reattachment to work requires the functioning of the IM. Mentally confrontation with the day ahead enables systematic planning and structuring of the day. Since this process, as assumed, is influenced and accompanied by a beloved and familiar person via the communication channel, the access to EM is paved. The interaction of the two systems helps the individual to trigger positive motivating processes on the one hand and regulating processes on the other, which have a positive effect on job performance (Kuhl, 2001; Kuhl et al., 2015). Thus, the exchange with the love partner enables access to the EM, which provides holistic and comprehensive information. Here, the form of self-soothing through regulative processes comes into play, which creates a prerequisite for optimal preparation for the working day. This form of regulation, which includes sharing with a loving person, such as a romantic partner, can help regulate mood, promote positive affect, inhibit negative affect, initiate motivational processes and lower work demands. So, in the morning, goals and plans are made that can be maintained using skills such as self-control. It refers to a person's ability to control impulses, regulate emotions, and direct behaviour toward long-term goals (Hofmann et al., 2015).

Considered within PSI theory, trait self-control plays a critical role in activating cognitive processes that contribute to self-regulation. Individuals who have high levels of trait self-control are better able to manage complex tasks while keeping their intentions in mind. This increased self-control in turn strengthens self-regulation, which ultimately leads to improved task performance (Hofmann et al., 2015; Kuhl, 2001). The self-control skill is located in the IM and supports the perception and pursuit of future-oriented plans. In addition, trait self-control provides access to IVB when dealing primarily

with automated activities that do not require planning at each step, such as travel expense reporting. Figure 3 shows how the macro systems interact in study two.

**Figure 3**

*Overview of the interaction of the macro systems in study two*




Taken together, the short time window in which the micro-role transition takes place can be influenced by romantic partners and is thus not an independent process. Following the PSI theory, motivational and regulatory processes are set in motion that have not yet been studied so far. Therefore, the second study provides further contributions to industrial and organisational psychology that addresses the antecedents of job performance and the interplay of individual traits. Like study one this study addresses RQ1 and RQ2. The first question is addressed by examining the relationship between RWCP and task performance and considering the underlying affective-motivational and regulatory processes. RQ2 concerns the examination of the trait of self-control in terms of its influence on the affective-motivational and regulatory processes hypothesised to enhance job performance, which is investigated in this study.

c) Study three: When happiness strengthens engagement and performance: the role of happiness at work as a resource for both experienced employees and newcomers

The third study investigates the relationship between the job resource HAW and extra-productive behaviour. Following the JD-R model (e.g., Bakker & Demerouti, 2007, 2017), it is assumed that this relationship is mediated by work engagement. Furthermore, it is assumed that the personal resource interest-taking interacts with HAW and has a supportive effect on work engagement. The hypothesised relationships are investigated in a two-study design with two target groups: experienced employees and newcomers (see Chapter C).

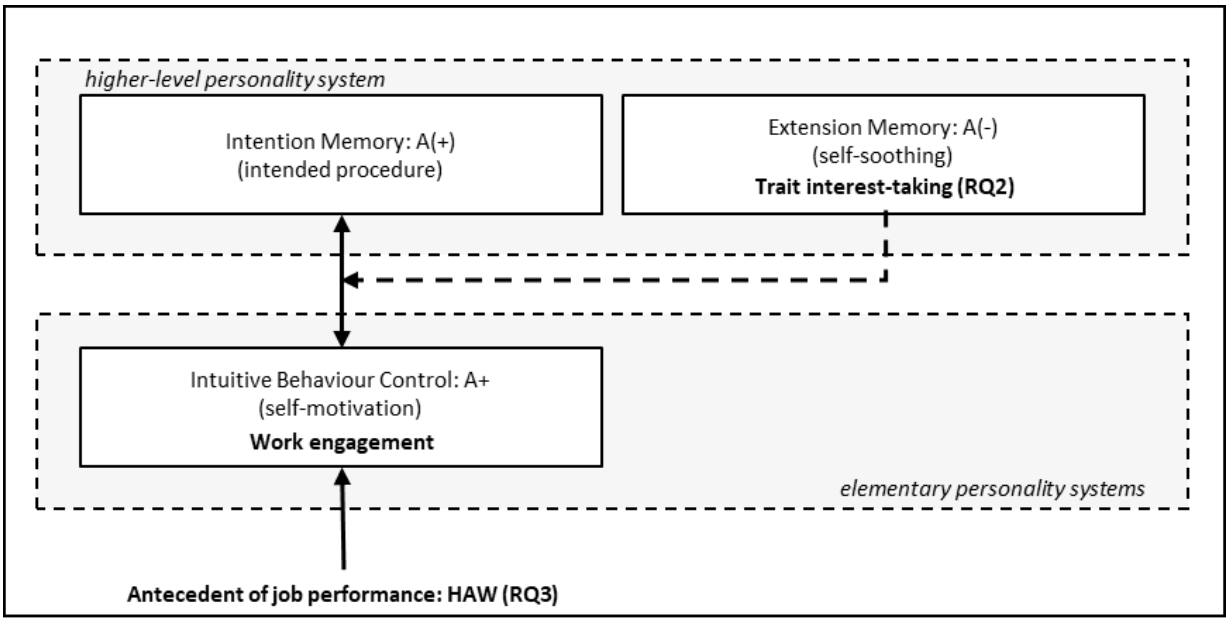
A growing number of studies show, in today's labour market, companies face the challenge of attracting and retaining qualified employees in the age of the so-called war for talent. Therefore, it is critical to identify and promote factors that provide a motivating environment to improve employee motivation and extra-productive behaviour, regardless of their tenure (e.g., Cheese et al., 2008; Monteiro et al., 2020). Particularly Rehwald and Kortsch (2022) suggest that happiness at work (HAW) can be an effective approach to motivate employees at work. Happiness at work at this point embodies an organisational resource (Rehwaldt & Kortsch, 2022) that is considered as desirable and ideal state and can positively influence job performance (Rehwaldt, 2019). Moreover, the personal trait interest-taking fosters self-directed awareness regarding matters of personal interest, as described by Ryan and Deci (2008) and Weinstein et al. (2012). We therefore contend that individuals with a higher interest-taking possess a more precise and in-depth understanding of their work environment. In making this assertion, we also incorporate the person x situation approach within the JD-R model framework, which underscores the interplay between employees' stable traits and the situational context of their work (Bakker et al., 2023).

According to PSI theory, working conditions that provide happiness at work lead all workers, regardless of industry or length of employment, to feel energized and motivated, increasing work engagement. This relationship, in turn, triggers job performance, which can be described as extra-

performance behaviour. Similar to the first study, IVB and IM interact here. Favourable working conditions activate IVB through need satisfaction and positive mood, reflected in work motivation, which takes the form of self-motivation and extra-performance behaviour. Supportive in this relationship can be the perception of interest taking, a central facet of the autonomy trait. It enables access to EM by considering all internal and external circumstances (holistic processes are processed), both through cognitive and emotional regulation processes (Koole et al., 2019; Kuhl et al., 2015). Continuous insight into oneself and one's experiences comprise a high level of self-oriented regulation (Koole et al., 2019; Ryan & Deci, 2006; Weinstein et al., 2012). Specifically, employees with this ability can better perceive work environments that promote happiness at work, leading to higher motivation in the form of work engagement.

**Figure 4**

*Overview of the interaction of the macro systems in study three*




The third study adresses RQ2 and RQ3. The third question is addressed by examining the relationship between the job resource HAW and extra-productive behaviour through the mediating variable of work engagement. The second question is addressed by examining the personal resource interset-taking and its interaction with HAW on work engagement in predicting extra-productive behaviour.

## III Design and Structure of the Dissertation

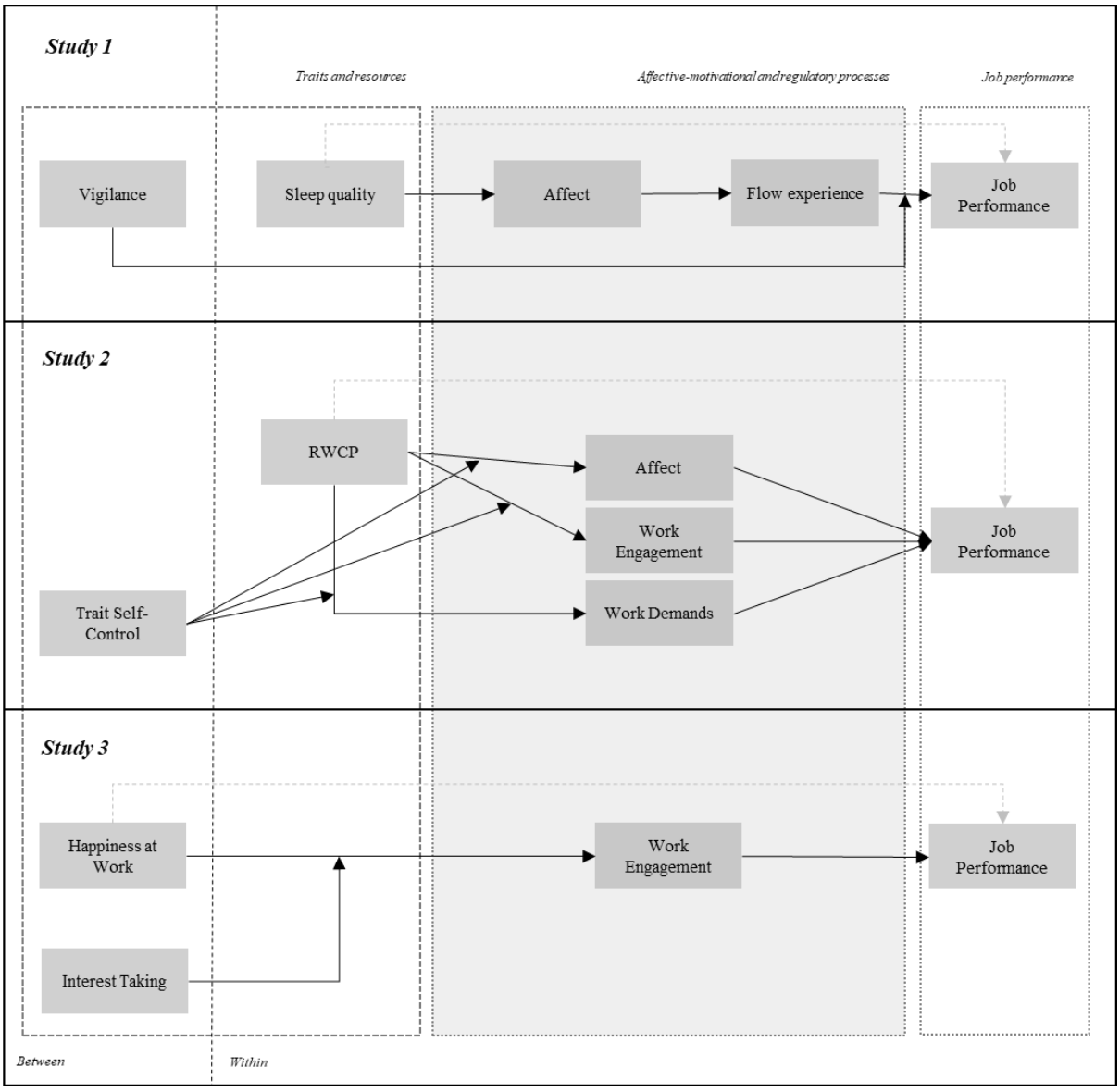
To answer the three research questions, a total of three longitudinal studies were designed, conducted, and analysed: The **first study** addresses RQ1 and RQ2 by testing a serial 1-1-1-1 mediation targeting positive affect and flow experience as mediators, and these explained the positive indirect relationship between sleep quality and daily task performance. In addition, trait vigilance as a cognitive ability was examined in this mediation model on the last pathway as a moderator. By means of the **second study**, RQ1 and RQ2 are addressed as well. In this study, the relationship between RWCP and task performance was examined using parallel moderators of positive and negative affect, work engagement, self-control demands, qualitative and quantitative workload. In addition, trait self-control as a favourable disposition regulatory variable was examined as a moderator on the a-paths. The **final study** focuses on RQ2 and RQ3. This study used a two-study design to examine the relationship between HAW and extra-productive behaviour via work engagement. Furthermore, interest-taking was examined as a moderating variable in interaction with HAW on the a-path. The target group of this study went beyond experienced employees and additionally included employees who recently started their work (newcomers).

The structure of all three studies follows a typical empirical study design (see Chapter A-C). Each chapter begins with an **abstract**, followed by an **introduction**. This is followed by a presentation of the **theoretical framework** that forms the basis for the derivation of the research hypotheses. After this section, the **methodological aspects** of each study are presented, including study design, measurement instruments and statistical elements such as descriptive statistics, reliabilities and model fit. Subsequently, the **results** of the study are presented and discussed. The **discussion** mentions the theoretical and practical contributions of the respective studies. **Limitations** and **future research** directions follow. Each study ends with a brief **conclusion**.

Concerning the used instruments of the study: All study variables used were based on self-assessments except for the vigilance measure. Vigilance was developed based on the Frankfurt Attention Inventory 2 (FAIR-2; Moosbrugger & Oehlschlägel, 2011) as an online-based psychometric (objective cognitive) test to assess vigilance characteristics (for more information, see Appendix, A1 “Overview of Constructs in Study One”, p. IV). Appendix A2 "Overview of constructs in study two" lists all research variables and Appendix A3 "Overview of constructs in study three" includes all variables used in study three. While Figure 5 shows an overview of all three research models of the respective studies of this dissertation, Table 1 shows transparently the contributions and functions of all authors and co-authors. At the end of this chapter, the three titles are listed below in Figure 5:

**Figure 5**

*Overall research model of the dissertation*




**Study 1:** A perfect beginning of a working day - how sleep quality, positive affect, flow, and trait vigilance facilitate performance at work

**Study 2:** Darling, let's talk about work! Reattachment via communication with romantic partners and its daily links to job performance

**Study 3:** When happiness strengthens engagement and performance: the role of happiness at work as a resource for both experienced employees and newcomers

**Table 1**

*Roles and contributions of authors and co-authors*

| | **Study 1** | **Study 2** | **Study 3** | |
|---|---|---|---|---|
| ***Study development & implementation*** | | | *Dairy Study* | *Weekly Study* |
| Research & topic identification | *ER* | *ER* | *ER, PF* | |
| Conceptualization | *ER* | *ER* | *ER, PF* | |
| Methodology | *ER* | *ER* | *ER, PF* | |
| Formal analysis | *ER* | *ER* | *ER* | *PF* |
| Investigation | *ER* | *ER* | *ER* | *PF* |
| Data management | *ER* | *ER* | *ER* | *PF* |
| Writing | *ER* | *ER* | *ER, PF* | |
| Discussion | *ER, PZ, SD* | *ER, SD* | *ER, PF* | |
| Supervision | *SD* | *SD* | *SD* | |

*Note. ER= Elvira Radaca, PZ = Prof. Dr. Peter Zimmermann, SD = Prof. Dr. Stefan Diestel, PF = Patrik Fröhlich*

# A Study one: A perfect beginning of a working day - how sleep quality, positive affect, flow, and trait vigilance facilitate performance at work

Authors: Elvira Radaca, Prof. Dr. Peter Zimmermann and Prof Dr. Stefan Diestel

**Authors contribution and manuscript stage**

**Elvira Radaca:** Research and topic identification, conceptualization, methodology, formal analysis, investigation, data management and writing

**Prof. Dr. Peter Zimmermann:** Discussion and Feedback

**Prof. Dr. Stefan Diestel:** Discussion, Feedback and Supervision

***Manuscript stage:*** *This study was submitted to the Journal of Occupational and Organizational Psychology in October 2023.*

**Abstract**

Over the past decade, research has increasingly focused on the positive effects of sleep in organisational contexts, showing that sleep can strongly influence employees' job performance (e.g., task completion). However, less is known about the underlying processes determining the positive relationship between sleep quality and task performance. To provide deeper insights into the role of moderators and mediators of this relationship, we conducted a daily diary study (experience sampling method) with 69 employees from different occupational contexts. All participants were briefly interviewed several times a day for ten working days. We found that sleep quality was positively and indirectly related to daily task performance via daily positive affect and flow experience during the working day. Moreover, trait vigilance (a stable cognitive skill) moderated the relationship between flow experience and task performance. Implications for theoretical advancements and practices and suggestions for future research are discussed.

***Keywords:*** *sleep quality; positive affect; flow experience; task performance; trait vigilance; experience sampling method*

# 1 Introduction

Sleep is essential for human functioning and facilitates many psychological processes. Sleep has been studied extensively in psychological research because of its far-reaching positive effects on various outcomes, such as psychological well-being, self-regulation, and performance (Henderson & Horan, 2021). In the last decade, research has increasingly focused on the beneficial effects of sleep in the organisational context, showing that sleep can influence employees' behaviour, such as task performance (Chiang et al., 2014). Task performance refers to behaviours that aim to fulfil job requirements and contribute to organisational functioning (Henderson & Horan, 2021). Although previous research documents the positive relationship between sleep and task performance, this link's boundary conditions and mediating mechanisms have been neglected. Based on the self-regulation theory (Muraven & Baumeister, 2000; Vohs & Heatherton, 2000) and in line with the broaden-and-build theory (Fredrickson, 2004), our study seeks to provide deeper insights into the psychological processes linking sleep quality to task performance. The aim is to understand the underlying process to target the right areas and support employees with suitable tools and measures to maximize their potential. In doing so, we consider momentary positive affect and daily flow experiences at work as mediators.

Affect is generally described as a momentary emotional state that someone feels (Breyer & Bluemke, 2016). Numerous studies have already demonstrated the positive relationship between sleep and positive affect. This relationship indicates that people feel more vital and active after a restful night's sleep because their cognitive, energetic, and regulatory resources are restored (Åkerstedt et al., 2009; Baumeister et al., 2000). High resource availability provided by high sleep quality promotes self-control processes, such as emotion regulation, which may also facilitate a positive affect the next morning (Palmer & Alfano, 2017). High positive affect, in turn, contributes significantly to individuals' initiation of motivational processes in order to achieve work goals and fulfil task-related requirements (e.g., Isen & Reeve, 2005). Based on these arguments and in line with the self-regulation theory (Kühnel

et al., 2021; Muraven & Baumeister, 2000), we predict that high sleep quality at night increases positive affect on the following day due to nightly resource recovery. There is convincing evidence that the motivational state as a flow experience at work is best activated when employees are fully recovered (Debus et al., 2014). Flow is a motivating and enjoyable state of mind that emerges when people are fully absorbed in their current activity (Csikszentmihalyi, 2014; Peifer & Engeser, 2021). Since recovery is a vital prerequisite for experiencing flow at work (Debus et al., 2014), we predict that sleep quality is positively associated with positive affect, which in turn also positively predicts flow experiences. Flow experiences should facilitate task performance (Peifer & Engeser, 2021). Thus, we predict indirect effects of sleep quality on task performance via positive affect and flow experiences. In line with the broaden-and-build theory (Fredrickson, 2004), we argue that positive affect expands thought-action repertoires and positively affect episodes of flow experiences as a marker of intrinsic motivation (Frederickson & Branigan, 2005). Some experimental support for our argument is provided by Isen and Reeve (2005), who showed that experiencing positive affect helps to cope with work tasks in two ways: First, positive affect enables workers to replenish and invest the regulatory resources needed for effective self-regulation, even when faced with high work demands (e.g., Schmidt & Diestel, 2012; Baumeister et al., 2007). Second, positive affect can activate intrinsic motivational processes. Moreover, recent studies prove that aspects of flow, such as intense concentration, a sense of total control over the situation, and absorption, are positively related to job performance (Soriano et al., 2021). In sum, when people enjoy good sleep quality, they feel more energetic and active, resulting in a positive affect. Positive affect, in turn, leads to increased cognitive flexibility and enhanced attentiveness, which activates motivational processes (Gable & Dreisbach, 2021). Both provision of cognitive resources through good sleep quality and promotion of motivational processes through positive affect support daily flow moments at work, which are favorable for daytime task performance through task-ability fit. Consequently, we assume that sleep quality can positively influence task performance via affective-cognitive processes, i.e., positive affect and flow experience at work.

Furthermore, we assume that trait vigilance as a specific cognitive ability boosts the within-person relationship between flow experience and task performance. We conceptualize trait vigilance as a form of attention that allows for the simultaneous processing of different relevant information (Posner & Rothbart, 2007). The primary characteristic of this form of attention is that it is a broad, non-focused form of sustained attention directed at many pieces of information or infrequently occurring events simultaneously (Kuhl et al., 2015). This attention tends to be controlled from the background of consciousness and enables focus on whatever seems relevant at the moment. Experimental studies have shown considerable interindividual differences in trait vigilance (Kleinsorge et al., 2014), enabling people to efficiently focus on relevant information regarding their needs, goals, and intentions. According to this, trait vigilance functions as an ability that manifests itself in a state of alertness. A large amount of information is processed simultaneously, selectively focused on individual needs, goals, and intentions at a broad level of attention (Kuhl et al., 2015). While people in the motivational flow state are highly focused and experience a perfect fit between tasks and abilities, we believe that people with high trait vigilance are better able to benefit from flow experiences by being more attentive and deeply aware of the motivational flow experience state, and consciously focusing their attention on things to broaden their perspective, thus providing cognitive flexibility that enables optimal task completion. In summary, our model suggests a positive indirect effect of sleep quality on task performance via positive affect and flow experiences. Moreover, this indirect effect should be stronger in individuals with high trait vigilance (compared to lower abilities, see Figure 6).

Our study provides several theoretical and practical contributions to the research areas of sleep and performance. First, we explain how sleep quality affects employees' task performance by considering affective and motivational states that build on each other. This contribution sheds light on the underlying process between sleep and task performance and identifies positive affect and flow experience at work as serial mediators in this relationship. Thus, our model integrates affective and motivational processes that explain how limited recharging resources via sleep quality and task performance are related. In sum, sleep quality has significantly impacted cognitive performance,

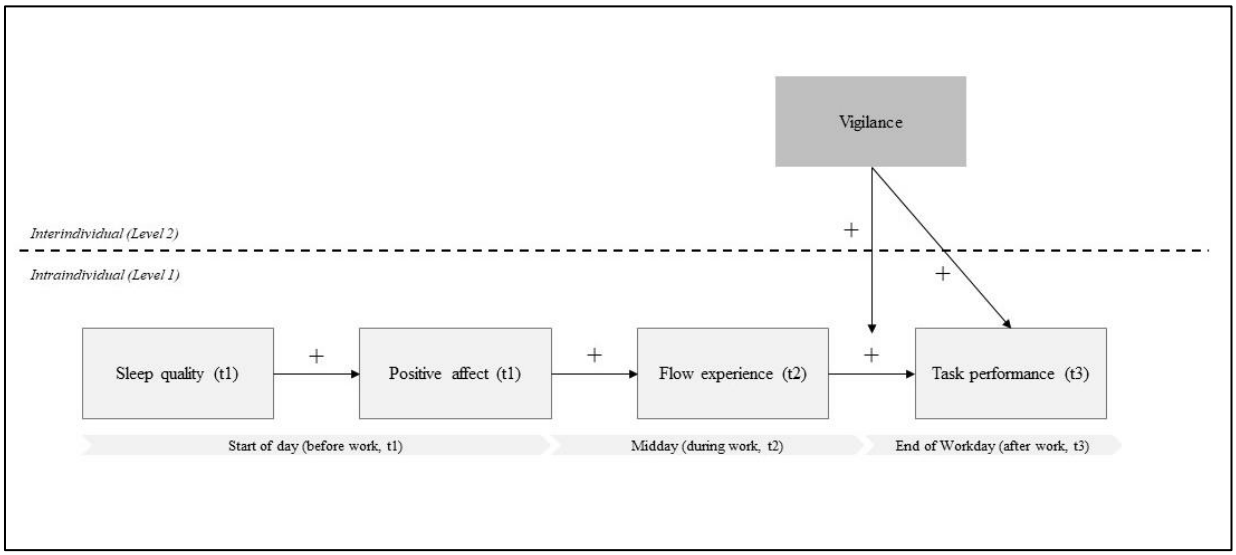
including attention, memory, and problem-solving skills. Understanding the relationship between sleep quality and task performance can help identify factors influencing productivity and efficiency in various domains, such as work. This knowledge can serve as the basis for strategies to improve well-being and optimize performance.

Second, through the lens of work and organisational psychology, we jointly examine relevant psychological phenomena such as recovery, performance, affect, and cognitive processes to understand when and how sleep quality shapes task performance fully. Furthermore, our model assumes that positive affect is an essential mediator for experiencing flow moments. Therefore, we provide new insights into the underlying processes between the already well-researched positive relationship between sleep quality and task performance.

Third, the empirical contribution is based on the order of mediators, the significance of trait vigilance as a cognitive ability in enhancing employees' task performance by immersing them in job-related activities but also on the interaction of subjective (all Level 1 variables) and objective data sources (trait vigilance). Notably, our study suggests the need to include trait vigilance as a critical component in intervention approaches to reap the benefits of the flow experience in the workplace. Therefore, the findings of this study contribute to the literature and practice by emphasizing the moderating effect of trait vigilance on the relationship between flow and task performance, thus providing valuable insights for managers and organisations to enhance employees' productivity and well-being.

**Figure 6**

*Conceptual model*



# 2 Theoretical background and hypotheses

## 2.1 Underlying processes between sleep quality and task performance

We propose that employees require enough resources for goal-directed behavior regulation that facilitates effective task completion and efficient goal achievement at work. Regarding self-regulation theory, employees have a limited and depletable self-regulatory (cognitive) resource capacity (Baumeister et al., 2000) that enables them to achieve goals at work. However, sleep quality replenishes employees' limited regulatory and cognitive resources, thereby increasing their capacity for self-regulation and enhancing task performance (Barber & Munz, 2011; Sonnentag et al., 2008) on the next working day.

In line with empirical evidence, we argue that people who had a restful sleep regenerate their cognitive resources and thus perform better at work in task performance than those who experienced poor sleep quality (for review, see Henderson & Horan, 2021). Thus, we argue that sleep primarily affects task performance by replenishing cognitive resources. Therefore, we assume that sleep quality positively predicts task performance.

***Hypothesis 1:*** *Day-specific sleep quality is positively associated with task performance during the working day.*

Although empirical evidence supports the connection between sleep quality and task performance, the underlying processes are still not completely understood. Therefore, we propose that sleep quality may enhance positive affect the next day, while positive affect promotes flow experience and thus positively impacts task performance. We derive our proposition from two theories: the self-regulation theory and the broaden-and-build theory. According to self-regulation theory, the high availability of regulatory resources supports employees in controlling goal-oriented and motivating processes (Vohs & Heatherton, 2000). However, to explain the underlying psychological mechanism between the positive relation of sleep quality to task performance via daily positive affect and daily flow experience, we expand the self-regulation theory by combining it with

the broaden-and-build theory (Fredrickson, 2004). This theory provides insights into positive emotions' action- and thought-expanding mechanisms. When people experience positive affect, they become highly motivated, building personal resources. This creates a positive upward spiral that can continue independently since repeated experiences with positive affects ultimately have a motivating effect. In other words, positive affect activates motivational processes that facilitate task performance by staying focused on goals, improving conscientious task completion, and enhancing persistence. The striving to repeat this positive experience promotes this cycle, whereby necessary cognitive resources can be built up. The mutual reinforcement of higher resource availability and increasing motivation should underly and determine the relationship between sleep quality and task performance: Sleep quality regenerates exhausted resources and promotes the emergence of positive affect the following day. The resulting positive affect produces non-specific, extended cognitive changes that broaden mental action tendencies. These tendencies manifest in high cognitive flexibility, enabling employees to adapt their behavioral and cognitive skills to task-related requirements. Therefore, positive affect causes individuals to fully concentrate on their tasks, thereby experiencing pleasurable and engrossing states of flow at work (broaden-and-build theory).

Researchers have already shown that good sleep quality improves positive affect the following day (Sonnentag et al., 2008) and that individuals in a positive mood can concentrate on given tasks (Wadlinger & Isaacowitz, 2006). In addition, good sleep promotes higher-order thinking, such as executive functions necessary for controlling and regulating one's behavior. These abilities enable individuals to create, maintain, control, correct and execute their goals or tasks (Kim et al., 2021). This state promotes perceptual enhancement and expands the repertoire of thoughts and goal-directed actions (e.g., good task performance; Fredrickson, 2013), which are led to better information processing, higher concentration, and overall higher performance (for a review, see Fredrickson, 1998). Therefore, we propose that employees who experience positive affect at work due to good sleep quality create favorable conditions for experiencing flow. Flow describes a motivational state of mind which implies intense task concentration. Flow causes employees to fade out irrelevant information

and focus attention on the task at hand (Brohm-Badry et al., 2017). Furthermore, flow moments are described as experiences of an optimal fit between skills and tasks. Both perceptions of task-ability fit and the perceptual change-induced (attentional tunneling) during flow experience explain why cognitive demands are not experienced as burdensome and more energy and resources are specifically released to complete work tasks. In the flow state, employees experience a fit between skills and tasks and increased motivation to stay on task.

This experience enables them to use available resources efficiently in task completion and goal achievement. Consequently, flow experiences positively affect task fulfillment (Peifer & Engeser, 2021). We argue that the availability of resources is facilitated by high sleep quality during the previous night. The resulting positive affect allows employees to better access their resources for meeting their job requirements by fostering motivational and cognitive processes. In sum, we propose a serial mediation that reflects how sleep quality shapes affective and cognitive processes, facilitating task performance. In detail, sleep quality should positively predict positive affect related to flow experiences at work, ultimately resulting in task performance. Thus, we derive the following Hypotheses:

***Hypothesis 2:*** *Sleep quality is positively and indirectly associated with task performance via daily positive affect and daily flow experience.*

## 2.2 The moderating role of trait vigilance

As a trait, trait vigilance forms a cognitive basis for coping with various cognitive and intellectual demands in everyday occupational and private life (Claypoole et al., 2018; Schweizer, 2006). As a central component of human cognition, it facilitates focusing on and maintaining individual goals, thereby enhancing goal-directed actions (for review, see Raz & Buhle, 2006). It relies on a favorable information processing mechanism that, in a state of alertness, can selectively process a lot of information and impressions simultaneously at a broad level of attention.

This processing mode can enable optimal utilization of fleeting but very significant flow moments for subsequent task fulfillment. On the one hand, trait vigilance helps widen the attentional scope after the narrow concentration (Posner & Rothbart, 2007) during the flow state, enabling increased performance during subsequent tasks. Whereas the narrow focus on the task at hand is important during flow experience, considering a broad range of stimuli facilitates task completion out of the flow state (e.g., Brohm-Badry et al., 2017). On the other hand, individuals with high trait vigilance can better utilize the motivating flow experience when engaging with the following tasks. Here, trait vigilance intervenes as a resource manager and enables the optimal maintenance of intrinsic motivation that expands to subsequent tasks. Trait vigilance thus functions as a personal skill relevant to the work context, enabling employees to become more aware of the affordances of specific moments and subsequent tasks by optimally using and allocating cognitive and motivational resources to achieve the set goals more quickly. Thus, individuals with high trait vigilance scores are also able to quickly recognize and identify other relevant tasks beyond those they focused on in the flow state with limited attention. Considering both cognitive and motivational processes, we assume that trait vigilance is a valuable skill moderating the positive association relationship between flow experiences and task performance.

***Hypothesis 3.*** *Trait vigilance moderates the positive relationship between daily flow experience and daily task performance such that the positive relationship is stronger (vs. weaker) when trait vigilance is higher (vs. lower).*

## 2.3 Moderated Mediation

In conclusion, we hypothesize that the indirect effect of sleep quality on daily task performance is contingent upon employees' trait vigilance. The ability to broaden the attentional scope to the task- and goal-relevant information should shape how employees benefit from their daily sleep quality, facilitating positive affect and hence flow experiences. Thus, the positive indirect effect of day-specific sleep quality on say-specific task performance will be moderated by trait vigilance in the third stage.

***Hypothesis 4:*** *Trait vigilance moderates the positive conditional indirect effect of employees' subjective sleep quality on the day-specific task performance via positive affect and flow experiences, such that the indirect effect is stronger (vs. weaker) for those employees who exhibit higher (vs. lower) trait vigilance.*

# 3 Design and Method

Data were assessed using a daily diary survey exclusively in electronic form. In a pre-survey questionnaire, we assessed demographic and person-level variables (e.g., trait vigilance test). Each participant received e-mails for ten working days - three times per day (morning, midday, and evening) with a link to day-specific questionnaires. The dispatch time of individual measurement points was based on already given details of working time within the general questionnaire. The first daily questionnaire, including sleep quality and positive affect measures, was sent two hours before work started. The second daily questionnaire arrived four hours after work started and assessed flow experience. Daily job performance was recorded with the last daily questionnaire received one hour after the end of work. The participants had a time window of two hours per daily questionnaire to complete. After one hour, a reminder e-mail was sent. All data of the daily diary study are based on self-reports. The diary study was interrupted during public holidays or weekends and continued the following regular working day. Our sample included 69 employees who filled out the daily questionnaires on 5.66 days on average (N = 69*6.25 days = 431 measurement points).

## 3.1 Measures

### *3.1.1 Daily Sleep Quality*

We measured sleep quality using two items of the Pittsburgh Sleep Quality Index (Buysse et al., 1989). Both items were rated on a four-point Likert scale and assessed the participants' sleep quality ["How would you rate the quality of your previous night's sleep?"; 0 (very good) to 3 (very bad)] as well as restfulness ["This morning, how much of a problem has it been for you to keep up enough enthusiasm to get things done?" ; 0 (not at all) to 3 (a huge problem)]. In order to capture sleep quality, we recoded both items.

### *3.1.2 Daily Positive Affect*

Positive affect was measured as psychological states with the Positive and Negative Affective Scale Inventory (PANAS Scale; Watson et al., 1988). Positive affect was measured with all ten items: active, interested, joyful, strong, excited, proud, enthusiastic, alert, determined, and attentive. Each day each participant was asked to report their affective state for each item on a five-point Likert scale (1 "not at all" to 5 "extremely").

### *3.1.3 Daily flow experiences*

We used four items to measure flow experience. These four items reflect the absorption dimension of flow (Engeser & Rheinberg, 2008; Schüler & Brunner, 2009). Participants were asked to rate on a 7-point intensity-rating scale (1 "not true at all" to 7 "absolutely true") how absorbed they were into the task they performed at work. An example item is "In the last few hours at work, I have not even noticed that time flies.".

### *3.1.4 Daily task performance*

Task performance was measured using four items (Griffin et al., 2007; Yang & Wei, 2017). The items were rated on a five-point scale ranging from 1 ("does not apply at all") to 5 ("fully applies"), and the sample item was "Today, I have done a good job."

### *3.1.5 Trait vigilance*

We used an online-based psychometric (objective cognitive) test to assess trait vigilance based on the Frankfurt Attention Inventory 2 (FAIR-2; Moosbrugger & Oehlschlägel, 2011). Participants were given the task of learning two criteria. Whenever both criteria were applied, they were supposed to click on specific figures from a row running from right to left on the screen according to specific selection

criteria (see Figure 7). In total, 80 figures were shown in random order. Each figure was displayed for about 1200ms and could be selected by tapping or clicking. The trait vigilance test works on any digital device.

For our study, we selected the quality score of the trait vigilance test because it represents a higher-level cognitive self-control function of attention (see Table 2). This function mainly includes phases of avoiding unfocused work.

**Table 2**

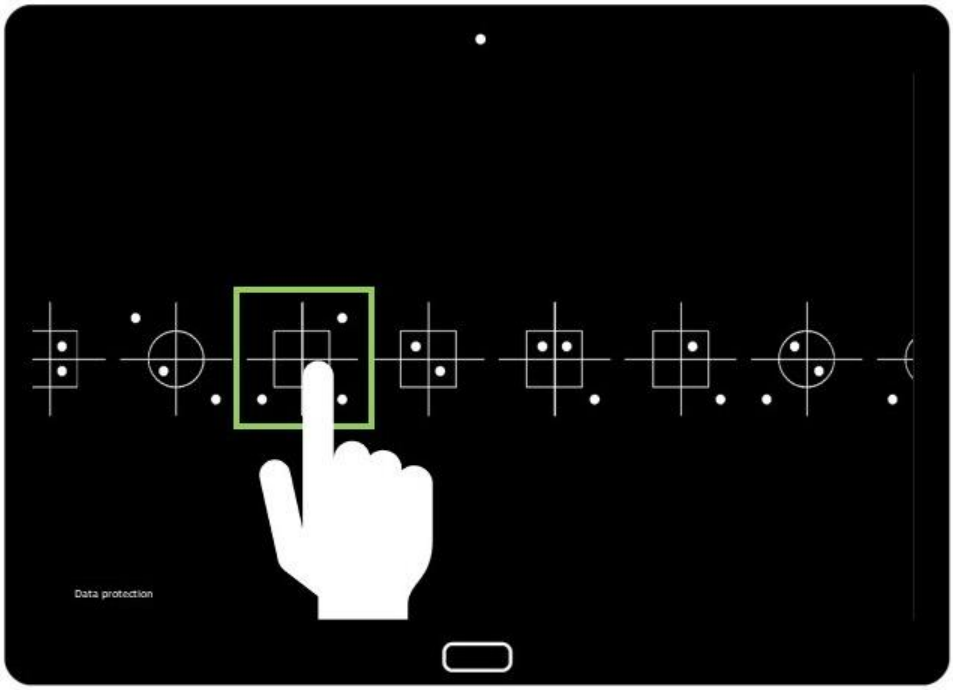
*Calculation of trait vigilance*

| Parameter | Meaning & Calculation |
|---|---|
| Total amount (G) | Number of processed items (80per test) |
| Error 2 (F2) | Missed items |
| Error 3 (F3) | Identified faulty target item |
| Power value (L) | (G) – 2 * (F2 + F3) |
| Quality value (Q) | L / G \| Q*100 |
| Continuity value (K) | Q*L |

*Note: The calculations are also strongly based on the FAIR-2.*

**Figure 7**

*Visualization of digital trait vigilance test on a tablet*



## 3.2 Participants

For our diary study,[1] we recruited 93 participants with different occupational backgrounds via the snowballing technique based on undergraduate psychology students' contacts and personal contacts to different companies (Hülsheger et al., 2021). For a professional acquisition, each student received documents, a flyer as promotional material, and the general data protection regulation for an information base of this study. Of these 93 participants, twenty-four were excluded from the data set because they did not complete all questionnaires for at least one day. Any person over the age of 18 who works part-time or full-time was eligible to participate.

Participation in our study was not monetarily compensated, but each participant was offered individual feedback. During acquiring participants process, all participants were made aware of the data protection regulation, the study's purpose, and the methodological procedure. The Ethics Committee of our university approved our study.

The sample included 69.6% female participants with a mean age of 35.93 years (Range=19-67; SD=13.75). 79.7% of the participants were supervisors, and 62.3% were full-time employees. The professional background of most participants included healthcare (11.6%), IT and communication (8.7%), production and processing industry (7.2%), financial and insurance sector (20.3%), science (14.5%), and other (24.6%). On average, the participants have worked for 15.77 years (SD=14.82) and 5.14 years (SD=6.27) in their current organisation.

## 3.3 Analysis/Statistics

Since our study design implies a nested data structure, with days (N=431 measurement points) nested within individuals (N=69), we performed multilevel modeling using Mplus, Version 8 (Muthén &

[1] This present dataset has already been used for another manuscript submitted to another journal. However, there is no overlap in the constructs between the current manuscript and the other manuscript.

Muthén, 1998-2017). We specified a general multilevel path model in Mplus, which estimates intra-individual (Level 1) and inter-individual (Level 2) variance components for all within-person variables. In line with our hypotheses, we tested a 1-1-1-1 mediation (Preacher et al., 2010) with a moderation on the c-path. According to Preacher et al. (2010), we built the product value by multiplying the predictor-mediation-path with the mediator-outcome-path. While the indirect effects were specified on the within-person level, the moderator was specified on the between-person level.

### 3.4 Construct validity

We performed a multilevel confirmatory factor analysis (ML-CFA) to test our measure validity. Four factors are included within the ML-CFA: Sleep quality, positive affect, flow experience, and task performance. The indices $\chi 2 = 682.872$*; df: 164, CFI = .89, TLI = .87, RMSEA = .09, and SRMRb/SRMRw = .05/.00 demonstrate suitable model fit, with all factor loadings significant at $p < 0.001$. Furthermore, to show the adequacy of our model, we compare it to diverse plausible alternatives. Comparing to those indices (e.g. $\chi 2 = 1349.812$*df: 169, CFI = .75, TLI = .72, RMSEA = .13 and SRMRb/SRMRw = .13/.00) our research model shows the most acceptable fit. Table 3 shows two alternative models and their fit indices.

**Table 3**

*Multilevel confirmatory factor analysis*

| Model | $\chi^2$ (df) | CFI | RMSEA | SRMRw | SRMRb |
|---|---|---|---|---|---|
| 4-factor model: Level 1: Sleep quality, positive affect, flow experience, task performance | 682.87*(164) | 0.89 | 0.09 | 0.05 | 0.00 |
| 2-factor model: Sleep quality, positive affect, and flow experience as one-factor task performance | 1349.81*(169) | 0.75 | 0.13 | 0.13 | 0.00 |
| 1-factor model: Sleep quality, positive affect, flow experience, and task performance as one factor | 2113.58* (170) | 0.58 | 0.16 | 0.17 | 0.00 |

Note. RMSEA = root mean square error of approximation; CFI = comparative fit index; SRMR = standardized root mean residual (w = within; b = between). ** p < .01.

## 3.5 Analytical procedure

In line with recommendations (Gabriel et al., 2019), sleep quality was centered around the group mean to model the within-person variance as a predictor. In contrast, the moderator variable trait vigilance was grand-mean centered (Preacher et al., 2010). However, the results are the same if we center around the overall mean. Since recent simulation studies have shown that the Bayesian estimation method is more accurate and efficient than conventional frequentist approaches (e.g., maximum likelihood), especially when analyzing multilevel and moderated mediation models, we used the Bayesian estimator that is based on the Markov chain Monte Carlo (MCMC) algorithm (van de Schoot et al., 2017). Accordingly, several iterations are considered to calculate the posterior values for each parameter (Zyphur & Oswald, 2015). Because our model (see Figure 6) has been examined in prior studies, the MCMC estimates are drawn from non-informative prior distributions to allow unbiased inferences (Holtmann et al., 2016; Wang & Preacher, 2015). Bayesian estimation does not rely on typical significance tests since it provides a distribution of information about a particular parameter and does not involve fixed values of these parameter estimates (Wagenmakers et al., 2018). Based on this estimate, a credibility interval (CI) based on posterior distribution is applied to evaluate a parameter estimate: If CI includes zero, this value indicates an untrustworthy value for the parameter. This approach can be used mainly for testing indirect effects in mediation models and complex multilevel moderated mediation models.

In line with the recommendations of Depaoli and van de Schoot (2017) concerning model fit criteria of Bayesian estimation, we evaluated the model fit and MCMC convergence through inspection of posterior predictive checking (PPC), potential scale reduction (PSR), trace plots and degree of autocorrelation for each model parameter. Concerning the value information about PPC and PPP, Mplus could not calculate scores due to estimated random effects. However, we also looked at mediated mediation (1-1-1-1 mediation) without random effects, which showed a good model fit

(Bayesian PPC 95%-CI = -16.00; 16.65; PPP = .50). After approximately 2,000 iterations, the PSR decreased rapidly and reached values under 1.05.

# 4 Results

## 4.1 Descriptive statistics

For a first overview, Table 5 shows the mean values and standard deviation of the measurement points of each daily questionnaire. Table 4 shows descriptive statistics and reliabilities of the study variables: means, standard deviation, interclass correlation coefficient, and intercorrelation among all study variables.

## 4.2 Test of Hypotheses

We tested the first and second hypotheses within two models (see Table 6). Afterward, the random slope model was extended to include the moderator variable and investigate hypothesis 3 (H3). Finally, we test our fourth hypothesis, which includes the moderated mediation on the c-path (H4).

The first hypothesis proposed that daily sleep quality is positively related to daily task performance. Our results fail to show a positive relationship between daily sleep quality and daily task performance (H1; B=.067, 95%-CI = [-.093; .234]). However, the second hypothesis proposed a full mediation effect at the within person-level wherein daily task performance occurrence is indirectly associated with sleep quality through positive affect followed by flow experience at work. Our results support the assumed 1-1-1-1 mediation and show that daily sleep quality is positively and indirectly associated with daily task performance via daily positive affect and daily flow experience (H2; Bind= .02, 95%-CI = [.00; .06], zero seemed not credible, PSD=.01).

Hypothesis 3 suggests that trait vigilance moderates the positive relationship between daily flow experience and daily task performance (c-path), such that the positive relationship is stronger

among employees who exhibit higher (vs. lower) trait vigilance. The results support this hypothesis showing that trait vigilance moderates the positive association between daily flow experience and daily task performance (c-path; H3; Bint= .01, 95%-CI = [.00; .02]; indirect zero seemed not credible, PSD=.00). The results are illustrated in Figure 8, showing that trait vigilance amplifies the positive relationship between daily flow experience and daily task performance at higher and a low level of manifestation (Aiken & West, 1991; Dawson, 2014). Accordingly, when trait vigilance is higher (vs. lower), the positive relationship between flow experience and task performance is stronger.

Our final hypothesis (H4) assumes that trait vigilance moderates the positive conditional indirect effect of employees' subjective sleep quality on the day-specific task performance via positive affect and flow experiences. The indirect effect is strongest for those employees who perceive higher (vs. lower) levels of trait vigilance. Only the indirect path with a high trait vigilance could be confirmed (Bind= .05, 95%-CI = [.01; .11], PSD=.03).

**Table 4**

*Average time recording of the questionnaires*

| **Time of Day** | **Aimed Time of Measurement** | *M* | *SD* |
|---|---|---|---|
| Morning (T1) | One hour before work starts | 8.36 a.m. | 1:24 hours |
| Midday (T2) | Four hours after work starts | 12.39 a.m. | 1:14 hours |
| Evening (T3) | One hour after work ends | 04.20 p.m. | 1:29 hours |

*Note. N=431; M = Mean; SD = Standard Deviation*

**Table 5**

*Descriptive statistic*

| Variable | M | SD (bt) | SD (wi) | 1-ICC(1) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Sleep Quality (t1) | 3.01 | .66 | .68 | 0.64 | **(.68)** | .57 * | .15 | .10 | .10 | .07 | -.01 |
| 2. Positive Affect (t1) | 3.28 | 1.02 | .94 | 0.49 | .61 ** | **(.96)** | .21 | .14 | .07 | .04 | .12 |
| 3. Flow Experience (t2) | 5.17 | 1.30 | 1.25 | 0.66 | .06 | 0.21 ** | **(.87)** | .18 | .02 | .03 | .13 |
| 4. Task Performance (t3) | 4.21 | .86 | .74 | 0.56 | .18 ** | .22 ** | .34 ** | **(.91)** | .07 | .27 * | .10 |
| 5. Trait vigilance | 90.49 | 11.59 | 10.94 | | .07 | -.04 | .01 | .10 * | | -.02 | -.17 |
| 6. Age | 36.17 | 13.75 | 13.95 | | .13 ** | .04 | .16 ** | .25 ** | -.03 | | .06 |
| 7. Gender | 1.29 | .46 | .46 | | -.02 | .02 | .12 ** | .02 | -.16 ** | .12 * | |

*Note. Means and standard deviation (at the between- and within-person level) are displayed at the beginning of the table (columns 1-3). In column 4, the Interclass correlation of the within variables are placed. Correlations above the diagonal are between correlations (N=69), and below the diagonal are within-person correlations (N=431). The values of the diagonal show the internal consistency of the descriptive statistic scales (for sleep quality, the Spearman-Brown coefficient (Eisinga et al., 2013) and all other variables the Cronbach's alpha is given)*

**Table 6**

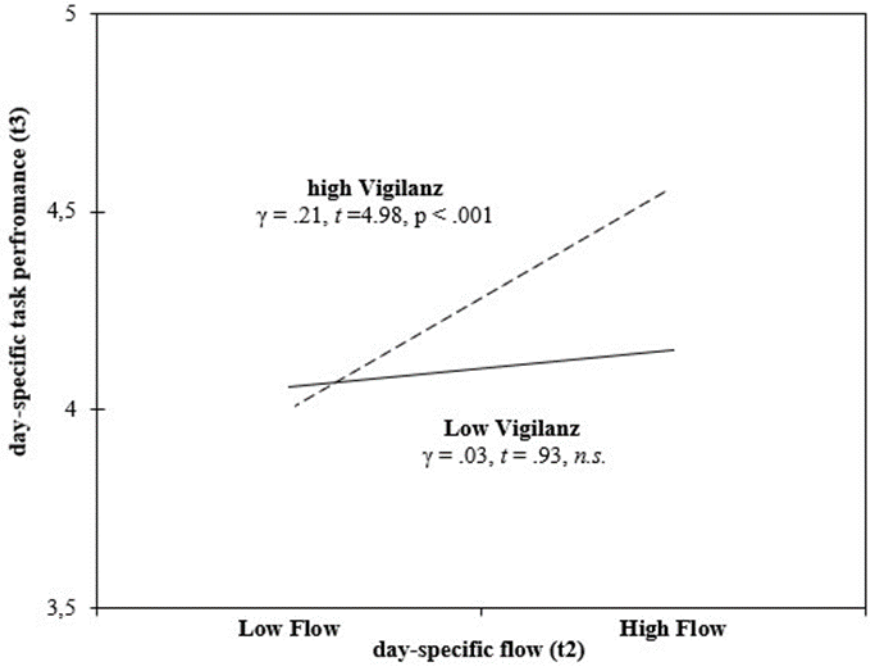
*Indirect effects and moderated mediation (random slopes)*

| | Model 1 | | | | Model 2 | | | |
|---|---|---|---|---|---|---|---|---|
| | *B* | *PSD* | *Lower 95% CI* | *Upper 95% CI* | *B* | *PSD* | *Lower 95% CI* | *Upper 95% CI* |
| *Within Effects* | | | | | | | | |
| *direct effects* | | | | | | | | |
| SQ→ PA | .596 | .106 | .389 | .805 | .610 | .090 | .434 | .783 |
| PA→ FL | .224 | .089 | .049 | .400 | .373 | .152 | .080 | .680 |
| PA→ TP | .103 | .064 | -.021 | .229 | .051 | .082 | -.110 | .215 |
| FL→ TP | .119 | .035 | .049 | .188 | .124 | .044 | .040 | .210 |
| SQ→ FL | .012 | .148 | -.275 | .307 | -.055 | .160 | -.370 | .264 |
| SQ→ TP | .067 | .083 | -.093 | .234 | .065 | .084 | -.100 | .234 |
| *Indirect effects* | | | | | | | | |
| SQ→ PA→ FL | .130 | .0590 | .028 | .260 | .223 | .097 | .046 | .432 |
| SQ→ PA→ FL→ TP | .015 | .009 | .002 | .036 | .026 | .019 | .003 | .66 |
| SQ→ FL→ TP | .001 | .018 | -.034 | .040 | -.006 | .021 | -.051 | .036 |
| SQ→ PA→ TP | .025 | .014 | .004 | .057 | .031 | .051 | -.066 | .138 |
| Variance | | | | .312 | | | | |
| Residual Variance | | | | .257 | | | | |
| $R^2$ | | | | .176 | | | | |
| *Between Effects* | | | | | | | | |
| *direct effects* | | | | | | | | |
| Trait vigilance (V) | .007 | .006 | -.005 | .019 | .008 | .003 | .001 | .015 |
| *Interaction* | | | | | | | | |
| FL x V (- 1SD) | | | | | .033 | .062 | -.090 | .155 |
| FL x V (+ 1SD) | | | | | .214 | .054 | .109 | .321 |
| Variance | | | | .246 | | | | |
| Residual Variance | | | | .070 | | | | |
| $R^2$ | | | | .715 | | | | |
| *Moderated c-path* | | | | | | | | |
| moderated mediation (-1SD) | | | | | .006 | .016 | -.022 | .042 |
| moderated mediation (+1SD) | | | | | .049 | .025 | .008 | .106 |

Note: $N_w$ = 431, $N_b$ = 69

**Figure 8**

*Cross-level moderating effects of trait vigilance on the day-specific relationship between flow experience and task performance*



## 5 Discussion

In the present study, we examined the underlying psychological mechanism of the assumed association between sleep quality and task performance and the moderating role of trait vigilance for the relationship between recovery and job performance. Based on our study results, in line with the self-regulatory theory (Muraven & Baumeister, 2000) and complemented by the broaden-and-build theory (Fredrickson, 2004), we can explain the effect of recovery processes on task performance by incorporating underlying affective-cognitive psychological mechanism.

Furthermore, we have identified positive affect as an antecedent of flow experience at work. About the broaden-and-build theory (Fredrickson, 2013), we argue that positive affect expands the thought-action repertoire and positively influences flow episodes by merging action and consciousness. In line with this theoretical framework and various indications from recent studies, we can demonstrate that the recovery process in the form of good sleep quality is significant for initiating motivational and cognitive processes through the regeneration of limited and important resources for task performance. In the same vein, we found evidence that employees who come to work refreshed have an increased potential for flow experiences at work through increased positive affect. Flow experience may mobilize additional resources through intrinsic motivation (Hidalgo et al., 2018), positively affecting task performance. Moreover, we state that flow experience at work is positively linked to task performance because this highly motivated and concentrated state improves attention focus and mental flexibility (Hidalgo et al., 2018).

Moreover, our study highlights the crucial role of trait vigilance as a moderator of the positive relationship between flow experience and task performance. The function of trait vigilance is maintaining a high concentration level to benefit individual goal attainment. This ability optimizes fleeting but very significant flow moments for subsequent task fulfillment. It can support employees in their work activity in two ways: First, it widens the gaze after the narrow concentration (Kuhl et al., 2015) during the flow state, enabling increased performance during subsequent tasks. Second, trait

vigilance functions as a resource manager because people with high trait vigilance might be better able to use the intrinsic motivation generated by flow experiences in subsequent tasks. In sum, trait vigilance is highly relevant to the work context, helping workers become more aware of specific moments and subsequent tasks by optimally using and allocating cognitive and motivational resources to achieve the set goals more easily.

### 5.1 Practical implication

We can offer several implications for both employees and organisations based on our findings. We illustrated that sleep and a good recovery are vital for energetic and motivating mood and task performance. In light of our findings, employees should ensure they get enough rest and optimize their sleep quality. This aligns with other empirical findings (Williamson et al., 2019). Employees can improve their sleep quality by explicitly promoting sleep hygiene (e.g., rituals, healthy eating, and a pleasant sleeping environment). Since trait vigilance is a key mechanism that enables employees to benefit from flow moments at work, to activate holistic processing (Posner & Rothbart, 2007; Kuhl et al., 2015), and to stay concentrated during task completion, we recommend that employees especially train this cognitive skill with the help of exercises or specific tools. For example, companies can provide free apps for training cognitive skills such as trait vigilance. In terms of the recovery process, creating a culture that values the recovery process and protects employees from being connected to work via technological devices during non-working hours may be beneficial. This is because "switching off" from work during non-working time improves recovery and improves individual sleep quality. However, although the variables positive affect and flow experience are strongly situation- and also person-dependent, implication for improving sleep quality can make an important contribution. Further, the organisation can promote a flow experience, particularly if employees are given challenging tasks that align with their skills. Therefore, the fit between tasks and skills should be considered explicitly in personnel development.

### 5.2 Limitations & direction for future research

Our study mainly includes self-reports, which are prone to certain biases (e.g., social desirability) and could lead to inflated associations due to common-method bias (Donaldson & Grant-Vallone, 2002). Future research could address this limitation and include physiological data, external informants, or sources. For example, the supervisor could evaluate performance, and sleep could be recorded with the help of actigraphy (Acker et al., 2021). In our study, we only focus on task performance. However, further research would also be interesting to investigate whether there is a relationship between sleep and terms of innovation or creativity (MacDonald et al., 2006). In addition, future intervention studies could determine how task performance can increase if participants regularly participate in cognitive training. Moreover, based on our theoretical derivation, we focused on positive affect and flow experience in our study. Nevertheless, it is conceivable that demand- and performance-related processes, such as stress, contribute more to the relationship between sleep and task performance. At this point, we encourage future researchers to take a different perspective on this context. A different order of variables would also be conceivable, although we have cross-checked this with our study and found no results.

## 6 Conclusion

Starting the day refreshed and well-rested improves employees' well-being and task performance (Williamson et al., 2019). Thus, for the first time, this study connects three research areas of recovery, performance, and cognitive ability to explain how sleep quality impacts task performance via positive affect and flow experience. Furthermore, we show that trait vigilance ability is central to employees' daily task performance. These findings are relevant for further research to improve theoretical understanding of the recovery process and for companies and organisations, as the mechanisms of positive affect and cognitive processes and abilities in the workplace are used to explain how task performance can be influenced by sleep quality and improved by trait vigilance. Based on the present

insights for managers and organizations, we offer combined themes of recovery and trait vigilance as the basis for novel intervention measures to increase employees' productivity and well-being.

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## B Study two: Darling, let's talk about work! Reattachment via communication with romantic partners and its daily links to job performance

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**Authors contribution and manuscript stage**

**Elvira Radaca:** Research and topic identification, conceptualization, methodology, formal analysis, investigation, data management and writing

**Prof. Dr. Stefan Diestel:** Discussion, Feedback and Supervision

***Manuscript stage:*** *This study was submitted to the Journal of Occupational and Organizational Psychology in October 2023.*

**Abstract**

In recent years of research in the context of industrial and organisational psychology, it has been recorded that employees benefit from mentally reconnecting to work before starting their workday (reattachment to work). However, the effects of this relationship on daily task performance and its activating processes, as well as the influence of a romantic partner on the process of morning reattachment to work, have not yet been investigated in empirical studies. To answer these questions, we conducted a diary study over ten working days with three measurement points per day. In total, we collected and analysed daily survey data from 150 workers (721 days) who were part of a romantic relationship. We argue that the positive association between morning reattachment to work via communication with the romantic partner about the upcoming workday and daily task performance is mediated by motivational, affective, and regulative processes. The results of our study partially support our hypotheses but suggest that communicative exchanges with the romantic partner about the upcoming workday primarily trigger affective and motivational processes, which is beneficial fort the daily job performance. These findings have both practical and theoretical implications. For practitioners, this paper offers recommendations on how both organisations and individuals can benefit from the results of this study. Limitations and possible directions for future research are also discussed.

***Keywords:*** *reattachment to work via romantic partners' communication; work engagement; affectivity; labour demands; task performance*

## 1 Introduction

Every day, employees go through a process known as micro-role transitions (Ashforth et al., 2000). These transitions manifest as "activities across role boundaries" that allow individuals to move from one role into another (Ashforth et al., 2000). This process involves explicit cognitive shifts from the non-occupational or private to the job domains. Findings from past studies (e.g., Tremmel et al., 2019; Schleupner et al., 2023) highlight the importance of initiating micro-role transitions at the onset of work via reattachment to the work domain that can facilitate psychological well-being, work engagement, and performance. Reattachment to work is a process of mentally tuning in and preparing for the workday by focusing on upcoming work-related events, tasks, or meetings (Sonnentag & Kühnel, 2016). Imagine a couple in the morning, having breakfast or a cup of coffee together before heading off to work or seamlessly starting work from home, chatting about the day ahead, telling each other what to expect. As this example shows, separating work and private environments is challenging. Especially not if, as the example shows, a mental attachment to work is established even though one is still at home in one's private environment. Moreover, this typical morning scenario shows that the morning reattachment to work is not entirely unaffected by close third parties.

Decades of scientific research have shown that romantic relationships significantly impact our behaviour and well-being (Holt-Lunstad, 2018; Markey et al., 2007). This interdependence, caused by their reciprocal influence, is fostered mainly by regular and sustained interactions over time (Fitzsimons et al., 2015; Rusbult & van Lange, 2003, 2008). Romantic couples usually maintain a close, intimate relationship and spend much time together, often with daily interactions (Hicks & Diamond, 2008). Whether before work, after work or even during work, romantic partners can communicate in constant and daily exchange (Gable et al., 2006), so they enormously influence each other.

Recently, there have been studies in the work psychology literature on daily time before work, focusing mainly on the process of reattachment to work. Most notably, Sonnentag and Kühnel (2016)

have discovered the importance of morning reattachment to work for workers' daily work engagement. Being mentally engaged in the upcoming workday, regardless of the importance of those events, tasks, or meetings, helps workers cross the boundaries (Ashforth et al., 2000) between non-work time and work time to get into an energised and engaged work mood (Sonnentag & Kühnel, 2016;). Until now, however, reattachment to work has been regarded as a cognitive process, influenced solely by the individual. Considering the timing of the micro-role transition in the morning (Ashforth et al., 2000), it is obvious, as the morning scenario shows, that especially for people living in a romantic partnership, the romantic partner might play a role in this process that should not be underestimated.

Our research examines how romantic partner interactions before work can affect daily processes at work and task performance. It enriches our understanding of the underlying affective, regulative, and motivational processes between the relationship of daily reattachment to work via communication with the romantic partner and daily task performance. We, therefore, argue that couples in romantic partnerships, in particular, can use this boundary phase to talk about upcoming work-related issues and thus make a significant co-creation contribution. Communicating with a romantic partner about upcoming work, whether in person or via smartphone, at home or on the way to work, helps employees mentally prepare for work demands. They can develop strategic plans, manage resources and start the workday motivated (Sonnentag & Kühnel, 2016).

Consistent with the episodic process model of affective influences on performance and self-regulation theory (Bandura, 1991; Baumeister, 2018; Beal, 2018), we propose that a person's ability to regulate thoughts with the support of a romantic partner via communication has a significant impact on employees' task performance. Consequently, conversations with the partner about upcoming work-related content constitute cognitive preparation for work. Reattachment to work via communication with the romantic partner (RWCP) triggers mental processes and strategies that promote a focus on work tasks (e.g., Sonnentag & Kühnel, 2016). Simultaneous focus and regulation put employees in an energetic, positive, and motivating mood (Sonnentag et al., 2020; Sonnentag & Kühnel, 2016). That

means the mental preparation for the upcoming workday helps employees regulate their emotions and thoughts, which supports them in dealing better with upcoming work-related strains and demands like self-control demands and qualitative and quantitative workloads. Demands for self-control arise, for example, when goal-desire conflicts occur, which can negatively impact performance. (Inzlicht et al., 2021; Wehrt et al., 2022). Qualitative workload occurs when work-related tasks are too complicated, and employees are psychologically overburdened (Prümper et al., 1995; Zapf, 1991). Quantitative workload, i.e., work-immanent regulatory overload, on the other hand, refers to time pressure and the amount of work to be done (Prümper et al., 1995; Robelski et al., 2019; Zapf, 1991). In line with the suggestion of Sonnentag and colleagues (2020), we therefore argue, that reattachment to work can help to deal with work demands that arise during the day by being attuned and prepared. Hence, individuals anticipate upcoming challenges, develop strategies to address them successfully, and plan resources for work (Hofmann et al., 2015). In addition, cognitive regulation creates a pleasant mood that enables individuals to face the upcoming workday in a positive and motivated mood (Baumeister, 2018), suggesting that this type of self-regulation may be necessary for performance in the work context (Hofmann et al., 2015) by providing high job performance (Diefendorff et al., 2000).

Again, consistent with the recommendation of Sonnetag and Colleges (2020) to consider individual factors, we focused on trait self-control as an individual factor. Since RWCP describes a regulation process, trait self-control is a valuable trait that can prioritise long-term goals, even if these short-term goals are immediately satisfying (Baumeister et al., 1998). The ability of self-control includes an initiative component that supports actively approaching motivated actions or work performances and sticking to the implementation and the goal in the long term (Ryan & Deci, 2000; Inzlicht & Schmeichel, 2012; Muraven & Slessareva, 2003). This is why we further assume that trait self-control plays a significant role as a moderator in the relationship between RWCP and all mediators (positive and negative affect, work engagement, self-control demands and workload).

In sum, we propose a model of moderated mediation wherein RWCP interacts with trait self-control in predicting affects (positive and negative), work engagement, and work-related demands and

workload (self-control demands, qualitative and quantitative workload), resulting in task performance (see Figure 9). We conducted a ten-day diary study with three measurement points to investigate our hypotheses and applied a multilevel analysis of a 1-1-1 moderated mediation model.

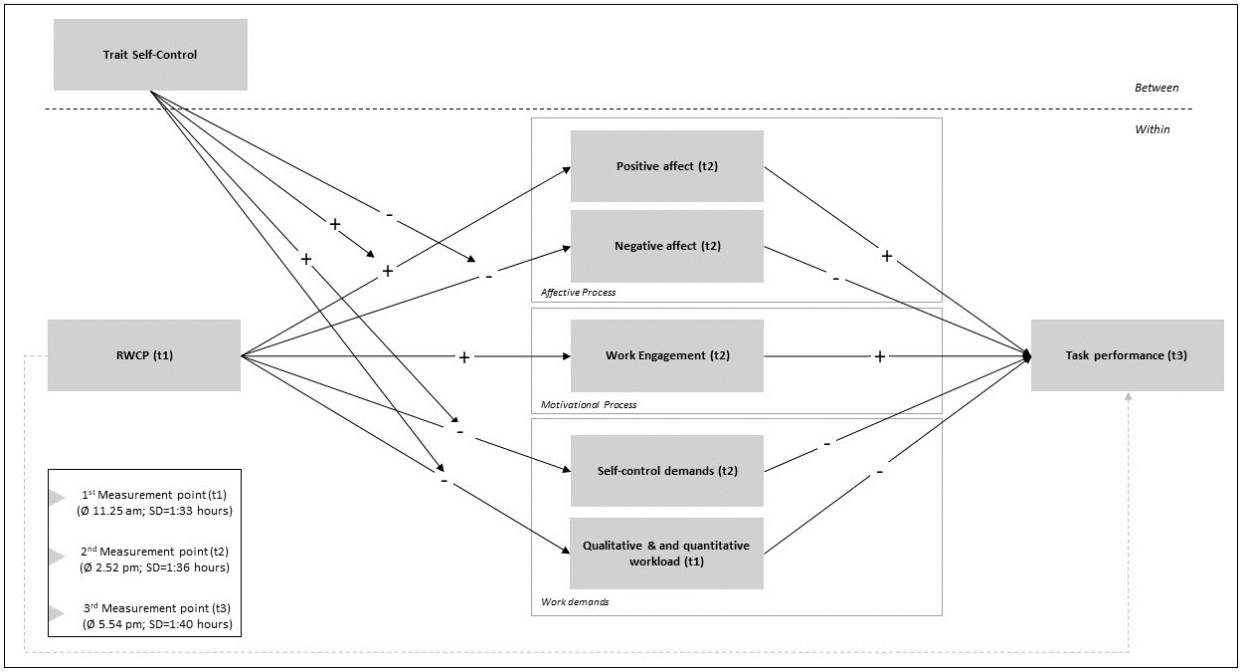
Our study offers several contributions. First, our study addresses the issue of reattachment to work, which has received increased attention in recent years (Fritz et al., 2021; Sonnentag & Kühnel, 2016), and extends the reattachment-to-work literature in two ways: First and foremost, we consider the cognitive process of reattachment to work to be a process that is reciprocally influenced and supported by romantic partners. Second, we move beyond work engagement and use our research to show how positive, motivational, and demand-related processes mediate between RWCP about pending work-related issues and task performance, as Schleupner et al. (2023) suggested in future research directions. Therefore, we contribute to research in this field by examining negative variables such as negative affect, work demands, and workload as mediating variables between RWCP and task performance.

Furthermore, romantic partner involvement in regulating thoughts and behaviours has implications for daily task performance and practical implications for individuals and organisations. It suggests that maintaining supportive and communicative relationships with romantic partners can benefit an individual's task performance. At this point, it should be noted that personal and professional lives are closely intertwined and that, especially in the age of new work, it is necessary to think about new work design concepts that also touch personal lives.

Last but not least, our study contributes to the literature by integrating insights from different theoretical perspectives. By incorporating concepts from the episodic process model of affective influences on performance (Beal et al., 2005), including elements of self-regulation theory (Rusbult & van Lange, 2008), a more comprehensive understanding of the mechanisms underlying romantic partner influence on performance is achieved. This integration clarifies the interplay between affective processes, self-regulation, and interpersonal dynamics in shaping individual performance in the workplace.

**Figure 9**

*Conceptual model*



# 2 Theoretical Background

## 2.1 Unlocking peak performance: The role of RWCP

### *2.1.1 Release affective and motivational processes through morning RWCP*

Before the workday begins, a series of preparatory processes and activities occur. Workers in a romantic partnership communicate with their partner about, e.g. upcoming tasks, events, demands, etc., at work. This verbal and mental effort enables staff to connect mentally with the work. However, RWCP in the morning involves using cognitive, regulative, and resource strategies, including prioritising tasks, making to-do lists, formulating plans, and anticipating upcoming work-related obligations and tasks (Sonnentag & Kühnel, 2016).

The episodic process model of affective influences on performance illuminates the intricate interplay between affect and performance. (Beal et al., 2005). This model revolves around three key components: (1) Antecedence, (2) affective mood response, and (3) consequence. Antecedence is often represented by events or occurrences that trigger specific emotional responses. For example, the affective response can include positive and negative emotions. Consistent with this, morning interactions with a romantic partner, i.e., a loved and trusted person, help employees to begin the workday in a more positive mood and reduce negative affect. Finally, consequences show how these affective reactions affect a person's information processing, behaviour, and performance. Accordingly, experienced affect can significantly affect work behaviour, which, in our case, means that RWCP indirectly influences task performance.

Further, in line with the episodic process model of affective influences on performance and drawing on the findings of various studies (Schleupner et al., 2023; Sonnentag et al., 2020; Sonnentag & Kühnel, 2016), we argue that RWCP sharpens the focus on the current workday and thus increases attention to work tasks by mentally and verbally externalising the upcoming work with the romantic

partner. As a result, employees enter a state of heightened energy and vitality, often called work engagement (Sonnentag et al., 2020; Sonnentag & Kühnel, 2016).

The state in which employees enter the workspace in the morning sets the tone for the entire workday, which in turn relates to states as well as their work engagement throughout the rest of the day (Sonnentag & Kühnel, 2016; Tremmel et al., 2019). Following the episodic process model of affective influences on performance, we hypothesise that employees who experience a negative or positive affective state initiate mental and motivational processes that can have both positive and negative effects on task performance (Aspinwall, 1998; Beal et al., 2005; Shockley et al., 2012). In addition, the meta-analysis by Corbeanu and Iliescu (2023) shows that work engagement positively impacts task performance.

***Hypothesis 1a:*** Day-specific RWCP is positively associated with day-specific task performance via positive affect.

***Hypothesis 1b:*** Day-specific RWCP is positively associated with day-specific task performance via negative affect.

***Hypothesis 1c:*** Day-specific RWCP is positively associated with day-specific task performance via work engagement.

### *2.1.2 Demands and Workload Processes*

Reattachent to work in the morning by talking about upcoming work tasks or events with romantic partners can be seen as a self-regulatory behaviour that serves not only to stay engaged at work but also to better cope with upcoming or emerging work demands (Bakker & Vries, 2021; Schleupner et al., 2023) such as self-control demands and qualitative and quantitative workload at work. As described earlier, the RWCP triggers mental processes that enable employees to face the upcoming challenges or tasks of the working day more regulated and focused. In concrete terms, employees who talk about

the day ahead with their partner in the morning before work trigger cognitive processes that allow them to tune into the working day mentally. For example, they prepare themselves for upcoming challenges and tasks by discussing them with their partner. Following the self-regulation theory, they have been able to regulate their emotions and thoughts, making it easier to face challenges and tasks associated with self-control demands or workload. This form of self-regulation can help reduce work demands, such as self-control or experiencing qualitative and quantitative workloads caused by performance-related processes (Inzlicht et al., 2021). Self-control demands include impulse control, distraction resistance, and overcoming internal resistance, which has been identified several times as a significant stressor at work (Schmidt & Diestel, 2015; Schmidt et al., 2007). Self-control demands arise, for example, when goal-desire conflicts are presented, which can have a negative impact on performance (Inzlicht et al., 2021; Wehrt et al., 2022). We, therefore, assume that the morning exchange about the upcoming work task negatively influences, and respectively prevents the emergence of self-control demands qualitative and quantitative workload (Prümper et al., 1995; Robelski et al., 2019; Zapf, 1991).

Diverse findings suggest that, for example, setting realistic goals and challenges, work demands, and helping sufficient work resources minimise labour demands and work overload (Bakker & Demerouti, 2017, 2018; Demerouti & Peeters, 2018; Holman & Axtell, 2016; Vries & Bakker, 2022). In our view, preoccupation and planning of upcoming work tasks via exchanges with the romantic partner enable precisely this realistic setting of daily goals, challenges, and adequate resource planning.

Following self-regulation theory (Bandura, 1991; Zhao et al., 2021), we argue that RWCP is seen as a form of introspection. During the conversation, partners reflect on their work, share thoughts and feelings, and evaluate the upcoming tasks or challenges of the working day. This introspection process enables them to prepare for their upcoming work demands consciously. In the morning, sharing and mental preparation for the workday helped ease the self-control demands throughout the day. By sharing their thoughts and feelings and supporting each other, partners can foster the self-

regulation process. This process can lead to them being better able to focus on complex tasks, follow rules and minimise distractions, as they have already received mental preparation and support from sharing with their partner in the morning. Therefore, we further assume that the relationship between RWCP and task performance is mediated via self-control demands and qualitative and quantitative workload.

***Hypothesis 1d:*** Day-specific RWCP is positively associated with day-specific task performance via self-control demands.

***Hypothesis 1e:*** Day-specific RWCP is positively associated with day-specific task performance via qualitative and quantitative workload.

## 2.2 Moderating effects of trait self-control

Our study focused on trait self-control as a crucial individual factor. This trait can help workers prioritise long-term goals even when short-term goals seem immediately satisfying (Baumeister et al., 1998). Trait self-control is defined as an intentional and volitional control and regulation of emotions and impulses as well as suppression of thoughts (Baumeister et al., 2007) that enables excellent attention and strong controllability and regulation of one's behaviour (Alhola & Polo-Kantola, 2007; van Dongen et al., 2005; Tangney et al., 2004). RWCP, as described at the outset, sets two processes in motion: the affective-motivational and the regulative processes. The affective-motivational process, characterised by the mediators work engagement, positive affect and negative affect, describes that the employee is motivated, engaged and in a good mood to achieve his or her set goals in the morning and to pursue motivation and focus despite short-term temptations (Ryan & Deci, 2000; Inzlicht & Schmeichel, 2012; Muraven & Slessareva, 2003). The regulative process, on the other hand, allows employees to actively pursue their work goals and make adjustments as needed to achieve those goals. However, morning conversations with their partner about the upcoming workday can help employees maintain their affective-motivational state and better prepare for new work demands and pressures. Due to the

resource nature of trait self-control and in line with the self-regulatory theory (Bandura, 1991) (Zhao et al., 2021), it provides employees with a source of regulative processes (Forestier et al., 2022). It can further support affective and motivational processes by resolving motivational conflict through an effortless or exhausting strategy (Forestier et al., 2022; Gillebaart, 2018). In addition to that a recent study forstes this argumentation and showed that a high trait self-control helps avoid temptations that require self-control (Ent et al., 2015). Other studies demonstrated that trait self-control functions as a protective resource and protects employees when they have to deal with demands (e.g. Externbrink et al. 2019; Diestel & Schmidt, 2011). Since RWCP acts as a resource and favours self-regulation processes, we hypothesize that the interaction between RWCP and trait self-control becomes manifest in a moderating effect on work demands such as self-control demands and workload, work engagement and positive and negative affect. This relationship is strengthened when trait self-control is high (and weakened when trait self-control is low).

***Hypothesis 2.1.*** Trait self-control moderates the positive relationship between day-specific reattachment to work through talking about upcoming work issues with the romantic partner in the morning and day-specific (a) positive affect and (c) work engagement such that the positive relationship is stronger (vs. weaker) when trait self-control is higher (vs. lower).

***Hypothesis 2.2.*** Trait self-control moderates the negative relationship between day-specific reattachment to work through talking about upcoming work issues with the romantic partner in the morning and day-specific (b) negative affect, (d) qualitative and quantitative workload and (e) self-control demands such that the negative relationship is weaker (vs. stronger) when trait self-control is higher (vs. lower).

### 2.3 Influence of trait self-control on RWCP's Impact on task performance

Assuming that RWCP allows employees to enter the day in a state of increased energy and vitality, which can be referred to in terms of work engagement, is expected to have a positive impact on daily performance, as explained in the episodic process model of influencing performance (Beal et al., 2005;

Sonnentag & Kühnel, 2016; Sonnentag et al., 2020). Based on this model, it is also permissible to assume that positive and negative affect can be mediators in the relationship between RWCP and task performance. Therefore, we suppose that work engagement and affect mediate the relationship between daily RWCP and daily task performance. In line with the self-regulatory theory, RWCP serves to take care of resource management and to respond better and in a more regulated way to work demands that arise through self-regulatory behaviour (Bakker & Vries, 2021; Schleupner et al., 2023) so that employees reduce their self-control demands and qualitative and quantitative workload. Self-regulation theory (Bandura, 1991) supports the idea that reflecting on work and consciously preparing for upcoming work demands can mitigate self-control demands. Therefore, the relationship between RWCP and task performance is thought to mediate via self-control demands and qualitative/quantitative workload. The mediator effects suggest that morning conversations with a romantic partner about work trigger various processes that may influence employees' daily performance. Trait self-control, with its characteristics, is seen as a useful resource and ability related to these mediation processes. We believe that longer-term, person-centred goals (e.g. needs, values and self-desires) are kept focused and maintained with the help of this skill, which ultimately positively impacts task performance.

In summary, we hypothesise that the indirect effect of RWCP on daily task performance profits from employees' trait self-control. This disposition to focus, stay, and concentrate on goal-relevant tasks should influence how employees improve from their daily exchanges with their romantic partner about work by enhancing affective-motivational processes and alleviating demands and workloads. Thus, the positive indirect effect of morning RWCP on task-specific performance is moderated by trait self-control on the a-path (see Figure 1).

***Hypothesis 3.1:*** Trait self-control moderates the positive conditional indirect effect of day-specific RWCP via (a) positive affect, (b) negative affect, (c) work engagement, (d) qualitative and quantitative workload, and (e) self-control demands, such that the indirect effect is stronger (vs. weaker) for those employees who exhibit higher (vs. lower) trait self-control.

***Hypothesis 3.2:*** Trait self-control moderates the positive conditional indirect effect of day-specific RWCP and day-specific task performance via (b) negative affect, (d) qualitative and quantitative workload, and (e) self-control demands, such that the indirect effect is stronger (vs. weaker) for those employees who exhibit higher (vs. lower) trait self-control.

# 3 Method

## 3.1 Design, Sample and Procedure

Our research hypotheses required the diary design, which we used and collected exclusively electronically. A total of 150 employees who are part of a romantic partnership participated in our study. First, we invited all collected participants for this investigation via email. We asked them to respond to a general questionnaire, which included demographic and person-level variables (e.g. trait self-control). Subsequently, after processing the general questionnaire, each participant received e-mails over the course of ten working days, three times per day (before, during and after work), to complete these day-specific questionnaires. The dispatch time of the individual measurement points is based on the details of working time within the general questionnaire. All used items were self-evaluated. During public holidays or weekends, the diary study was interrupted and continued on the following regular working day. Our sample of 150 employees completed the daily questionnaires on an average of 4.8 days, resulting in 721 measurement points.

In total, we were able to acquire 283 participants with different occupational backgrounds via announcements in different organisations in Germany. For a professional acquisition, we created documents such as a flyer as promotional material and the general data protection regulation for a holistic information base for this study. Of these 283 people, 50 did not start and further 46 did not complete the preliminary questionnaire, which is why we excluded them from the dataset. From the left, 187 participants 150 could be considered for our investigation because they fulfilled all relevant

conditions of participation, e.g. being part of a romantic relationship. Participation in our study was not financially compensated.

The gender distribution includes 67% female and 33% male participants, with a mean age of 38.34 years (Min=21; Max=63; SD=13.42). Most of our participants are employees without personnel responsibility (70%). The professional background of the participants is divided into the following occupational fields: 10% Banking, finance, and Insurance 2% Construction, 10.7% Retail and wholesale trade, 11.3% Education and teaching, 15.3% Health, 1.3% Crafts, 6.7% IT and Communication, 14% Public administration, 2% Production and manufacturing, 0.7% Transport, 4.7% Science and 21.3 Other. On average, our participants have been working for 17.51 years (SD=13.99).

## 3.2 Measures

All variables of the study model except for the trait self-control were measured daily at different times. The RWCP and qualitative and quantitative workload was collected directly after the start of work. All other mediators were collected during working hours, and the outcome variable was collected shortly after work. As Schleupner et al. (2023) mentioned, these multiple surveys per day of each variable allowed us to capture it immediately after the possible occurrence of each condition. To ensure that we collected the survey at these time points and did not allow too much time for participation, the questionnaires were deactivated after 2 hours.

### *3.2.1 Reattachment to work via communication with the romantic partner*

We adjust our reattachment to the work scale via communication with the romantic partner based on the reattachment to the work scale developed by Sonnentag and Kühnel (2016). Like the original scale, our adjusted scale includes five items and is rated on a five-point scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). An example item reads, "Before I started my work this morning, I reflected about/considered the upcoming workday by talking about it with my partner.".

### *3.2.2 Daily positive affect*

Positive and negative affect were measured as psychological states, with all twenty items based on the Positive and Negative Affective Scale Inventory (PANAS Scale; Watson et al., 1988). Our participants were asked to report their affective state for each item on a five-point Likert scale (1 "not at all" to 5 "extremely"). The sample item for positive affect is "joyful", and for negative affect is "annoyed".

### *3.2.3 Work engagement*

For measuring work engagement in our diary study, we used the UWES-3 (Schaufeli et al., 2019) to keep the questionnaire as short as possible. This short work engagement scale is reliable and well-established (Mazzetti et al., 2023). We measured work engagement on a six-point scale ranging from 1 ("strongly disagree") to 6 ("strongly agree"), and a sample item for the subscale vitality is "In the last hour of my work, I was full of energy.".

### *3.2.4 Self-control demands*

Self-control demands were assessed using three sub-facets (resisting distractions, impulse control, and overcoming inner resistance) with ten items (Neubach & Schmidt, 2007; Diestel & Schmidt, 2011). Participants were asked to rate all items on a five-point scale ranging from 1 ("not at all") to 5 ("a great deal"). Sample items are, "If I wanted to be successful in my work today, I could not allow myself to be distracted." (resisting distraction), "Today at my work, I was never allowed to get impatient." (impulse control) and "some of my current work tasks I could only work on against inner resistance." (overcoming inner resistance).

### *3.2.5 Qualitative and quantitative workload*

The qualitative and quantitative workload was measured with six items on a five-point scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"; Prümper et al., 1995). Each subscale includes three items. A sample item for qualitative workload is called "Today my work makes too great demands on my ability to concentrate." A sample item for quantitative is "Today at work; I am often under time pressure.".

### *3.2.6 Daily task performance*

Task performance was measured with four items on a five-point scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"; Griffin et al., 2007; Yang & Wei, 2017). An example item reads, "Today I did a good job."

### *3.2.7 Trait self-control*

We assessed self-control using the Self-Control Scale by Bertrams and Dickhäuser (2009). In total, we include 12 items (sample item: "I am good at resisting temptations"; Tangney et al., 2018). All items were rated on a 5-point scale from 1 ("strongly disagree") to 5 ("strongly agree").

## 3.3 Analysis

Because of our nested dates, we perform a stepwise multi-level analysis with Mplus version 8. Following Gabriel et al. (2019), RWCP was centered on the group mean to predict within-person variance. Trait self-control, the moderator, was centred on the grand mean (Preacher et al., 2010). Simulations show that Bayesian estimation (using the Markov chain Monte Carlo algorithm, van de Schoot et al., 2017) is more accurate and efficient than traditional frequentist approaches, especially for complex models. In this study, Bayesian estimates (drawn from non-informative priors, Holtmann

et al., 2016; Wang & Preacher, 2015) replace significance tests with parameter distributions (Wagenmakers et al., 2018) measured by credibility intervals (CIs). CIs that span zero imply unreliable parameter values. This method applies to indirect effects in mediation models and multilevel moderated mediation.

For the Bayesian model fitting, we investigated posterior predictive checks (PPC), potential scale reduction (PSR), trace plots and autocorrelation, as recommended by Depaoli and van de Schoot (2017). Mplus was unable to calculate PPC/PPP due to estimated random effects. Mediated mediation (1-1-1) without random effects showed a very good fit (Bayesian PPC 95%-CI = -28.76; 30.23; PPP = .50) after ~2,000 iterations; PSR dropped quickly to <1.09.

# 4 Results

## 4.1 Multilevel confirmatory factor analysis

To test the validity of our measurement, we conducted multilevel confirmatory factor analysis (ML-CFA). Eight factors were included: RWCP, positive and negative affect, work engagement, self-control beliefs, qualitative and quantitative work engagement, and task performance. The indices $\chi 2$ = 3800.072*; df: 978, CFI = .83, TLI = .82, RMSEA = .06, and SRMRb/SRMRw = .06/.09 show overall adequate to good model fit, with all factor loadings significant ($p < 0.001$). To show the adequacy of our model, we also compare it to several plausible alternatives. Table 9 shows two other possible models with their fit indices.

## 4.2 Descriptive Statistics

Table 8 illustrates the descriptive statistics and reliabilities of the study variables. Before testing the hypotheses, we examined the within-person (level 1) and between-person (level 2) variances between our outcome variables and assessed model fit. The results of the variance decomposition support the use of multilevel modelling.

**Table 7**

*Time overview answering the three questionnaires per day*

| Time of Day | Aimed Time of Measurement | *M* | *SD* |
|---|---|---|---|
| Morning (T1) | Two hours after work starts | 11.25 a.m. | 1:33 hours |
| Midday (T2) | Four hours after work starts | 2.52 p.m. | 1:36 hours |
| Evening (T3) | One hour after work ends | 5.54 p.m. | 1:40 hours |

*N=721*

**Table 8**

Descriptive statistics

| Variable | M | SD (bt) | SD (wi) | ALPHA(bt) | ALPHA(wi) | 1-ICC(1) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. RWCP (t1) | 1.74 | 0.92 | 1.13249 | 0.980 | 0.977 | | **(.98)** | 0.223 ** | ).154 | 0.152 | 0.164 * | ).170 * | ).244 ** | 0.043 | 0.181 * | -0.224 ** | 0.026 |
| 2. Qualitative strain | 1.93 | 0.69 | 0.96 | 0.81 | 0.78 | 0.58 | 0.117 ** | **(.78)** | 0.726 ** | ).410 ** | ).121 | 0.243 ** | ).097 | -0.154 | -0.040 | -0.180 | 0.116 |
| 3. Quantitative strai | 1.94 | 0.84 | 1.08 | 0.92 | 0.86 | 0.50 | 0.093 ** | 0.608 ** | **(.86)** | 0.358 ** | ).205 * | ).201 * | ).065 | -0.026 | -0.023 | 0.079 | -0.036 |
| 4. Self-control dema | 1.94 | 0.65 | 0.85 | 0.91 | 0.89 | 0.58 | 0.117 ** | 0.356 ** | ).328 ** | **(.89)** | -2.46 ** | ).244 ** | ).269 ** | -0.740 | -0.126 | -0.114 | 0.046 |
| 5. Positive affect (t2) | 3.26 | 0.75 | 0.93 | 0.96 | 0.95 | 0.44 | 0.116 ** | -0.140 ** | ).121 ** | ).323 ** | **(.95)** | -0.128 | 0.707 ** | 0.456 ** | 0.110 | 0.124 | 0.073 |
| 6. Negative affect (t2 | 1.20 | 0.24 | 0.41 | 0.90 | 0.89 | 0.68 | 0.048 | -0.178 ** | ).164 ** | ).341 ** | ).230 ** | **(.90)** | -0.005 | -0.152 | -0.076 | -0.182 * | -0.092 |
| 7. Work Engagement | 3.47 | 0.93 | 1.22 | 0.94 | 0.92 | 0.48 | 0.155 ** | -0.034 | -0.013 | -0.269 ** | ).717 ** | ).185 ** | **(.92)** | 0.372 ** | 0.107 | 0.970 | 0.062 |
| 8. Task Performance | 4.25 | 0.57 | 0.77 | 0.95 | 0.92 | 0.53 | 0.017 | -0.161 ** | ).023 | -0.179 ** | ).404 ** | ).222 ** | 0.78 ** | **(.92)** | 0.086 | 0.135 | -0.171 * |
| 9. Trait self-control | 3.30 | 0.51 | 0.52 | 0.64 | | | 0.135 ** | -0.006 | 0.005 | -0.059 * | ).020 | -0.041 | 0.052 | 0.059 * | **(.67)** | -0.101 | 0.197 * |
| 10. Age | 38.29 | 13.47 | 13.52 | | | | -0.178 ** | 0.008 | 0.064 * | ).096 ** | ).075 ** | ).118 ** | ).079 ** | 0.086 ** | -0.079 ** | | -0.079 |
| 11. Gender | 1.32 | 0.47 | 0.45 | | | | 0.100 ** | 0.124 ** | ).045 | 0.047 | 0.029 | -0.035 | 0.074 ** | -0.100 ** | 0.162 ** | -0.043 | |

*Note. Means, standard deviation (at the between- and within-person level) as well as internal consistency of the used scales (Cronbach's alpha) are displayed at the beginning of the table (columns 1-5). In column 6, the Interclass correlations of the within variables are placed. Correlations above the diagonal are between correlations (N=150), and below the diagonal are within-person correlations (N=721). The diagonal includes the omega-values (reliability)*

**Table 9**

*Multilevel confirmatory factor analysis*

| Model | $\chi^2$ (df) | CFI | RMSEA | SRMRw | SRMRb |
|---|---|---|---|---|---|
| 8-factor model: | | | | | |
| Level 1: RWCP, positive affect, work engagement, negative affect, self-control demands, workload task performance<br>Level 2: Trait self-control | 3800.07*(978) | 0.83 | 0.06 | 0.06 | 0.09 |
| 4-factor model: | | | | | |
| Level 1: RWCP, positive affect, and work engagement as one-factor; negative affect, self-control demands, and workload as one factor; task performance<br>Level 2: Trait self-control | 10739.08*(996) | 0.42 | 0.12 | 0.14 | 0.09 |
| 2-factor model: | | | | | |
| Level 1: RWCP, positive affect, work engagement, negative affect, self-control demands, workload, and task performance as one factor<br>Level 2: Trait self-control | 15032.60* (999) | 0.17 | 0.14 | 0.26 | 0.10 |

Note. RMSEA = root mean square error of approximation; CFI = comparative fit index; SRMR = standardized root mean residual (w = within; b = between). ** p < .01.

## 4.3 Test of Hypotheses

The first hypotheses relate to the parallel mediator effects. We hypothesised that the relationship between RWCP and task performance is mediated via a.) positive affect, b.) negative affect, c.) work engagement, d.) self-control demands, and e.) qualitative and quantitative workload. Multilevel estimated do not indicate the mediated effects of b) negative affect (*B* = 0.00, 95%-CI = [-0.007; 0.006]), d.) self-control demands (*B* = - 0.00, 95%-CI = [-0.007; 0.002]), and e.) qualitative (*B* = - 0.00, 95%-CI = [-0.007; 0.004]) and quantitative (*B* = - 0.00, 95%-CI = [-0.009; 0.008]) workload. But the results show that a.) positive affect (*B* = 0.01, 95%-CI = [0.004; 0.027]) and c) work engagement (*B* = 0.02, 95%-CI = [0.004; 0.032]) mediate the relationship between RWCP and task performance. Thus, the hypotheses 1b, 1d, and 1d have to be rejected, whereas hypotheses 1a and 1c can be accepted. Table 10 provide an overview of the indirect effects and Figure 10 shows the results of all paths and the R Squares of the within as well as between level.

Hypotheses 2.1a-e includes the variable trait self-control as moderator. We assumed that trait self-control moderates the positive relationship between day-specific RWCP and day-specific a.) positive affect, c.) work engagement, and the negative relationship between RWCP and day-specific b.) negative affect, d.) self-control demands, and e.) qualitative and quantitative workload such that the positive/negative relationship is stronger/weaker (vs. weaker/stronger) when trait self-control is higher (vs. lower). Based on the study results, we were only able to prove the moderator effect for the outcome variables a.) positive affect (*B* =-0.19, 95%-CI = [-0.33; -0.05]), b.) negative affect (*B* =0.09, 95%-CI = [0.00; 0.17]), and c.) work engagement (*B* =-0.29, 95%-CI = [-0.49; -0.10]). For the other outcome variables, d.) self-control demands (*B* = 0.15, 95%-CI = [-0.03; 0.33]), and e.) qualitative (*B* = 0.03, 95%-CI = [-0.20; 0.25]) and quantitative (*B* = -0.07, 95%-CI = [-0.32; 0.17]) workload the hypotheses must be rejected. The results are illustrated in Figure 11 and 12, showing that trait self-control enhance the positive relationship between daily RWCP and daily task performance at lower

level of manifestation. The interaction with the outcome variable negative affect was not mapped because the simple slope calculations did not become significant.

Hypothesis 3.1a and 3.1c include that trait self-control moderates the positive conditional indirect effect of day-specific RWCP and day-specific task performance via positive (a) affect and (c) work engagement, such that the indirect effect is stronger (vs. weaker) for those employees who exhibit higher (vs. lower) trait self-control. Our results show that trait self-control moderates the positive conditional indirect effect of day-specific RWCP and day-specific task performance via positive (a) affect (*B* = 0.01, 95%-CI = [0.00; 0.03]) and (c) work engagement (*B* = 0.02, 95%-CI = [-0.00; 0.03]). Thus, both hypotheses are supported. Hypotheses 3.2b, 3.2d, and 3.2.e stated that trait self-control moderates the positive conditional indirect effect of day-specific RWCP and day-specific task performance via positive (b) negative affect (*B* = -0.00, 95%-CI = [-0.01; 0.00]), (d) qualitative (*B* = -0.00, 95%-CI = [-0.01; 0.00]) and quantitative workload(*B* = -0.00, 95%-CI = [-0.01; 0.01]), and (e) self-control demands (*B* = -0.00, 95%-CI = [-0.01; 0.01]). Following our results all hypotheses (3.2b, 3.2d, and 3.2.e) must be rejected.

**Table 10**

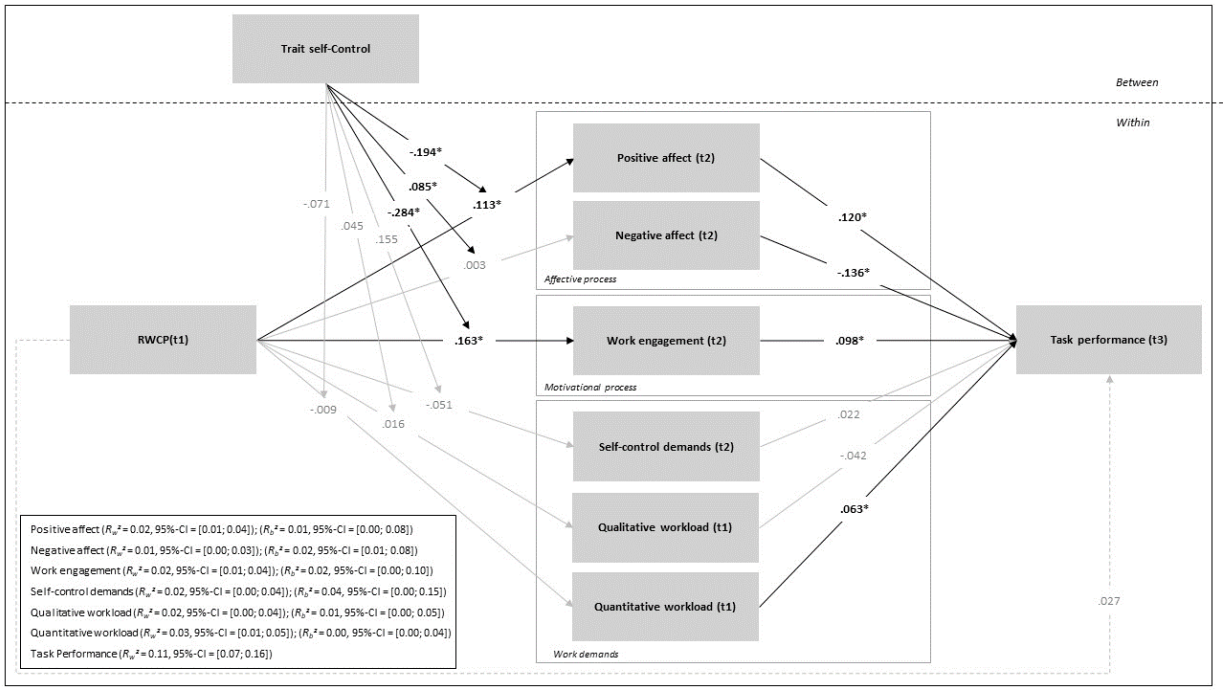
*Results of the indirect effects*

| | Indirect effect | | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|
| ***Within - Mediation path*** | | | | |
| RWCP→positive affect→ task performance | 0.013 | * | 0.004 | 0.027 |
| RWCP→negative affect→ task performance | 0.000 | | -0.007 | 0.006 |
| RWCP→work engagement→ task performance | 0.015 | * | 0.004 | 0.032 |
| RWCP→self-control demands→ task performance | -0.001 | | -0.006 | 0.002 |
| RWCP→qualitative strain→ task performance | -0.000 | | -0.007 | 0.004 |
| RWCP→quantitative strain→ task performance | -0.000 | | -0.009 | 0.008 |

*Note. * 95% CI excludes zero; The indirect effect based on Bayesian model estimation with 100.000 MCMC iterations.*

**Figure 10**

*Results from Bayesian multilevel analysis*




*Note. * 95% CI excludes zero; $R_w^2$= Within-Level R-Square and $R_w^2$= Between-Level R-Square; The grey connections show non-significant and the black ones significant relationships.*

**Figure 11**

*Interaction effects of RWCP and trait self-control on work engagement*

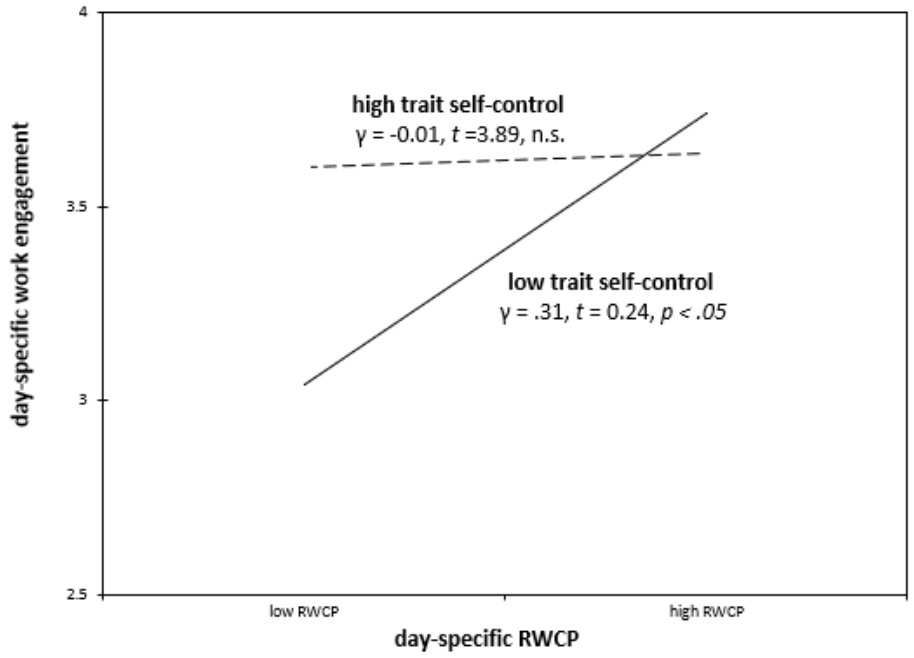
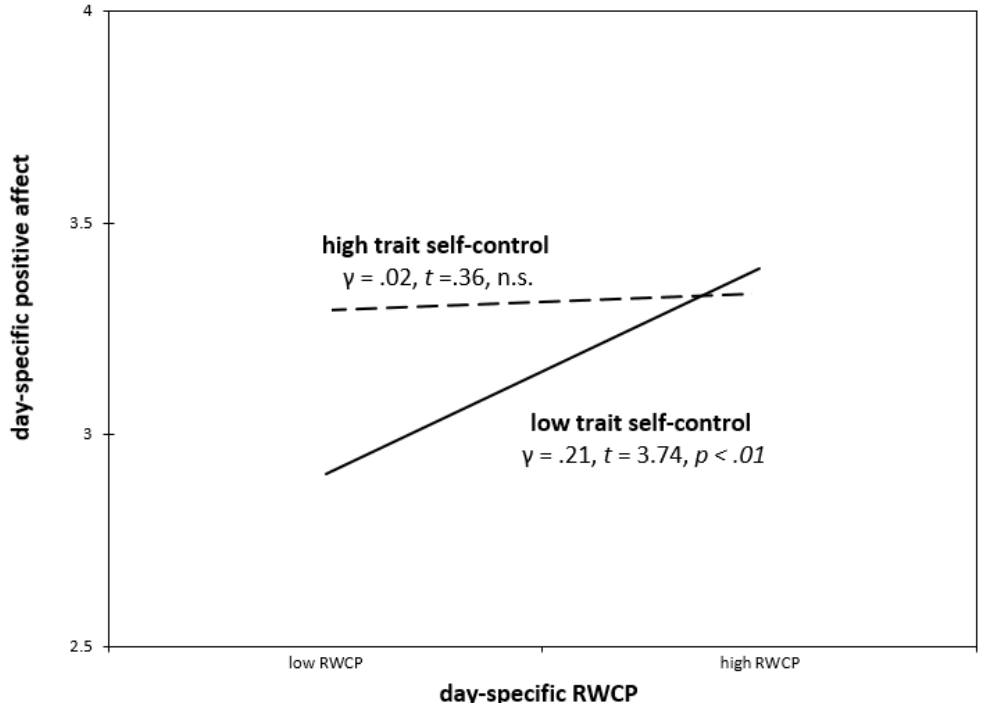


**Figure 12**

*Interaction effects of RWCP and trait self-control on positive affect*



## 5 Discussion

Our study aimed to understand the underlying processes triggered by RWCP that affect task performance. Our results provide additional insights into the effect of reattachment to work on work engagement (Sonnentag et al., 2019; Sonnentag & Kühnel, 2016) but also presumed positive affect (Schleupner et al., 2023) when considering the role of romantic partners in this process. The morning exchange with a trusted and loving person, such as that of a romantic partner, about the upcoming workday suggests that employees can initiate affective and motivational processes and thus start their workday with an extra charge of energy, positivity, and motivation.

Furthermore, in this study, we aimed to show that interindividual skills such as trait self-control plays a significant protective role on daily experienced affective, motivative and work-related process. Our moderation result suggests that trait self-control moderates the relationship between RWCP and a.) positive affect and b.) work engagement. Against our assumptions, the data show that for individuals with low self-control, communication with their partner has a stronger positive effect on both positive affect and work engagement. The results suggest that people who have high self-control benefit from this resource anyway and can behave in a more regulated, purposeful and attentive way, so that they experience the day in a good and motivated mood. For those who have low trait self-control, the resource RWCP is enormously important for motivation and mood during the working day.

Concerning all other mediators (negative affect, workload, and self-control demands), neither the main effect, mediation, nor moderation were found here. These results are also valuable and allow us to assume that the morning connection to work by communicating with the romantic partner about the upcoming workday only initiates affective-motivational processes and has no influence on emerging workloads, stress situations, or self-control demands. It only serves as an affective, energetic mood, made possible by the partner exchange and the psychological reattachment to work.

## 5.1 Theoretical Implications and Future Research

The mutual influence of work and private life has long since ceased to be a secret (Poethke et al., 2023). Our study picks up on an extraordinary moment in the morning. It is the moment when one is still in non-work time but mentally already connected to work by talking about work with one's romantic partner, thus indirectly influencing daily task performance. As we demonstrated with our results, this interaction triggers affective and motivational processes that explain how RWCP is related to task performance. We are deprived of our assumption, but a very interesting finding is that RWCP has no influence on workloads and self-control demands. We also found similar patterns in our additional analyses, in which we included emotion work and exhaustion as mediators in our study model. These findings provide an important theoretical contribution to understanding the effectiveness of RWCP during the workday. It appears that mental preparation for work via talking with the romantic partner helps employees begin their resource planning in advance and thus acts as mental preparation for the following workday. This good feeling of preparation for the workday goes so far that employees start the workday vital and motivated (e.g. Sonnentag & Kühnel, 2016), which can only benefit task performance.

Our study mainly focused on further investigating the underlying mechanisms between RWCP and task performance. To this end, we also included positive (and negative) effects in our model, as suggested by Schleupner et al. (2023). It is also conceivable that job performance is indirectly influenced by RWCP and other performance variables such as creativity (Bledow et al., 2011). Therefore, we encourage future researchers to consider other performance variables.

Trait self-control is a stable disposition that influences a person's ability to regulate behaviour and impulses. Our study results show that individuals with different levels of trait self-control may experience and respond differently to the morning RWCP. This extends our understanding of how individual traits interact with daily routines and interpersonal interactions to influence work-related outcomes such as task performance via affective and motivational processes. It would be important to

elaborate further on this theoretical implication by considering other relevant individual differences, such as personality traits (e.g., mindfulness) or relationship traits (e.g., attachment styles of romantic partners), as moderators in future research. Since we could not prove that individuals with a high trait self-control strengthen the link between RWCP and positive affect and work engagement as hypothesised, another recommendation for future studies would be to investigate what this might be due to. One suggestion is that RWCP is both a regulatory and a social resource that is effective depending on the personality trait.

In our study, we show that the romantic partner plays a crucial role concerning reattachment to work in the morning. But we limited ourselves to communication with the romantic partner as a close person. However, the thought of what happens to people who are not in a romantic partnership is permissible. Is it possible that family members, roommates, or close friends acting as morning communication partners also trigger these effects at work? This would be an interesting question to consider in future studies.

### 5.2 Practical Implications

What is unique about the results of our study is that we can relate practical implications not only to the individual and organizational levels but also to romantic relationships. Our finding that morning RWCP indirectly influences task performance positively via positive affect and work engagement demonstrates to individuals and couples alike the importance of having partners participate in the work environment. Companies can also gain insights into the importance of including romantic couples in the work context. Some companies are already doing this by inviting partners to christmas parties, for example. This allows partners to get a better idea of each other's work environment, making the exchange easier and more productive. Talking in the morning about the workday ahead does so much for individuals, as it has a positive impact on well-being as well as job performance. It's a little something that can be quickly and easily integrated into everyday life, if it's not already there, living RWCP as a morning routine.

Our results suggest that morning RWCP primarily triggers affective and motivational processes without directly influencing the emerging workload and self-control demands. Organizations can use this finding to distinguish between the affective benefits of morning interactions and the need for separate strategies to manage workload and work demands. Here, targeted stress reduction programs and workload management techniques can be implemented to address these specific challenges. By separating these areas, organizations can more effectively help employees experience a balanced and productive workday. Using an online-based self-assessment test, employees can find out how high their workload is and take appropriate action. However, this can also be provided to employees by company health management (e.g., Fritz, 2019).

Companies can use flexible work designs to ensure that employees have a little more time in the morning to talk to their partners about the workday ahead. At this point, it should be emphasized that while RWCP has benefits for well-being and work performance, it should be limited to these phases, and especially the recovery process during non-work time should not be spent talking with romantic partner about work-related issues because mental detachment from work is enormously important for well-being, motivation, and performance (e.g. Fritz, 2019).

## 5.3 Limitations

Like any study, this one has some limitations. First, the measurement of the RWCP scale needs to be mentioned. With this scale, we only asked whether the participants talked about their work with their romantic partner in the morning before work. What exactly was discussed and what topics were focused on was not asked here. It is also unclear whether the romantic partner actually participated in a dialogue or whether the study participant only reported it. Our focus of the study was mainly on exchanges about upcoming work to map whether the moment of reattachment to work occurred via communication with the romantic partner. Other researchers could deepen this point and investigate which types and contents of communication are particularly effective for an individual's work performance and well-being.

Furthermore, our dataset is based on self-reported data. This means that we cannot completely rule out the possibility that bias, e.g., due to social desirability, did not occur and resulted in inflated associations due to common method bias (Donaldson & Grant-Vallone, 2002). Therefore, a recommendation at this point for future researchers would be to collect, e.g. dyad data sets for consideration of a reciprocal evaluation. Also, in particular, task performance could be evaluated, e.g. by a supervisor or team member, for more objective data sources.

## 6 Conclusion

The present study shows that RWCP in the morning helps employees to start the working day in a good mood and highly motivated, which positively influences task performance. For the first time in the reattachment to work literature, the role of the romantic partner in the process of reattachment to work was considered. In addition, negative mediators, work demands, workload and negative affect were also considered for the first time. However, no correlation was found here, which suggests that RWCP only sets in motion affective-motivational processes. Furthermore, we show that trait self-control plays a moderating role in this relationship. Interestingly, we show that employees with a lower TSC benefit from RWCP and show higher work engagement and positive affect. Based on these findings, we offer practical contributions to managers and organisations on how findings from this study can help to increase motivation and a positive mood during the working day.

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# C Study three: When happiness strengthens engagement and performance: the role of happiness at work as a resource for both experienced employees and newcomers

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**Authors contribution and manuscript stage**

**Elvira Radaca:** Research and topic identification, conceptualization, methodology, formal analysis, investigation, data management and writing
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***Manuscript stage:*** *This study was submitted to the Journal of Occupational and Organizational Psychology in July 2023.*

**Abstract**

In today's competitive labour market, companies should strive for happiness at work (HAW), which is related to better performance, efficiency, and motivation. Nevertheless, evidence is scarce regarding the relationship between HAW, work engagement, and extra-productive behaviour for experienced employees and newcomers. Given this background, our research ex-amines the link between HAW and employees' extra-productive behaviour, particularly adaptive and extra-role performance. We conducted two longitudinal studies among newcomers (N = 126) and experienced employees (N = 126) of various industries. Based on the Job De-mands-Resources Model (JD-R), we argue that work engagement mediates the relationship between HAW and adaptive performance as well as organisational citizenship behaviour (OCB). Furthermore, we predict interest-taking to moderate (amplify) the positive relationship between HAW and work engagement. Across both studies, our findings indicate indirect effects of HAW on extra-productive behaviour via work engagement. Interest-taking strengthens the impact of HAW on work engagement for newcomers but not for experienced employees. These new insights into the relationship between HAW and extra-productive behaviour can aid organisations in enhancing the performance and motivation of all employees,

regardless of their tenure. Theoretical and practical implications, as well as limitations and future research directions, are discussed.

***Keywords:*** *happiness at work; work engagement, adaptive performance, organisational citizenship behaviour, newcomers; experienced employees*

## 1 Introduction

A growing number of studies demonstrate that employees highly value motivating work environments, which provide opportunities for personal growth, meaningfulness, and career advancement, over monetary benefits (e.g., Allan et al., 2019; Ehresmann & Badura, 2018). In today's job market, companies face the challenge of attracting and retaining skilled employees in the "War for Talents" era. Here it is crucial to identify and promote factors that constitute motivating environments to enhance employee motivation and extra-productive behaviour, enabling organisations to attract and retain highly talented employees (e.g., Cheese, 2008; Monteiro et al., 2020). Rehwaldt and Kortsch (2022b) suggest that happiness at work (HAW) can be an effective approach to motivating employees in their work. HAW represents an ideal and positive state that includes evaluations of affective and cognitive components in the work context and refers to the sense of meaning at work, self-actualization, and community at work (Rehwaldt, 2017). Furthermore, research suggests that happiness is positively related to extra-productive behaviour in terms of adaptive performance and extra-role performance (e.g., Salas-Vallina et al., 2017; Singh & Banerji, 2022). While adaptive performance refers to an employee's ability to adapt to changes in the workplace (Griffin et al., 2007a; Jundt et al., 2015), organisational citizenship behaviour (OCB) is defined as individual extra-role behaviour not explicitly required by the job description or formal work conditions (Fox et al., 2012; Organ, 1997).

Although the notion that HAW can lead to extra-productive behaviour at work has gained traction in research, past research has only tentatively explored the role of HAW in the way employees engage in extra-productive behaviour. Whereas initial evidence indicates that HAW is a promising precursor of employee effectiveness (e.g., Rehwaldt, 2017, 2020), the questions of how, why, and when HAW shapes employees' behaviour at work remain largely unanswered. This is somewhat surprising as theoretical insights from research on the Job Demands-Resources (JD-R) model (e.g.,

Bakker & Demerouti, 2007, 2017) strongly suggests that HAW relates to extra-productive behaviour by enhancing motivational processes and that employee personality might further influence these processes (Bakker et al., 2023). Our study, therefore, aims to provide an in-depth understanding of the effects of HAW on OCB and adaptive performance by examining work engagement as a mediator, with additional consideration of moderating mechanisms.

Work engagement, a positive, motivational state of mind consisting of the three facets of vigour, dedication, and absorption (Schaufeli et al., 2002), has been identified as a key factor that mediates the relationship between resources and employee performance (e.g., Bakker et al., 2011; Christian et al., 2011; Saks, 2019). Drawing from the JD-R model (Bakker & Demerouti, 2007, 2017) and in line with empirical evidence on the positive relationship of work engagement with extra-role performance (e.g., Borst et al., 2019; Kanjanakan et al., 2021) and adaptive performance (e.g., Costa et al., 2016; Kaya & Karatepe, 2020), we hypothesize that HAW will act as a job resource and promote work engagement, which ultimately enhances adaptive performance and OCB.

Thereby, organisations' workforce includes employees at different stages of their careers, both new and experienced. Newcomers undergo a volatile phase during organisational socialization while they acquire the knowledge, skills, and attitudes required for the new role they adjust to (van Maanen & Schein, 1979) and go from being organisational outsiders to becoming insiders (Bauer et al., 2007). Organisational insiders are characterized by higher levels of knowledge and expertise, with a deeper understanding of their job and the organisation, therefore called veterans or experienced employees (Bauer & Erdogan, 2011). Because of the different stages and situational contexts in which experienced employees and newcomers find themselves, it is reasonable to adapt study designs accordingly, even if the phenomena studied are assumed to be the same in their effectiveness. Therefore, we conducted a two-study design to examine both target groups to consider employees at different stages of their organisational careers. We hereby enlarge the scope of mechanisms of HAW by investigating the

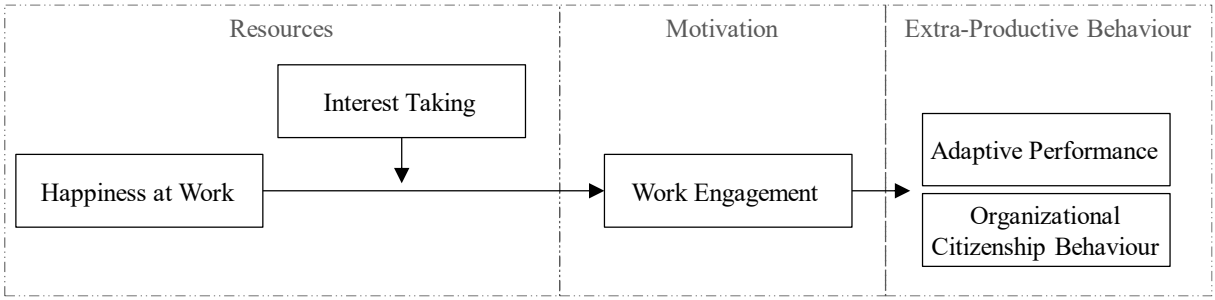
proposed effects among experienced employees and newcomers. Based on these two samples, we examine the indirect effects of HAW on adjustment performance and OCB via work engagement.

Additionally, we seek to uncover interaction effects that further explain the relationship between HAW and work engagement by proposing interest-taking as an amplifying moderator of the positive relationship. Interest-taking is a personal trait and a form of trait autonomy that describes the ability to openly reflect on inner and outer circumstances with an unbiased opinion, which creates a state of self-directed awareness of things of inner interest (Ryan & Deci, 2008; Weinstein et al., 2012). We argue that individuals with higher interest-taking get a more precise and in-depth sense of their environment at work and therefore expect that employees with higher (lower) levels of interest-taking will be better (less) able to utilize HAW, leading to higher (lower) work engagement. In doing so, we also address the person x situation approach within the JD-R model framework that emphasizes the interaction of stable traits of employees with the situational context of their work (Bakker et al., 2023b).

In sum, we propose a model of moderated mediation wherein HAW interacts with interest-taking in predicting work engagement, resulting in adaptive performance and OCB (see Figure 10). To investigate our hypotheses among our samples with experienced employees and organisational newcomers, we apply a multilevel analysis of a 2-1-1 moderated mediation model for our studies.

**Figure 13**

*Conceptual research model*



We offer several contributions by clarifying the role of HAW in the JD-R Model framework and outlining its relevance for newcomers and experienced employees. First, our study uncovers that HAW is an important job-related resource (Bakker & Demerouti, 2007) and indirectly positively affects adaptive performance and OCB. Second, concerning the literature on organisational socialization specifically, our study adds to the knowledge about the role of work engagement for newcomer extra-productive behaviour and what resources can help enhance newcomer engagement (Saks & Gruman, 2012, 2018). Third, by including interest-taking as a trait and implementing the person x situation approach (Bakker et al., 2023), we contribute to understanding how personality traits moderate the relationship between the job resource HAW and employee work engagement in different career stage contexts. Concerning practice, especially human resources management can draw from our insights, which is why we offer practical recommendations on actions and strategies regarding interventions to create motivating work environments with factors relating to HAW.

## 2 Theoretical Background

### 2.1 Happiness at work and performance: the mediating role of work engagement

#### *2.1.1 Happiness at work as a resource and its relation to extra-productive behaviour:*

Several studies have shown that work environments and conditions significantly impact psychological well-being and extra-productive behaviour (e.g., Rossberg et al., 2004). In modern workplaces, factors related to HAW are becoming increasingly relevant for experienced employees and newcomers. HAW can be described as an ideal and positive state that includes evaluations of affective and cognitive components at the workplace (Rehwaldt, 2017). Whereas various concepts and instruments reflect general happiness and related constructs that refer to broader well-being factors (e.g., Butler & Kern, 2016; Su et al., 2014), this conceptualization refers to happiness at the very work context (Rehwaldt & Kortsch, 2022). Based on a grounded theory approach by Rehwaldt (2017), Rehwaldt and Kortsch

(2022) propose three central factors of HAW: Meaningfulness, self-actualization, and community. Meaningfulness involves perceiving one's contribution to a meaningful goal and aligning values and goals for organisational coherence. It extends beyond task purposes, encompassing a broader perspective of contributing to a larger purpose and assisting others. Self-actualization entails utilising personal strengths and abilities to implement ideas at work, driven by individual ideals and beliefs. This leads to increased emotional attachment and commitment, fostering happiness. The third factor, community, is fostered through social interaction and cohesion among members sharing a common goal. It encompasses task-related and professional exchanges and emotional interactions built on trust and familiarity, enhancing the sense of belonging and overall HAW.

Rehwaldt (2017) describes these factors of HAW as a valuable job resource. In general, resources include any means an individual perceives that helps them achieve their goals (Halbesleben et al., 2014). The JD-R model is a theoretical framework to explain the relationship between job demands, resources, and employee well-being and performance (Bakker & Demerouti, 2017; Bakker et al., 2023). It distinguishes between two types of resources: Personal resources and job resources. Personal resources are individuals' positive self-evaluations about aspects of themselves associated with personal resilience (Hobfoll et al., 2003) and reflect their beliefs about successfully controlling and influencing their environment (Bakker & Demerouti, 2007). Job resources include different aspects of the job that might lower job demands and associated costs, and/or support employees in achieving work goals, and/or help individuals in their personal development, growth, or learning (Bakker & Demerouti, 2007, 2017). HAW implies that individuals can self-realize and sense the purpose of their work within a trustful and professional community, thus emphasising aspects of the job that support individuals and help employees grow and succeed. Therefore, according to the JD-R model, HAW can be considered a job resource.

Previous research demonstrates that employees benefit from higher resources in the form of HAW, as they should be more productive and energized, take fewer sick days, and intend to stay longer

with the organisation (Pryce-Jones & Lindsay, 2014). Here, Rehwaldt (2017) argues that improving factors that contribute to HAW is not only a goal in itself but also has a significant impact on individual extra-productive behaviour and employee engagement. This shows as employees who feel good about their jobs, find meaning in their work, can develop themselves further, and work in an environment where shared goals are pursued, are generally more productive, more motivated, and have less absenteeism due to illness (Baruch-Feldman et al., 2002; Bashir et al., 2020; Rossberg et al., 2004). Previous studies consistently demonstrate that HAW is important for employees' well-being and extra-productive behaviour (e.g., Salas-Vallina et al., 2017; Singh & Banerji, 2022). Thus, higher resources in the form of HAW relate to a motivating environment for employees, positively impacting extra-productive behaviour in the form of adaptive performance and OCB.

OCB refers to employee behaviours that go beyond formal duties of core job tasks and support the social structure of organisations (Fox et al., 2012; Organ, 1997), thus helping organisations as a whole and individuals within the organisation (Spector et al., 2010). Those behaviours include, for example, supporting colleagues and complying with organisational rules and procedures. Adaptive performance describes the ability of employees to adapt to new or unforeseen situations successfully and to exhibit appropriate behaviours to deal successfully with these challenges (Jundt et al., 2015). It encompasses employee flexibility and adaptivity in reacting to work-related changes and is an important factor in the performance of individuals and organisations (Griffin et al., 2007a). Both adaptive performance and OCB are crucial for organisations in improving organisational effectiveness, enhancing teamwork and collaboration, and promoting a positive corporate culture (e.g., Chiaburu et al., 2022; Podsakoff et al., 2000).

In summary, HAW is an important resource that enhances employees' extra-productive behaviours, such as adaptive performance and OCB. Higher HAW should help employees better adapt to changes and motivate them to engage in behaviour beyond their formal duties, that is, OCB. Nevertheless, only scarce evidence exists on the relationship of HAW with adaptive performance and

OCB. In line with the JD-R model and addressing this research gap, we expect HAW as a job resource to positively affect employees' extra-productive behaviour in the form of adaptive performance and OCB. We, therefore, propose the following hypotheses:

***Hypothesis 1.1:*** *HAW is positively related to adaptive performance among (a) experienced employees (b) and newcomers.*

***Hypothesis 1.2:*** *HAW is positively related to OCB among (a) experienced employees (b) and newcomers.*

### *2.1.2 The mediating role of work engagement*

Focusing on the relationship of resources with individual and organisational outcomes, the motivational path of the JD-R model describes a mediation process via motivation and engagement. It assumes that personal and job resources are positively related to work engagement, which impacts individual behaviour and organisational outcomes (Bakker & Demerouti, 2007, 2017). Thus, work engagement should mediate the relationship between the job resource of HAW and employee extra-productive behaviour. Due to its conceptual role within the JD-R model, most work engagement research deals with either antecedents and consequences of work engagement or its mediating role (e.g., Borst et al., 2020; Christian et al., 2011; Lesener et al., 2019). Work engagement is a positive, fulfilling, motivational state of mind that reflects in vigour (i.e., high level of energy, resilience, and perseverance), dedication (i.e., experiencing a strong involvement, a sense of significance and enthusiasm), and absorption (i.e., being fully absorbed and concentrated in one's work so that time passes quickly; Schaufeli et al., 2002). Employees provided with a work environment that fulfils their expectations have higher levels of engagement (Green et al., 2017). A work environment that reflects factors of HAW will therefore relate to higher levels of work engagement. Employees that are provided with opportunities to self-actualize and to find meaning in their work will be more engaged and motivated, as they should be better able to sense the significance in what they do, be happily

engrossed in their meaningful work and experience higher levels of vitality and perseverance in supportive and trusting community. In a resource-rich work environment characterized by HAW, employees' willingness to dedicate themselves to work will increase (Bakker et al., 2011; Meijman & Mulder, 1998). In line with the JD-R model, we, therefore, expect HAW as a job resource to be positively related to work engagement.

Regarding its relation to extra-productive behaviour, several scholars found work engagement essential in predicting adaptive performance (e.g., Costa et al., 2016; Kaya & Karatepe, 2020; Park et al., 2020) and OCB (e.g., Gupta et al., 2017; Mathumbu & Dodd, 2013; Sulea et al., 2012). Meta-analytic evidence demonstrates that work engagement strongly relates to extra-role performance (Borst et al., 2020) and, among various behavioural outcomes, its highest correlation is with OCB (Kanjanakan et al., 2021). Employees that experience increased work engagement report higher levels of vigour, dedication, and absorption at work and will thus be more likely to demonstrate extra-productive behaviours. Regarding adaptive performance, engaged employees are more focused and engrossed in their work (Breevaart et al., 2014), enabling them to detect changes more efficiently and be more ready and dedicated to adapting to those successfully. Therefore, engaged employees should be more likely to demonstrate behaviours that reflect their adaptive performance. Furthermore, regarding OCB, work engagement is positively related to extra-role behaviours (e.g., Eldor & Harpaz, 2016). Engaged employees are more likely to demonstrate OCB as they are dedicated to achieving their work goals while having an increased capability of performing behaviours that go beyond formal work tasks and benefit the organisation and individuals within it (Christian et al., 2011). Thus, in line with the JD-R model and former empirical evidence, we expect work engagement to relate to both adaptive performance and OCB positively.

In summary, both the JD-R model and evidence underscore that work engagement is an important mediator between job resources and performance (e.g., Lesener et al., 2019; Neuber et al., 2022; Saks, 2019), strongly suggesting mediation of the relationship between HAW and adaptive

performance or OCB. While the vast majority of studies have investigated work engagement among experienced employees, recent research indicates that the mediating role of work engagement in predicting individual extra-productive behaviour and performance also applies to newcomers during organisational socialization (Saks & Gruman, 2018). Accordingly, work engagement plays an important mediating role for all employees, both experienced and new to the organisation.

In conclusion, the JD-R model and recent socialization literature suggest that HAW will positively influence work engagement for both experienced employees and newcomers. This assumption is also consistent with the findings of Lesener et al. (2020), as HAW is a resource that is closely connected to the individual and thus has a presumably strong effect on work engagement. Moreover, theory and empirical research have consistently linked work engagement to extra-productive behaviour in both populations and demonstrated the mediating role of work engagement between job resources and extra-productive behaviour, particularly concerning adaptive performance and OCB. Thus, it is reasonable to assume that work engagement mediates the relationship between HAW and extra-productive behaviour in the form of adaptive performance and OCB. Therefore, we postulate the following hypotheses:

***Hypothesis 2.1:*** *HAW is positively indirectly related to adaptive performance via work engagement among (a) experienced employees (b) and newcomers.*

***Hypothesis 2.2:*** *HAW is positively indirectly related to OCB via work engagement among (a) experienced employees and (b) newcomers.*

### 2.2 The moderating role of interest-taking

By examining experienced employees and newcomers, we examine individuals in different contexts, considering their unique personal and professional situations. We propose that employees with higher levels of interest taking, reflecting in attentional self-directed regulation at work and openness to

internal and external circumstances, will be better able to benefit from HAW in demonstrating increased work engagement. Drawing from the person x situation approach of the JD-R model (Bakker et al., 2023), we seek to improve understanding of the interaction between an individual's personality and work situation. The approach assumes that an individual's behaviour results from their unique personality traits and the specific situational factors they encounter. Considering the effects of personality traits helps improve our understanding of the relationship between HAW and work engagement.

Interest-taking, a central facet of trait autonomy, is the conscious ability to think about and reflect on internal and external circumstances, involving both cognitive and motivational processes that encompass awareness and ongoing insight into oneself and one's experiences, promoting a high degree of self-oriented regulation (Ryan & Deci, 2008; Weinstein et al., 2012). Specifically, this means that employees take an active interest in a given circumstance or thing, building a personal connection to it. This helps them, e.g., stay intrinsically motivated in a task or activity. In addition, in interest-taking, individuals actively reflect on phenomena or conditions as well as circumstances in a curious rather than defensive manner. That is, individuals with high levels of interest-taking are better able to be open to, reflect on, and match internal and external events with their inner selves (Weinstein et al., 2012). The main element of interest-taking is the awareness of one's own experiences and self in these moments (Weinstein et al., 2012, p. 398), which reflects a higher level of self-directed attention. Thus, we assume that interest-taking is crucial in enabling employees to optimally process the conditions and circumstances they face at work, such as factors that determine HAW, and assess the extent to which these align with their self. This leads to a higher degree of self-direction and the ability to leverage these factors and conditions at work, ultimately enhancing work engagement. Complementing this argumentation, we can transfer the expected interaction to the resource-reciprocity proposition of the JD-R model (Bakker et al., 2023). The JD-R model expects that resources reciprocate so that individuals with higher levels of personal resources can access higher levels of job resources and vice versa (Bakker et al., 2023, p. 33), leading to a joint positive impact on work

engagement. Interest-taking can be characterized as a personal resource, as it represents a positive self-evaluation related to the ability to control and impact the work environment. In contrast, HAW is referred to as a job resource. That means a higher level of the personal resource of interest-taking should relate to better accessibility of the job resource of HAW, consequently enhancing work engagement.

In summary, employees (newcomers and experienced employees) with higher levels of interest-taking, representing a personal resource, are better able to perceive and profit from a working environment that aligns with their values, feelings, and interests. Therefore, the influence of HAW, which represents a job resource, on work engagement will be enhanced, leading to the following hypothesis:

***Hypothesis 3:*** *Interest-taking moderates the positive relationship between HAW and work engagement among (a) experienced employees and (b) newcomers; the relationship will be stronger (weaker) for individuals with higher (lower) interest-taking.*

In line with the JD-R model, we propose that higher job resources related to HAW will positively impact work engagement, enhancing adaptive performance and OCB. Thus, we expect work engagement to mediate the respective positive relationship of HAW with adaptive performance and OCB among newcomers and experienced employees. In addition, we expect employees with higher levels of interest-taking, represented by a higher degree of self-directed attention, to be better able to process beneficial conditions and circumstances at work and thus leverage the factors related to HAW, further enhancing their work engagement. Overall, we expect that both indirect effects of HAW on adaptive performance and OCB via work engagement will be stronger (weaker) for individuals with higher (lower) levels of interest-taking. This leads to the following hypotheses:

***Hypothesis 4.1:*** *Interest-taking moderates the indirect effect of HAW on adaptive performance via work engagement among (a) experienced employees and (b) newcomers.*

***Hypothesis 4.2:*** *Interest-taking moderates the indirect effect of HAW on OCB via work engagement among newcomers among (a) experienced employees and (b) newcomers*

## 3 Overview of the studies

Since our two target groups are in different phases and situational contexts, it was essential to adapt the study design to the respective target group accordingly, even if the phenomena studied are assumed to be equally effective. As a consequence, we conducted two studies to test our hypotheses. The first study includes experienced employees from various organisations participating in a diary study. The second study uses a monthly assessment to focus on organisational newcomers. By expanding the examination of our research model into the domain of organisational socialization among newcomers, we seek to gather insight into commonalities and differences in the interactive effects of HAW on work engagement and performance. By doing so, we also gain insights into how HAW might be important for newcomers and how this relates to enhancing newcomers' work engagement during organisational socialization. Furthermore, we improve the generalizability by replicating our findings among varying samples. Ethical soundness of both studies was certified under APA standards.

## 4 Study 1 – Experienced employees

### 4.1 Materials & methods

#### *4.1.1 Research design and participants*

For Study 1, a diary study, we recruited experienced employees from a diverse range of occupational backgrounds. Recruitment was performed via convenience sampling, using direct contact and contacts with different companies. We used a standardized promotional flyer and provided information about

data protection. Participation in the study was voluntary and without monetary compensation. However, participants had the option to receive individual feedback on their data. All participants were fully informed about the data protection regulations, the purpose of the study, and the methodological procedure before participating.

We conducted this diary study using an online survey. The pre-questionnaire consisted of stable constructs, such as sociodemographic information and person-related variables (e.g., HAW and interest-taking). Over ten working days (Monday to Friday), participants received three emails a day (morning, noon, and evening) with links to the respective questionnaires. The study was suspended on weekends and holidays and resumed on the next regular work day. The timing of the questionnaires was based on the participants' self-reported working hours. The first email was sent two hours before the start of work, the second four hours into the workday, and the last email was sent one hour after work ended. Participants had two hours to complete each questionnaire. They received a reminder email if they did not complete it within one hour.

Of the initial 138 participants recruited, 12 were excluded due to incomplete daily questionnaires for at least one day. The final sample size was 126 employees who completed all questionnaires on an average of 6.37 out of a maximum of 10 survey days, resulting in a total of 803 measurement points. All data collected in the daily diary study was self-reported.

65.90% were female, and the average age was 34.20 years (range = 19-67; SD = 13.50). The work experience was 13.97 years (SD = 14.32) on average, and the average organisational tenure was 6.45 years (SD = 9.06). 15.90% of the participants held supervisory positions, and 59.50% were full-time employees. The majority of the participants were from the financial and insurance sector (18.30%), healthcare (10.30%), science (9.50%), IT and communication (8.70%), production and processing industry (7.90%), and miscellaneous industries (21.40%).

### *4.1.2 Measures*

We assessed HAW and interest-taking in the pre-questionnaire. All other constructs were assessed daily as repeated measures; work engagement as a state at noon, adaptive performance, and OCB in the evening to reflect on the whole working day. See Table 11 for an overview of all measures. To see all the constructs of these studies, see Appendix A3.

**Table 11**

*Measures of focal variables*

| Variable | Source | Item count | Response Scale | Sample Items |
|---|---|---|---|---|
| Happiness at Work | Rehwaldt and Kortsch (2022b) | 12 | 1 ("disagree") to 5 ("totally agree") | "I can implement my ideas and wishes."[ab]<br>"I feel that my work is meaningful." [ab]<br>"In our company, we treat each other with respect." [ab] |
| Interest-Taking | Weinstein et al. (2012) | 3 | 1 ("not at all true") to 5 ("completely true") | "I often reflect on why I react the way I do." [ab] |
| Work Engagement | Schaufeli et al. (2006) | 9 | 1 ("never") to 7 ("always") | "At my work, I feel[a]/felt[b] bursting with energy."<br>"My job inspires[a]/inspired[b] me."<br>"I am[a]/was[b] immersed in my work." |
| Adaptive Performance | Griffin et al. (2007a) | 3 | 1 ("very little") to 5[a] / to 7[b] ("a great deal") | "I adapted well to changes in my core tasks." [ab] |
| OCB | Staufenbiel and Hartz (2000)[a] | 7[a] | 1 ("does not apply at all") to 7 ("fully applies")[a] | "Today, I actively sought to prevent difficulties with colleagues."[a] |
| | Spector et al. (2010)[b] | 10[b] | 1 ("never") to 5 ("every day")[b] | "Helped a co-worker who had too much to do"[b]<br>"Offered suggestions to improve how work is done."[b] |

Note. OCB = Organisational Citizenship Behaviour. We used the same scales for both studies, except for OCB. For study 1, work engagement was worded as a state, while adaptive performance and OCB reflected the whole working day and were worded accordingly. To account for the retrospective assessment of all the repeated measures in study 2 (work engagement, adaptive performance and OCB), items were reworded and the instruction was adapted accordingly. [a] Study 1. [b] Study 2.

### *4.1.3 Analytical procedure*

All analyses were performed with Mplus 8.7 (Muthén & Muthén, 2017). We applied multilevel path analysis to test our 2-1-1 model of moderated mediation (Preacher et al., 2010, 2011). Following recent recommendations on 2-1-1 multilevel mediation (Fang et al., 2019), we used the Bayesian estimation method that has repeatedly demonstrated better accuracy and efficiency compared to frequentist

approaches (e.g., maximum likelihood) for multilevel models that include moderated mediation (Asparouhov & Muthén, 2021b). To estimate the moderated mediation model, we specified a level-2 interaction between the moderator (i.e., interest-taking) and the independent variable (i.e., HAW). For an unbiased estimation, we centred both level-2 variables and their interaction around the grand mean (Enders & Tofighi, 2007). Bayesian estimation is based on the Markov Chain Monte Carlo algorithm, where multiple iterations are used for calculating posterior parameter values (Zyphur & Oswald, 2015). We rely on non-informative priors to allow unbiased inferences (Wang & Preacher, 2015), as our hypotheses include novel relationships. Bayesian estimation does not deliver fixed values with significance values for parameter estimates but instead makes use of the distribution of information for the parameters. Therefore, a credibility interval (CI), based on the posterior distributions, is provided for each parameter estimate. In a 95% CI, the effect has a 95% probability of falling within the given range. Thus, similar to the logic of frequentist confidence intervals, including zero in a 95% CI would indicate that the respective parameter might not differ from zero. For convergence and fit of our respective models in the two studies, we evaluated the potential scale reduction value, trace plots for the distribution, model parameter autocorrelations, and Posterior Predictive p-Values (Asparouhov & Muthén, 2021).

## 4.2 Results of study 1

### *4.2.1 Descriptive statistics, construct validity, and model fit*

Table 12 shows means, correlations, intraclass correlations (ICCs), and reliabilities for Study 1[2]. We first examined within-person (Level 1) and between-person (Level 2) variances among our outcome

[2] Despite significant correlations of age and work experience with OCB and of organizational tenure with interest-taking, we excluded these control variables from further analyses in order to minimize power reduction associated with type II

variables and evaluated the model fit before testing the hypotheses. A substantial amount of between-person variance was given (see ICC values in Table 12). Thus, the results of variance decomposition strongly support the application of multilevel modelling.

**Table 12**

*Descriptive statistics for study 1 (experienced employees)*

| Variable | *M* | *SD* | ICC | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Work Engagement [a] | 4.78 | 1.25 | .69 | (.95) | **.25** | **.12** | | | | | |
| 2. Adaptive Performance [b] | 3.20 | 1.02 | .37 | .13 | (.79) | **.17** | | | | | |
| 3. OCB [a] | 3.34 | 1.30 | .61 | .18 | **.63** | (.83) | | | | | |
| 4. Happiness at Work [b] | 3.63 | 0.60 | | **.50** | .16 | .19 | (.82) | | | | |
| 5. Interest-Taking [b] | 3.42 | 0.79 | | -.04 | .09 | .06 | .17 | (.81) | | | |
| 6. Age [c] | 34.20 | 13.50 | | .09 | -.06 | **-.23** | .15 | -.15 | - | | |
| 7. Gender [d] | 1.33 | 0.47 | | .12 | .10 | .11 | .04 | -.14 | .72 | - | |
| 8. Work Experience [c] | 13.97 | 14.32 | | .09 | -.04 | **-.18** | .14 | -.15 | **.96** | .41 | - |
| 9. Organisational Tenure [c] | 6.45 | 9.06 | | -.10 | .07 | -.11 | -.05 | **-.27** | **.64** | .13 | **.69** |

*Note*. OCB = Organisational Citizenship Behaviour. M = Grand means for person-level means. SD = Standard deviation of grand means for person-level means. ICC = Intraclass correlations of within-variables. Values for McDonald's Omega are depicted in parentheses on the diagonal. Below the diagonal are between-level correlations (*N* = 126), and above the diagonal are within-level correlations (*N* = 803). Numbers in bold = 95% Credibility interval does not include zero.

[a] 7-point scale. [b] 5-point scale. [c] In years. [d] 1 = female, 2 = male.

We performed an MCFA to examine the construct validity of the self-report measures. A 5-factor model with separate HAW, trait interest-taking, work engagement, adaptive performance, and OCB was tested against three alternative models. Table 13 shows the results of the model comparison. Results imply the discriminability of our measures, as the 5-factor model fitted our data best.

error inflation (Becker, 2005; Becker et al., 2016). Supplemental analyses that accounted for the aforementioned variables also did not reveal a different pattern of results.

**Table 13**

*Confirmatory factor analyses results for study 1 (experienced employees)*

| | Model | $\chi^2$ (df) | $\Delta\chi 2$ | CFI | TLI | RMSEA | $SRMR_w$ | $SRMR_b$ |
|---|---|---|---|---|---|---|---|---|
| 1 | Within: Work Engagement; Adaptive Performance; OCB<br>Between: Happiness at Work; Interest-Taking | 1113.891 (267) | - | 0.863 | 0.843 | 0.063 | 0.063 | 0.115 |
| 2 | Within: Work Engagement & Adaptive Performance as one factor; OCB<br>Between: Happiness at Work; Interest-Taking | 1685.116 (269) | 571.225*** | 0.771 | 0.739 | 0.081 | 0.106 | 0.115 |
| 3 | Within: Work Engagement; Adaptive Performance & OCB as one factor<br>Between: Happiness at Work; Interest-Taking | 1501.609 (269) | 387.718*** | 0.801 | 0.773 | 0.076 | 0.074 | 0.115 |
| 4 | Within: Work Engagement & Adaptive Performance & OCB as one factor<br>Between: Happiness at Work & Interest-Taking as one factor | 2963.385 (271) | 1849.494*** | 0.565 | 0.507 | 0.112 | 0.162 | 0.155 |

*Note*. OCB = Organisational Citizenship Behaviour. CFI = Comparative Fit Index. TLI = Tucker-Lewis Index. RMSEA = Root Mean Square Error of Approximation. SRMRw/SRMRb = Standardized Root Mean Residual for within/between.
* $p < .05$. ** $p < .01$. *** $p < .001$.

### *4.2.2 Test of hypotheses*

Before hypothesis testing, the trace plot inspection and a stable potential scale reduction value of less than 1.05 after approximately 200 iterations indicated a very good model convergence. Results further indicated a good fit for the mediation model (95%-CI = [-18.98; 29.75]; Posterior Predictive P-Value = .33).

For Hypothesis 1.1a and Hypothesis 1.2a, we tested the direct positive effect of HAW on adaptive performance and OCB, respectively. Multilevel estimates do not indicate direct effects of HAW on adaptive performance (*B* = 0.12, 95%-CI = [-0.13; 0.38]) and OCB (*B* = 0.21, 95%-CI = [-0.16; 0.60]). Therefore, Hypothesis 1.1a and Hypothesis 1.2a have to be rejected, and HAW does not directly relate to adaptive performance and OCB among experienced employees.

Hypothesis 2.1a proposed the indirect positive effect of HAW on adaptive performance via work engagement. Hypothesis 2.2a proposed an indirect effect of HAW and OCB via work engagement. Consistent with Hypothesis 2.1a and Hypothesis 2.2a, multilevel estimates revealed that between-person HAW positively related to work engagement (*B* = 0.90, 95%-CI = [0.60; 1.21]). At the within-

person level, work engagement was positively related to both adaptive performance (*B* = 0.30, 95%-CrI = [0.21; 0.38]) and OCB (*B* = 0.14, 95%-CI = [0.05; 0.23]), supporting Hypothesis 2.1a and Hypothesis 2.2a respectively. Consequently, the two hypothesised indirect effects of HAW via work engagement on adaptive performance (*B* = 0.26, 95%-CI = [0.16; 0.39]) and OCB (*B* = 0.13, 95%-CI = [0.05; 0.23]) were evident among experienced employees (see Table 14). Both Hypothesis 2.1a and Hypothesis 2.2a are therefore supported. Thus, work engagement fully mediates the positive relationships between HAW and adaptive performance (Hypothesis 2.1a) and OCB (Hypothesis 2.2a) among experienced employees.

In Hypothesis 3a, we predicted moderating effects (amplifying effects) of interest-taking on the positive relationship between HAW and work engagement among experienced employees (a-path of the model). However, multilevel estimates do not indicate an interaction effect of HAW × interest-taking on work engagement (*B* = -0.14, 95%-CI = [-0.47; 0.19]). Therefore, Hypothesis 3a did not receive support from the first sample's data. Interest-taking does not moderate the positive relationship between HAW and work engagement among experienced employees. Consequently, the proposed moderator's conditional indirect effects at higher or lower levels could not be interpreted. Thus, Hypothesis 4.1a and Hypothesis 4.2a are not supported.

**Table 14**

*Multilevel estimates for study 1 (experienced employees)*

| Parameter | Model 1 (mediation) | | | | Model 2 (moderated mediation) | | | |
|---|---|---|---|---|---|---|---|---|
| | B | PSD | 95% CI LL | 95% CI UL | B | PSD | 95% CI LL | 95% CI UL |
| *Within-level* | | | | | | | | |
| *Direct effects* | | | | | | | | |
| WE→AP | **0.293** | 0.044 | 0.208 | 0.379 | **0.296** | 0.043 | 0.211 | 0.380 |
| WE→OCB | **0.143** | 0.046 | 0.052 | 0.234 | **0.144** | 0.046 | 0.053 | 0.234 |
| $R^2$ AP | **0.064** | 0.018 | 0.032 | 0.105 | **0.065** | 0.018 | 0.034 | 0.104 |
| $R^2$ OCB | **0.014** | 0.009 | 0.002 | 0.037 | **0.014** | 0.009 | 0.002 | 0.037 |
| *Between-level* | | | | | | | | |
| *Direct effects* | | | | | | | | |
| WE→AP | **0.040** | 0.072 | -0.100 | 0.181 | **0.039** | 0.072 | -0.105 | 0.183 |
| WE→OCB | **0.107** | 0.110 | -0.112 | 0.325 | **0.105** | 0.112 | -0.115 | 0.323 |
| $R^2$ WE | **0.231** | 0.069 | 0.105 | 0.373 | **0.261** | 0.070 | 0.130 | 0.403 |
| $R^2$ AP | **0.038** | 0.037 | 0.002 | 0.141 | **0.038** | 0.038 | 0.002 | 0.138 |
| $R^2$ OCB | **0.050** | 0.040 | 0.004 | 0.154 | **0.051** | 0.041 | 0.004 | 0.158 |
| *Cross-level* | | | | | | | | |
| *Direct effects* | | | | | | | | |
| HAW→WE | **0.871** | 0.154 | 0.569 | 1.167 | **0.902** | 0.156 | 0.597 | 1.209 |
| HAW→AP | 0.126 | 0.125 | -0.126 | 0.368 | 0.123 | 0.128 | -0.125 | 0.375 |
| HAW→OCB | 0.219 | 0.193 | -0.169 | 0.594 | 0.214 | 0.194 | -0.164 | 0.598 |
| IT→WE | | | | | -0.187 | 0.117 | -0.414 | 0.047 |
| *Indirect effects* | | | | | | | | |
| HAW→WE→AP | **0.252** | 0.059 | 0.147 | 0.381 | **0.263** | 0.060 | 0.158 | 0.393 |
| HAW→WE→OCB | **0.121** | 0.047 | 0.042 | 0.225 | **0.127** | 0.048 | 0.046 | 0.232 |
| *Interaction* | | | | | | | | |
| HAW×IT→WE | | | | | -0.142 | 0.168 | -0.472 | 0.188 |

*Note*. $N_{between}$ = 126, $N_{within}$ = 803. PSD = Posterior Standard Deviation. HAW = Happiness at Work. WE = Work Engagement. IT = Interest-Taking. AP = Adaptive Performance. OCB = Organisational Citizenship Behaviour. 95% CI LL (UL) = Lower (Upper) Level of 95% Credibility Interval. Bold values indicate parameters' 95% Credibility Interval does not include zero.

### *4.2.3 Supplementary analysis*

Although the current study focused on the moderating role of interest-taking, we conducted supplementary analyses to examine the other subscales of the index of autonomous functioning. Multilevel estimation revealed non-existent interactions of the sub-facets of susceptibility to control (*B* = 0.01; 95%-CI = [-0.16; 0.17]) and authorship (*B* = -0.03; 95%-CI = [-0.56; 0.50]) with HAW. Therefore, none of the subscales of the index of autonomous functioning moderated the positive effect of HAW on work engagement among experienced employees.

## 4.3 Discussion of study 1

In our first study, we sought to investigate the mediating role of work engagement in a sample of experienced employees, and our findings confirmed our hypothesis. Our results indicate that HAW had a positive effect on work engagement, which in turn positively influenced extra-role performance in the form of adaptive performance and OCB. The path of motivation triggered by HAW highlights the importance of this construct as a key resource for experienced employees. Although we initially hypothesized that interest-taking moderates the positive effect of HAW on work engagement, our first study does not provide evidence for this interaction. One possible explanation for this lack of moderation is that experienced employees often possess a deep understanding of work processes and company culture, and they are frequently capable of adapting their work to their interests and skills. Furthermore, their experience often allows them to quickly acclimate to new tasks, which might limit the relevance of interest-taking in moderating the relationship between HAW and work engagement. However, our study's findings provide valuable insights into the mediating role of work engagement between HAW and extra-role performance among experienced employees.

# 5 Study 2 - Newcomers

## 5.1 Materials & Methods

### *5.1.1 Research design and participants*

We recruited newcomers from various organisations in Germany using the convenience sampling method through professional networks or direct contact. Participants self-registered for the online study via a double opt-in email procedure. All participants were fully informed about the study's details and assured of data confidentiality and security. Participation was voluntary, and participants received no monetary compensation. However, as in Study 1, participants were given the option of receiving

individual feedback on their data regarding resources and motivation. Of the 246 people who initially participated in the survey, 120 were excluded because they had only completed one survey or because data were either illogical or incomplete. The final sample included 126 newcomers with an average age of 27.84 years (SD = 6.73 years), of which 63.50% were female. The average work experience was 4.26 years (SD = 6.48), and the average number of previous job changes was 2.15 (SD = 2.17), reflecting the participants' experience with socialization processes. 10.30% of the newcomers were in leadership positions, and 31.70% worked part-time. Participants came from various industries: Health and social care sector (18.90%), service industry (17.10%), wholesale and retail (16.20%), education and upbringing (12.60%), or information and communications (8.10%). Participants filled out the first questionnaire two to four weeks after organisational entry, covering the time since they started their job. Three consecutive questionnaires were then sent at four-week intervals to cover the initial four months of the new employment.

### *5.1.2 Measures*

We used the same scales as in Study 1, except for OCB (see Table 7). The first questionnaire included demographic information, such as age or gender, and measures of HAW and interest-taking as a trait. The first and the subsequent three questionnaires assessed work engagement, adaptive performance, and OCB.

### *5.1.3 Analytical procedure*

The procedures of Study 1 were adopted for Study 2 accordingly.

## 5.2 Results of study 2

### *5.2.1 Descriptive statistics, construct validity and model fit*

Table 15 displays descriptive statistics and reliabilities of Study 2 variables. Similar to Study 1[3], examination for within-person (Level 1) and between-person (Level 2) variances among the outcome variables of Study 2 revealed substantial amounts of variance on Level 2 (see ICC values in Table 15). In line with Study 1, the results of variance decomposition for Study 2 also support the application of multilevel modelling.

As in Study 1, a 5-factor model with separate HAW, trait interest-taking, work engagement, adaptive performance, and OCB was tested against three alternative models. As can be seen in Table 16, the 5-factor model better fitted our data compared to the alternative models. We could replicate the factor structure from Study 1, and the discriminability of our measures was given.

**Table 15**

*Descriptive statistics for study 2 (newcomers)*

| Variable | *M* | *SD* | ICC | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Work Engagement [a] | 4.64 | 1.21 | .71 | (.95) | **.34** | **.18** | | | | | |
| 2. Adaptive Performance [a] | 5.43 | 0.95 | .43 | **.55** | (.75) | **.14** | | | | | |
| 3. OCB [b] | 2.53 | 0.70 | .63 | **.34** | **.26** | (.82) | | | | | |
| 4. Happiness at Work [b] | 3.68 | 0.70 | | **.67** | **.46** | .26 | (.89) | | | | |
| 5. Interest-Taking [b] | 3.49 | 0.72 | | **.22** | .18 | -.09 | .22 | (.77) | | | |
| 6. Age [c] | 27.84 | 6.73 | | .16 | .11 | .17 | .07 | -.05 | - | | |
| 7. Gender [d] | 1.37 | 0.48 | | -.08 | -.08 | .12 | .02 | -.06 | .02 | - | |
| 8. Work Experience [c] | 4.26 | 6.48 | | .09 | .09 | .13 | -.03 | -.05 | **.90** | .02 | - |
| 9. Job Change Experience [e] | 2.15 | 2.17 | | -.02 | -.09 | .16 | -.09 | -.09 | **.48** | .08 | **.58** |

*Note*. OCB = Organisational Citizenship Behaviour. M = Grand means for person-level means. *SD* = Standard deviation of grand means for person-level means. ICC = Intraclass Correlations of within-variables. Values for McDonald's Omega are depicted in parentheses on the

[3] For the same reason as in Study 1, we excluded additional control variables from our multilevel path analyses, especially since there were no significant correlations of the focal variables with control variables in the second study.

diagonal. Below the diagonal are between-level correlations (N = 126), and above the diagonal are within-level correlations (N = 399). Numbers in bold = 95% Credibility Interval does not include zero.
[a] 7-point scale. [b] 5-point scale. [c] In years. [d] 1 = female, 2 = male. [e] Total number of previous job changes.

***Table 16***

*Confirmatory factor analyses results for study 2 (newcomers)*

| | Model | $\chi^2$ (df) | Δχ2 | CFI | TLI | RMSEA | $SRMR_w$ | $SRMR_b$ |
|---|---|---|---|---|---|---|---|---|
| 1 | Within: Work Engagement; Adaptive Performance; OCB<br>Between: Happiness at Work; Interest-Taking | 818.688 (324) | - | 0.894 | 0.880 | 0.062 | 0.063 | 0.077 |
| 2 | Within: Work Engagement & Adaptive Performance as one factor; OCB<br>Between: Happiness at Work; Interest-Taking | 1004.492 (326) | 185.804*** | 0.855 | 0.837 | 0.072 | 0.073 | 0.077 |
| 3 | Within: Work Engagement; Adaptive Performance & OCB as one factor<br>Between: Happiness at Work; Interest-Taking | 1111.978 (326) | 293.290*** | 0.832 | 0.811 | 0.078 | 0.107 | 0.077 |
| 4 | Within: Work Engagement & Adaptive Performance & OCB as one factor<br>Between: Happiness at Work & Interest-Taking as one factor | 1781.576 (328) | 962.888*** | 0.689 | 0.652 | 0.106 | 0.129 | 0.118 |

*Note*. OCB = Organisational Citizenship Behaviour. CFI = Comparative Fit Index. TLI = Tucker-Lewis Index. RMSEA = Root Mean Square Error of Approximation. SRMRw/SRMRb = Standardized Root Mean Residual for within/between.
* $p < .05$. ** $p < .01$. *** $p < .001$.

### *5.2.2 Test of hypotheses*

Trace plot inspection and the potential scale reduction value falling below 1.05 after approximately 500 iterations indicated good model convergence for Study 2. Like in Study 1, results revealed a good model fit (95%-CI = [-19.60; 26.47]; Posterior Predictive P-Value = .41) for Study 2.

Hypothesis 1.1b and Hypothesis 1.2b postulated the respective direct positive effects of HAW on adaptive performance and OCB among newcomers. Multilevel estimates do not confirm the direct effects of HAW on adaptive performance (*B* = 0.14, 95%-CI = [-0.09; 0.38]) or OCB (*B* = 0.04, 95%-CI = [-0.17; 0.25]). Among newcomers, HAW is not directly related to adaptive performance and OCB.

Hypothesis 2.1b and Hypothesis 2.2b proposed that work engagement mediates the positive effect of HAW on newcomer adaptive performance (Hypothesis 2.1b) and newcomer OCB (Hypothesis 2.2b), respectively. The results show that between-person HAW was related to newcomer within-level work engagement (a-path; *B* = 1.01, 95%-CI = [0.79; 1.23]). On the within-person level, newcomer work

engagement was related to adaptive performance (*B* = 0.37, 95%-CI = [0.25; 0.50]) and OCB (*B* = 0.12, 95%-CI = [0.04; 0.19]). Therefore, the results support the indirect effect of HAW on adaptive performance via work engagement (*B* = 0.37, 95%-CI = [0.24; 0.54]) and the indirect effect of HAW on OCB via work engagement (*B* = 0.12, 95%-CI = [0.04; 0.20]; see Table 17). Thus, Hypothesis 2.1b and Hypothesis 2.2b were supported. Consistent Study 1 on experienced employees, work engagement also fully mediates the positive relationship between HAW and adaptive performance (Hypothesis 2.1b) and the positive relationship between HAW and OCB (Hypothesis 2.2b) among newcomers.

Hypothesis 3b addressed the moderating role of interest-taking. It proposes that the positive relationship between HAW and work engagement is stronger for newcomers with higher (vs. lower) interest-taking. In support of this proposition, results indicate that interest-taking moderates the positive relationship between HAW and work engagement (*B* = 0.46, 95%-CI = [0.19; 0.72]). We performed simple slope analysis for values of the moderator at one standard deviation above (+1SD) and below (-1SD) the mean as recommended by Preacher, Curran & Bauer (2006) and depicted the interaction in Figure 14. Interaction patterns show that for newcomers with higher levels of interest-taking, the positive relationship between HAW and work engagement is stronger (*B* = 1.34) than for those showing lower levels of interest-taking (*B* = 0.67). Thus, Hypothesis 3b is supported. Interest-taking moderates the positive relationship between HAW and newcomer work engagement.

Consequently, Hypothesis 4.1b and Hypothesis 4.2b predicted that interest-taking moderates the respective indirect effects of HAW on adaptive performance and OBC via work engagement. Multilevel estimates provided evidence for a moderation of the indirect effects. For values of the moderator at one standard deviation above and below the mean, results indicate conditional indirect effects of HAW on adaptive performance (*B* = 0.25 for interest taking at -1SD, *B* = 0.50 for interest taking at +1SD) and OCB (*B* = 0.08 for interest taking at -1SD, *B* = 0.15 for interest taking at +1SD) via work engagement (see Table 17). Thus, interest-taking moderates both indirect effects of HAW on adaptive performance (Hypothesis 4.1b) and OCB (Hypothesis 4.2b) via work engagement among newcomers.

**Table 17**

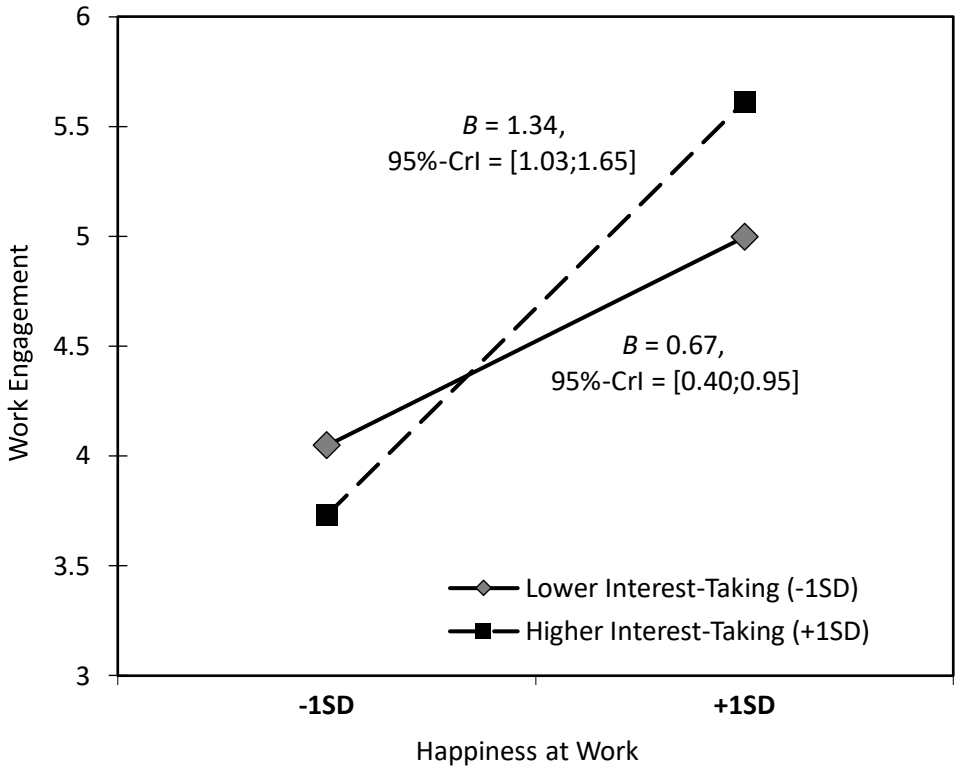
*Multilevel estimates for study 2 (newcomers)*

| Parameter | Model 1 (mediation) | | | | Model 2 (moderated mediation) | | | |
|---|---|---|---|---|---|---|---|---|
| | B | PSD | 95% CI LL | 95% CI UL | B | PSD | 95% CI LL | 95% CI UL |
| *Within-level* | | | | | | | | |
| *Direct effects* | | | | | | | | |
| WE→AP | **0.373** | 0.064 | 0.246 | 0.499 | **0.373** | 0.063 | 0.251 | 0.496 |
| WE→OCB | **0.118** | 0.039 | 0.040 | 0.195 | **0.116** | 0.039 | 0.039 | 0.194 |
| $R^2$ AP | **0.114** | 0.036 | 0.052 | 0.195 | **0.114** | 0.036 | 0.052 | 0.191 |
| $R^2$ OCB | **0.032** | 0.022 | 0.004 | 0.086 | **0.031** | 0.021 | 0.004 | 0.084 |
| *Between-level* | | | | | | | | |
| *Direct effects* | | | | | | | | |
| WE→AP | **0.269** | 0.086 | 0.097 | 0.438 | **0.276** | 0.085 | 0.109 | 0.439 |
| WE→OCB | **0.165** | 0.079 | 0.008 | 0.317 | **0.171** | 0.078 | 0.020 | 0.327 |
| $R^2$ WE | **0.448** | 0.074 | 0.297 | 0.587 | **0.539** | 0.071 | 0.387 | 0.663 |
| $R^2$ AP | **0.334** | 0.092 | 0.158 | 0.513 | **0.350** | 0.092 | 0.173 | 0.530 |
| $R^2$ OCB | **0.127** | 0.063 | 0.030 | 0.272 | **0.139** | 0.067 | 0.033 | 0.292 |
| *Cross-level* | | | | | | | | |
| *Direct effects* | | | | | | | | |
| HAW→WE | **0.984** | 0.112 | 0.765 | 1.200 | **1.005** | 0.113 | 0.786 | 1.228 |
| HAW→AP | 0.152 | 0.120 | -0.087 | 0.386 | 0.142 | 0.119 | -0.087 | 0.376 |
| HAW→OCB | 0.049 | 0.108 | -0.161 | 0.258 | 0.043 | 0.108 | -0.167 | 0.251 |
| IT→WE | | | | | 0.104 | 0.105 | -0.103 | 0.310 |
| *Indirect effects* | | | | | | | | |
| HAW→WE→AP | **0.364** | 0.076 | 0.229 | 0.526 | **0.373** | 0.076 | 0.237 | 0.535 |
| HAW→WE→OCB | **0.115** | 0.041 | 0.039 | 0.200 | **0.116** | 0.042 | 0.039 | 0.203 |
| *Interaction* | | | | | | | | |
| HAW×IT→WE | | | | | **0.457** | 0.136 | 0.193 | 0.722 |
| *Conditional a-path* | | | | | | | | |
| HAW×IT(-1SD)→WE | | | | | **0.668** | 0.140 | 0.399 | 0.951 |
| HAW×IT(+1SD)→WE | | | | | **1.339** | 0.159 | 1.030 | 1.654 |
| *Conditional indirect effects* | | | | | | | | |
| HAW×IT(-1SD)→WE→AP | | | | | **0.248** | 0.068 | 0.130 | 0.395 |
| HAW×IT(+1SD)→WE→AP | | | | | **0.496** | 0.103 | 0.311 | 0.707 |
| HAW×IT(-1SD)→WE→OCB | | | | | **0.076** | 0.032 | 0.023 | 0.148 |
| HAW×IT(+1SD)→WE→OCB | | | | | **0.154** | 0.056 | 0.052 | 0.274 |

*Note*. $N_{between}$ = 126, $N_{within}$ = 399; PSD = Posterior Standard Deviation. HAW = Happiness at Work. WE = Work Engagement. IT = Interest-Taking. AP = Adaptive Performance. OCB = Organisational Citizenship Behaviour. 95% CI LL (UL) = Lower (Upper) Level of 95% Credibility Interval. Bold values indicate parameters' 95% Credibility Interval does not include zero.

**Figure 14**

*Interaction effects of happiness at work and interest-taking*




### *5.2.3 Supplementary analysis*

As in Study 1, we conducted an additional analysis on potential moderating effects of the other two subscales of the index of autonomous functioning. Similar to Study 1, no interaction of HAW with susceptibility to control was found (*B* = 0.10, 95&-CI = [-0.21; 0.40]) among newcomers. Regarding the interaction of HAW and the subscale of authorship, multilevel estimates support an interaction effect on work engagement (*B* = 0.56, 95%-CI = [0.24; 0.87]). As the focus of the current study lies on interest-taking, there will be no discussion in detail regarding self-congruence for Study 2 specifically. Nevertheless, potential implications for future research will be discussed later.

### 5.3 Discussion of study 2

In line with Study 1, all hypotheses regarding the mediating role of work engagement were supported among our newcomer sample. We found that HAW relates to work engagement, which further leads to increases in socialization outcomes. Therefore, our findings further support the proposition of HAW as an important resource for experienced employees and newcomers. In addition, and in contrast to Study 1, we were able to show that interest-taking moderates the positive effect of HAW-on-work engagement. This further highlights the importance of additionally considering interactions between job resources and personal resources and adds to our understanding of how individuals might profit from HAW. Also, the findings of our second study address the supposition of the newcomer pathway to organisational socialization (Saks & Gruman, 2018), which adapts the motivational process of the JD-R model and extends it to organisational socialization research. Finally, work engagement mediates the positive relationship between HAW and adaptive performance and OCB, respectively. Thus, by proving that work engagement is an important mediator between socialization resources (here: HAW) and socialization outcomes (here: adaptive performance and OCB), our findings add to the knowledge about the role of work engagement among newcomers during organisational socialization.

## 6 General discussion

To the best of our knowledge, this is the first study that investigates the relationship between HAW and adaptive performance or OCB among different populations of employees and, based on the JD-R model (Bakker & Demerouti, 2017), explains these relationships via work engagement. In particular, we examine the interactive effect of HAW and interest-taking on work engagement, ultimately predicting adaptative performance and OCB, through two studies with employees at different stages of their organisational careers: experienced employees (Study 1) and newcomers (Study 2). First, our results demonstrate that HAW is an important job resource for both experienced employees and newcomers, affecting work engagement and the motivational process of the JD-R model. Second, we

confirmed the moderating role of interest-taking among newcomers, introducing interest-taking as a valuable personal resource that helps individuals benefit from HAW even more regarding their engagement. Third, both studies improve our understanding of the link between HAW and important work-related performance outcomes, namely adaptive performance and OCB. Based on JD-R theory, we demonstrate the crucial role of work engagement as a mediator with additional emphasis on organisational socialization research.

## 6.1 Theoretical contribution

We make several contributions to theory and research. First, we contribute to research on HAW regarding its role as a resource and its consequences for organisations and employees at different career stages. Recent research shows HAW is inherently connected with motivating job characteristics (Oerlemans & Bakker, 2018) and modern work environments (Kortsch et al., 2022). HAW is determined by the factors of self-actualization, meaningfulness, and community (Rehwaldt, 2017; Rehwaldt & Kortsch, 2022) and is supposed to relate to creativity, motivation, and performance (Rehwaldt, 2020). Implementing this conceptualization of HAW, we expand the knowledge about its relationship with motivation and performance among employees at different stages of their careers. Referring to the JD-R model's motivation process, we demonstrate that HAW is an important job resource (Bakker & Demerouti, 2007, 2017) for experienced employees and newcomers. By conducting two longitudinal studies among heterogeneous samples, we further address recent calls for longitudinal examinations of HAW and its consequences among diverse occupational groups (Rehwaldt & Kortsch, 2022).

By including interest-taking as a moderator in the relationship between HAW and work engagement, we further add to the understanding of how personal resources help individuals leverage their job resources more effectively. The JD-R model expects individuals with more personal resources to have better access to job resources, which will benefit the motivational process (Bakker et al., 2023b). In our second study, we can show that newcomers with higher levels of interest-taking,

compared to those with lower levels, are better able to benefit from the job resource HAW, such that they exhibit higher levels of work engagement. In doing so, we also respond to calls by Saks and Gruman (2012, 2018) to examine the joint effects of resources on work engagement among newcomers and contribute to organisational socialization literature. As mentioned earlier, we did not find a moderating effect of interest-taking among experienced employees. However, previous research has shown differences between newcomers and experienced employees in terms of the influence of personality on performance (e.g., Bauer et al., 2007; Tracey et al., 2007). Our results were surprising as we hypothesized that interest-taking benefits newcomers and experienced employees. One possible explanation could be the different phases and situations that lead to different perceptions of the work environment among new hires and experienced employees. While newcomers gain many new impressions, experienced employees have more expertise and experience to react to situational work events without much effort and attention. Therefore, because of their stage, newcomers benefit more from higher interest-taking, such as finding meaning in events and staying motivated. However, more research is needed to replicate and confirm these findings. The person x situation approach of JD-R theory by Bakker et al. (2023) can serve as a theoretical foundation to dig deeper into understanding these relationships.

We further contribute to the work engagement literature by clarifying the role of work engagement for newcomers during organisational socialization and experienced employees. In line with the JD-R model and numerous empirical research that suggests work engagement mediates the motivational process between job resources and performance outcomes (e.g., Bakker & Demerouti, 2017), our results show that work engagement fully mediates the relationship between HAW and adaptive performance and OCB respectively. Regarding research on organisational socialization, our study adds to the limited knowledge about newcomer work engagement (Saks & Gruman, 2012, 2018). We introduce HAW as a valuable socialization resource and empirically support the mediating role of work engagement for newcomers.

Furthermore, our studies focus on adaptive performance and OCB and contribute to the knowledge of how to promote both simultaneously. Employees are confronted with changes in their work environment and show adaptive behaviour to respond to those changes in their job tasks (Jundt et al., 2015). We contribute to the literature and expand the evidence on how engagement improves adaptive performance in employees, as there are only a few studies to link them (e.g., Kaya & Karatepe, 2020; Park et al., 2020). Furthermore, our results add to the existing literature on the relationship between work engagement and OCB (e.g., Borst et al., 2020; Gupta et al., 2017). Consistent with previous research, our results suggest a positive relationship between work engagement and OCB for both experienced employees and newcomers. Making an important contribution to organisational socialization research, this is the first study to demonstrate the relationship between newcomers' work engagement, adaptive performance, and OCB.

## 6.2 Practical implications

Our findings provide valuable insights for practitioners. Current research suggests that HAW can provide valuable indicators for assessing progress and change in various work domains, such as employee acquisition, onboarding, and retention (e.g., Kortsch et al., 2022; Rehwaldt, 2017). Results from both studies extend and support these approaches and serve as a foundation for practical implementation for organisations seeking to build and improve HAW and work engagement from the outset and throughout employment. Creating favourable and inspiring work conditions and environments is strongly related to better performance (e.g., Bashir et al., 2020).

Organisations should aim to build a professional and trusting community and empower employees to contribute to the bigger picture to strengthen HAW. This can be achieved, for example, by emphasising the factors of meaningfulness and self-actualization, encouraging early employee participation, supporting open communication, implementing feedback, and promoting autonomous working (e.g., Kortsch et al., 2022; Rehwaldt, 2017). In particular, training on positive leadership and

coaching on HAW could help employees improve the factors of HAW. Companies should also provide employees with opportunities to improve their ability to align their actions with their interests to promote HAW and improve work engagement and extra-productive behaviours. Furthermore, training employees in interest-taking supports them in developing important skills and improving their experience of HAW. Implementing interventions addressing work engagement (see also Knight et al., 2019) and HAW is a promising avenue for future research.

### 6.3 Limitations and avenues for future research

First, we used self-report data, susceptible to certain biases (e.g., social desirability) and inflated associations due to common method bias. Future research could therefore address this limitation and include, for example, external information or sources such as team members or supervisors. Furthermore, especially in the first study, there is no significant moderator effect, raising two questions: (1) Which moderators could support the link between HAW and work engagement, especially for experienced employees? (2) Are there possibly industry differences in the sense that the perception of interests in some industries interacts more with HAW and thus sets motivational processes in motion that favour individual work engagement? Investigation of both questions could be a promising avenue for future research. It should also be noted that a large portion of the first study was collected during the Corona pandemic, which is an additional limitation. In addition, future intervention studies could examine how training or coaching, focusing on work engagement or factors for HAW, enhances extra-productive behaviour.

## 7 Conclusion

Our studies show the importance of the job resource HAW for extra-productive behaviour via the activation of motivational processes of employees at different career stages (newcomers and experienced employees). In addition, we show that the personal resource interest-taking enhances the

positive relationship between HAW and work engagement for newcomers. Future studies should build on these findings and further examine the role of HAW or its interactions with other personal and organisational resources.

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# IV Overall discussion

This dissertation aimed to extend theoretical and empirical research in industrial and organisational psychology by uncovering the underlying motivational and regulatory processes triggered by the presence and interaction of personal and job resources to better understand their interplay regarding their influence on employees' job performance. If these interrelationships are understood, it is possible to initiate adequate actions that support employees in working in a motivated manner, experiencing higher well-being and performing well. Therefore, three empirical studies should answer the three overarching research questions. The common feature of all three contributions is that all three studies were conducted longitudinally and were evaluated using multilevel analyses. In all studies, affective-motivational and regulatory processes were investigated, favoured by personal and job resources. Individual traits were also considered as moderating variables in all studies. While the first two studies focused on personal resources, the third study addresses a job resource as antecedents of job performance. The individual traits selected in all three studies represent skills that are useful for meeting challenges and constant changes in the world of work in the best possible way.

The **first Study** (Study one) showed that when employees have replenished their resources overnight via sleep quality, they start in a positive mood into the day (active IBC), which fosters motivational processes in the form of flow experience, which in turn leads to better task performance (serial mediation via interaction between IBC and IM). In addition to that, trait vigilance utilises these motivational processes better to show even higher task performance.

The results of the **second Study** (Study two) suggest that the morning exchange about work with the romantic partner (social resource; RWCP) shortly before the workday starts helps employees target cognitive processes in the form of activating the IM concerning planning and structuring the upcoming workday. This morning event primarily sets in motion positive and motivational processes that positively influence task performance because the willingness to act via the IBC is activated.

However, as suggested, it did not reduce negative mood, work demands, or workload. Furthermore, this study demonstrated that trait self-control, gaining support from the IM, moderates the relationship between RWCP and a.) positive affect and b.) work engagement. The findings of both studies address RQ1 and RQ2.

The **third Study** (Study three) addressed RQ2 and RQ3. This study showed that happiness at work has a positive indirect effect on extra-productive behaviour through the activation of a motivational process in the form of work engagement for both experienced employees and newcomers (interaction between IBC and IM). In addition, this study demonstrated that interest-taking strengthens the positive relationship between HAW and work engagement via access to the EM. This moderator effect was just found for the target group newcomers.

In the following, I discuss the individual study results, summarise the theoretical findings and show what contribution this study has made to answering the overarching research questions (RQ1-RQ3). In addition, I address the resulting theoretical implications. A separate section is devoted to the overarching practical implications. Finally, the last section refers to the methodological and theoretical limitations that should provide important insights for future research.

a) Overarching Discussion of Study One

The first study examined the underlying psychological mechanism of the hypothesised relationship between sleep quality and task performance and the moderating role of the trait vigilance on the relationship between recovery and work performance. Based on the study results, in line with self-regulation theory (Muraven & Baumeister, 2000) and complemented by broaden-and-build theory (Fredrickson, 2004), the effect of recovery processes on task performance can be explained by incorporating the underlying affective-cognitive psychological processes.

The study showed that recovery in the form of sleep quality is associated with positive affect and that this state favours motivational processes (via flow experience), which in turn positively influences daily task performance. Consistent with the PSI theory, this study shows that positive affect precedes the flow experience. The availability of resources via sleep quality activates positive affect. It ensures that the IBC is turned on, signalling to the employee that all needs are met and sufficient resources are available. This positive mood that is created facilitates resource investment. This state expands the repertoire of thought and action, so flow experience is favoured as fusion of action and consciousness occurs. The readiness of resource investment because of the refreshed and good mood is supported by intrinsic motivation (Hidalgo et al., 2018), when tasks arise that need to be accomplished and challenge the individual, the IM gets activated for helping the individual in planning, controlling, and implementing complex and long-term plans which ultimately has a positive impact on task performance (Kuhl, 2001; Kuhl et al., 2015).

Furthermore, with this study vigilance was identified as a moderator of the positive relationship between flow experience and task performance. Vigilance allows concentration to be maintained, which helps optimize the importance of flow moments for subsequent task performance. Vigilance does this by broadening focus and harnessing the intrinsic motivation generated by flow experiences for subsequent tasks. The trait vigilance thus plays a crucial role in the work context by helping employees to respond more consciously to specific moments and tasks and to use their cognitive resources effectively to achieve set goals more easily (Kuhl et al., 2015). Therefore, the identification of the moderated effect of vigilance on the relationship between flow experience and task performance provides a further theoretical contribution. The insight that intrinsic motivated processes can be stabilized via cognitive ability such as vigilance which in consequence lead to higher task performance.

In sum, the findings of study one provides several theoretical contributions. First, they unmasked the affective-motivational and regulatory processes between the relationship of daily

antecedents (sleep quality) and daily job performance. Secondly, the results of the first study show that positive affect occurs before the experience of flow, which is partly assumed the other way around in research. Thirdly, the antecedent examined belong to the private sphere, so it is an important theoretical contribution to look more closely at the effects of both spheres. Forth, vigilance was identified as useful trait concerning the relationship between flow experience and task performance.

Hence, the results of the first study answer RQ1 and RQ2 by showing that personal resource in the form of sleep quality is associated with task performance via affective-motivational and regulatory processes and that trait vigilance in the role of moderator enhances affective-motivational and regulatory processes.

b) Overarching discussion of study two

The second study investigated the underlying psychological mechanism of the hypothesised relationship between RWCP and task performance and the moderating role of the trait self-control in this interaction. Based on the study results, in line with episodic process model of affective influences on performance and self-regulation theory (Bandura, 1991; Beal et al., 2005; Muraven & Baumeister, 2000), the effect of RWCP on task performance can be explained by incorporating the underlying affective-motivational and regulatory psychological processes. Moreover, trait self-control enhanced the relationship between RWCP and the outcome variables a.) positive affect and b.) work engagement.

The results of this study provide valuable theoretical insights, as the processes can be explained by the PSI theory. Thus, results of the second study show that the RWCP in the morning helps employees target and strategically plan the use of resources for which IM is responsible. In addition, the romantic partner provides another social resource through sharing, which helps pave the way for access to EM (Kuhl, 2001). This mental engagement helps individuals getting into a more stimulated and engaged work mood (Sonnentag & Kühnel, 2016; Tremmel et al., 2019) and activates

the IBC via positive affect. The interplay of the activated systems contributes to initiating motivational and regulatory processes and favours job performance, which is consistent with the study findings. The PSI theory also suggests that regulatory processes take place in dealing with work demands that can have a positive impact on job performance. However, this relationship could not be shown in this study. The study results, in particular, provide an essential theoretical contribution to current reattachment to work research. This is because the underlying processes in the form of positive affect and work engagement were found to mediate the positive relationship between RWCP and job performance, and the role of the partner in this process acts as an additional social resource that is part of this process. Involving the romantic partner in the morning to talk about the upcoming work supports resource planning and motivates them to engage, which fosters positive and motivational processes, thereby forming an explanatory basis of how morning RWCP indirectly positively affects daily job performance. Although it is not a secret that work and personal lives affect each other (e.g., Poethke et al., 2023), this study was able to fill an existing gap in research looking at the role of the partner in micro-role transition in the morning, which is also the first of its kind. Moreover, as hypothesised, trait self-control proved to be a moderator in the relationship between RWCP and a.) positive affect and b.) work engagement. Trait self-control, which contributes to self-regulation, can enhance this relationship. Because of the regulative characteristics of trait self-control, it is located in the IM and supports the perception and pursuit of future-oriented plans.

The second study focused on answering the RQ1 about the influence of being mentally prepared for work on job performance as well as the role of interaction between personal traits and social relations. The moderator effect examined, which can be confirmed with this study, shows that individuals with different levels of self-control may experience and respond differently to the morning RWCP. Hence, study two provide an answer to RQ2 by predicting an understanding of the interaction between individual characteristics with daily routines and affective and motivational processes.

c) Overarching Discussion of Study Three

The third study shows that the workplace resource HAW is related to extra-productive behaviour and is mediated by work engagement. Furthermore, the personal resource interest-taking interacts with HAW and moderates work engagement. However, this moderator effect could only be demonstrated for the study with newcomers. HAW is strongly associated with motivational work characteristics, and influences experienced employees and newcomers. HAW based on self-actualisation, meaningfulness, and community (Rehwaldt, 2017, 2019; Rehwaldt & Kortsch, 2022) has been linked to creativity, motivation, and performance in a few studies, but the third study revealed the triggering motivational process in this relationship. Considering interest-taking as a moderator in the relationship between HAW and work engagement, results show that individual resources can help individuals use their occupational resources more effectively. These findings are congruent with the JD-R model, which states that individuals with more personal resources have better access to job resources, which enhances the motivational process (Bakker et al., 2023).

Moreover, following the PSI theory job resources such as HAW activate the IVC via need satisfaction and positive mood, reflected in work engagement, which fosters the willingness to act highly motivated and leads to extra-productive behaviour (adaptive performance and OCB). Interest-taking enables access to EM by considering all internal and external circumstances (holistic processes are processed), which enables cognitive and emotional regulation processes for engaging work engagement (Koole et al., 2019; Kuhl et al., 2015). However, we demonstrated the moderator effect only in the target group of newcomers, showing that those with higher levels of interest-taking compared to those with lower levels can better benefit from the HAW occupational resource by showing higher levels of work engagement. In doing so, we not only answer a research question but also respond to Saks and Gruman's (2012, 2018) call to examine the joint effects of resources on work engagement among newcomers. Therefore, this study also provides an important contribution to theory and practice.

Overall, study three answers RQ3 by examining the understanding of HAW and its role as a job resource at different career stages in relation to extra-performance behaviour. This study also addresses RQ2 by showing that interest-taking matters for career entrants and enables them to use job resources better to increase motivation at work.

d) Overall Practical Implications

Overarching practical implications for companies and individuals can be derived from the findings of this study. Indirectly, recommendations for romantic couples can also be derived.

***For organisations.*** Resource recovery and investment promote affective-motivation processes that positively impact job performance. Recovery was applied via sleep quality in the first study, demonstrating that good sleep quality makes employees more energised and motivated (Sonnentag et al., 2008) Of course, the most outstanding contribution to improving sleep quality can be made by individuals themselves, but there are also ways for organisations to help them do this. The contribution that organisations can make is to provide information and raise awareness about the importance of sleep. They can make a supportive contribution through training or lectures, especially on topics such as sleep hygiene and recovery after work (Schleupner & Kühnel, 2021). At the same time, a positive work climate is created that signals and supports the importance of good rest. Motivational processes were mapped in the first study, for example, via the variable flow experience. Experiencing flow depends on employees challenging tasks that match their abilities (Peifer & Engeser, 2021), in addition to resource acquisition and resource deployment. This match between tasks and employees' skills should be considered in staff development, e.g. by offering training courses or ensuring that skills and tasks are well matched at the recruitment stage. In addition to personal development and encouragement from the organisation, as the third study has shown, creating good working conditions and environments is also beneficial, as these are crucial for extra-productive work behaviour. Organisations should build a professional and trusting community, encourage employee participation,

promote open communication, and provide positive leadership training, as leaders can strongly influence and maintain the work climate (Kao et al., 2023). Moreover, organisations could use the HAW tool to determine the extent of HAW in their organisation and initiate action to increase HAW if needed.

Central importance for practice is also to offer work models that support the integration of work and private life in the best possible way. Agile and flexible working models enable employees to respond to their current private lives in line with the situation (Munjal, 2017; Poethke et al., 2023). The second study results, in particular, support this implication, as employees benefit from discussing the upcoming workday with their partner in the morning. Such flexible working models would enable enough time with their partner in the morning. Moreover, to benefit from morning exchange with the romantic partner, as shown in the study, two companies can provide insight into their employees' work environment by inviting romantic partners to events. This can facilitate interaction between partners and increase the interaction quality.

***For individuals.*** For individuals, the greatest challenge in the age of New Work is to integrate the private and work domains so that they can lead a healthy and motivated life in both worlds. From the results of the first study, it can be concluded that individuals should optimise the quality of their sleep, as this not only has a positive effect on health but also mood, motivation and performance (Schleupner & Kühnel, 2021; Sonnentag et al., 2008). The results show that good sleep quality makes employees more motivated and energised to start well into the day. Straightforward actions can significantly improve sleep quality. These include, for example, promoting sleep hygiene, exercise training (meta-analysis), and developing sleep rituals (Schleupner & Kühnel, 2021; Yang et al., 2012). The results of the second study prove that the morning exchange about the working day with the romantic partner can positively influence well-being, mood and performance. Here, it is crucial to catch the time window of the micro-role transition to place the work topics. Thus, transitioning to the next role is much more relaxed and successful (Fritz et al., 2021; Sonnentag & Kühnel, 2016). Moreover, further

recommendations can be derived for couples. Since RWCP is positively related to positive mood, well-being and job performance, and since these effects benefit both working romantic partners, the first recommendation for those couples that do not yet exchange in the morning would be to build this into their morning routine. This allows couples to support each other, which positively impacts relationship quality (Overall et al., 2010). A recent meta-analysis supports this recommendation by showing that high partnership quality and social support are associated with better sleep quality (Gordon et al., 2021). However, this should be limited to the time before work, as it is essential to mentally detach from work, especially after work (Sonnentag et al., 2022). All studies showed that individual skills such as trait vigilance or trait self-control can benefit motivational and affective processes. Therefore, individuals should train, e.g. cognitive skills like vigilance to benefit from flow moments at work and stay focused while completing tasks. There are a lot of offers, such as free apps, to train cognitive skills. Many studies have demonstrated the positive effect of mindfulness on individual self-control (Hülsheger et al., 2021). For this reason, another practical effect of strengthening, e.g. trait self-control, is to attend mindfulness training and courses (Karremans & Papies, 2017).

e) Overall Limitations and Future Research

All studies are primarily based on self-report, which may introduce biases such as social desirability and bias from common methods (Donaldson & Grant-Vallone, 2002). An exception is the measurement of vigilance, which we measured using a self-developed vigilance test. This test thus represents an objective measurement tool. To counteract the potential bias of self-assessment, it would be advisable to include physiological data or external sources in future studies. For example, supervisors and close work colleagues could assess employee performance and the participant's ability to self-observe. Actigraphs can measure sleep (Acker et al., 2021), and romantic partners could rate each other's communication and support in a dyadic survey.

Regarding content, my three studies are limited to task performance and extra-productive behaviours. However, it would be precious to include innovation performance or creativity as outcome

variables in future studies (Harari et al., 2016), as they are relevant to organisational competitiveness. In addition, it would be useful for future research to conduct intervention studies to shed light on how cognitive training affects motivational and affective processes and task performance.

Moreover, work location did not play a role in my research questions. However, it is conceivable that the triggering of affective and motivational processes in the form of positive affect and flow experience varies by location (Gerpott et al., 2022). This consideration opens another recommendation for future studies. In addition to that, many different industries were represented in all three studies. Although there was no evidence to suggest that this work should look more closely at any particular industry, it would be interesting for future studies to look more closely at industry-relevant skills and personality traits to provide more tailored training to promote well-being and performance.

Concerning the impact of the COVID-19 pandemic, a substantial portion of the data points were collected during this phase, which is a further limitation. Not only because of the replication crisis (Shrout & Rodgers, 2018), but also because of the exceptional situation (COVID-19 pandemic) and the ever-changing world of work, it would be useful to replicate the studies and show how robust the results are at different times, in different places, and in different industries.

Diary studies were used to examine the research models, which provide a unique perspective by mapping the daily variations of experiences and emotions in the context of personal life and work. In my studies, I have focused on time-of-day-specific effects. However, longitudinal trajectories over time (Nagin et al., 2018) or spill-over effects (Daniel & Sonnentag, 2014) would also be conceivable, especially to further deepen the understanding of work-life interaction. Furthermore, topics concerning romantic couples offer the possibility to collect longitudinal dyad data (Herrmann et al., 2023; Sanz-Vergel et al., 2023). With this data structure, it would be possible to analyse cross-over and spill-over effects and thus determine the actual interaction. Future researchers can pick up at this point and investigate dyad model. Complementing this, it would be very valuable for future studies to use latent growth models and examine how RWCP develops over the course of a working week when

partners are physically present and when they are not. Therefore, it would be necessary to study RWCP over time (Hertzog et al., 2003).

# V Overall conclusion

The overall goal of this dissertation was to examine the fluctuating processes that precede job performance, taking a holistic approach that incorporates mechanisms and resources from both the personal and work contexts. I conducted three longitudinal empirical studies to understand better daily processes and the dynamic interplay between work, personal life, and the individual. In three studies, I was able to show that recovery (in the form of sleep quality), communication with a romantic partner just before work starts (RWCP), and organisational resources in the form of conditions for happiness at work set in motion favourable processes that make workers more energised, motivated, and focused. This, in turn, has positive effects on job performance. In addition, I have shown that people with high levels of trait vigilance are better able to process motivational processes and channel them more purposefully into more productive task performance.

Interestingly, the ability to self-observe has been shown to compensate for morning micro-role transition in interactions with romantic partners when communication with the partner is not high. Regarding the ability to trait interest-taking, I could not find evidence for the target group of experienced employees. This ability is crucial for newcomers as it strengthens the link between HAW and work engagement. Overall, this dissertation addresses the current stream of New Work and highlights the importance of studying work-life integration in industrial and organisational psychology, as well as the role and influence of the romantic partner. In addition, these findings contribute to potential work design and work climate by demonstrating the motivational impact of HAW on extra-productive performance. Companies can use these findings to create working conditions that ensure happiness at work, thereby securing a competitive advantage and becoming attractive to new employees and retaining existing ones. In brief, given the increasing importance of work-life integration and conditions for happiness at work in the modern workplace, the findings of this dissertation provide a sound rationale for creating, for example, New Work design models that are

more flexible. At the same time, they also address individuals and show how individuals should proactively manage their private and professional boundaries, what influence third parties can have, and what investment in their skill development would be valuable and practical to navigate the dynamic modern world of work. These efforts are critical to fostering employee productivity and success in today's competitive work environment.

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## VI Appendix

## A1 Overview of Constructs in Study One

The following tables give a detailed overview of the used variables in study one (see chapter A).

**Table 1**

*This table contains all the essential information for measuring flow experience in study one.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Flow Experience** | Flow Experience Scale | 7-point Likert scale |
| Source(s): | | |
| Rheinberg, F., Vollmeyer, R., & Engeser, S. (2003). Die Erfassung des Flow-Erlebens, in J. Stiensmeier-Pelster & F. Rheinberg (Hrsg.). (2003). Diagnostik von Motivation und Selstkonzept (Tests und Trends N.F. 2) (S. 261-279). Göttingen: Hogrefe.. | | |
| Engeser, S., & Rheinberg, F. (2008). Flow, performance and moderators of challenge-skill balance. Motivation and emotion, 32, 158-172. | | |
| Schüler, J., & Brunner, S. (2009). The rewarding effect of flow experience on performance in a marathon race. Psychology of Sport and Exercise, 10(1), 168-174. | | |
| German wording of items in the survey: | | Response anchors: min – max |
| 1. „In den letzten Stunden bei der Arbeit war ich ganz vertieft in das, was ich gemacht habe.“ | | Trifft überhaupt nicht zu– trifft voll zu |
| 2. „In den letzten Stunden bei der Arbeit fühlte ich mich optimal beansprucht.“ | | Trifft überhaupt nicht zu– trifft voll zu |
| 3. „In den letzten Stunden bei der Arbeit war ich völlig selbstvergessen.“ | | Trifft überhaupt nicht zu– trifft voll zu |
| 4. „In den letzten Stunden bei der Arbeit merkte ich gar nicht, wie die Zeit vergeht.“ | | Trifft überhaupt nicht zu– trifft voll zu |

## Table 2

*This table contains all the essential information for measuring positive affect in study one.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Positive Affect** | Positive Affect and Negative Affect Scale (PANAS) | 5-point Likert scale |
| Source(s): Thompson, E. R. (2007). Development and validation of an internationally reliable short-form of the positive and negative affect schedule (PANAS). Journal of cross-cultural psychology, 38(2), 227-242.https://doi.org/10.1177/0022022106297301<br>Note: Übersetzung der relevanten Items übernommen von Bluemke & Breyer (2016)<br>Bluemke, M., & Breyer, B. (2016). Deutsche Version der Positive and Negative Affect Schedule PANAS (GESIS Panel). In Zusammenstellung sozialwissenschaftlicher Items und Skalen.doi:10.6102/zis242 | | |
| German wording of items in the survey: | | Response anchors: min – max |
| 1. „aktiv“ | | gar nicht– äußerst |
| 2. „stark“ | | gar nicht– äußerst |
| 3. „angeregt“ | | gar nicht– äußerst |
| 4. „stolz“ | | gar nicht– äußerst |
| 5. „begeistert“ | | gar nicht– äußerst |
| 6. „wach“ | | gar nicht– äußerst |
| 7. „entschlossen“ | | gar nicht– äußerst |
| 8. „aufmerksam“ | | gar nicht– äußerst |
| 9. „interessiert“ | | gar nicht– äußerst |
| 10. „freudig erregt“ | | gar nicht– äußerst |

## Table 3

*This table contains all the essential information for measuring sleep quality in study one.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Sleep Quality** | Sleep Quality Index | 4-point Likert scale |
| Source(s): Bussy et al. (1989). The Pittsburgh Sleep Quality Index: A New Instrument for Psychiatric Practice and Research. Psychiatry Research, 28, 193-213. DOI:10.1016/0165-1781(89)90047-4 | | |
| German wording of items in the survey: | | Response anchors: min – max |
| 1. Wie würden Sie insgesamt die Qualität Ihres Schlafes in der vergangenen Nacht beurteilen? | | sehr gut– sehr schlecht |
| 2. Haben Sie heute Probleme, mit genügend Schwung die üblichen Alltagsaufgaben zu erledigen? | | Keine Probleme – große Probleme |

## Table 4

*This table contains all the essential information for measuring task perfromance in study one.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Task Performance** | Performance | 5-point Likert scale |
| Source(s): Griffin, M. A., Neal, A., & Parker, S. K. (2007). A new model of work role performance and positive behavior in uncertain and interdependent contexts. Academy of Management Journal, 50(2), 327–347. | | |
| German wording of items in the survey: | | Response anchors: min – max |
| 1. „Heute habe ich meine Aufgaben gut erledigt.“ | | Trifft überhaupt nicht zu– trifft voll zu |
| 2. „Heute habe ich meinen Job gut gemacht.“ | | Trifft überhaupt nicht zu– trifft voll zu |
| 3. „Heute habe ich meine beruflichen Verpflichtungen vollständig erfüllt.“ | | Trifft überhaupt nicht zu– trifft voll zu |
| 4. „Heute habe ich sehr gewissenhaft gearbeitet.“ | | Trifft überhaupt nicht zu– trifft voll zu |

**Information about the online-based vigilance test and its calculation**

Concentration can be conceptually and empirically integrated into the nomological network of the multidimensional component concept of attention (Goldhammer & Moosbrugger, 2006). The attention test primarily measures the executive functions of attention and inhibition in combination with memory performance. In this context, the test is designed to respond only to target stimuli that are specified by various rules to be remembered. The construction of the test is based on the Frankfurt Attention Inventory 2 (FAIR-2; Moosbrugger & Oehlschlägel, 2011), which measures the ability to concentrate (vigilance).

***Test design and administration.*** Participants are shown circles and squares, each divided into four parts by a cross. The task is to click on specific figures from a row running from left to right according to specific selection rules. At any given time, 20 figures are displayed simultaneously. A total of 320 figures are displayed. The order of the figures is randomly generated. Each figure is displayed on the screen for about 1,200 msec and can be selected by tapping or clicking. In level 1, participants must remember two selection rules and select the correct figures. In level two, three rules are given, and in level three, four rules are given so that memory and working memory are more challenged.

Assessment of performance. To evaluate the performance, the correctly chosen, the omitted and the incorrectly chosen numbers are put in relation to the best possible performance. The exact calculations can be found in the following table.

**Table 5**

*This table contains all essential information about the calculation vigilance in study one.*

| Indicator | Abbreviation | Description |
|---|---|---|
| Total quantity | *G* | Number of items processed (max. 320 per test) |
| Error 1 | *F1* | List line errors (interruption, double garland, omission of items) |
| Error 2 | *F2* | Count missed errors |
| Error 3 | *F3* | Faulty target item identified |
| Marking value | *M* | (G – F1): G |
| Performance value (L) | *L* | (G – F1) – 2 * (F2 + F3) |
| Quality value | *Q* | L / G \| Q*100 (percentage share) |
| Performance value (K) | *K* | Q*L |

## A2 Overview of Constructs in Study Two

The following tables give a detailed overview of the used variables in study two (see chapter B).

### Table 6

*This table contains all the essential information for measuring positive affect in study two.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Positive Affect** | Positive Affect and Negative Affect Scale (PANAS) | 5-point Likert scale |
| Source(s): | | |
| Thompson, E. R. (2007). Development and validation of an internationally reliable short-form of the positive and negative affect schedule (PANAS). Journal of cross-cultural psychology, 38(2), 227-242.https://doi.org/10.1177/0022022106297301<br>Note: Übersetzung der relevanten Items übernommen von Bluemke & Breyer (2016)<br>Bluemke, M., & Breyer, B. (2016). Deutsche Version der Positive and Negative Affect Schedule PANAS (GESIS Panel). In Zusammenstellung sozialwissenschaftlicher Items und Skalen.doi:10.6102/zis242 | | |
| German wording of items in the survey: | | Response anchors: min – max |
| 1. „aktiv“ | | gar nicht– äußerst |
| 2. „stark“ | | gar nicht– äußerst |
| 3. „angeregt“ | | gar nicht– äußerst |
| 4. „stolz“ | | gar nicht– äußerst |
| 5. „begeistert“ | | gar nicht– äußerst |
| 6. „wach“ | | gar nicht– äußerst |
| 7. „entschlossen“ | | gar nicht– äußerst |
| 8. „aufmerksam“ | | gar nicht– äußerst |
| 9. „interessiert“ | | gar nicht– äußerst |
| 10. „freudig erregt“ | | gar nicht– äußerst |

### Table 7

*This table contains all the essential information for measuring qualitative and quantitative strain in study two.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Qualitative and Quantitative Workload** | Qualitative and Quantitative Workload | 5-point Likert scale |
| Source(s): | | |
| Prümper, J., Hartmannsgruber, K. & Frese, M. (1995). KFZA. Kurz-Fragebogen zur Arbeitsanalyse. Zeitschrift für Arbeits- und Organisationspsychologie, 39.Jg. (N.F.13) 3, 125-132. | | |
| German wording of items in the survey: | | Response anchors: min – max |
| 1. „Bei meiner Arbeit gibt es Sachen, die zu kompliziert sind“ | | Stimme überhaupt nicht zu– stimme voll zu |
| 2. „Meine Arbeit stellt zu hohe Anforderungen an meine Konzentrationsfähigkeit.“ | | Stimme überhaupt nicht zu– stimme voll zu |
| 3. „Meine Arbeitsaufgaben sind so vielfältig, dass man leicht den Überblick verliert.“ | | Stimme überhaupt nicht zu– stimme voll zu |
| 4. „Bei der Arbeit stehe ich häufig unter Zeitdruck.“ | | Stimme überhaupt nicht zu– stimme voll zu |
| 5. „Ich habe zu viel Arbeit.“ | | Stimme überhaupt nicht zu– stimme voll zu |
| 6. „Mein Arbeitspensum ist häufig nur zu schaffen, wenn ich auf Pausen verzichte.“ | | trifft überhaupt nicht zu– trifft voll zu |

**Table 8**

*This table contains all the essential information for measuring RWCP in study two.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Reattachment to Work via Communication with the Romantic Partner** | Reattachment to Work via Communication with the Romantic Partner Scale (RWCP-Scale) | 5-point Likert scale |
| Source(s): Eigene Skalenentwicklung in Anlehnung an: Sonnentag, S., & Kühnel, J. (2016). Coming back to work in the morning: Psychological detachment and reattachment as predictors of work engagement. Journal of Occupational Health Psychology, 21(4), 379–390. https://doi.org/10.1037/ocp0000020 | | |
| German wording of items in the survey: | | Response anchors: min – max |
| 1. „Bevor ich heute Morgen mit der Arbeit anfing, stimmte ich mich gedanklich wieder auf die Arbeit ein." | | trifft überhaupt nicht zu– trifft voll zu |
| 2. „Bevor ich heute Morgen mit der Arbeit anfing, bereitete ich mich gedanklich auf die Arbeit vor. | | trifft überhaupt nicht zu– trifft voll zu |
| 3. Bevor ich heute Morgen mit der Arbeit anfing, ließ ich mir den heutigen Arbeitstag durch den Kopf gehen." | | trifft überhaupt nicht zu– trifft voll zu |
| 4. „Bevor ich heute Morgen mit der Arbeit anfing, dachte ich daran, was ich heute bei der Arbeit erreichen wollte." | | trifft überhaupt nicht zu– trifft voll zu |
| 5. „Bevor ich heute Morgen mit der Arbeit anfing, dachte ich daran, was bei der Arbeit auf mich zukommen wird." | | trifft überhaupt nicht zu– trifft voll zu |

**Table 9**

*This table contains all the essential information for measuring self-control demands in study two.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Self-Control Demands** | Self-Control Demands | 5-point Likert scale |
| Source(s): Neubach, B. & Schmidt, K. H. (2007). Entwicklung und Validierung von Skalen zur Erfassung verschiedener Selbstkontrollanforderungen bei der Arbeit. Zeitschrift für Arbeitswissenschaft, 61, 35-45. Addition Information: The 10 items used are those with the highest factor loadings. | | |
| German wording of items in the survey: | | Response anchors: min – max |
| 1. „Um meine Arbeitsziele zu erreichen, durfte ich mich nicht ablenken lassen." | | trifft gar nicht zu– trifft voll zu |
| 2. „Wenn ich meine Arbeit erfolgreich bewältigen wollte, durfte ich irgendwelchen „Ablenkungen nicht nachgeben." | | trifft gar nicht zu– trifft voll zu |
| 3. „Um mein Arbeitspensum zu schaffen, musste ich mich dazu zwingen, keine Zeit mit Nebensächlichkeiten zu vergeuden." | | trifft gar nicht zu– trifft voll zu |
| 4. „Meine Arbeit hat von mir verlangt, niemals die Beherrschung zu verlieren." | | trifft gar nicht zu– trifft voll zu |
| 5. „Auch wenn ich manchmal sehr gereizt war, durfte ich mir das auf keinen Fall anmerken lassen." | | trifft gar nicht zu– trifft voll zu |
| 6. „Bei meiner Arbeit durfte ich nie ungeduldig werden." | | trifft gar nicht zu– trifft voll zu |
| 7. „Bei meiner Arbeit durfte ich mich niemals gehen lassen." | | trifft gar nicht zu– trifft voll zu |
| 8. „Bestimmte Aufgaben in Angriff zu nehmen, hat mich manchmal einiges an Überwindung gekostet." | | trifft gar nicht zu– trifft voll zu |
| 9. „Einige meiner Arbeitsaufgaben waren so, dass ich mich richtig zwingen musste, sie zu erledigen." | | trifft gar nicht zu– trifft voll zu |
| 10. „Einige meiner Arbeitsaufgaben konnte ich nur gegen innere Widerstände bearbeiten." | | trifft gar nicht zu– trifft voll zu |

**Table 10**

*This table contains all the essential information for measuring task performance in study two.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Task Performance** | Performance | 5-point Likert scale |
| Source(s): | | |
| Griffin, M. A., Neal, A., & Parker, S. K. (2007). A new model of work role performance and positive behavior in uncertain and interdependent contexts. Academy of Management Journal, 50(2), 327–347. | | |
| German wording of items in the survey: | | Response anchors: min – max |
| 1. „Heute habe ich meine Aufgaben gut erledigt." | | trifft überhaupt nicht zu– trifft voll zu |
| 2. „Heute habe ich meinen Job gut gemacht." | | trifft überhaupt nicht zu– trifft voll zu |
| 3. „Heute habe ich meine beruflichen Verpflichtungen vollständig erfüllt." | | trifft überhaupt nicht zu– trifft voll zu |
| 4. „Heute habe ich sehr gewissenhaft gearbeitet." | | trifft überhaupt nicht zu– trifft voll zu |

**Table 11**

*This table contains all the essential information for measuring trait self-control in study two.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Trait Self-Control** | Trait Self-Control | 5-point Likert scale |
| Source(s): | | |
| Tangney, J. P., BOONE, A. L., & BAUMEISTER, R. F. (2018). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. In: Self-Regulation and Self-Control (pp. 181-220). Routledge. | | |
| Translation: Bertrams, Alex, and Oliver Dickhäuser (2009). Messung dispositioneller Selbstkontrollkapazität: Eine deutsche Adaptation der Kurzform der Self-Control Scale (SCS-KD). Diagnostica 55.(1), 2-10. | | |
| German wording of items in the survey: | | Response anchors: min – max |
| 1. Ich bin gut darin, Versuchungen zu widerstehen. | | trifft gar nicht zu– trifft voll zu |
| 2. Es fällt mir schwer, schlechte Gewohnheiten abzulegen | | trifft gar nicht zu– trifft voll zu |
| 3. Ich sage häufig unüberlegte Dinge. | | trifft gar nicht zu– trifft voll zu |
| 4. Ich gestatte mir nie, die Kontrolle zu verlieren. | | trifft gar nicht zu– trifft voll zu |
| 5. Ich kann mich gut dazu überwinden, Aufgaben zu erledigen, die ich eigentlich sehr ungern bearbeite. | | trifft gar nicht zu– trifft voll zu |
| 6. Andere Menschen würden mich als impulsiv beschreiben. | | trifft gar nicht zu– trifft voll zu |
| 7. Ich wünschte, ich hätte mehr Selbstdisziplin. | | trifft gar nicht zu– trifft voll zu |
| 8. Ich lasse mich zu sehr von meinen Gefühlen leiten. | | trifft gar nicht zu– trifft voll zu |
| 9. Andere Menschen würden sagen, dass ich eine eiserne Selbstdisziplin habe. | | trifft gar nicht zu– trifft voll zu |
| 10. Es fällt mir schwer Aufgaben zu Ende zu bringen, die mir keinen Spaß machen. | | trifft gar nicht zu– trifft voll zu |
| 11. Ich verliere zu schnell die Geduld. | | trifft gar nicht zu– trifft voll zu |
| 12. Ich unterbreche oft andere Menschen. | | trifft gar nicht zu– trifft voll zu |

**Table 12**

*This table contains all the essential information for measuring work engagement in study two.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Work Engagement** | Utrecht Work Engagement Scale (UWES-3) | 6-point rating scale |
| Source(s): Schaufeli, W. B., Shimazu, A., Hakanen, J., Salanova, M., & Witte, H. de (2019). An Ultra-Short Measure for Work Engagement. European Journal of Psychological Assessment, 35(4), 577–591. https://doi.org/10.1027/1015-5759/a00043 | | |
| German wording of items in the survey ([a] for study 1, [b] for study 2): | | Response anchors: min – max |
| 1. „In der letzten Stunde meiner Arbeit war ich voll überschäumender Energie." (Vitalität) | | trifft überhaupt nicht zu– trifft voll zu |
| 2. „In der letzten Stunde war ich von meiner Arbeit begeistert." (Hingabe) | | trifft überhaupt nicht zu– trifft voll zu |
| 3. „In der letzten Stunde bin ich völlig in meiner Arbeit aufgegangen." (Absorbiertheit) | | trifft überhaupt nicht zu– trifft voll zu |

## A3 Overview of Constructs in Study Three

The following tables provide a detailed overview of the variables used in study three (see Chapter C). The different formulations due to the different study designs and target groups of the two studies are also considered.

**Table 13**

*This table contains all essential information for measuring adaptive performance in study three.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Adaptive Performance** | Performance | Study 1: 5-point rating scale<br>Study 2: 7-point rating scale |
| Source(s): Griffin, M. A., Neal, A., & Parker, S. K. (2007). A new model of work role performance: Positive behavior in uncertain and interdependent contexts. Academy of Management Journal, 50(2), 327–347. https://doi.org/10.5465/amj.2007.24634438 | | |
| German wording of items in the survey ([a] added in study 1): | | Response anchors: min – max |
| 1. „Ich konnte mich (heute)[a] gut auf Veränderungen bei meinen Kernaufgaben einstellen." | | gar nicht / nie – völlig / immer |
| 2. „Ich bin (heute)[a] mit Änderungen in der Art und Weise, wie ich meine Kernaufgaben zu erledigen habe, klargekommen." | | gar nicht / nie – völlig / immer |
| 3. „Ich habe (heute)[a] neue Fertigkeiten erlernt, die mir helfen, mich auf veränderte Kernaufgaben einzustellen." | | gar nicht / nie – völlig / immer |

**Table 14**

*This table contains all essential information for measuring HAW in study three.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Happiness at Work** | Happiness and Work Scale | 5-point Likert scale |
| Source(s): Rehwaldt, R., & Kortsch, T. (2022). Was macht bei der Arbeit glücklich? Entwicklung und Validierung einer mehrdimensionalen Skala zur Erfassung von Glück bei der Arbeit [What makes you happy at work? Development and validation of a multidimensional scale to capture happiness at work]. Zeitschrift Für Arbeits- Und Organisationspsychologie A&O, 66(2), 72–86. https://doi.org/10.1026/0932-4089/a000373 | | |
| German wording of items in the survey: | | Response anchors: min – max |
| 1. „Bei meiner Arbeit habe ich viele Freiheiten." | | stimme gar nicht zu – stimme voll zu |
| 2. „Ich kann meine Vorstellungen und Wünsche durchsetzen." | | stimme gar nicht zu – stimme voll zu |
| 3. „Wenn ich eine Idee habe, kann ich diese im Unternehmen umsetzen." | | stimme gar nicht zu – stimme voll zu |
| 4. „Mit meiner Arbeit trage ich aktiv zum Wohl anderer Menschen bei." | | stimme gar nicht zu – stimme voll zu |
| 5. „Ich empfinde meine Arbeit als sinnvoll." | | stimme gar nicht zu – stimme voll zu |
| 6. „Meine Arbeit hilft dabei, die Welt ein Stück besser zu machen." | | stimme gar nicht zu – stimme voll zu |
| 7. „Auch in angespannten Situationen schiebt bei uns keiner die Verantwortung einem anderen zu." | | stimme gar nicht zu – stimme voll zu |
| 8. „Wir ziehen alle gemeinsam an einem Strang." | | stimme gar nicht zu – stimme voll zu |
| 9. „In meinem Unternehmen gibt es einen respektvollen Umgang untereinander." | | stimme gar nicht zu – stimme voll zu |
| 10. „Wenn ich private Probleme habe, bespreche ich diese mit meinen Kollegen." | | stimme gar nicht zu – stimme voll zu |
| 11. „Ich vertraue meinen Kolleginnen bzw. Kollegen voll und ganz." | | stimme gar nicht zu – stimme voll zu |
| 12. „In unserem Team lachen wir oft und machen Späße." | | stimme gar nicht zu – stimme voll zu |

**Table 15**

*This table contains all essential information for measuring interest-taking in study three.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Interest-taking** | Index of Autonomous Functioning | 5-point Likert scale |
| Source(s): Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2012). The index of autonomous functioning: Development of a scale of human autonomy. Journal of Research in Personality, 46(4), 397–413. https://doi.org/10.1016/j.jrp.2012.03.007 | | |
| German wording of items in the survey: | | Response anchors: min – max |
| 1. „Ich denke häufig darüber nach, warum ich auf die eine oder andere Weise reagiere.“ | | stimmt gar nicht – stimmt völlig |
| 2. „Es macht mich neugierig, wenn ich mit Angst oder Furcht auf Ereignisse in meinem Leben reagiere.“ | | stimmt gar nicht – stimmt völlig |
| 3. „Ich will stets die Gründe meines Handelns erfahren.“ | | stimmt gar nicht – stimmt völlig |
| 4. „Ich bin daran interessiert, warum ich so handle, wie ich handle.“ | | stimmt gar nicht – stimmt völlig |
| 5. „Ich befasse mich gerne mit meinen Gefühlen.“ | | stimmt gar nicht – stimmt völlig |

**Table 16**

*This table contains all essential information for measuring OCB in study three.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Organisational Citizenship Behavior** | Study 1: OCB-Fragebogen<br>Study 2: OCB-Checklist | Study 1: 7-point Likert scale<br>Study 2: 5-point frequency scale |

Source(s):

Study 1:

Staufenbiel, T., & Hartz, C. (2000). Organisational citizenship behavior: Entwicklung und erste Validierung eines Messinstruments [Organisational citizenship behavior: Development and validation of a measurement instrument]. https://psycnet.apa.org/record/2000-03885-002 https://doi.org/10.1026/0012-1924.46.2.73

Study 2:

Fox, S., Spector, P. E., Goh, A., Bruursema, K., & Kessler, S. R. (2012). The deviant citizen: Measuring potential positive relations between counterproductive work behaviour and organisational citizenship behaviour. Journal of Occupational and Organisational Psychology, 85(1), 199–220. https://doi.org/10.1111/j.2044-8325.2011.02032.x

Spector, P. E., Bauer, J. A., & Fox, S. (2010). Measurement artifacts in the assessment of counterproductive work behavior and organisational citizenship behavior: Do we know what we think we know? The Journal of Applied Psychology, 95(4), 781–790. https://doi.org/10.1037/a0019477

| German wording of items in the survey: | Response anchors: min – max |
|---|---|
| Study 1: | trifft gar nicht zu – trifft voll zu |
| 1. „Heute habe ich innovative Vorschläge zur Verbesserung der Qualität in meinem Arbeitsbereich gemacht.“ | trifft gar nicht zu – trifft voll zu |
| 2. „Heute habe ich mich über neue Entwicklungen im Unternehmen informiert.“ | trifft gar nicht zu – trifft voll zu |
| 3. „Heute beachtete ich Vorschriften und Arbeitsanweisungen mit größter Sorgfalt.“ | trifft gar nicht zu – trifft voll zu |
| 4. „Heute ergriff ich die Initiative, um das Unternehmen vor möglichen Problemen zu bewahren.“ | trifft gar nicht zu – trifft voll zu |
| 5. „Ich wirkte heute bei auftretenden Meinungsverschiedenheiten ausgleichend auf Kollegen/Kolleginnen ein.“ | trifft gar nicht zu – trifft voll zu |
| 6. „Heute bemühte ich mich aktiv darum, Schwierigkeiten mit Kollegen/Kolleginnen vorzubeugen.“ | trifft gar nicht zu – trifft voll zu |
| 7. „Heute ergriff ich freiwillig die Initiative, neuen Kollegen/Kolleginnen bei der Einarbeitung zu helfen.“ | trifft gar nicht zu – trifft voll zu |
| Study 2: | |
| 1. „Ich habe mir Zeit genommen, einen Arbeitskollegen zu beraten, zu betreuen oder ein Mentor für ihn zu sein.“ | niemals – jeden Tag |
| 2. „Ich habe einem Kollegen geholfen, neue Fähigkeiten zu erlernen oder mein berufliches Wissen mit ihm geteilt.“ | niemals – jeden Tag |
| 3. „Ich habe anderen neuen Mitarbeitern geholfen, sich bei der Arbeit einzugewöhnen.“ | niemals – jeden Tag |
| 4. „Ich habe jemandem anteilnehmend zugehört, der ein Problem bei der Arbeit hatte.“ | niemals – jeden Tag |
| 5. „Ich habe Vorschläge gemacht, wie die Arbeit besser erledigt werden kann.“ | niemals – jeden Tag |
| 6. „Ich habe einem Arbeitskollegen geholfen, der zu viel zu tun hatte.“ | niemals – jeden Tag |
| 7. „Ich habe mich freiwillig für zusätzliche Arbeitsaufgaben gemeldet.“ | niemals – jeden Tag |
| 8. „Ich habe an Wochenenden oder anderen freien Tagen gearbeitet, um ein Projekt oder eine Aufgabe fertigzustellen.“ | niemals – jeden Tag |
| 9. „Ich habe mich freiwillig dazu gemeldet, in meiner Freizeit Meetings zu besuchen oder in Komitees zu arbeiten.“ | niemals – jeden Tag |
| 10. „Ich habe eine Mahlzeit und andere Pausen früher beendet, um die Arbeit abzuschließen.“ | niemals – jeden Tag |

**Table 17**

*This table contains all essential information for measuring work engagement in study three.*

| Construct: | Name of the measure: | Response scale: |
|---|---|---|
| **Work Engagement** | Utrecht Work Engagement Scale (UWES-9) | 7-point rating scale |
| Source(s): Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The Measurement of Work Engagement With a Short Questionnaire: A Cross-National Study. Educational and Psychological Measurement, 66(4), 701–716. https://doi.org/10.1177/0013164405282471<br>Sautier, L. P., Scherwath, A., Weis, J., Sarkar, S., Bosbach, M., Schendel, M., Ladehoff, N., Koch, U., & Mehnert, A. (2015). Assessment of Work Engagement in Patients with Hematological Malignancies: Psychometric Properties of the German Version of the Utrecht Work Engagement Scale 9 (UWES-9). Die Rehabilitation, 54(05), 297–303. https://doi.org/10.1055/s-0035-1555912 | | |
| German wording of items in the survey ([a] for study 1, [b] for study 2): | | Response anchors: min – max |
| 1. „Bei meiner Arbeit bin ich voll überschäumender Energie.“ [a]<br>„Bei meiner Arbeit war ich voll überschäumender Energie.“ [b] | | nie – immer |
| 2. „Beim Arbeiten fühle ich mich fit und tatkräftig.“ [a]<br>„Bei meiner Arbeit fühlte ich mich fit und tatkräftig.“ [b] | | nie – immer |
| 3. „Wenn ich morgens aufstehe, freue ich mich auf meine Arbeit.“ [a]<br>„Wenn ich morgens aufgestanden bin, freute ich mich auf meine Arbeit.“ [b] | | nie – immer |
| 4. „Meine Arbeit inspiriert mich.“ [a]<br>„Meine Arbeit hat mich inspiriert.“ [b] | | nie – immer |
| 5. „Ich bin von meiner Arbeit begeistert.“ [a]<br>„Ich war von meiner Arbeit begeistert.“ [b] | | nie – immer |
| 6. „Ich bin stolz auf meine Arbeit.“ [a]<br>„Ich war stolz auf meine Arbeit.“ [b] | | nie – immer |
| 7. „Ich fühle mich glücklich, wenn ich intensiv arbeite.“ [a]<br>„Ich fühlte mich glücklich, wenn ich intensiv gearbeitet habe.“ [b] | | nie – immer |
| 8. „Ich gehe völlig in meiner Arbeit auf.“ [a]<br>„Ich bin völlig in meiner Arbeit aufgegangen.“ [b] | | nie – immer |
| 9. „Meine Arbeit reißt mich mit.“ [a]<br>„Meine Arbeit hat mich mitgerissen.“ [b] | | nie – immer |