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Human Resource Management in times of crises:
Employee support, attraction, and motivation

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Pre-publications of the dissertation

This dissertation contains results that are either published, invited to revise and resubmit or submitted for publication in international peer-reviewed journals. In the following, the publications and submission status of each study are listed.

Publications and Submissions

Study 1

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Study 2

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Personalpsychologie. Hogrefe-Verlag. (in press)

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Havranek, C., Korunka, C., Kellner, B., Kubicek, B., Wolfsberger, J., & Straus, E. (2022). Arbeit im Wandel: Hybrid Work, Workation und das Büro der Zukunft. Web publication, Deloitte.

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Straus, E., Kühnel, J. & Korunka, C. (2023). Work-Life Balance and well-being of remote workers during COVID-19: Did women suffer more?. *Work, Stress, and Health 2023*, Miami, USA (accepted)

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- Straus, E. (2022). How to motivate employees to act more pro-environmentally friendly. In Conservation & Sustainability 1. *1st Cognitive Behavior Neuroscience (CoBeNe) Academy Conference, Vienna, Austria*.
- Straus, E., Uhlig, L., Kühnel, J., & Korunka, C. (2021). Home-Office during COVID-19: Maintaining Well-being, Productivity, and Engagement. In A. Kemter & J. Wegge (Chairs): Challenges of demographic changes for jobs and retirement: Work design, digital assistance systems, and leadership. *12th Conference of Work, Organizational, Economic, and Engineering Psychology in Chemnitz, Germany*.

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Summary

We live in times of political, societal, and environmental crises that permanently change our working world. In the last three years, Human Resource Management departments (HR), being the interface between employees and organizational management, were particularly influenced by the COVID-19 crisis and the climate crises. While the COVID-19 crisis forced employees to work from home, accelerating remote work and changing employees' resources at work, the increasing popularity of the climate crisis shapes employees' values and forces companies to react to the employees' claim for more environmentalism. This dissertation spontaneously reacted to the contemporary importance of the COVID-19 crisis and the climate crisis and investigated changing resources and values of employees during those times. Resources and values build core concepts for the work of HR by determining positive and negative job outcomes such as job satisfaction, performance, and deviant work behavior. To demonstrate the impact of changing resources and values on HR during the COVID-19 pandemic and the climate crisis, three studies were conducted that exemplarily target three challenges, namely, how to **support**, **attract**, and **motivate employees**. The first study focuses on resources during the COVID-19 pandemic and underlines how HR can **support** employees during those times. The second and third studies investigate values and point out how HR can **attract** engaged employees and how to **motivate** employees to pro-environmental behavior. Thereby, this dissertation addresses the contemporary importance of political, societal, and environmental crises and meets the need for more research on the interplay between values, resources, and behaviors of employees, having crucial consequences for HR in times of crises.

Study 1 focuses on remote workers' resources that were important to overcome the unprecedented circumstances of the COVID-19 pandemic. By examining a variety of personal, external, and work-related resources in the first and second lockdown in Austria, this study provides guidelines on how HR can **support** remote workers to maintain well-being, engagement, and performance in those times. At a daily level, one working week in the first lockdown period (March 2020 to May 2020; 2222 employees) and in

the second lockdown period (November 2020 to January 2021, 1268 employees) were analyzed by applying a latent change score model. As hypothesized, remote workers' well-being, engagement, and performance decreased from the first to the second lockdown. Self-efficacy and social support from colleagues were the most important resources to reduce the decline in well-being and engagement. Findings from this study highlight that remote workers suffered from the COVID-19 pandemic and that HR has to focus on different resources depending on whether they want to support remote workers in their well-being, engagement, or productivity.

Study 2 examines whether the alignment of employees' and organizational values have different implications for companies in times of crises. A congruence between personal values and the perceived company's values is an advantage for application processes because people who are attracted to these values are more likely to apply (Sivertzen et al., 2013). Thus, investigating values in times of crises contributes to HR's challenge of **attracting** suitable employees that fit the company's culture. By investigating different contents of values, this study compares the impact of congruences of intrinsic values (e.g., contributing to society) versus congruences of extrinsic values (e.g., financial success) on positive and negative work behavior, well-being, and commitment. Using a three-wave longitudinal study design with four weeks-time lags and polynomial regression analyses, 678 employees reveal that the alignment of values does not exclusively have positive effects for organizations. In contrast, an alignment of extrinsic values is even associated with negative work behavior, and an incongruence of high personal *intrinsic* values but low organizational *intrinsic* values are associated with high engagement. Given that people are more prone to extrinsic values in times of crises, results highlight that the reliance on the alignment of values in HR practices can have severe consequences for companies and that incongruent scenarios can be beneficial.

Study 3 examines how HR should frame goals to **motivate** as many employees as possible to pro-environmental behavior (PEB). The climate crisis forces companies to redefine organizational goals which HR has to bring closer to the employees striving for different values. 1712 participants were divided into

four groups that receive either a) intrinsic reasons (e.g. By acting pro-environmentally, people contribute to the good cause.), b) extrinsic reasons (e.g., By acting pro-environmentally, people receive more likes on social media.), c) only information (e.g., More and more people act pro-environmentally.), or d) nothing. By applying a two-way longitudinal study design with a two-week time lag and a latent change approach, this study tests whether self-concordant reasons that fit personal values lead to a greater increase in PEB and whether organizational pro-environmental support influences this relationship. Results show that providing extrinsic reasons leads to a significantly higher increase in PEB than intrinsic reasons. Furthermore, providing only information without any reasons lead to higher increase in PEB than providing intrinsic reasons, independently of what we strive for. Results highlight that HR has to pay attention to extrinsic reasons and that different framings have an enormous impact on extra-role behaviors such as pro-environmental behaviors.

In sum, this dissertation accounts for the contemporary importance of political, societal, and environmental crises which contributes to practice and theory alike. While investigating important resources to support employees during the COVID-19 crisis provides practical guidelines for HR to actively invest in those resources, examining employees' values contributes to both practice and theory by providing new perspectives for the motivation to crises-relevant goals and the theoretical taxonomies on alignments of values and goals.

Zusammenfassung

Wir leben in Zeiten politischer, gesellschaftlicher und ökologischer Krisen, die das Personalmanagement (HR) nachhaltig verändern. HR wurde in den letzten drei Jahren vor allem durch die COVID-19 Krise und die Klimakrise geprägt: Aufgrund der COVID-19 Krise waren Mitarbeitende gezwungen, zu Hause zu arbeiten und verloren dabei ihren gewohnten Arbeitsplatz. HR musste die Mitarbeitenden in diesen Zeiten unterstützen und neue *Ressourcen* zur Verfügung stellen. Auf der anderen Seite verändert die Klimakrise die *Werte* der Mitarbeitenden und HR muss auf die Forderungen der Arbeitnehmenden nach mehr Umweltschutz reagieren. Ressourcen und Werte beeinflussen unsere Arbeitsmotivation und unser Arbeitsverhalten. Sie spielen eine entscheidende Rolle für zum Beispiel die Arbeitszufriedenheit, Leistung und Krankheitsrate in Unternehmen. Aufgrund dieser zentralen Bedeutung für die Arbeitswelt befasst sich die vorliegende Dissertation mit den sich verändernden Ressourcen und Werten von Mitarbeitenden während der COVID-19 Krise und der Klimakrise und zeigt anhand von drei empirischen Studien, wie sich diese Veränderungen auf HR auswirken können. Dazu werden exemplarisch drei Aufgabenbereiche von HR angesprochen: Mitarbeitende **1) unterstützen, 2) für das Unternehmen begeistern** und **3) für krisenrelevante Unternehmensziele motivieren**. Die erste Studie konzentriert sich auf Ressourcen während der COVID-19-Pandemie und hebt hervor, wie Mitarbeitende, die zu Hause arbeiten mussten (im Folgenden Remote-Arbeitende genannt), **unterstützt** werden können. Die zweite und dritte Studie untersuchen persönliche Werte und zeigen auf, wie HR engagierte Mitarbeitende **begeistern** und zu umweltfreundlichem Verhalten **motivieren** kann. Damit geht die vorliegende Arbeit auf die aktuelle Relevanz politischer, sozialer und ökologischer Krisen und die Forderung ein, den Zusammenhang zwischen persönlichen Ressourcen, Werten und Verhaltensweisen in Krisenzeiten stärker zu untersuchen.

Studie 1 konzentriert sich auf die COVID-19-Pandemie und die verschiedenen Ressourcen von Remote-Arbeitenden. Es wurden persönliche, externe und arbeitsbezogene Ressourcen und deren Auswirkungen auf Wohlbefinden, Engagement und Leistung während des ersten und des zweiten

Lockdowns in Österreich untersucht. Damit liefert diese Studie Leitlinien für HR, wie Remote-Arbeitende durch die Distanz **unterstützt** werden können. Die Teilnehmenden füllten im ersten Lockdown (März 2020 bis Mai 2020; 2222 Beschäftigte) und im zweiten Lockdown (November 2020 bis Januar 2021, 1268 Beschäftigte) jeweils eine Arbeitswoche lang einen online Fragebogen aus. Mit Hilfe eines latenten Change-Score-Modells konnte bestätigt werden, dass sich das Wohlbefinden, das Engagement und die Leistung der Remote-Arbeitenden vom ersten zum zweiten Lockdown verringerten. Die wichtigsten Ressourcen für das Wohlbefinden und Engagement waren das Selbstwirksamkeitserleben und die Unterstützung durch Kolleg:innen. Darüber hinaus konnte die Produktivität durch eine geeignete Ausstattung zu Hause gefördert werden. Die Ergebnisse verdeutlichen, dass Remote-Arbeitende unter der COVID-19-Pandemie litten und dass das Wohlbefinden, das Engagement und die Produktivität von unterschiedlichen Ressourcen abhängig sind. HR sollte also in unterschiedliche Ressourcen investieren, um Remote-Arbeitende in Krisenzeiten zu unterstützen.

Studie 2 konzentriert sich auf unterschiedliche Werte von Mitarbeitenden und Unternehmen. Eine Übereinstimmung zwischen persönlichen Werten und jenen des Unternehmens ist oft entscheidend für die wahrgenommene **Attraktivität** eines Unternehmens. Dies kann sich beispielweise positiv auf die Bewerber:innenzahlen auswirken. In Krisenzeiten verändern sich Wertvorstellungen dahingehend, dass Menschen eher anfällig für materialistische Werte werden (z.B. das Streben nach finanziellem Erfolg, Macht oder Anerkennung). Materialistische Werte hängen mit negativem Arbeitsverhalten und Burnout zusammen, deshalb untersucht Studie 2, ob eine Übereinstimmung zwischen den Werten des Unternehmens mit jenen der Mitarbeitenden ausschließlich positive Folgen hat oder ob es Inhalt der Werte eine Rolle spielt. Dabei werden altruistische Werte (z. B. das Streben, etwas zur Gesellschaft beizutragen) und materialistische Werte unterschieden. Unter Verwendung eines Drei-Wellen-Längsschnitt-Studiendesigns gepaart mit einem vier-wöchigen Zeitintervall und polynomialen Regressionsanalysen zeigen 678 Mitarbeitende, dass eine Kongruenz zwischen persönlichen Werten und jenen des Unternehmens nicht ausschließlich positive Auswirkungen hat. Im Gegenteil, es kann sogar gezeigt

werden, dass eine Übereinstimmung zwischen materialistischen Mitarbeitenden-Werten und materialistischen Unternehmenswerten mit negativem Arbeitsverhalten einhergeht. Darüber hinaus ist eine Inkongruenz von hohen persönlichen altruistischen Werten, aber niedrigen altruistischen Unternehmenswerten mit hohem Engagement verbunden. In Anbetracht der Tatsache, dass Menschen in Krisenzeiten eher zu materialistischen Werten neigen, unterstreichen die Ergebnisse, dass das Vertrauen auf die Ausrichtung von Werten schwerwiegende Folgen für Unternehmen haben kann, und dass Inkongruenz-Szenarien von Vorteil sein können.

Studie 3 untersucht, wie HR Ziele formulieren sollte, um möglichst viele Mitarbeitende zu umweltfreundlichem Verhalten zu **motivieren**. Krisen zwingen Unternehmen häufig, neue Unternehmensziele zu formulieren (z.B. grüne Unternehmensziele), welche den Mitarbeitenden nähergebracht werden müssen. Da die Akzeptanz neuer Ziele unter anderem von den persönlichen Werten des Mitarbeitenden abhängig ist, beschäftigen sich zahlreiche Forscher:innen damit, welche Motive möglichst viele Mitarbeitende zu umweltfreundlichem Verhalten motivieren. Es wurden 1712 Teilnehmende in vier Gruppen eingeteilt, um zu überprüfen, ob altruistische Motive (z.B. Immer mehr Menschen recyceln Papier. Dadurch schützen sie unsere Umwelt), materialistische Motive (z.B. Immer mehr Menschen recyceln Papier. Dadurch bekommen sie Anerkennung in der Gesellschaft.), lediglich Informationen (z.B. Immer mehr Menschen recyceln Papier.) oder eine Kontrollgruppe zu mehr umweltfreundlichen Verhalten führen. Mit Hilfe eines Zwei-Wellen-Längsschnitt-Designs mit einem zweiwöchigen Zeitintervall wird in Studie 3 getestet, ob jene Motive, die mit den persönlichen Werten übereinstimmen zu mehr umweltfreundlichen Verhalten führen als Motive, die nicht mit den persönlichen Werten übereinstimmen. Außerdem wird mit einem latenten Change-Score Modell untersucht, ob eine umweltfreundliche Unternehmenskultur einen Einfluss auf das umweltfreundliche Verhalten der Mitarbeitenden hat. Entgegen den Erwartungen zeigen die Ergebnisse, dass materialistische Motive zu einem signifikant höheren Anstieg an umweltfreundlichen Verhalten führen als altruistische Motive. Sogar die Bereitstellung von lediglich Informationen ohne jegliche Motive führen zu einem höheren

Anstieg als das Präsentieren altruistischer Inhalte – unabhängig davon, welche Werte die Mitarbeitenden vertreten. Die Ergebnisse zeigen, dass HR mit materialistischen Motiven in Unternehmenszielen arbeiten sollte, und dass unterschiedliche Unternehmenskulturen einen großen Einfluss auf umweltfreundliches Verhalten am Arbeitsplatz haben.

Zusammenfassend lässt sich sagen, dass diese Dissertation der aktuellen Bedeutung politischer, gesellschaftlicher und ökologischer Krisen Rechnung trägt, die sowohl für die Praxis als auch für die Theorie von großer Relevanz sind. Während die Untersuchung krisenrelevanter Ressourcen praktische Leitlinien für neue Investitionen liefert, leistet die Untersuchung von unterschiedlichen Werten durch das Aufzeigen von neuen Ansätzen für die Unternehmensattraktivität und Zielformulierung sowohl einen Beitrag zur Praxis als auch zur Theorie, da sie neue Perspektiven für theoretische Taxonomien von Werten und Zielen und deren Kongruenzen liefert.

General introduction

We live in times of political, societal, and environmental crises that permanently change our working world. For three years Human Resource Management departments (HR), defined as a strategic approach to managing work and employment relations, are predominantly confronted with the COVID-19 crisis and the climate crisis. The COVID-19 crisis and the increasing popularity of the climate crisis caused the closing of whole business sectors, insecurities in financial capital, and unprecedented circumstances in the market (e.g., Baker et al., 2020; Bond, 2013). Many businesses suffered from restrictions, supply shortages, and high sick leave (e.g., Shehzad et al., 2020) and employees were facing higher workloads, job insecurity, and unprecedented working environments (e.g., Adikaram et al., 2021; Aitken-Fox et al., 2020). Moreover, the COVID-19 crisis and the climate crisis led to changes in employees' resources and values. For instance, during the COVID-19 pandemic resources such as well-equipped working spaces or quick information sharing on the corridor were no longer available as employees were forced to work from home (Eurofound, 2020). Employees' values changed as people were exposed to a constant threat situation due to the spread of the coronavirus which increased insecurity and fear in society making people more prone to extrinsic values (e.g., pursuing financial success or fame) (Kasser, 2016). Resources and values build core concepts for the work of HR by determining employee motivation, behavior, and positive and negative job outcomes such as job satisfaction, performance, and exhaustion. HR had to adopt practices that depend on employees' resources and values such as strategies to support or motivate employees in those times. Therefore, HR being responsible for the interplay between organizational management and employees (Bratton et al., 2022) not only had to cope with new, uncertain circumstances on an organizational level but also has to provide structure and support for employees whose resources and values change in times of crises.

This dissertation spontaneously reacted to the crisis' circumstances that influenced HR in the last three years. By investigating employees' resources and values during the COVID-19 pandemic and the climate crisis, this dissertation exemplarily examines three challenges HR faces, depending on changing

resources and values, namely, **supporting, attracting, and motivating employees**. In doing so, this dissertation makes several contributions. First, by investigating employees' resources and values being central individual constructs, this dissertation examines inherent changes in human beings and answers the call for more fundamental research on the interplay between values, resources, needs, and behaviors (Lu et al., 2019; Seligman et al., 2013; Van den Broeck et al., 2016). Second, building on strategies and concepts in order to cope with current crises, this dissertation accounts for the contemporary importance of political, societal, and environmental crises which have enormous impact for both practitioners and scholars alike. For practitioners, investigating resources and values during crises provides guidelines to actively invest in resources, to attract employees with different values, and to restructure motivation strategies for crises-relevant goals. As for theory, examining employees' values and their alignment with environmental values will provide new perspectives for theoretical taxonomies on congruences of personal and organizational values and goals. Third, the data was collected in times of crises which improves both, the generalizability of our findings to other crisis situations and the interpretation of HR guidelines being targeted to the according crisis. In addition, investigating values during the COVID-19 pandemic and in times of strong prominence of the climate crisis captures both the extrinsic tendencies of values due to the COVID-19 crisis and the changes in values due to the surging prominence of the climate crisis. Emphasizing these contributions, all studies are pre-registered and analyzed with high-quality methods such as latent change score models and polynomial regression analyses. Thereby, I answer the call both for more open practices to reduce research biases and for more high-quality research methods in applied psychology (Matusik et al., 2021; Mitchell & James, 2001; Nosek et al., 2018; Vantilborgh et al., 2018).

In the following, I will explain how resources and values are affected in times of crises and how changing resources and values influence HR practices. With the aid of three example challenges of HR (**1) supporting, 2) attracting, and 3) motivating employees**), I underline why a reassessment and investigation of HR practices during the COVID-19 and the climate crisis are necessary. Afterwards, I will

introduce our inherent psychological needs as underlying shared taxonomy.

Supporting employees: The first challenge focuses on how to support employees during the COVID-19 pandemic. As both, HR and employees were inexperienced and unprepared for such a crisis situation, I investigated the resources that employees needed to cope with the enduring COVID-19 pandemic. Resources defined as conditions or personal characteristics that help to overcome stress (Hobfoll, 1989; Hobfoll et al., 1990) are expected to be particularly relevant during crises as crises provide a very stressful environment. During the COVID-19 pandemic, employees were forced to work from home (Eurofound, 2020) and exposed to a constant threat situation due to the spread of the coronavirus. So, many resources such as short coffee breaks with colleagues or quick information sharing on the corridor got lost (e.g., Belzunegui-Eraso & Erro-Garcés, 2020). Also, schools, cinemas, and other leisure activities were closed and it was difficult to compensate for the loss of social interactions. Due to these changing work environments, there was a need to reassess employees' resources and examine new resources that had to be built up and made available by HR to properly support employees during the COVID-19 pandemic.

Attracting employees: The second challenge focuses on the fact that employees feel attracted to companies that share the same values. As an application is often the result of an alignment of the applicant's and the companies' values (Farndale & Vaiman, 2022), personal values play a key role for HR. In times of crises, personal values defined as our guiding principles for life are likely to change due to insecurity and fear (Cao et al., 2020; Kasser, 2016). This makes people more prone to extrinsic values (Kasser, 2016). Such extrinsic values are associated with counterproductive work behavior, ill-being, turnover (Deci & Ryan, 2000; Unanue et al., 2016; Vander Elst et al., 2012), and less volunteer work (Finkelstein, 2009), and pro-environmental behaviors (Unanue et al., 2016). These potential negative implications of extrinsic values have an enormous impact on the application process as the reliance on an alignment of values can hold costly consequences for companies and should be reexamined in times of crises.

Motivating employees: A third challenge of HR during crises is to motivate employees to crisis-relevant goals. Crises often force organizations to redefine organizational goals. Since the climate crisis has become more urgent and prominent within the last three years, HR is forced to react to the claim for more environmentalism and to motivate employees to pro-environmental organizational goals. The realization of pro-environmental goals is dependent on employees' opinions and values (Farndale & Vaiman, 2022). However, there are ambivalent findings on what reasons organizations should provide to motivate the majority of employees to pro-environmental organizational goals. While theoretical research considers an intrinsic framing (e.g., PEB contributes to the preservation of nature) to outperform an extrinsic framing (e.g., PEB is associated with admiration in society), organizational contexts mostly establish extrinsic triggers that, interestingly, can be successful. There is a need for a more nuanced perspective on how organizations should frame goals and to examine moderators that enable an extrinsic framing to fit (or not) both employees' values and their organizational environment in order to address as many employees as possible for crisis-relevant goals. Given that people are more prone to extrinsic values in times of crises, the importance to investigate employees' values and the interaction with goal framings even increases.

Taken together, this dissertation investigates resources that HR needs to enhance in order to **support** employees during the COVID-19 crises, it explores employees' values during the COVID-19 crises that play a key role for the perceived **attraction** of a company, and it examines employees' values to **motivate** employees to organizational pro-environmental goals with regard to the climate crisis.

General theoretical background

While the three studies draw on different theoretical taxonomies, the overarching theoretical framework underlying these studies is the self-determination theory (SDT) postulating three psychological needs – the need for competence (e.g., feeling qualified), need for autonomy (e.g., feeling self-determined), and need for relatedness (e.g., feeling of being part of a group) – that have to be satisfied for optimal functioning. Psychological needs are the basis to understand regulatory processes of personal

value aspirations, and underlying value-directed behavior. They are the fundamental mechanisms for guiding our actions, successful psychological growth, and our health (Deci & Ryan, 2000). As the satisfaction of our psychological needs leads to positive outcomes for organizations and employees such as higher organizational citizenship behavior (OCB), job satisfaction, affective commitment, and less turnover intention and negative affect (Van den Broeck et al., 2016), it is important for HR to help employees satisfying their psychological needs. Especially in times of crises, employees' satisfaction of needs is vulnerable as changing working environments like the compulsion to work from home during the COVID-19 pandemic can surrender autonomy and may lead to frustration of needs. Regarding the three challenges of HR to support, attract, and motivate employees in times of crises, employees' psychological needs are the fundamental explaining mechanisms of our findings. Although I did not explicitly measure psychological needs in the three studies, the taxonomy of psychological needs is taken in all three studies to discuss the findings. The discussions of each study can be found at the end of the respective chapter.

In the following, I will include the three challenges of HR into the framework of psychological needs and the precarious working environments in times of crises. Learning from past research and revealing why working environments in times of crises cannot be compared with normal working circumstances, I will depict how the constructs of employees' resources and values are related to HR's challenges of supporting, attracting, and motivating employees and will derive the according research question. Lastly, I will describe the three studies in more detail.

Supporting resources during the COVID-19 pandemic that has threatened psychological need fulfillment

The first responsibility of HR that I exemplarily investigate is how to support employees during the COVID-19 pandemic, posing unusual circumstances for employees. In European countries, schools, cinemas, and other leisure activities were closed and people were exposed to a constant threat situation due to the spread of the virus (Statista, 2020). Since these circumstances, known as lockdowns, continued for several months (Bundesministerium, 2021; World Health Organization, 2020a, 2020b), employees

were forced to work from home (in the following referred to as remote workers), and HR was challenged to support remote workers in their new unprecedented work environments.

These circumstances were likely to affect employees' psychological needs. Psychological needs are the fundamental mechanisms for guiding our actions, successful psychological growth, and our health (Deci & Ryan, 2000). Need satisfaction is important for companies as it leads to positive outcomes such as higher organizational citizenship behavior (OCB), job satisfaction, affective commitment, and less turnover intention (Van den Broeck et al., 2016). However, in times of crises, our psychological needs are likely to be threatened. For instance, during the COVID-19 pandemic, the need for relatedness could hardly be met as people were forced to stay at home and social interactions were restricted to a minimum. Moreover, keeping distance, avoiding hugs, kisses, and other welcoming gestures to reduce the spread of the virus has led to increased feelings of loneliness and isolation (Kasar & Karaman, 2021; Loades et al., 2020; van Zoonen et al., 2021). In working contexts, the compulsion to work from home not only isolated employees but also resulted in difficult arrangements with colleagues, an omission of social interactions, and a lack of support within teams (e.g., Chong et al., 2020; Eurofound, 2020; Statista, 2020) that additionally reduced the feelings of relatedness. Furthermore, the need for competence defined as feeling qualified in what we are doing was likely to be threatened as the majority of employees were unprepared for working from other locations than the company building and personal performances were prone to suffer from the new working environments (Vincenzi et al., 2022). Especially, families agonized over the circumstances as schools and child care centers were closed, forcing them to work next to their kids which inevitably leads to reduced performances. Also, the need for autonomy defined as being free in own decisions and behaviors was likely to be threatened because of restrictions, rules, and constantly changing policies due to the unknown virus (Spiegel & Tookes, 2021). Not only politicians established restrictions but also companies set up rules for working environments such as wearing masks, establishing new home office policies, and pressuring to register personal locations to be able to follow the spread of the virus.

Regarding these changing circumstances and the threat to remote workers' psychological needs, it

was necessary to reassess remote workers' work life during these times and investigate how HR can support them. By investigating remote workers' quality of work life and resources during the COVID-19 pandemic, the first study provides guidelines for HR on how to **support** remote workers during the COVID-19 crisis and reveals what resources should be prioritized in future HR measures.

Attracting employees by targeting congruent values that determine psychological needs

The second study investigates values in times of crises and exemplarily targets a second challenge of HR, namely to keep an attractive company image in times of crisis. Having a positive company image has several positive effects such as increased numbers of applicants, a higher market value, or satisfied employees (e.g., Priyadarshi, 2011; Wallace et al., 2014). However, crises cause insecurity and fear and people feel threatened, socially excluded, and worried about how to satisfy psychological needs (Kasar & Karaman, 2021; Loades et al., 2020). These worries cause people to set high priorities on extrinsic values (e.g., Kasser, 2016; Twenge et al., 2010) which can have severe consequences for companies.

Usually, a congruence between personal values and the perceived company's values is an advantage for the company because people who are attracted to these values are more likely to apply (Sivertzen et al., 2013). Multiple studies confirmed that an alignment between employees' values and the companies' values has positive consequences for both employees and organizations such as high organizational commitment, performance, motivation, job satisfaction, or less turnover intention (e.g., Deci & Ryan, 2000; Greguras & Diefendorff, 2009; Kristof-Brown et al., 2005; Verquer et al., 2003). Farndale and Vaiman (2022) even state that companies have to look at an alignment of values when selecting employees in times of crisis.

However, research centering on different *types* of values show that different types of values have dissimilar implications for companies. For instance, the SDT distinguishes between intrinsic values such as striving for maintaining long and meaningful relationships, contributing to the community, or developing one's personal growth and extrinsic values such as striving for financial success, popularity, or having a physical appealing image (Kasser & Ryan, 1993, 1996) states that intrinsic values are more

closely related to well-being, life satisfaction, engagement, and even performance whereas extrinsic values are associated with higher turnover intentions, counterproductive work behavior, emotional exhaustion, lower well-being, and life satisfaction (Kasser & Ryan, 1993; Vansteenkiste et al., 2007; Vansteenkiste et al., 2008). They argue that intrinsic values are more closely related to the inherent growth tendency (Deci & Ryan, 2000; Kasser & Ryan, 2001) as pursuing intrinsic values engages people in behaviors and lifestyles that satisfy more psychological needs than pursuing extrinsic values (e.g., Kasser & Ryan, 1996, 2001). Reasons for this are, for instance, people with higher extrinsic values may have lower self-esteem (Duriez & Klimstra, 2011), compare themselves more often with other people (Lyubomirsky & Ross, 1997), and focus their attention on academic status and what other people think rather than on themselves (Vansteenkiste et al., 2008). They make themselves dependent on the reactions of other people, thereby surrendering their autonomy over the fulfillment of their values. Consequently, SDT representatives claim that extrinsic values are more likely to lead to a frustration of psychological needs and thus, to ill-being, negative behavior, and turnover intention (Deci & Ryan, 2000; Unanue et al., 2016; Vander Elst et al., 2012).

Regarding the **attraction** of a company in times of crisis, the question arises of whether an alignment of values is always beneficial, independently of the fact that people rather pursue extrinsic values in times of crises. Concretely, what will happen when employees strive for extrinsic values and their aspirations match their environment – does it have negative or positive consequences for companies? This question is extremely relevant for HR, as we and a whole new generation grow up facing multiple crises such as the COVID-19 crisis, the climate crisis, and political crises that cause insecurity and fear and make us vulnerable to extrinsic values (Kasser, 2016).

It has to be noted that intrinsic and extrinsic value striving are not mutually exclusive. People can strive for both value orientations in the same way. Moreover, people tend to strive for multiple values at the same time (Unsworth et al., 2014). This phenomenon is further discoursed in the discussion section.

Motivating employees to perform green actions by targeting values that determine psychological needs

A third challenge of HR that draws on employees' values is motivating employees to crisis-relevant goals namely, to reduce carbon dioxide emissions and to act more pro-environmentally due to the climate crisis. It is evident that our climate is changing and that it is necessary to reduce the carbon dioxide emissions to mitigate this change (Australian Bureau of Meteorology, 2019; Peterson et al., 2013). Researchers warn of severe consequences climate change will bring, such as unknown diseases, species extinctions, famines, poverty, extreme weather conditions, and immigration (e.g., Australian Bureau of Meteorology, 2019; Shultz et al., 2019). Due to this importance, there are already several studies focusing on and advocating for corporate social responsibility and pro-environmental goals in organizations (e.g., Andersson et al., 2013; Norton et al., 2012). However, as opinions and values concerning climate change issues and pro-environmental behaviors (PEB) are diverse and often difficult to change (e.g., Stern et al., 1995), HR is faced with the big challenge of how to frame such pro-environmental organizational goals to motivate all employees to PEBs.

There is ambivalence in the findings on goal framings. On the one hand, research shows that increasing self-concordance concerning personal values and the issue of climate change leads to enhanced PEB (Unsworth & McNeill, 2017). Meaning that reasons such as 'PEB helps to preserve nature' is more important for people caring about the environment than for people who do not care about nature. Given that people are more prone to extrinsic values in times of crises, organizations should provide extrinsic reasons such as 'PEB helps to save money' to motivate the majority of employees. However, on the other hand, there is research showing that an intrinsic framing usually performs best (e.g., Vansteenkiste, Lens, & Deci, 2006), independently of what we strive for. An explanation for successful intrinsic goal framing can be drawn from the principles of SDT stating that different values and goals lead to different qualities of motivation and engagement (Deci & Ryan, 2000). Behavior that is induced through intrinsic goal framing or based on intrinsic values is closely related to people's inherent tendency to grow and develop,

both socially and personally, and allow people to satisfy their three basic psychological needs (Kasser, 2016; Vansteenkiste et al., 2007).

However, organizations provide a context that usually draws on external regulation (e.g., incentives, to-do lists, performance management), and indeed, external triggers can be successful for motivation (Jeno et al., 2020; Zhong et al., 2010). Combining these ambivalent findings of successful intrinsic and extrinsic framings with crises circumstances in which people are more prone to extrinsic values, there is a need to provide a more nuanced perspective of why both intrinsic and extrinsic framings can be successful. It is important to examine moderators that enable an extrinsic framing to fit (or not) both employees' values and their organizational environment to provide guidelines for HR on how to **motivate** employees to crisis-relevant goals. Given that people are more prone to extrinsic values in times of crises, the importance of how to frame organizational goals to reach all employees gains in significance.

Dissertation outline

This dissertation includes three empirical studies examining three challenges of HR that are affected by changing resources and changing values in times of crises. Specifically, it investigates HR's challenges of supporting, attracting, and motivating employees.

Study 1 examined resources during the COVID-19 pandemic and aimed to reveal what resources have been most important for maintaining remote workers' well-being, subjective productivity, and engagement. We drew on the conservation of resources theory and explored the role of personal (self-goal setting, self-efficacy, home-office experience), external (equipment at home), and organizational (work-related and social) resources in daily changes in well-being, subjective productivity, and engagement. For this purpose, we collected diary data (five working days for each teleworker) during the periods March to May 2020 (2222 employees) and November to January 2021 (1268 remote workers).

Study 2 examined values and the alignment of employees' and organizational values with regard to the attractiveness of organizations and potentially negative consequences for companies. Drawing on the

value congruence literature and the SDT, we argue that the outcomes of congruence between employee and organizational values depend on the content of the values under consideration. By drawing on the SDT, a prime theory suggesting implications for different contents of values, this study investigates the impact of congruences of intrinsic values (e.g., contributing to society, affiliation) versus congruences of extrinsic values (e.g., financial success) on positive and negative work behavior, well-being, and commitment. We tested these assumptions in a three-way longitudinal study with a four-week interval with a sample of 678 employees.

Study 3 investigates how organizations should frame pro-environmental goals to engage as many employees as possible to PEB. Specifically, we examined different reasons why to act pro-environmentally and whether different reasons are more or less important for people striving for different values. Drawing on the goal hierarchy approach and the SDT, we hypothesized that providing reasons to act pro-environmentally that fit personal values leads to an increase in PEB and additionally, we investigated the role of perceived organizational pro-environmental support in the relationship between extrinsic values and an increase in PEB. We tested these assumptions by randomly assigning 1712 participants to four groups that receive either a) intrinsic reasons, b) extrinsic reasons, c) only information, or d) nothing and by applying a two-way longitudinal study design with a two-week time lag.

In the following, I will introduce each study with its introduction, methods, results, discussion, and conclusion section. Afterwards, I provide a general discussion on the results of all studies, deriving theoretical and practical contributions, limitations, and ideas for future research.

Study 1

Summary

In European countries, the COVID-19 pandemic has given rise to a demanding work situation for office employees who have been required to work from home (hereinafter referred to as remote workers). Due to curfews, school closures, and leisure restrictions in Austria, remote work circumstances have changed compared to before the pandemic. By combining event system theory with transactional stress

theory, we aim to identify the most important resources for maintaining remote workers' well-being, perceived productivity, and engagement during the COVID-19 pandemic. We collected daily data (five working days for each remote worker) once from March to May 2020 (2222 employees) and again from November 2020 to January 2021 (1268 employees) and explored the role of personal (self-goal setting, self-efficacy, home-office experience), external (equipment at home), and organizational (work-related and social) resources for changes in well-being, perceived productivity, and engagement. Well-being and engagement decreased less when remote workers indicated high resources of self-efficacy and social support at the beginning of the crises. Results further reveal that an improvement in resources from the first to the second measurement was associated with a reduced decline in well-being, productivity, and engagement, respectively. We discuss implications for HR and provide suggestions for future research.

Introduction

Due to the coronavirus disease 2019 (COVID-19) pandemic, employees in Austria have been obligated to work from home during at least two periods, once in spring (March - May 2020) and once again in autumn (October 2020 - January 2021) when COVID-19 cases increased significantly (hereafter, in line with former studies, employees working from home are defined as remote workers [Waizenegger et al., 2020; Wang et al., 2020]). Remote work is not a new phenomenon and is well established in many organizations (López-Igual & Rodríguez-Modroño, 2020). So far, studies conducted before the pandemic have been ambivalent regarding the impact of remote work on employees' quality of work life, finding both positive and negative effects on well-being (Anderson et al., 2015; Boell et al., 2013; Tavares, 2017), productivity (Delanoeije & Verbruggen, 2020; Gajendran & Harrison, 2007; Hill et al., 2003; Nakrošienė et al., 2019), and engagement (Kim & Coghlan, 2020).

However, it is questionable whether remote work still had both positive and negative effects on remote workers' work life during this pandemic situation as the COVID-19 pandemic has led to unusual circumstances: Curfews have been imposed, schools and childcare centers have been closed, partners have often also had to work from home, and outdoor leisure activities have been prohibited, which resulted in

difficulties to maintain a work-life balance (Syrek et al., 2021). Furthermore, during the mandatory periods of restriction in Austria noted above, all office workers were obliged to work from home, which resulted in complex working arrangements, a lack of social interaction, and a lack of support within teams (Belzunegui-Eraso & Erro-Garcés, 2020; Chong et al., 2020; Eurofound, 2020; Statista, 2020). These circumstances hereafter collectively referred to as lockdown, continued for several months (Bundesministerium, 2021; World Health Organization, 2020a, 2020b, 2020c). Many remote workers were inexperienced and unprepared for this situation and sometimes lacked the resources to deal with it (Belzunegui-Eraso & Erro-Garcés, 2020). Therefore, the transferability of previous studies on remote workers' work life and resources is limited. This leads to the question of how remote workers have been affected by the pandemic situation, and what resources were important to protect their quality of work life during lockdown. The aim of the current study is thus to reassess remote workers' daily well-being, productivity, and engagement during this enduring demanding work situation and to identify resources that help remote workers maintain their quality of work life.

Previous data have shown that working from home during the first COVID-19 lockdown had negative effects on employees' well-being and productivity (Eurofound, 2020; Galanti et al., 2021; George et al., 2021; Ralph et al., 2020; Syrek et al., 2021). Furthermore, it has been shown that personal, external, and organizational job resources can mitigate these negative effects (Coghlan & Kim, 2020; Dolce et al., 2020; Ralph et al., 2020; Wang et al., 2020; Zacher & Rudolph, 2021). For instance, social support, job autonomy (Wang et al., 2020), and a well-equipped working space (Ralph et al., 2020) enhanced the quality of work life during the first COVID-19 lockdown. In addition, studies have revealed that having resources such as one's own office or desk at home became more important as other family members were required to stay at home as well.

However, most studies to date have only focused on specific resources, without drawing comparisons between them. Comparing resources and determining which resources have been the most important to maintain employee well-being, productivity, and engagement during the COVID-19

pandemic is expected be highly beneficial for prioritizing Human Resource Management (HR) measures. In addition, it is important to examine a successful investment in resources namely, what happens when employees build up new resources during the pandemic. Specifically, should HR invest in building resources during pandemics, or is this useless as resources should be there to begin with? Reasons to raise these questions can be drawn from the predictability of the second lockdown. While the first Austrian lockdown in the spring of 2020 was an unprecedented situation, the second, which started in fall of 2020, was widely expected (Popper, 2020; World Health Organization, 2020c). Therefore, the recurring demanding work situations could be anticipated and both organizations and employees had time to build up resources (e.g., improve technical equipment at home or offer self-management webinars). Such an increase in resources can lower strain and help employees to cope with the enduring demanding work situation (Hobfoll et al., 1990; Hobfoll et al., 2003; van Wingerden et al., 2016). However, to our knowledge, no study to date has examined the enhancement of resources during the pandemic to provide evidence of the impact of HR measures during crises.

The present longitudinal diary study aims to fill this gap, and thereby makes several contributions. First, this study contributes to the existing ambivalent remote working literature. It provides insights into remote workers' work life during the enduring demanding work situation of the COVID-19 pandemic. Since this work situation differed from the situation before the pandemic, the results are important for HR to gain knowledge about the changing work life of remote workers. Further, this study aims to highlight what resources should be provided and prioritized by HR in order to guide employees through times of crisis and cope with enduring demanding work situations such as pandemics. As the vast majority of research on remote workers' resources has analyzed only a few resources at a time, and has not compared several personal, external, and organizational job resources with each other (Belzunegui-Eraso & Erro-Garcés, 2020; Chong et al., 2020; Ralph et al., 2020; Wang et al., 2020; Zacher & Rudolph, 2021), knowledge is lacking about what resources are most important to mitigate detrimental consequences of demanding work situations.

Second, we analyze the relationship between resource gains and changes in well-being, perceived productivity, and engagement during the COVID-19 pandemic. In doing so, we expand the knowledge on how strengthening resources during a crisis affects remote workers' daily well-being, perceived productivity, and engagement. This will help practitioners to predict the impact of their investments in resources and to prioritize certain HR measures over others.

These practical contributions are methodologically supported by our study design, our chosen method for analyzing the data, and the theories on which we build. Primarily, our longitudinal diary study design provides new insights into the working lives of remote workers during the enduring demanding work situation in the first eleven months of the COVID-19 pandemic. Using such a longitudinal diary design allows us to gain rare insights into the daily situation of remote workers' everyday working lives and avoids retrospective, potentially distorted judgments on experiences during the pandemic. For data analysis, we applied the latent change score (LCS) model, which allows us to capture true changes over time and to overcome the limitations of difference scores. These methodological strengths are complemented by our theoretical foundations. We build on event system theory (EST, Morgeson et al., 2015) and the transactional theory of stress and coping (Lazarus & Folkman, 1984) as these two theories explain the impact of the COVID-19 pandemic on two different levels, namely, either on an organizational level or on an individual level. Building on the two approaches allows us to hypothesize how the COVID-19 crises impacts individuals. It builds our theoretical basis for examining how the COVID-19 crises affects remote workers' work life and what resources were important to protect this quality of work life.

Theory development and hypotheses

Enduring demanding work situation for remote workers

The COVID-19 pandemic lasted for a long period of time and the demanding work situation burdened remote workers' lives throughout. For instance, maintaining a work-life balance during lockdowns was almost impossible as work, child care, and leisure time had to be conducted within the same home-based setting (Syrek et al., 2021). Activities outside the home were severely restricted which

further exacerbated the work-life imbalance (Syrek et al., 2021). It stands to reason that this demanding situation would negatively influence employees' quality of working life. Combining the EST (Morgeson et al., 2015) with the transactional theory of stress and coping (Lazarus & Folkman, 1984), the enduring demanding work situation of the COVID-19 crisis represents a stressful environment. The main principle of EST is that organizations are systems that interact with the environment and do not operate in isolation (Morgeson et al., 2015). Certainly, organizations are permanently influenced by the dynamics of their environments (Katz & Kahn, 1966; Morgeson et al., 2015), and events can impact these dynamics.

Integrating the transactional theory of stress and coping into this framework, these events can either be assessed as harmless or as threatening and stressful (Lazarus & Folkman, 1984). Such assessments depend on appraisal processes arising from interactions between the environment and the individual. Due to the rapid and prolific spread of the virus, the COVID-19 crisis is characterized by constant threat that has influenced organizational environments and that has driven a compulsion to work from home, led to complex arrangements between colleagues, and minimized social interactions (Belzunegui-Eraso & Erro-Garcés, 2020; Chong et al., 2020; Eurofound, 2020; Gajendran & Harrison, 2007; Statista, 2020). As many remote workers were previously inexperienced in these working conditions and lacked the resources to deal with them, the COVID-19 situation is likely to have been assessed as a threatening and stressful event.

To gain a comprehensive picture of the quality of working life of remote workers during the pandemic, we focus on their well-being, engagement, and productivity. Well-being at work is central to various domains as it leads to, for example, good social relationships, reduced strain and fewer health complaints (Charalampous et al., 2019; van Horn et al., 2004). Engagement is associated with decreased turnover intention (Bhatnagar, 2012; Bothma & Roodt, 2012; C. Cooper & Dewe, 2008; Kaduk et al., 2019; Wright & Cropanzano, 2000), high organizational commitment (Cesário & Chambel, 2017; Teo et al., 2020), and increased trust (Chughtai et al., 2015; Jena et al., 2018). These are crucial factors for successful, productive remote working, particularly in times of crisis (Aitken-Fox et al., 2020; Lukić &

Vračar, 2018). Although employers are mainly concerned with employees' productivity during remote work (Parker et al., 2020), exploring this along with well-being, productivity, and engagement considers both, the perspective of remote workers, whose attention lies on their own well-being, and the perspective of employers, whose priority is to successfully lead the company through crises and maintain productive and engaging workers. Since working conditions during the lengthy COVID-19 lockdowns were demanding, we first hypothesize a decline in daily well-being, daily perceived productivity, and daily engagement.

Hypothesis 1: Daily well-being, daily perceived productivity, and daily engagement decrease from time 1 (March to May 2020) to time 2 (November 2020 to January 2021).

Resources during crisis

Resources defined as conditions, personal characteristics, and energies that are perceived as important themselves or that are important in order to reach a desired state are expected to be particularly relevant in times of crisis (Hobfoll, 1989). Individuals strive to actively acquire, maintain, and restore resources to overcome strain. As the work situation during COVID-19 is likely to have caused strain (Belzunegui-Eraso & Erro-Garcés, 2020; Chong et al., 2020; Eurofound, 2020; Statista, 2020), the acquisition and conservation of resources are highly relevant for coping with this work situation.

In order to consider as many potential resources as possible, we used three selection criteria. First, in accordance with previous studies and theories, we distinguished between personal, external, and organizational (work-related and social) job resources (Demerouti et al., 2001; Hobfoll et al., 1990; Hobfoll & Lerman, 1988; W. B. Schaufeli & Taris, 2014; Shaw et al., 1993). Second, we integrated the results of previous studies regarding personal, external, and organizational job resources of remote workers in crisis situations. For instance, self-goal setting skills (Müller & Niessen, 2019), self-efficacy (van Yperen & Snijders, 2000), and remote work experience (Tietze & Nadin, 2011) have been highlighted as important resources for remote workers. In addition, organizational job resources, like social support, job autonomy, and supportive leadership, have been cited as central during the initial

phases of the pandemic (Dolce et al., 2020; Wang et al., 2020). Third, we chose resources that can be improved and strengthened by HR, specifically, those that can add value to processes of selection, support, and/or development of employees. For instance, external resources like good working spaces can be easily improved in terms of equipment and ergonomics by HR; additionally, our chosen personal and organizational job resources could be enhanced, for example, through training or coaching (Luthans et al., 2006; Luthans et al., 2008). Taking these criteria together, we defined the following resources: (1) personal resources: self-goal setting, self-efficacy, home-office experience; (2) external resources: equipment at home; and (3) organizational job resources. Organizational job resources are divided into (3.1) work-related resources: job security, job latitude (refers to the freedom an employee has to control and organize her/his work, Frese & Zapf, 1994), communication during COVID-19; and (3.2) social resources: leader autonomy support, supervisor support, colleague support (Figure 1.1).

Hypothesis 2.1: Greater availability of personal resources (self-goal setting, home-office experience, self-efficacy) weaken the decline in (a) daily well-being, (b) daily perceived productivity, and (c) daily engagement from time 1 to time 2.

Hypothesis 2.2: Greater availability of external resources (equipment at home) weaken the decline in (a) daily well-being, (b) daily perceived productivity, and (c) daily engagement from time 1 to time 2.

Hypothesis 2.3: Greater availability of organizational job resources weaken the decrease in (a) daily well-being, (b) daily perceived productivity, and (c) daily engagement from time 1 to time 2.

Additional research question (referred to as Hypothesis 3): Which resources are the most important predictors to weaken the decline in (a) daily well-being, (b) daily perceived productivity, and (c) daily engagement from time 1 to time 2?

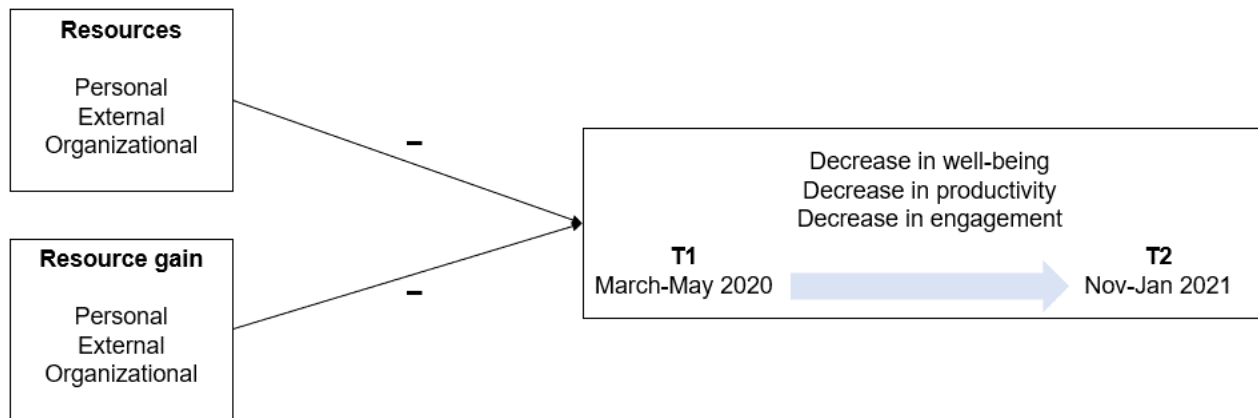


Figure 1.1. Conceptual Model of study 1. The minus signs indicate that resources are negatively related to decreases.

Gains in resources during crises

In addition to examining the level of resources at a specific point in time (e.g., at the beginning of the first lockdown as it is done in Hypothesis 2 and 3), it is crucial to examine changes in resources during a period of time. Over the course of an ongoing crisis, which can be expected to endure long-term, it becomes vital that organizations go beyond reacting to the crisis, and instead try to manage it proactively (Boiral et al., 2021). One way to do this is by trying to increase resources. The question which resources should be strengthened has been of great interest for organizations (Boiral et al., 2021). We propose that investing in resources *during* the pandemic may have led to improvements in remote workers' well-being, perceived productivity, and engagement. Following an evaluation of whether investing in these resources is worthwhile, the next hypothesis expands on Hypotheses 2 and Hypothesis 3, and reveals what can be achieved through successful HR measures that improve the necessary resources.

This practical contribution of our study is based on the main principle of conservation of resources theory (COR), which indicates that resources have dynamic characteristics and can be lost and gained by individuals (Hobfoll, 1989). Resource gain is associated with health and well-being (Hobfoll, 1989, 2001), and puts people in a better position in which they are able to spend more resources. Furthermore, gaining resources is linked to the facilitation of additional resource gains (Hobfoll, 1989, 2001; Hobfoll et al., 2018). For instance, organizations that have invested in high ergonomic standards for employees at home

(i.e., external resources) may reduce employees' physical discomfort so they feel less exhausted after work, which will lead to higher productivity. This increased productivity, in turn, can enhance self-efficacy (i.e., personal resources) and thus increase other employee resources. Consequently, resource gains during the COVID-19 pandemic may have been helpful in stimulating an improvement spiral of resources and avoiding decreases in well-being, perceived productivity, and engagement. Therefore, we propose that an investment in resources during the pandemic has a significant impact on employees' quality of work life. Specifically, an enhancement in resources (e.g., investment by HR in technical equipment for remote workers) during earlier phases of the pandemic should have helped employees gain more resources in later phases of the pandemic and thereby been essential for mitigating the decrease in remote workers' well-being, productivity, and engagement.

Hypothesis 4: The higher the resource gains the lower the decline in (a) daily well-being, (b) daily perceived productivity, and (c) daily engagement, from time 1 to time 2.

Method

By following a longitudinal design and using a LCS approach to analyze the data, we are able to capture true changes over time (Ferrer et al., 2007). These true changes over time are formed by the levels of daily well-being, daily productivity, and daily engagement at the beginning of the pandemic (time 1) and by their level at the end of our data collection (time 2). Latent changes in the true scores of these variables are then predicted by the level of resources during time 1, during time 2 (Hypothesis 2 and 3), and by the latent change of resources (Hypothesis 4).

Procedure and sample

We recruited participants via our personal contacts to organizations and agencies located in Austria. To improve participation, we promised to provide respondents with information on the results of the study. The response rate was high since lockdowns were exceptional situations and employers were more interested in the well-being, productivity, and engagement of their remote workers than before the pandemic. The survey was distributed by our contact persons, who mainly comprised human resource

managers. Participants worked in various fields, such as social organizations, media companies, consultancy agencies, and public organizations. Participants were first contacted in March 2020 and informed about the daily procedure and the planned second data collection stage in November 2020. For both data collection stages, we used the following procedure: As soon as participants registered for, gave their informed consent regarding, and agreed to take part in the study, they received the general questionnaire, including items on socio-demographics and resources (conducted using SoSci Survey). Participants were asked to provide their email address and (if preferred), also their phone number, to which the day-specific online questionnaires would be sent. For the invitation to the questionnaire at the second measurement time in November, all participants were contacted via email. To ensure we strictly followed the ethical American Psychological Association (2018) ethical guidelines, email addresses and telephone numbers were saved separately to the answers in the questionnaires; thus, they could not be matched to respondents. The provided information in the questionnaires was completely anonymous.

At 5:30pm on each of the five working days following registration, the participants received an email or text message with a request to fill out the day-specific questionnaire, hereafter referred to as the daily questionnaire. This structured daily questionnaire captured their well-being, perceived productivity, and engagement. To ensure that only remote workers participated, we added a filter question to the general survey and included only remote workers in the survey. In November, we contacted all participants via their registered email addresses with the invitation to take part in the second stage of data collection.

From March to May 2020, a total of 2222 participants (9821 daily entries) were included in the analysis; these participants had filled out at least one daily questionnaire. For the second data collection stage, from November 2020 to January 2021, we contacted these same 2222 participants again and received responses from 1268 participants, which equated to 5950 daily entries (response rate of 57.1 percent). Data were accessed and analyzed only once the data collection window had closed.

The majority of respondents were women (61.9 percent). The average age was 41.9 years ($SD =$

12.1), and the ages ranged from 16 to 71 years. Thirty percent of the participants had at least one child. Leader responsibility was indicated by 29.1 percent of participants and their mean organizational tenure was 17.4 years ($SD = 13.3$). More than 82 percent were highly educated (at least high school and/or university degree level).

Measures

We collected data from two sets of questionnaires (general questionnaire and daily questionnaires) for each data collection period. Time 1 refers to data collected from March to May 2020, and time 2 includes data from November 2020 to January 2021. Measuring constructs at different points in time helped us to reduce common method bias, per the recommendation of Podsakoff et al. (2003). Data collected from the general questionnaire, which included the assessment of resources, were collected at least one day before those of the day-specific questionnaires. Additionally, well-being, perceived productivity, and engagement were measured daily to reduce common method bias.

All our selected instruments have been validated and published in psychology-related peer-reviewed journals. Additionally, all scales were confirmed to have a Cronbach's alpha score of above .70 indicating good internal consistency. The instruments of each construct are provided in Table 1.1.

Table 1.1

Overview of the measured constructs of study 1

Construct	Scale name	Items	Example item	Range	Source
Daily questionnaire					
Well-being	Positive and negative affect schedule	3	Today, to what extent do you feel this way? Today, I feel... ...relaxed, ...calm, ...laid-back	1 (not at all) to 7 (extremely)	Watson et al., 1988
Perceived productivity	Task-based job performance	3	Today, I fulfilled all the requirements of the job.	1 (not at all) to 7 (completely)	Goodman & Svyantek, 1999
Engagement	Utrecht work engagement scale	3	Today, to what extent do you feel this way concerning work? Today, I felt bursting with energy.	1 (never) and 7 (always)	W. B. Schaufeli & Bakker, 2004
General questionnaire					

Self-efficacy	General self-efficacy scale	3	I can always manage to solve difficult problems if I try hard enough.	1 (strongly disagree) to 7 (strongly agree)	Schwarzer et al., 1997
Self-goal setting	Revised self-leadership questionnaire	2	I think about the goals that I intend to achieve in the future.	1 (strongly disagree) to 7 (strongly agree)	Houghton & Neck, 2002
Remote work experience	Author-created	1	Do you in general have experience of working from home (home office)?	1 (none) to 4 (a lot)	
Work equipment	Author-created	6	I have a sufficiently fast Internet connection.	“no” or “yes”	
Job security	Author-created	1	How secure do you currently feel your job to be?	1 (not safe at all) to 7 (very safe)	
Job latitude	Instrument for stress-oriented task analysis	3	Can you decide for yourself how to do your work?	1 (very little) to 5 (very much)	Semmer et al., 1995
Communication during COVID-19	Organizational change questionnaire	3	I am regularly informed on how the change concerning COVID-19 measures is going.	1 (strongly disagree) to 7 (strongly agree)	Bouckenooghe et al., 2009
Leader autonomy support	Work climate questionnaire	3	I feel that my manager provides choices and options.	1 (strongly disagree) to 7 (strongly agree)	Baard et al., 2004
Social support from colleagues and leaders	Social support scales	4	To what extent can you rely on the following people when it gets hard at work?	1 (not at all) to 4 (a lot)	Frese, 1989

Control variables

We included the control variables age, gender, and number of children, measured at time 1 because previous studies have shown that these factors can influence changes in remote workers' productivity and well-being² (Gajendran & Harrison, 2007; Harker Martin & MacDonnell, 2012; Kossek et al., 2006).

Data analysis³

To test our hypotheses, we used the LCS approach. This approach is suitable for testing individual change (Ferrer & McArdle, 2010). It models a latent change variable that represents an increase or

² The results do not differ substantially from the reported results.

³ Before the second round of data collection, we pre-registered parts of our hypotheses with the Open Science Framework. As we wanted to capture the first phase of the COVID-19 pandemic as early as possible, it was not possible to pre-register any hypotheses before the first data collection stage. However, as all our hypothesis tests include data from the second round of data collection, we could not test our hypotheses before registering them. The pre-registration can be retrieved [here](#).

decrease in the latent true score of variables between two measurement times. In doing so, individual change can be modeled, potential contaminating factors between individuals can be excluded, and limitations of change scores can be overcome (Matusik et al., 2020; McArdle, 2009). For data analysis, we used Mplus 8 (L. K. Muthén & Muthén, 2009) and the restricted maximum likelihood estimation method with robust standard errors for estimation.

To test Hypothesis 1, we built latent constructs of well-being, perceived productivity, and engagement (e.g., well-being at time 1, well-being at time 2) and modeled LCSs for these constructs, representing the change from time 1 to time 2 (e.g., Δ well-being). Before testing the hypotheses, we examined the appropriateness of our model by conducting a confirmatory factor analysis (CFA). Day-specific variables of well-being, perceived productivity, and engagement from time 1 and time 2 were used to build the latent constructs. Subsequently, the latent change variable (e.g., Δ well-being) was modeled. To do so, the path between the variable at time 1 and the variable at time 2 were restricted to one. Further, the latent change variable was set as a latent cause of the variable at time 2 with a factor loading fixed to one. The latent change factor (e.g., Δ well-being) then represented the true change in the variable from time 1 to time 2. A depiction of the model is shown in Figure 1.2.

The LCS approach can model factors that are predicted by other variables and dynamics over time (McArdle, 2009). Therefore, the LCS of, for example, Δ well-being can be predicted by the resources. To test Hypothesis 2, the impact of resources (at time 1 and time 2) on changes in well-being, perceived productivity, and engagement were analyzed. In Figure 1.2 these effects are displayed as paths γ_2 (resources at time 1) and paths γ_3 (resources at time 2).

For Hypothesis 3, LCSs in resources were modeled. Correlations between the LCSs of resources and the LCSs of well-being, perceived productivity, and engagement were examined (r_1). High correlations indicated a strong relationship between changes in resources and changes in work outcomes. Additionally, since Hypothesis 3 is not a directional hypothesis, we used two-sided p -values for the exploratory analysis leading to more conservative testing. By utilizing a large sample size, we followed

the recommendations of Funder and Ozer (2020) and interpreted our results in terms that are meaningful in context and do not reduce the estimation of effect sizes on artificial benchmarks.

To evaluate model fit, we used three frequently used indices (Hertzog et al., 2003; Li et al., 2014; Sianoja et al., 2018), namely the Root Mean Square Error of Approximation (RMSEA, Steiger, 1990), Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI, Bentler, 1990). To indicate the most important resources, we followed the recommendation of Funder and Ozer (2020) to interpret the γ paths of all resources in the context of our study design.

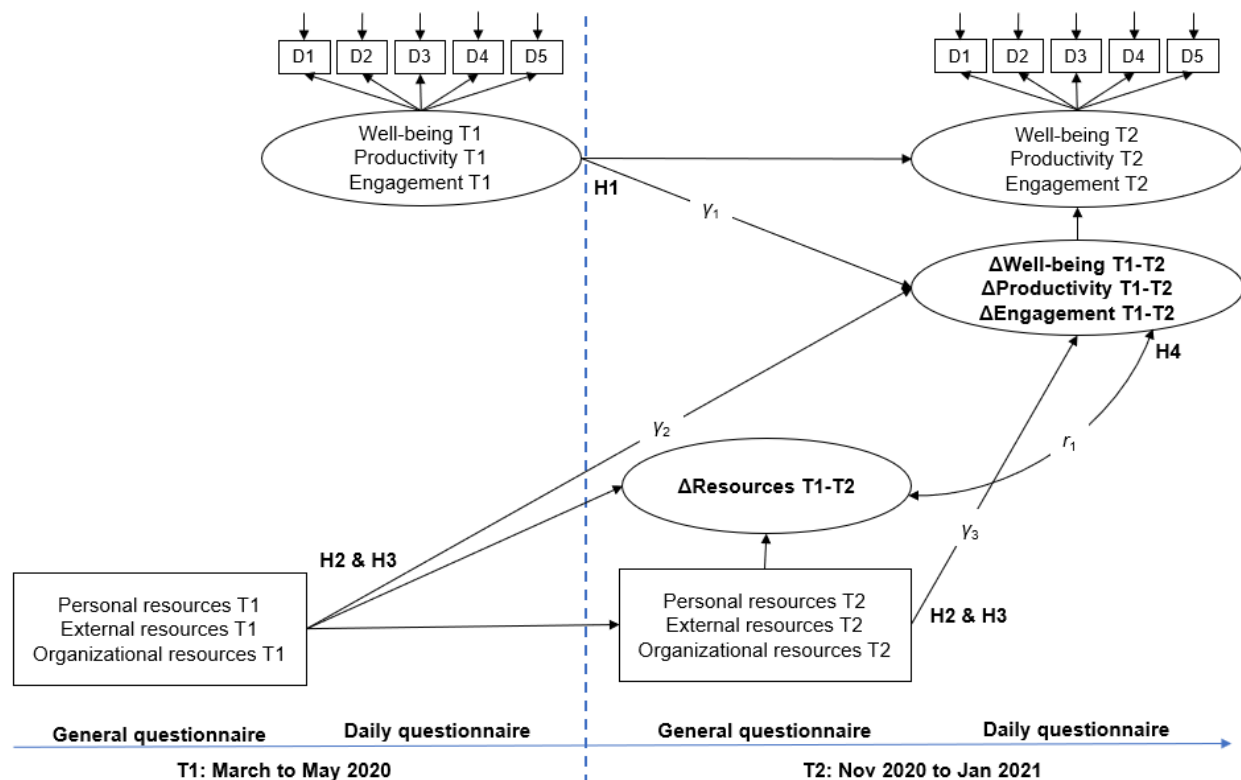


Figure 1.2. A two-factor latent change score model of study 1. Paths γ_1 represent the proportional change from well-being, perceived productivity, or engagement measured at time 1 to those measured at time 2. Paths γ_2 represent the effect of resources measured at time 1 on this proportional change. Paths γ_3 represent the effect of resources measured at time 2 on this proportional change. Correlation r_1 represents the relationship between proportional change in resources and proportional change in well-being, perceived productivity, or engagement. Unlabeled paths are fixed to 1.0 (McArdle, 2009).

Results

Table 1.2 shows the means, standard deviations, internal consistencies, and intercorrelations of the study variables. The interrelation between time 1 and time 2 of well-being was $r = .50$, that of perceived productivity was $r = .24$, and that of engagement was $r = .69$. Well-being was positively related to all resources, except for job latitude at time 1. Likewise, perceived productivity was positively related to most resources, except for job latitude at both time 1 and time 2, and for remote work experience at time 1. Additionally, engagement was positively related to most resources, except for job latitude at time 1 and remote work experience at time 1.

Table 1.2

Means, standard deviations, internal consistencies, and correlations

Variable	<i>M</i>	<i>SD</i>	<i>a</i>	1	2	3	4	5	6	7	8	9
1. Gender	1.38	0.49										
2. Age	41.92	12.09		.17**								
3. Kids	1.68	0.47		.13**	-.16**							
4. Perceived productivity (T1)	6.04	0.91	.96	.03	.24**	-.09**						
5. Perceived productivity (T2)	6.03	0.89	.96	.01	.22**	-.02	.69**					
6. Engagement (T1)	5.02	1.21	.94	.03	.25**	-.08**	.69**	.51**				
7. Engagement (T2)	4.97	1.17	.93	.02	.21**	-.05	.52**	.67**	.68**			
8. Well-being (T1)	5.35	1.18	.97	.07**	.13**	.02	.50**	.37**	.56**	.38**		
9. Well-being (T2)	5.10	1.20	.97	.07*	.08**	.00	.34**	.44**	.36**	.51**	.50**	
10. Self-efficacy (T1)	5.62	0.88	.76	.03	.16**	-.06**	.35**	.32**	.37**	.37**	.30**	.28**
11. Self-goal setting (T1)	5.52	1.05	(.48)	-.10**	-.05*	.00	-.15**	.15**	.23**	.24**	.08**	.06*
12. Self-goal setting (T2)	5.34	1.20	(.36)	-.04	-.08**	-.02	-.08**	.12**	.157**	.22**	.04	.05
13. Remote work experience (T1)	2.70	1.13	-	.08**	.12**	-.12**	.04	.03	.06**	.06*	.03	.00
14. Remote work experience (T2)	3.82	0.41	-	-.05	.08**	-.06*	.17**	.14**	.12**	.12**	.05	.07*
15. Equipment at home (T1)	9.43	1.31	-	.13**	.11**	-.05*	.19**	.17**	.24**	.20**	.18**	.14**
16. Equipment at home (T2)	9.40	1.32	-	.12**	.11**	-.04	.19**	.19**	.25**	.27**	.20**	.19**
17. Job latitude (T1)	3.98	0.76	.80	.07**	.09**	-.02	.03	.01	.04	.05	.04	.05
18. Job latitude (T2)	4.03	0.69	.79	.06*	.09**	-.04	.04	.07*	.07**	.15**	.11**	.18**
19. Job security (T1)	6.23	1.27	-	.03	.13**	-.02	.13**	.12**	.11**	.10**	.15**	.14**
20. Job security (T2)	6.36	1.21	-	.08**	.08**	-.03	.17**	.14**	.12**	.15**	.19**	.18**
21. Communication COVID-19 (T2)	5.37	1.44	.89	-.02	.09**	-.08**	.13**	.14**	.18**	.20**	.12**	.19**
22. Leader Autonomy Support (T2)	5.47	1.41	.95	.08**	.03	.03	.16**	.18**	.19**	.27**	.21**	.25**
23. Social support colleagues (T2)	3.27	0.59	.87	.00	-.04	.00	.17**	.18**	.16**	.22**	.17**	.24**
24. Social support leader (T2)	3.06	0.74	.90	.10**	.00	-.02	.20**	.21**	.21**	.27**	.26**	.29**

Table 1.2 (Continued)

	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. Gender														
2. Age														
3. Kids														
4. Perceived productivity (T1)														
5. Perceived productivity (T2)														
6. Engagement (T1)														
7. Engagement (T2)														
8. Well-being (T1)														
9. Well-being (T2)														
10. Self-efficacy (T1)														
11. Self-goal setting (T1)	.36**													
12. Self-goal setting (T2)	.20**	.50**												
13. Remote work experience (T1)	.11**	.11**	.11**											
14. Remote work experience (T2)	.11**	.20**	.08**	.28**										
15. Equipment at home (T1)	.15**	.15**	.12**	.23**	.16**									
16. Equipment at home (T2)	.20**	.17**	.18**	.24**	.21**	.61**								
17. Job latitude (T1)	.22**	.11**	.04	.20**	.08**	-.02	-.05							
18. Job latitude (T2)	.23**	.11**	.10**	.14**	.12**	-.08**	-.12**	.61**						
19. Job security (T1)	.20**	.01	-.06*	-.04*	.06*	-.04*	-.04	.05*	.06*					
20. Job security (T2)	.13**	.02	.02	.01	.08**	-.08**	-.11**	.02	.13**	.28**				
21. Communication COVID-19 (T2)	.21**	.13**	.16**	.10**	.20**	-.16**	-.19**	.11**	.21**	.03	.11**			
22. Leader Autonomy Support (T2)	.23**	.10**	.13**	.20**	.11**	-.16**	-.20**	.17**	.33**	.10**	.15**	.42**		
23. Social support colleagues (T2)	.13**	.05	.06*	.00	.06*	-.07*	-.09**	.08**	.17**	.07*	.13**	.19**	.33**	
24. Social support leader (T2)	.17**	.05	.07*	.03	.05	-.15**	-.17**	.04	.18**	.08**	.15**	.36**	.77**	.44**

Note. $N(T1) = 2222$. $N(T2) = 1268$. T1 = time 1, from March to May 2020. T2 = time 2, from November 2020 to January 2021. Gender: 1 = female; 2 = male; 3 = divers. Self-efficacy was only measured at time 1. * $p < .10$. ** $p < .05$. *** $p < .01$.

First, we conducted the CFAs to test the measurement correctness of our model. We used the standard method for CFA namely, the fixed factor method. Each multilevel CFA contained daily well-being, daily perceived productivity, or daily engagement variables as manifest factors. The model fit of the six CFAs well-being, perceived productivity, and engagement from time 1 and time 2, respectively was acceptable.

We tested Hypothesis 1 using the LCS model. Here, the LCS was estimated for each outcome variable (well-being, perceived productivity, and engagement). Acceptable model fit was found for well-being (CFI = .94, TLI = .94, RMSEA = .043), perceived productivity (CFI = .90, TLI = .89, RMSEA = .051), and engagement (CFI = .91, TLI = .90, RMSEA = .060). In line with Hypothesis 1, well-being ($M\Delta = -.24, p < .001$), perceived productivity ($M\Delta = -.04, p < .05$), and engagement ($M\Delta = -.07, p < .001$) decreased from time 1 to time 2. Thus, Hypothesis 1 is supported.

Hypothesis 2 stated that personal, external, and organizational job resources mitigated the decline in well-being, perceived productivity, and engagement. To test this, we added personal, external, and organizational job resources (as manifest variables) individually (one at a time) into the model. It was found that certain personal, external, and organizational job resources weakened the decrease in well-being and engagement. However, neither personal nor organizational job resources were related to a decrease in perceived productivity. The explained variances of the LCSs, as well as the resulting γ_2 coefficients of personal, external, and organizational job resources from time 1 and time 2, are provided in Table 1.3.

Personal resources: The model including the effect of personal resources on changes in well-being (CFI = .95, TLI = .94, RMSEA = .034), changes in perceived productivity (CFI = .91, TLI = .90, RMSEA = .043), and changes in engagement (CFI = .92, TLI = .91, RMSEA = .050) showed acceptable model fit. The personal resource self-efficacy was shown to prevent the decline in well-being ($\gamma_2 = .14, p < .001$) and in engagement ($\gamma_2 = .13, p = .004$). Additionally, self-goal setting was significantly related to a reduced decline in engagement ($\gamma_2 = .10, p = .007$). Taken together, we can partly confirm Hypothesis 2.1. Higher

personal resources were related to a less strong decline in well-being and engagement but were not related to perceived productivity.

External resources: Concerning changes in well-being, external resources, such as having access to necessary materials ($\gamma_2 = .07, p < .05$) and having good technical equipment ($\gamma_2 = .06, p < .05$), were important. Contrary to Hypothesis 2.2, having a dedicated home workspace was related to a stronger decrease in well-being. However, for perceived productivity, the external resource of having access to materials was relevant for a reduced decline ($\gamma_2 = .08, p < .05$). Thus, Hypothesis 2.2 is partially supported. The presence of specific external resources was related to a reduced decline in well-being and perceived productivity but was not related to a reduced decline in engagement.

Organizational job resources: High job latitude and social support from colleagues were associated with a reduced decrease in well-being and engagement (Table 1.3). Additionally, having high job security and being satisfied with the organization's communication about COVID-19 mitigated the decrease in well-being (Table 1.3). Referring to the control variables included as predictors on the LCS, age ($\gamma_2 = -.006, p < .01$) and gender ($\gamma_2 = .09, p < .05$) were significant. Men were found to be slightly more satisfied than women, and younger remote workers showed lower levels of well-being, regardless of their organizational job resources. Furthermore, an indication of high leader autonomy support ($\gamma_2 = .12, p < .05$) was related to higher engagement. This, Hypothesis 2.3 is partially supported: higher organizational job resources were associated with a reduced decrease in well-being and engagement, but not with changes in perceived productivity.

Table 1.3

Estimated path coefficients for latent change score models

Predictor	Δ Well-being			Δ Perceived productivity			Δ Engagement		
	Coefficient (γ)	SE	R ²	Coefficient (γ)	SE	R ²	Coefficient (γ)	SE	R ²
Personal resources			.22			.11			.16
Self-goal setting	.00	.50		.06	.05		.10**	.02	
Self-efficacy	.14**	.04		.04	.05		.13**	.03	
Remote work experience	-.03	.03		-.04	.04		-.01	.02	

External resources		.21		.14		.14
Own workspace (e.g., desk)	-.12**	.04	-.07	.05	-.07	.06
Own office/room	.06	.04	.05	.05	.04	.05
Good internet connection	.01	.04	.05	.05	.05	.04
Access to necessary materials	.07*	.04	.08*	.05	.00	.04
Good technical equipment (laptop etc.)	.06*	.04	.00	.05	.03	.04
High ergonomic standards	.01	.04	.00	.05	-.01	.04
Organizational job resources		.20		.12		.14
Job security	.07*	.02	-.02	.05	.04	.04
Job latitude	.10**	.04	.02	.05	.11**	.04
Communication during COVID-19	.08*	.02	.04	.06	.01	.05
Social support from colleagues	.12**	.03	.06	.07	.12**	.05
Social support from leaders	.05	.05	-.07	.05	.01	.07
Leader autonomy support	.06	.06	-.12*	.07	.12*	.07
All resources		.28		.14		.21
Self-goal setting	-.01	.03	.05	.05	.10**	.04
Self-efficacy	.11**	.04	.01	.06	.09**	.05
Remote work experience	-.06*	.03	-.07	.04	.01	.04
Own workspace (e.g., desk)	-.10**	.04	-.06	.06	-.05	.05
Own office/room	.04	.04	.03	.06	.01	.04
Good internet connection	.02	.03	.05	.06	-.05	.04
Access to necessary materials	.05*	.03	.08	.06	-.02	.04
Good technical equipment (laptop etc.)	.06*	.04	.00	.05	.02	.04
High ergonomic standards	-.01	.04	.01	.05	-.03	.04
Job security	.03	.04	-.01	.05	.01	.04
Job latitude	-.01	.04	.01	.05	-.03	.04
Communication during COVID-19	.07*	.04	.04	.06	.00	.05
Social support from colleagues	.13**	.04	.07	.05	.13**	.05
Social support from leaders	.04	.06	-.08	.08	.01	.07
Leader autonomy support	.07	.06	.11	.07	.14*	.07

Note. Standardized coefficients. R^2 = explained variance of latent change score. Separate analyses of personal, external, and organizational job resources were calculated using one-sided p -value. Exploratory hypothesis 3 with all resources together is examined with a two-sided p -value. * $p < .05$. ** $p < .01$.

For Hypothesis 3, we explored which resources had the highest effect on well-being, perceived productivity, and engagement. For this purpose, we constructed an overall model that included personal, external, and organizational job resources for all outcomes. The most important resources were found to

be self-efficacy and social support from colleagues, as these were positively related to a reduced decline in both well-being and engagement (Table 1.3). Furthermore, the findings were in line with those for Hypotheses 1–3; namely, access to necessary materials, technical support, and good communication during lockdowns were associated with a reduced decrease in well-being. A reduced decrease in engagement was related to self-goal setting and leader autonomy support. Contrary to our expectations, having a dedicated home workspace and remote work experience were associated with a larger decrease in well-being.

Finally, we tested Hypothesis 4, which suggested that an increase in resources weakened the decline in well-being, perceived productivity, and engagement. Overall, an improvement in resources was correlated with less decline in well-being, perceived productivity, and engagement (Table 1.4). In particular, having a dedicated office space, enhanced ergonomic standards, and increased remote work experience during the pandemic were important for reducing employees' decline in well-being, productivity, and engagement, respectively. Increased scope for action and job security were associated with a reduced decline in well-being and engagement. Improved goal-setting skill was positively correlated with a reduced decline in engagement ($r_2 = .17, p < .001$). Improvements in equipment at home were positively related to higher engagement⁴.

Table 1.4

Correlations between changes in well-being, productivity, engagement, and resources

	Well-being	Perceived productivity	Engagement
Self-goal setting	.05	.08	.17**
Remote work experience	.08*	.10*	.08*
Own workspace (e.g., desk)	.05	.06	.10**
Own office/room	.10**	.12**	.13**
Good Internet connection	.10*	-.01	.06
Access to necessary materials	.05	.04	.09*
Good technical equipment (laptop etc.)	.01	.06	.09*

⁴Appendix A provides descriptive information about positive and negative changes in resources and associated outcome variables.

High ergonomic standards	.06*	.07*	.09**
Job security	.12**	.03	.09*
Job latitude	.20**	.08	.22**

Note. Standardized coefficients. These resources were measured twice. For all displayed constructs a latent change score was modeled. One-sided p -value. $N = 1222$. * $p < .05$. ** $p < .01$.

Supplemental analysis

We conducted further analysis of the finding that the resource of having a dedicated home workspace had a negative effect on changes in well-being. To do so, we compared well-being at time 1 and time 2 of remote workers who had access to this resource with remote workers who did not have access to this resource. The supplemental analyses reveal that employees who had a dedicated workspace at time 1 indicated higher well-being at time 1 than people who did not have a dedicated workspace ($t(2003) = 2.56, p = .010$). However, this significant difference at time 1 cannot be observed at time 2 ($t(1087) = 0.73, p = .468$).

Discussion

This study examined the role of resources on changes in remote workers' daily well-being, perceived productivity, and engagement during the COVID-19 pandemic. We proposed that remote workers suffered from the enduring demanding work situation, and aimed to show which resources were most important for maintaining remote workers' well-being, perceived productivity, and engagement by hypothesizing that resources and resource gains can reduce the decline in remote workers' quality of work life during the pandemic. By using both, a longitudinal diary design to capture actual changes over time, and the LCS method with its unique capability to predict time-varying and/or invariant covariates (K. J. Grimm et al., 2013), this study adheres to the guidelines on performing LCS models only with true longitudinal data (K. J. Grimm et al., 2013). Moreover, this study answers the call for more high-quality longitudinal examinations of organizational and work trends (Matusik et al., 2020; Mitchell & James, 2001; Vantilborgh et al., 2018). This enables us to provide empirical evidence of dynamic relationships between two constructs without requiring difference scores, which entail significant methodological problems (Edwards, 1995).

As predicted, our results reveal that remote workers' well-being, perceived productivity, and engagement decreased during the first eleven months of the pandemic. These findings are consistent with existing research on the accumulation of strain over time (Bolger et al., 1996; Carayon, 1996; Fuller et al., 2003). According to the transactional stress and coping model proposed by Lazarus and Folkman (1984), employees who initially assessed the COVID-19 pandemic as stressful would also have been likely to assess it in the same way later, as it endured. Although we anticipated this outcome, habituation of remote workers to the pandemic situation could also have happened (Zacher & Rudolph, 2021). In this case, remote workers' well-being, perceived productivity, and engagement would not have decreased. Thus, our findings bring new insights for EST and its main principle, which asserts that environments and organizations interact with each other, and that the impact of this interaction is dependent on individuals' appraisal and the event's duration. Events that are assessed as stressful, and that occur repeatedly or persist long-term, lead to greater strain in employees' environments and can have strong negative impacts long-term. Based on these results, in the context of lockdowns during COVID-19, it stands to reason that if the demanding situation is long-lasting and another lockdown phase follows, even greater decreases in well-being, perceived productivity, and engagement will occur.

Corresponding to COR theory (Hobfoll, 1989; Hobfoll & Lerman, 1988), our results further suggest that personal, external, and organizational job resources helped remote workers to cope with the enduring demanding work situation. However, our findings show that resources cannot be considered as equivalent to each other but must be differentiated in terms of which aspects organizations want to improve. For instance, while high levels of personal resources positively relate to a reduced decline in well-being and engagement, they are not as strongly related to perceived productivity. This finding supports triple match theory, in which resources are more likely to prevent negative consequences of stressors when stressors, resources, and strains match (De Jonge & Dormann, 2006). These results are further discussed in the section detailing our study's implications.

In line with our hypotheses, a smaller decline in remote workers' well-being and engagement

during the pandemic was associated with high self-efficacy and social support from colleagues. Self-efficacy may result from having successfully mastered challenges in the past, as belief in one's personal efficacy strengthens after successfully overcoming stressful events (Bandura, 1994). Furthermore, Benight et al. (1999) have shown that following Hurricane Opal in Florida in 1995, self-efficacy was the most important predictor of low levels of distress. As such, self-efficacy may also be an effective predictor of the ability to master challenges such as those posed by the COVID-19 pandemic. Shifting the focus to social support, the high importance of such support from colleagues for reduced decline in both well-being and engagement may have been due to the changing working conditions during the pandemic. For instance, employees could only communicate via digital technology, as face-to-face interaction and brief updates provided on-the-fly were lost (Wang et al., 2020), making collaboration with colleagues more difficult. Solutions for overcoming these difficulties and for enhancing social support include online platforms, which have been shown to enhance social interaction among workers (Wang et al., 2020). For instance, informal chatting (e.g., through WeChat or DingTalk) have been shown to help employees feel socially supported (Wang et al., 2020), and virtual coffee breaks reduce feelings of isolation (van Zoonen et al., 2021). Thus, boosting digital social interaction within the organization was a very important resource during lockdowns.

Nevertheless, while the resources considered weakened the decline in well-being they did not completely eradicate the negative effects of the crisis on employees' well-being. Referring to Herzberg's (1974) two-factor theory which differentiates between hygiene factors and motivational factors, the resources considered in this study comprise hygiene factors, as they prevent dissatisfaction but do not influence workers' motivation. For example, job latitude, and having access to necessary materials and communication during COVID-19, minimized the decrease in well-being but did not lead to increased well-being compared to before the pandemic. This suggests that the COVID-19 lockdowns were so stressful to employees that the resources we consider in this study were only able to minimize the damage, without increasing well-being as they may have done over time prior to the pandemic (Demerouti et al.,

2017).

However, in contrast to our hypothesis, having a dedicated home workspace at home at time 1 (e.g., a desk) reinforced the decline in well-being. An explanation for this effect is found in the supplemental analysis, which revealed that people who had a dedicated home workspace at time 1 indicated significantly higher well-being at time 1 compared to people who did not have their own workspace. This significant difference was no longer found at time 2. People who had a dedicated workspace showed higher well-being at the beginning of the pandemic, but they drop to the same low level of well-being after eleven months and thus, their decrease in well-being from time 1 to time 2 is stronger. This could be an explanation of why having a dedicated workspace has a negative effect on the latent change score of well-being: People with their own workspace started out at a higher level at the beginning of the pandemic and then dropped to the same level of well-being as people without their own workspaces, leading to a stronger decrease in well-being.

As predicted, improvements in resources were positively related to remote workers' quality of work life. In particular, improvements in remote workers' equipment at home and increased remote work experience were associated with a reduced decline in well-being, perceived productivity, and engagement. This finding is particularly interesting as these two resources can be improved relatively easily. For instance, access to materials, higher ergonomic standards, and good internet connections are resources that can be provided easy via HR. In addition, remote work experience increased naturally as employees were often forced to work from home during the COVID-19 pandemic. Nevertheless, remote work experience at the onset of the pandemic was associated with a stronger decline in well-being. Only employees who continued working from home during the summer, and thus gained more remote work experience during the pandemic, indicated a lower decrease in well-being. Concerning HR, this means that encouraging employees to continue working from home to help them gain more experience in this environment remains important. These findings regarding improvements in resources during the pandemic are especially useful for HR as they reveal the impact successful measures have on remote workers' well-

being, perceived productivity, and engagement.

Limitations and future research

As with many studies, the present research is subject to several limitations. The first pertains to generalizability. It is possible that only remote workers who had the capacity to participate in our diary study, or who were dissatisfied with the COVID-19 situation, agreed to participate. Additionally, it could be argued that our sample was self-selected; thus, generalization should be conducted with caution. Regarding generalizability across occupational groups, our selection of organizations was random and the study registration was public. Therefore, anyone who was interested in participating was able to do so. This broad distribution and the sample's diversity can be considered strengths as they enabled us to capture data from multiple occupational sectors. Moreover, organizations did not receive incentives to participate hence, no dependence could have biased participation. Nevertheless, the voluntary nature of this organizational participation raises the question of whether a study on resources only attracts organizations that are interested in this topic and that are willing to invest in their employees. Additionally, voluntariness at the individual level entailed that only remote workers with the capacity to be part of a study participated. As the pandemic lockdowns posed major challenges and individuals had to cope with an unprecedented situation, it is likely that being available for a diary study was not possible for some people (e.g., employees with young children or other care duties). Thus, our results likely underestimate the negative impact of the pandemic. Future studies can avoid this bias by offering incentives or collecting data from organizations that make participation mandatory.

Second, owing to the rapid onset of the pandemic, we attempted to start data collection as soon as possible. However, we recognize in retrospect that we had overlooked certain organizational job resources. This is why communication about COVID-19 measures, social support from colleagues, social support from leaders, and leader autonomy support were only measured at time 2. Nevertheless, an advantage of the second timepoint is that we only captured resources during the crisis and responses are less biased from support or communication before the crisis. For instance, questions about communication

regarding COVID-19 measures at the very beginning of the pandemic might have been posed too early, as no measures had yet been taken. However, future studies should examine changes in communication and support during the pandemic.

Another limitation pertains to the measurement scale used for perceived productivity. Specifically, we measured perceived productivity with self-reported data, which are susceptible to socially desirable responses. Indeed, perceived productivity had a right-skewed distribution that may have caused ceiling effects. These limitations could explain the non-significant findings and low variance in productivity. Future studies could ask supervisors about their remote workers' productivity, or ask colleagues to assess team members' level of productivity, in order to avoid common method bias, social desirability bias, and right-skewed distributions (Podsakoff et al., 2003).

Implications for HR practices

Several implications for the selection, support, and development of remote workers emerge from this study. With the aim of enhancing well-being, both Human Resource Management teams, hereafter referred to as HR teams, and line managers carrying leader responsibilities have several options. HR teams can develop self-efficacy in employees by providing coaching, specifically e-coaching, in times of crisis (Luthans et al., 2006; Luthans et al., 2008). Since self-efficacy has been shown to be relevant for handling change processes in organizations (Heuven et al., 2006), and since times of crisis often entail many organizational changes, self-efficacy may be of special interest for HR teams. Regarding social interaction between colleagues, HR teams can offer advice to line managers on facilitating informal, as well as formal, interactions via chat rooms and telephone calls (e.g., via WeChat, DingTalk, or Microsoft Teams) and on promoting turning the camera on during such interactions (Wang et al., 2020). A review by Boulton, Kneale, Stansfield, Heron, Sutcliffe, Hayanga, and Todd (2021), which examined 18 studies conducted during the COVID-19 pandemic, highlighted that video communication, online discussion forums, and telephone assistance served as useful interventions to improve social support at work. These interventions were shown to be most successful when remote workers were able to speak freely and have shared experiences.

Therefore, line managers should establish a daily *jour fixe* online, in which they encourage employees to share their experiences of remote work during the pandemic. In doing so, commonalities may emerge, and remote workers may feel more socially supported and comfortable.

Furthermore, improvements to remote workers' workspace design, such as technical equipment, access to necessary materials, and high ergonomic standards, are helpful for remote workers' well-being. Such improvements could be made by advocating for new technical standards. To further support remote workers, HR teams could offer team training, motivate line managers to cultivate an open form of communication about COVID-19 measures, and provide greater scope for action in order to promote remote workers' well-being.

Self-goal setting skills were also shown to be relevant in engaging employees. HR teams can introduce self-structuring exercises into the selection process in order to assess applicants' ability to set goals. To support existing employees in their self-goal setting skills, HR teams can provide self-management training. Furthermore, team and leadership training that foster colleague and autonomy support can improve engagement as well as perceived productivity. Providing access to all necessary materials should also enhance perceived productivity.

What HR teams and line managers can expect from successful measures for remote workers is not only the effects of increased resources on well-being, perceived productivity, and engagement themselves but also the effect of the improvement itself: If HR teams and line managers enhance the resources of existing employees, for example, through training, coaching, and implementation of new digital and ergonomic standards, these resources will, in turn, help the employee having access to a bigger pool of resources, gain additional new resources (Hobfoll, 1989, 2001). For instance, after successful team training, remote workers may rely more on their colleagues and feel more comfortable sharing information. This could lead to higher productivity. In turn, higher productivity could enhance self-efficacy. Taken together, enhancing resources during the COVID-19 pandemic has an enormous positive impact on remote workers' well-being, perceived productivity, and engagement.

Conclusion

This longitudinal study examines remote workers' work qualities during the COVID-19 pandemic and reveals that enduring crises situations have negative effects on employees' well-being, engagement, and productivity. If crises continue for several months, employees suffer even more from these circumstances and there is no habituation process occurring. Our results show that self-efficacy and social support from colleagues are important to mitigate negative effects on well-being and engagement. Moreover, we show that investing in resources has positive effects on their well-being, engagement, and productivity. Taking into account the negative consequences for companies, this study underlines the importance for organizations to support their employees and invest in resources to succeed in times of crises.

Study 2

Summary

A common understanding is that a congruence between the company's values and the individual's values leads to positive outcomes such as increased attractiveness of the company and people are more likely to apply. However, there are theories indicating that different types of values are related to different outcomes. A prime example of such theories is self-determination theory (SDT), which asserts that intrinsic values (e.g., contributing to society) are related to positive outcomes, such as employee well-being and organizational commitment, whereas extrinsic values (e.g., financial success) are negatively related to such outcomes. This is especially interesting as peoples' values change in times of crises, becoming more prone to extrinsic values. The question arises whether an alignment of individual and organizational values always leads to positive outcomes, irrespective of the particular values involved. In this article, we integrate SDT with value congruence research to predict that outcomes depend not only on the match between individual and organizational values, but also on whether values are intrinsic versus extrinsic. We investigate these predictions using a large sample of employees (N=740) from various organizations and industries, collecting data with a prospective longitudinal design. Using polynomial

regression, we show that, as predicted, outcomes relevant to value congruence depend greatly on whether values are intrinsic or extrinsic. For instance, when intrinsic values are congruent, engagement increases with rising individual and organization values. Conversely, when extrinsic values are congruent, deviant behavior and emotional exhaustion increase as individual and organizational values increase. Our findings suggest a contingency approach to value congruence research in which the content of individual and organizational values is critically important. We conclude by discussing practical implications for HR in times of crises and directions for future research.

Introduction

Values are beliefs about a desirable state that represent our guiding principles for life and build our framework of existence (Schwartz, 1992). In work contexts, values are considered of utmost importance as they provide norms in guiding the behavior and interactions of organizational members and affecting organizational outcomes such as performance, well-being, and turnover intention (e.g., Chatman, 1989; Greguras & Diefendorff, 2009; Kristof, 1996; Van den Broeck et al., 2019; Verquer et al., 2003). Due to this importance, multiple theories exist to explain positive and negative implications of values (e.g., Deci & Ryan, 2000; Kristof, 1996).

One of the most frequently researched theories on values is the value congruence approach (e.g., Cable & Edwards, 2004; Edwards & Cable, 2009; Edwards et al., 1998; Edwards & Parry, 1993; Greguras & Diefendorff, 2009; Kristof, 1996; Kristof-Brown, 2000; Pervin, 1968). Value congruence, or the alignment between individual and organizational values, suggests that a congruence between the individual and the environment is associated with positive outcomes (e.g., Kristof, 1996) such as increased organizational commitment, job satisfaction, higher performance, and lower turnover intention (Greguras & Diefendorff, 2009; Kristof-Brown et al., 2005; Verquer et al., 2003). In practice, a congruence between personal values and the perceived company's values is even an advantage for application processes because people who are attracted to these values are more likely to apply (Sivertzen et al., 2013).

However, in addition to the approach of congruences of values, there is a substantial amount of

research on different contents of values. For instance, research distinguishes contents of values in striving for achievement (e.g., Gay et al., 1971; Super, 1968), altruism (e.g., Pryor, 1982; Super, 1968), or prestige (e.g., Gay et al., 1971; Pryor, 1982; Super, 1968), suggesting that some values lead to beneficial outcomes whereas others do not (e.g., Unanue et al., 2014; Van den Broeck et al., 2014). A prime example of theories focusing on different implications of different contents of values is self-determination theory (SDT; Deci & Ryan, 2000). SDT asserts that intrinsic values (e.g., contributing to society, affiliation) are related to positive outcomes, such as employee well-being and organizational commitment, whereas extrinsic values (e.g., financial success, status) are negatively related to such outcomes (e.g., Kasser & Ryan, 2001; Van den Broeck et al., 2019; Vansteenkiste et al., 2007). Extrinsic values are even related to higher turnover intention, racial and ethnic prejudice as well as deviant work behavior (Duriez et al., 2007; Unanue et al., 2014; Van den Broeck et al., 2014), underlining that the content of personal and organizational values is of crucial importance. Additionally, people are more prone to extrinsic values in times of crises which highlights the importance to focus on the content of values in research.

Although, contents of values are well studied in existing research, and as early as 1953, Cronbach had already claimed “the need to discuss similarity only with respect to specified dimensions”, the contents of values have not yet been integrated into the value congruence literature. Regarding the negative consequences for companies that some values can have, the crucial unanswered question is: Is it irrelevant *what* employees strive for as long as they fit the company’s values?

To address this question, our study examines the impact of value congruence using the differentiation between intrinsic and extrinsic values from SDT. We draw on SDT as it is one of the best-known motivational theories receiving increased attention in practice, such as in education, health, technology, environment, workplace, and organization sectors (e.g., (Behzadnia et al., 2022; Chiu et al., 2022; Niemiec et al., 2022; Rietveld et al., 2022; Unanue et al., 2016). Due to this increased attention in practice and the huge empirical evidence on direct implications of intrinsic and extrinsic work values (e.g., Kasser & Ryan, 1993, 2001; Unanue et al., 2014; Van den Broeck et al., 2019; Van den Broeck et al.,

2014), we chose the distinction of SDT to separate different values. By doing so, we exemplarily can answer the question of what happens when employees strive for extrinsic values *and* their aspirations fit their environment. Does it have negative consequences for companies because of extrinsic value strivings or positive consequences because of the fit?

Answering this question, our study makes three overarching contributions. First, combining the value congruence literature with literature focusing on the implications of the content of values contributes to a more nuanced prediction of outcomes of value congruence; such as to hypothesize more precisely high and low levels of congruence and incongruence effects. For theorists, this study provides new ideas for extending existing frameworks. Existing frameworks attribute positive outcomes of values either to the alignment of values (e.g., Greguras & Diefendorff, 2009; Kristof-Brown et al., 2005; Verquer et al., 2003) or to the content of values (e.g., Duriez et al., 2007; Unanue et al., 2014; Van den Broeck et al., 2014; Vander Elst et al., 2012). By considering the effects of the contents and the congruences of values as well as using polynomial regression analyses, we advance our understanding of previous findings that may be mutually influenced. For practitioners – especially for HR – this provides important information about which values should be promoted within the company and whether a match between the employee's values and those of the organization is always beneficial. Since values change in times of crises and people become more prone to extrinsic values (Kasser, 2016), the findings of how a congruence of extrinsic values may influence the company are important for HR practices.

Second, by analyzing subjective fit and using polynomial regression analyses to combine the two theoretical approaches, this study contributes to the conceptualization and measurement of congruences. It not only allows for variance in the effects of congruences on outcomes, but also underlines the importance of the differentiation of fit measures. A distinction is made between direct and indirect measurements (Kristof, 1996; Kristof-Brown et al., 2005). Direct measurement means that people are directly asked to indicate whether they perceive a fit between themselves and the environment (perceived fit). Indirect measurement means that the fit is calculated by a separately rated person- and environment-variables

(subjective fit). We measured subjective fit by assessing the values of individuals and the values supported by the organization separately. In doing so, we answer the call for applying polynomial regression analyses to assess fit and thereby, for avoiding single scores (Edwards, 1994a, 1994b, 1995)

Thirdly, this study contributes to the knowledge about the potential negative correlates of value congruence. While positive outcomes such as organizational commitment and job satisfaction are well studied in the value congruence literature (Verquer et al., 2003), negative outcomes such as deviant work behavior are less frequently examined (Stone et al., 2019). It is important to change this focus as negative outcomes are not simply the opposite of positive outcomes. Negative outcomes have their own, unique antecedents and developmental processes, which differ from those of positive outcomes (Barrett et al., 2007; Tellegen et al., 1999). Moreover, further insights into the development of negative outcomes are important, as they may hold costly consequences for organizations (Dunlop & Lee, 2004; Kraemer & Gouthier, 2014). Given that negative outcomes are associated with extrinsic value striving (Duriez et al., 2007), our study provides a relevant context to delve deeper into the relationship between value congruence and negative outcomes, and extends our theoretical knowledge of the negative effects of value congruence.

Theory development and hypotheses

Figure 2.1 provides our conceptual model incorporating the differentiation between intrinsic and extrinsic value congruence and their effects on employees' behavior, well-being, and commitment. By



examining behavior, well-being, and commitment, we not only gain a comprehensive picture of the consequences of intrinsic and extrinsic value congruence but also meet both the perspective of workers as well as employers. This is because workers' attention lies on their own well-being, and the organization's interest is to minimize the costs of turnover and illness (Podsakoff et al., 2000; Riketta, 2005) which goes along with positive behavior, well-being, and high commitment.

Figure 2.1. Conceptual model of study 2.

To account for positive and negative consequences of values, we examine behavior, well-being, and commitment with positive and negative outcomes: Organizational citizenship behavior (OCB) vs. deviant behavior, engagement vs. emotional exhaustion, and affective vs. continuous commitment. We have chosen these constructs firstly because they are relevant for theory and practices and empirically well established in value research (Greguras & Diefendorff, 2009; Kristof-Brown et al., 2005). Secondly, they allow us to formulate the hypotheses consistently for all positive and negative outcomes: Intrinsic values are positively related to OCB, engagement, and commitment, and negatively to deviant behavior, emotional exhaustion, and continuous commitment (e.g., Roche & Haar, 2013; Vansteenkiste, Lens, & Deci, 2006; Vansteenkiste et al., 2007). In contrast, extrinsic values are either lower positively or even negatively related to OCB (e.g., Torlak & Koc, 2007), engagement (e.g., Unanue et al., 2017; although money can also increase engagement, the quality of engagement is shown to be lower than when striving for intrinsic values; Jenkins et al., 1998), and commitment (e.g., Unanue et al., 2017). Extrinsic values are positively related to deviant behavior (e.g., Deckop et al., 2015) and emotional exhaustion (e.g., Unanue et al., 2017; Vansteenkiste et al., 2007). To our knowledge there is no study showing an explicit relationship between continuous commitment and extrinsic values, however, due to empirical evidence that extrinsic values are associated with higher turnover intention and lower affective commitment (e.g., Unanue et al., 2017; Vansteenkiste et al., 2007), we hypothesize that extrinsic values are positively related to continuous commitment. Thereby, we were able to set up uniform hypotheses for positive and negative outcomes regarding intrinsic and extrinsic values. In the following, we will delve into the elements of the model to

explain their meaning and relationships.

The concept of value congruence

Values guide our behavior and represent our principles for life (Schwartz, 1992). In work contexts, employees' work values refer to what people consider important with regard to the experience of work, while organizational values provide norms guiding the behavior and interactions of organizational members and defining how organizational resources should be allocated (Chatman, 1989; Kristof, 1996).

When the values of employees and organizations match, we can speak of a value congruence (Chatman, 1989). The value congruence framework is based on the principle that shared values between the employee and the organization build a beneficial interaction between the person and the environment (Cable & Judge, 1995, 1996; Westerman & Cyr, 2004). An example for a congruence framework that explicitly focus on the perceived alignments of personal and environmental values is the goal hierarchy approach (the definition of 'goal' is equivalent to our definition of 'values') (Cropanzano et al., 1993) which is based on the assumption that personal values follow a hierarchical structure, meaning that some values are personally more important than others. The personal importance and the connection between a higher-order value and the perceived environmental support that helps to follow this higher-order value guide our actions (Sheldon & Elliot, 1999; Sheldon & Kasser, 1995). Perceiving that the organization supports personal higher-order values increases motivation towards the specified behavior and enables positive well-being (Sheldon & Kasser, 1995). In the following, we speak of an alignment of values when employees perceive that the organization supports personal important higher-order values. Meta-analytic findings suggest that this alignment is associated with positive outcomes such as job satisfaction, organizational commitment, task performance, and OCB (Arthur et al., 2006; Hoffman & Woehr, 2006; Kristof-Brown et al., 2005; Verquer et al., 2003). Reasons for this can be that value congruence establishes a common sense for interpreting the environment (Erdogan et al., 2004), builds trust, and improves communication (Edwards & Cable, 2009) which make employees feel secure (Elangovan & Shapiro, 1998), encourages them to speak freely and to feel more connected (Boulton, Kneale, Stansfield,

Heron, Sutcliffe, Hayanga, ..., & Todd, 2021; Meglino et al., 1989). Drawing on these findings, the following congruence hypotheses derive.

Hypothesis 1 (congruence): Positive job outcomes

Intrinsic and extrinsic value congruence leads to high positive job outcomes. (a) OCB, (b) engagement, and (c) affective organizational commitment are highest along the congruence line. The positive outcomes are lowest when there is strong incongruence.

Hypothesis 2 (congruence): Negative job outcomes

Intrinsic and extrinsic value congruence leads to low negative job outcomes. (a) Deviant behavior, (b) emotional exhaustion, and (c) continuous organizational commitment are lowest along the congruence line. The negative outcomes are highest when there is strong incongruence.

Illustrating this hypothesis using polynomial regression and surface plots means that “the ridge that describes the peak of the surface runs along the congruence line” (Edwards & Cable, 2009), such that the positive outcomes are “maximized at the point of congruence at all levels of individual and organizational values” (Edwards & Cable, 2009). Such results are expected because the value congruence literature assumes that at each point along this line, people would fit in with their environment, ensuring a smooth interaction (Edwards & Cable, 2009). In Figure 2.2, we illustrate hypothesis 1 and show that positive outcomes are highest along the congruence line ($Y = X$), independently of a congruence of low versus high levels of intrinsic values.

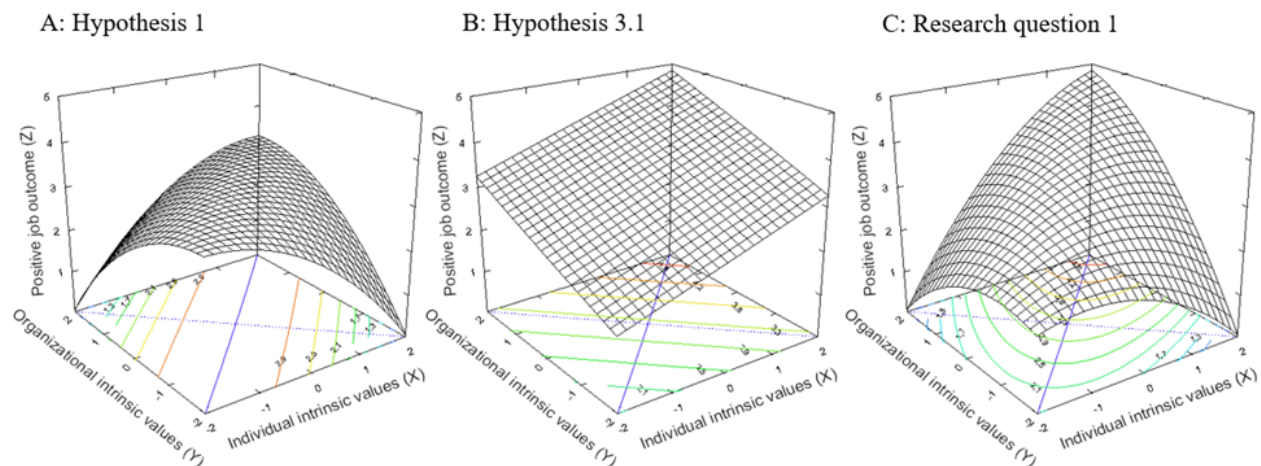


Figure 2.2. Hypothetical surface representing intrinsic value congruences and positive job outcomes. On the X,Y

plane, the line running diagonally from the near corner to the far corner represents the congruence line, thus $Y = X$ and the dotted line running diagonally left to right represents the incongruence line, thus $Y = -X$. When the first principal axis ($Y = X$) cross the X,Y plane within the range of X and Y measure, it is represented by a solid line. Underlying equation: $Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2 + e$. $b_3 = b_5 < 0$. Picture A: Hypothesis 1: $b_4 = |2*b_3|$. Picture B: Hypothesis 3.1: $b_1 = b_2 > 0$. Picture C: Research question 1: $b_1 = b_2 > 0$. $b_3 = b_5 < 0$. $b_4 = |2*b_3|$.

However, the outcomes of value congruences depend on the conceptualization, measurement and analyses applied (Kristof, 1996; Kristof-Brown et al., 2005). For instance, the positive findings of the meta-analyses mentioned above are based on studies that treat the concept of value congruence as a single overarching entity (e.g., Cable & Judge, 1996; Meglino et al., 1989; O'Reilly et al., 1991) and/or use difference scores to analyze congruence versus incongruence of values (Arthur et al., 2006; Hoffman & Woehr, 2006; Kristof-Brown et al., 2005; Verquer et al., 2003). In contrast, colleagues using polynomial regression analyses and visualizing data in surface plots found that value congruences between employees and organizations with *high* levels of values do not yield the same outcomes as congruences with *low* levels of values (e.g., Edwards & Cable, 2009; Herrbach & Mignonac, 2007; Howell et al., 2012). This already indicates that congruence is not exclusively positive. However, previous research does not consider the content of values, it remains silent on whether congruence of all types of values would lead to the same outcomes.

Schwartz (1992), one of the proponents of value research, argued that the content of values and their diversity is of primordial importance when we want to understand the values' impacts. Abundant empirical research supports this claim in showing that the content of values matters (e.g., Gay et al., 1971; Kasser, 2016; Lofquist & Dawis, 1978; Meglino & Ravlin, 1998; Super, 1968). So, it is inconsistent to examine value congruence without distinguishing between types of values.

The importance of the content of values

Various frameworks exist to separate different contents of values (e.g., Gay et al., 1971; Kasser, 2016; Lofquist & Dawis, 1978; Meglino & Ravlin, 1998; Super, 1968). For example, Super (1968) differentiated between values as diverse as creativity, achievement, security, and altruism, while Schwartz (1992) found ten distinct basic human values ranging from universalism to power and self-direction that

reflect a different motivation. The evidence of different types of values in both private contexts (e.g., Deci & Ryan, 2000; Schwartz, 1992) and work contexts (e.g., Pryor, 1982; Super, 1968) is widespread.

Examining different contents of values is a matter of course in psychological research.

Most frameworks primarily develop taxonomies to understand and separate values of different contents in an all-encompassing way (e.g., Lofquist & Dawis, 1978; Pryor, 1981, 1982; Schwartz, 1992), however, they rarely focus on the potential different outcomes of the pursuit of these values. A theory that has clear predictions about the diverging implications of values representing different contents is SDT (Deci & Ryan, 2000). SDT specifies two theoretical distinction sets of values and explicitly argues that they lead to different outcomes: Intrinsic and extrinsic values (Kasser & Ryan, 1993, 1996). Intrinsic values are aspirations such as striving for maintaining long and meaningful relationships, contributing to the community, and developing one's personal growth (Kasser & Ryan, 1993, 1996). Extrinsic values or materialistic values, in contrast, are aspirations such as striving for financial success, fame and popularity, and attaining power.

Although, both value strivings are not mutually exclusive but rather a continuum on which employees and organizations can have low or high levels in each content; high levels in intrinsic or extrinsic values are associated with different outcomes. Intrinsic values are associated with beneficial outcomes such as high employee well-being (e.g., engagement), low ill-being (e.g., burnout), positive attitudes towards one's job and organization, and high performance (Deci & Ryan, 2000; Duriez & Klimstra, 2011; Vansteenkiste et al., 2007). Extrinsic values require the contingent reaction of others and are associated with unhealthy behavior (e.g. smoking, drinking), the misuse of others for one's own benefit, poor quality motivation as well as low individual well-being (Dittmar et al., 2014; Kasser, 2016). In a similar vein, striving for extrinsic values in the context of work has been associated with low employee engagement, high levels of burnout, high turnover intentions as well as low performance (Van den Broeck et al., 2015; Vansteenkiste et al., 2007). In line with this research on individual values, studies show that environmental intrinsic and extrinsic values have similar implications. On a team and

organizational level, intrinsic work values have equally been related to employee well-being and positive attitudes, while extrinsic values have adverse effects (Schreurs et al., 2014; Van den Broeck et al., 2014).

Illustrating the hypotheses of the literature on contents of values using polynomial regression and surface plots, the SDT would suggest that particularly at high levels of personal and environmental intrinsic values positive job outcomes are highest, and particularly at high levels of personal and environmental extrinsic values negative job outcomes are highest:

Hypothesis 3 (SDT): Positive job outcomes

Hypothesis 3.1: Intrinsic values lead to high positive job outcomes.

(a) OCB, (b) engagement, and (c) affective organizational commitment are highest when intrinsic personal values or organizational are high. The positive outcomes are lowest when intrinsic personal or organizational values are low.

Hypothesis 3.2: Extrinsic values lead to low positive job outcomes.

(a) OCB, (b) engagement, and (c) affective organizational commitment are highest when extrinsic personal or organizational values are low. The positive outcomes are lowest when extrinsic personal or organizational values are high.

Hypothesis 4 (SDT): Negative job outcomes

Hypothesis 4.1: Intrinsic values lead to low negative job outcomes.

(a) Deviant behavior, (b) emotional exhaustion, and (c) continuous organizational commitment are lowest when intrinsic personal values or organizational are high. The negative outcomes are highest when intrinsic personal or organizational values are low.

Hypothesis 4.2: Extrinsic values lead to high negative job outcomes.

(a) Deviant behavior, (b) emotional exhaustion, and (c) continuous organizational commitment are highest when extrinsic personal or organizational values are high. The negative outcomes are lowest when extrinsic personal or organizational values are low.

In short, only the content of intrinsic values is considered for an increase in positive job outcomes but the congruence is not. Figure 2.2 illustrates the hypothesis 3.1.

However, our empirical knowledge of the content of values is mostly restricted to the main effects of personal and environmental values and lacks the notion of value congruence. We would benefit from the integration of empirical work on value contents and value congruence as some research has hinted at the idea that the pursuit of extrinsic values may yield detrimental outcomes regardless of the context: Even in samples among business students or employees working in the banking sector the pursuit of extrinsic

values has been associated with ill-being and negative attitudes, even though it can be assumed that these contexts are most likely being typified by extrinsic values (Unanue et al., 2017; Vansteenkiste, Duriez, et al., 2006). However, the meta-analysis of Dittmar et al. (2014) suggests that the relations between extrinsic value pursuit and the outcomes may be somewhat less problematic in samples dominated by males, students, or employees working in business or law, as well as in economically unequal countries, suggesting that the environment in which these values are pursued does matter. One study of Van den Broeck et al. (2019) on youngsters actually measured environmental values, showing that the pursuit of extrinsic values can be beneficial in extrinsic environments for happiness and satisfaction but not for health. This finding is especially interesting in times of crises as people are more prone to extrinsic values during those times (Kasser, 2016). Yet, none of these studies examined working contexts and measured organizational values, precluding a true test of the assumed beneficial effects of value congruence. It therefore, remains unclear which results can be expected of alignment between personal and organizational intrinsic or extrinsic values.

Diverging exploratory research questions by combining value congruence and the content of values.

In Figure 2.2, we illustrate the combination of both theories (Figure 2.2 C: Research question 1). Integrating value congruence theory with SDT and its assumptions about the positive and negative main effects of intrinsic and extrinsic values, respectively, we explore whether particularly at *high* levels of personal and environmental *intrinsic* values, and *low* levels of personal and environmental *extrinsic* values, congruence would be beneficial. Also, we investigate the incongruence of high and low levels of intrinsic and extrinsic values. Combining the two perspectives, the following exploratory research questions arise:

Research question 1. Positive outcomes:

Research question 1.1: Do a) OCB, (b) engagement, and (c) affective organizational commitment change along the intrinsic and extrinsic congruence line? If so, are the positive outcomes highest when intrinsic values are high?

Research question 1.2: Does the incongruence line of positive outcomes differ between intrinsic and extrinsic values?

Research question 2. Negative outcomes:

Research question 2.1: Do (a) Deviant behavior, (b) emotional exhaustion, and (c) continuous organizational commitment change along the intrinsic and extrinsic congruence line? If so, are the negative outcomes highest when extrinsic values are high?

Research question 2.2: Does the incongruence line of negative outcomes differ between intrinsic and extrinsic values?

Method

Transparency and openness

As recommended by APA journals, we followed the Transparency and Openness Promotion (TOP) guidelines of Nosek et al. (2015). With IBM SPSS Statistics Version: 28.0.1.1 (14), we analyzed our data and calculated non-linear regression coefficients (polynomial regressions), which we tested using the bootstrap. In line with Edwards and Parry (1993), surfaces were plotted using MYSTAT 12. MYSTAT 12 allows for plotting congruence lines, incongruence lines, and courses of the first and second principal axis in a clear and concise way. Data, analysis codes (syntax), and research materials of this study are available by emailing the corresponding author.

Our study design, sampling plan, analyses, and all measures were pre-registered with OSF before data collection⁵. The analysis part was precisely defined in advance to provide the best possible transparency. The pre-registration can be retrieved via the following OSF link:

https://osf.io/4g9en/?view_only=61db33c43103463c91d37039d5bb4f68

Procedure

The present longitudinal study consists of three measurements with four weeks between each measurement. A questionnaire had to be filled out at every measurement. The first questionnaire included sociodemographic items and items about personal values. Four weeks later, participants had to fill out a questionnaire containing the parts of the independent variables, namely the organizational values. We measured organizational values twice, once in the first questionnaire and once in the second questionnaire

⁵We pre-registered hypotheses about possible mediators. To reduce the complexity of the study, we exclude the mediation hypotheses from the main manuscript and omit the indices.

four weeks later, separately from personal values due to possible consistency effects (Kristof, 1996). We ran the analyses twice. First, analyses were done by matching personal values measured at time 1 with organizational values measured at time 1 and secondly, analyses were calculated by matching personal values measured at time 1 with organizational values measured at time 1. The analyses do not show main differences and therefore, results of matching the personal and organizational values from time 1 are reported in this study. Eight weeks after the first questionnaire, the dependent variables were measured (OCB, engagement, affective and continuous organizational commitment, deviant behavior, and emotional exhaustion). Participants received the appropriate links via email and they had ten days to complete the corresponding questionnaire. A reminder email was sent after six days.

Participants

We included quality checks in all three questionnaires as recommended by Mason and Suri (2012). Only participants who passed at least 80 percent of the quality checks were included in the analyses.

Participants were recruited with the online panel provider *Respondi* (www.respondi.de). Participants could collect points that are paid out by the provider. The sample size was 740 (421 women; 319 men) participants of full cross-sectional questionnaires. As we collected data with a panel provider, we are not able to provide a response rate. Post hoc sensitivity analysis shows that this sample size of 740 participants is sufficient to detect an effect size of $f = 0.20$, with $\alpha = 0.05$ and power of 0.98.

Many of the participants were between 18 and 29 years old (44.0%) and between 30 and 39 years old (42.0%) and only a few were between 40 and 49 (6.5%) and between 50 and 65 years old (7.5%). Most participants did not have kids (70.5 %) and had a high school diploma or university degree (78.7 %). The sample consisted of 365 participants working in services sectors (49.3 %), 170 participants working in industrial sectors (23.0 %), 103 participants working in research and education sectors (13.9 %), and 94 participants working in information sectors (12.7 %). Most participants (63.0 %) did not have any leadership responsibilities. Participants had an average organizational tenure of 6.74 years ($SD = 6.59$).

Measures

Extrinsic and intrinsic values

Individual values were measured with the 18-item German version of the Aspiration Index⁶ of Kasser and Ryan (1993) adapted from Klusmann et al. (2005) to fit the working context. The introduction stated: “The next statements relate to your personal life values and you may find these important for your work. Please indicate how important the following value is to you.” Participants rated each item on a 7-point scale (1 = not important at all, 7 = very important). For organizational values, we used the adapted version of the Aspiration Index with the following instructions: “To which degree do you see these values being promoted or supported in your work context? My Organization promotes/ supports the employees...”. Example items are “...to have an interesting work”, “...to be financially successful.”. Participants should rate on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Cronbach’s alphas for all measured constructs are shown in Table 2.2.

OCB

OCB was measured with an adapted version of the scale of Smith et al. (1983) analog to Kelloway and Loughlin (2002). The introduction for the nine items was “To what extent is each item characteristic to yourself?” and an example item is “Helping other employees with their work when they have been absent.”. It should be assessed on a 5-point Likert Scale (1= not characteristic at all, 5 = very characteristic).

Deviant behavior

Deviant behavior was measured with ten items from Bennett and Robinson (2000) which represent a modified version of the Robinson and Bennett (1995) list of deviant workplace behaviors for interpersonal and organizational counterproductive behaviors. The introduction was: “To what extent do you have engaged in each of the behaviors in the last year?” and an example item is “Made fun of someone at work”. Participants should rate on a 7-point scale (1 = never, 2 = once a year, 3 = twice a year,

⁶We also measured values with the short version of the Aspiration Index (Duriez et al. , 2007). Results were the same for both versions.

4 = several times a year, 5 = monthly, 6 = weekly, 7 = daily).

Engagement

Engagement was measured with the three items of the Utrecht work engagement scale (UWES, W. Schaufeli & Bakker, 2003). This scale separates work engagement in the three dimensions; vigor, absorption, and dedication, that tend to correlate highly with each other (W. Schaufeli & Bakker, 2003). We chose the most characteristic item of each subscale to measure work engagement, that were the German versions of “Usually at work, I feel bursting with energy”, “Usually, I am immersed at work”, and “Usually, I am enthusiastic about my job”. The introduction was: “To what extent do you feel this way concerning work?”. Participants should rate on a 7-point Likert scale (1 = never, 7 = always).

Emotional exhaustion

Emotional exhaustion was measured with four items of the Maslach Burnout Inventory (MBI, Maslach & Jackson, 1981). The introduction was: “To what extent did you feel in the following way this year?” and an example item is “I feel emotionally drained from my work.”. The scale was measured on a 6-point scale (1 = a few times a year, 6 = every year).

Organizational commitment

Organizational commitment types were measured with the scale of Allen and Meyer (1990). They distinguish between the affective commitment scale (ACS), continuous commitment scale (CCS), and normative commitment scale (NCS). We used the ACS as positive job outcome because of its advantage of exclusively measuring the affective orientation towards the organization and not the behavioral intention of an employee (Allen & Meyer, 1990). CCS is selected to test the second hypothesis as it allows to clearly separate between positive and negative commitment. Although, we additionally measured NCS, we used the CCS to measure a possible negative effect of value congruence as normative commitment is associated with positive job outcomes and is not exclusively negative (Allen & Meyer, 1990).

The ACS and CCS subscales contained eight items each. Example items are “I would be very

happy to spend the rest of my career with this organization.” (ACS) and, “Right now, staying with my organization is a matter of necessity as much as desire.” (CCS). All 16 items should be assessed on a 7-point scale reaching from 1 (strongly disagree) to 7 (strongly agree).

Analyses

Before testing the hypotheses, we examined the appropriateness of the constructs by conducting a confirmatory factor analysis with all constructs and with each construct separately (CFA). Afterwards, to test our hypotheses, we used polynomial regression and response surface methodology (Edwards, 1994, 2002; Edwards & Parry, 1993). The advantage of this general approach is that it holds separate estimates for the relationship between the congruence variables and the outcomes, allowing to focus on the significance of individual effects and of higher-order terms. These additional tests are particularly important because they go beyond the explained variance and not only focus on an overall magnitude of the relationship. They rather allow differences and nuances in individual effects and therefore, describe patterns of constraints implied by the model more adequately and interpretably (Edwards, 1994).

Prior to the analysis, we transformed personal values into a 5-point scale and scale-centered both personal and organizational values such that they ranged from -2 to +2. We then estimated the following equation in which X and Y were individual and organizational values respectively (either intrinsic or extrinsic, depending on the hypothesis being tested), and Z was the outcome of interest. Coefficient estimates from this equation were used to plot a three-dimensional surface to facilitate the interpretation of our results.

$$Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2 + e$$

To test our hypotheses and research questions, we used response surface methodology to analyze the shape of each surface along the $Y = X$ and $Y = -X$ lines and the location of the first principal axis. For the $Y = X$ line, we tested $a_1 = b_1 + b_2$, representing the slope at $X = 0$ (and $Y = 0$) and $a_2 = b_3 + b_4 + b_5$,

signifying the curvature along the line. For the $Y = -X$ line, tested $a_3 = b_1 - b_2$, which refers to the slope at $X = 0$ (and $Y = 0$) and $a_4 = b_3 - b_4 + b_5$, which is the curvature along the line. We also computed p_{10} and p_{11} , which are the intercept and slope of the first principal axis running across the X, Y plane, expressed in equation form as $Y = p_{10} + p_{11}X$.

We used the aforementioned quantities to test our hypotheses as shown in Table 2.1. For a better overview, Table 2.1 is sorted by positive and negative job outcomes. The precondition to support the value congruence hypothesis 1 with positive job outcomes is a downward curve along the incongruence line so, a_4 should be negative (Edwards & Cable, 2009). Describing that the ridge runs along the congruence line, the first principle axis should have a slope of 1 and an intercept of 0 and illustrating that there is no change along the congruence line, a_1 and a_2 should equal 0. Note that only a_4 should be negative to support the hypothesis. With the aid of our research questions, we examine whether this shape can be hypothesized in advanced considering the effects of different content of values. For instance, Hypothesis 3 from the perspective of the content of values predicts a_1 to be positive. Combining the two expectations, the research questions explore whether a_1 is greater than zero, a_3 equals zero and a_4 is lower than zero, and p_{10} and p_{11} do not differ from zero and one. None of the hypotheses restrict the value of a_2 , provided the shape of the surface along the $Y = X$ line is positive throughout its entire range.

To test these quantities a_1 , a_2 , a_3 , and a_4 were tested using procedures that apply to weighted linear combinations of regression coefficients. For p_{10} and p_{11} , we used bias-corrected percentile-based confidence intervals obtained using the bootstrap (Efron & Tibshirani, 1993), given that these quantities involve nonlinear combinations of regression coefficients that cannot be assumed to follow a normal distribution (Edwards, 2002; Edwards & Parry, 1993). We drew 10,000 bootstrap samples and constructed bias-corrected confidence intervals as described by Stine (1989).

Table 2.1

Expected coefficients from the perspective of congruence, the SDT, and their combination

Outcomes	Hypotheses	a_1	a_2	a_3	a_4	p_{10}	p_{11}
Positive job	Hypothesis 1 (congruence)			0	-*	0	1
outcomes	Hypothesis 3.1 (SDT)	+					
	Hypothesis 3.2 (SDT)	-					
	Research question 1.1	+	+/0/-**	0	-	0	1
	Research question 1.2	-	+/0/-**	0	-	0	1
Negative job	Hypothesis 2 (congruence)			0	+	0	1
outcomes	Hypothesis 4.1 (SDT)	-					
	Hypothesis 4.2 (SDT)	+					
	Research question 2.1	-	+/0/-**	0	+	0	1
	Research question 2.2	+	+/0/-**	0	+	0	1

Note. Combining the expected coefficients of value congruence hypotheses with the coefficients of SDT hypotheses, the research questions derived. *Only a_4 is a precondition to support the value congruence effect. The other coefficients describe the surface for a traditional value congruence surface as shown in Figure 2.2. ** a_2 can differ from zero provided the shape of the surface along the $Y = X$ line remains monotonic.

Results

Descriptive statistics

Mean, standard deviations, and correlation coefficients are presented in Table 2.2. Correlations among intrinsic values and OCB, engagement, and affective commitment were positive. While personal extrinsic values are positively correlated with deviant behavior and emotional exhaustion, intrinsic values are either negatively correlated or not correlated at all. Continuous commitment shows positive correlations with both, intrinsic and extrinsic values.

Table 2.2

Mean, standard deviations, and correlations of all constructs

		M	SD	1	2	3	4	5	6	7	8	9	10
1	Intrinsic personal values	5.24	0.91	(.83)									
2	Intrinsic organizational values	3.31	0.84	.40**	(.91)								
3	Extrinsic personal values	3.65	1.19	-.33**	-.21**	(.88)							
4	Extrinsic organizational values	2.51	0.88	-.15**	-.59**	.51**	(.92)						
5	OCB	3.71	0.65	.40**	.38**	.08	.10*	(.82)					
6	Deviant behavior	2.10	1.02	-.13**	-.08*	.27**	.21**	-.20**	(.93)				
7	Affective commitment	4.01	1.21	.25**	.52**	.16**	.38**	.39**	-.08	(.80)			
8	Continuous commitment	4.18	1.09	.10*	.18**	.07	.12**	.14**	.09**	.29**	(.73)		
9	Engagement	4.92	1.24	.39**	.42**	.16**	.25**	.48**	-.19**	.49**	.09*	(.87)	
10	Emotional exhaustion	2.84	1.49	-.06	-.28**	.14**	-.04	-.19**	.38**	-.34**	.04	-.40**	(.94)

Note. *N* ranged from 553 to 678. The reliability of each measure is displayed on the diagonal of the matrix (in parantheses). * $p < .05$ [two-tailed]. ** $p < .01$ [two-tailed].

First, we conducted the CFAs to test measurement correctness of our variables. We used the standard method for CFA, namely the fixed factor method. Each CFA contained the according measured items as manifest factors. The overall CFA with all constructs in one model shows moderate model fit (CFI = .87, TLI = .86, SRMR = .05). The model fit of the eight CFAs (intrinsic values, extrinsic values, OCB, engagement, affective commitment, deviant behavior, emotional exhaustion, and continuous commitment) that were tested separately was acceptable. The poorest model fit was exhibited for OCB which is still acceptable (CFI = .91, TLI = .90, SRMR = .06).

Tests of positive job outcomes (Hypothesis 1, Hypothesis 3, research question 1)

All surfaces of positive outcomes are illustrated in Figure 2.3. In Appendix B.1, regression coefficients of all polynomial regressions are shown. Neither the interactions nor the squared coefficients of individual and organizational values are significant. However, as our statistical approach reveals individual effects, organizational values are disclosed to have direct effects on engagement and affective commitment, whereas personal values seem to have less influence on positive job outcomes.

Recall for hypothesis 1 that, a negative value for a_4 is a prerequisite for supporting the value congruence effect for positive outcomes (Edwards & Cable, 2009), the result that a_4 do not differ from zero for intrinsic and extrinsic values (see Appendix B.2) is sufficient to reject the value congruence hypothesis 1.

Hypothesis 3.1 predicts a_1 should be greater than zero (intrinsic values) and hypothesis 3.2 predicts a_1 should be smaller than zero (extrinsic values). Supporting hypothesis 3.1 but rejecting hypothesis 3.2, a_1 is positive for both intrinsic and extrinsic values meaning that positive job outcomes increase with higher levels of intrinsic and extrinsic values along the congruence line.

Answering research question 1.1 whether positive outcomes change along the congruence line and if so, whether positive outcomes are highest when intrinsic values are high, the result of p_{11} being greater shows that intrinsic values lead to even greater increase in positive job outcomes (see Appendix B.2). Recall that the value congruence hypothesis 1 is not dependent on but assumes that a_3 should equal zero,

and a_4 is predicted to be smaller than zero for positive outcomes (i.e., OCB, engagement, affective commitment). Answering research question 1.2, a_3 is positive for OCB and negative for affective commitment explaining that in case of an incongruence, individual and organizational values have different impacts on positive job outcomes. Individual intrinsic values are important for high OCB whereas organizational intrinsic values are more important for high affective commitment (this finding is underlined by the significant effect of the coefficients $b_1 = .45$, 95% CI [0.18, 0.69] for OCB and $b_2 = .73$, 95% CI [0.50, 0.96] for affective commitment, see Appendix B.1). In sum, positive outcomes are dependent on the content of values and it even makes a difference whether organizational or personal values are focused.

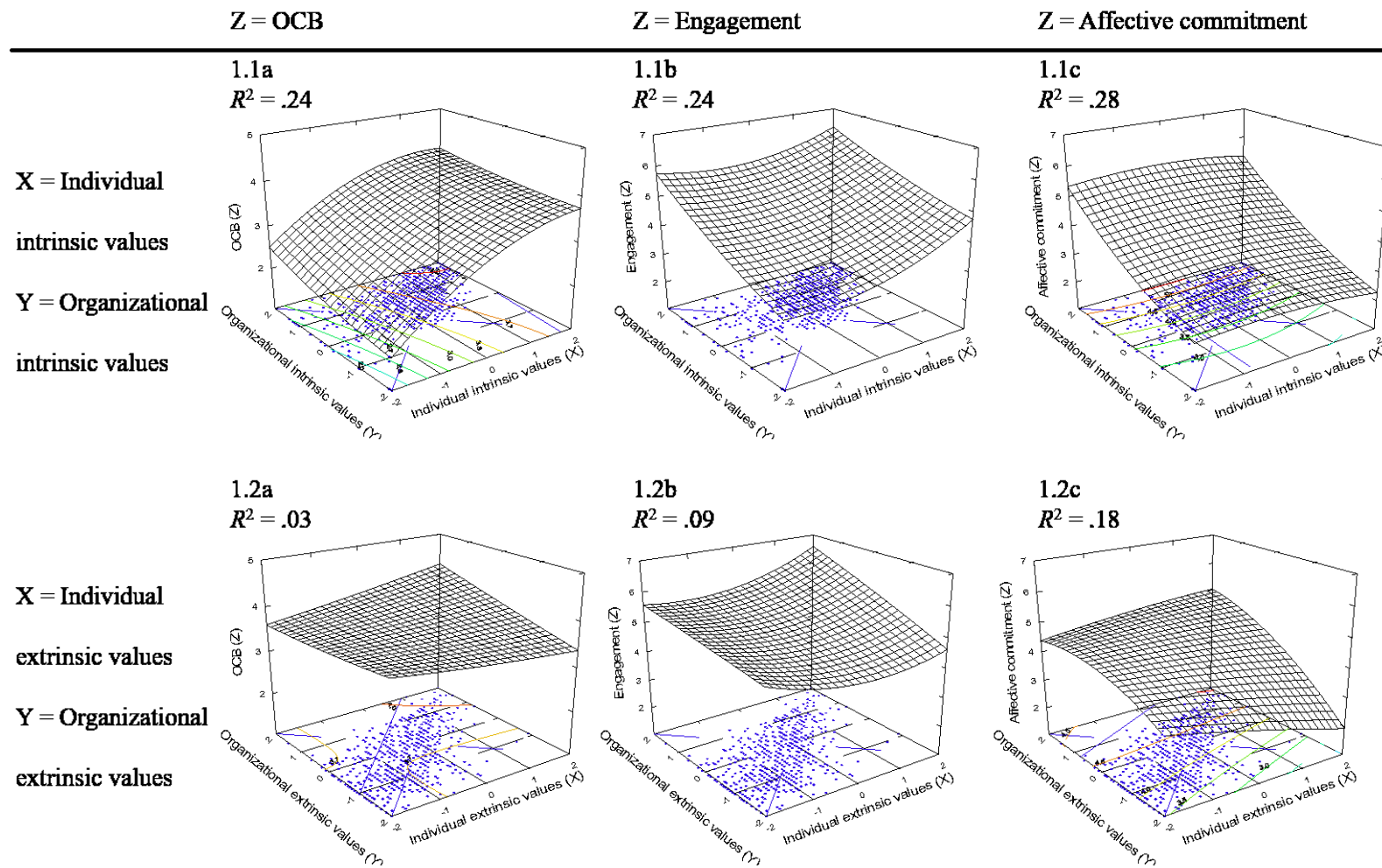


Figure 2.3. Illustration of the results of positive outcomes. On the X,Y plane, the line running diagonally from the near corner to the far corner represents the congruence line, thus $Y = X$ and the dotted line running diagonally left to right represents the incongruence line, thus $Y = -X$. When the first principal axis ($Y = X$) cross the X,Y plane within the range of X and Y measure, it is represented by a solid line. The scatterplot on the X,Y plane represents the raw X and Y data. Numbers before the pictures indicate the hypotheses. R^2 is the squared multiple correlation coefficient. Underlying equation: $Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2 + e$

Tests of negative job outcomes (Hypothesis 2, Hypothesis 4, research question 2)

Turning to the value congruence hypothesis 2, a_4 should be greater than zero for negative outcomes (i.e., deviant behavior, emotional exhaustion, continuous commitment). Rather, a_4 does not differ from zero, rejecting hypothesis 2 that along the congruence line of intrinsic and extrinsic values negative job outcomes are lowest.

For hypothesis 2.4, it is stated that a_1 should be smaller than zero while for hypothesis 4.2, it is stated that a_1 should be greater than zero. As shown in Appendix B.2, these predictions are supported for extrinsic values and both deviant behavior and continuous commitment, showing that both increases with the level of extrinsic values. Contrary to the predictions, continuous commitment increases with the level of intrinsic value congruence. Thus, we have to reject hypothesis 4.1 but can partly confirm hypothesis 4.2 that deviant behavior and continuous commitment increase with the level of extrinsic values.

Research question 2 asks whether negative outcomes change along the congruence line and whether negative outcomes are highest when extrinsic values are high. The regression coefficients demonstrate that higher personal extrinsic values are associated with deviant behavior and emotional exhaustion, whereas organizational extrinsic values are associated with less emotional exhaustion (see Appendix B.1). As a_3 and a_4 are not significant and the explained variances of negative outcome variables are very low (R^2 ranging from .04 to .11), we cannot make any assumptions about the incongruence line, but we can conclude that intrinsic as well as extrinsic value aspirations do not explain negative job outcomes as well as they explain positive outcomes. Surfaces of negative job outcomes are illustrated in

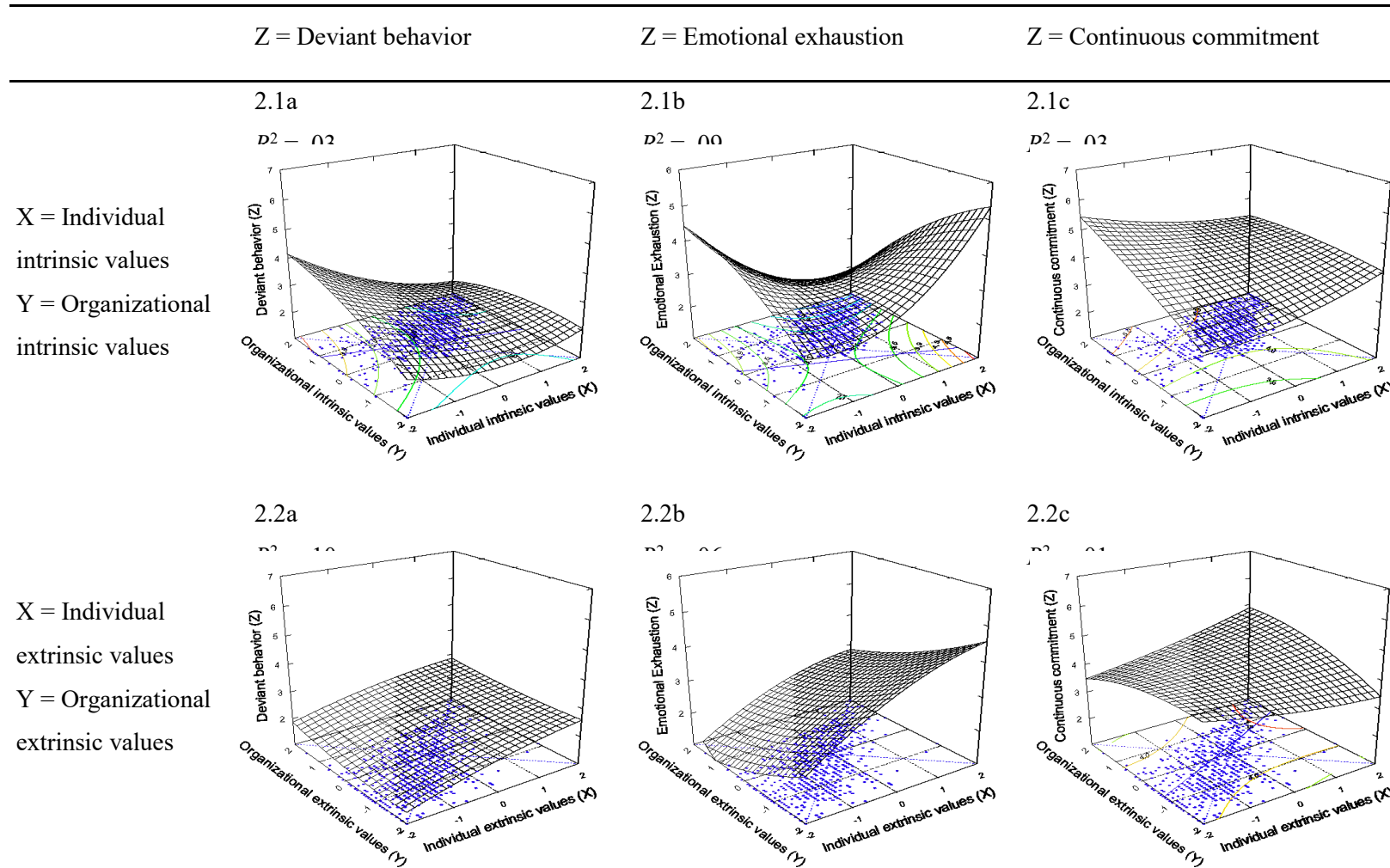


Figure 2.4. Illustration of the results of negative outcomes. On the X,Y plane, the line running diagonally from the near corner to the far corner represents the congruence line, thus $Y = X$ and the dotted line running diagonally left to right represents the incongruence line, thus $Y = -X$. When the first principal axis ($Y = X$) cross the X,Y plane within the range of X and Y measure, it is represented by a solid line. The scatterplot on the X,Y plane represents the raw X and Y data. Numbers before the pictures indicate the hypotheses. R^2 is the squared multiple correlation coefficient. Underlying equation: $Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2 + e$.

Discussion

The current pre-registered study combines the value congruence literature with the literature on the content of values, and tests whether the content of personal and organizational values have main effects on positive and negative job outcomes in case of value congruence. With a longitudinal design, we investigated employees striving for extrinsic and/or intrinsic values and whose values are simultaneously aligned with those of the organization. As people are more prone to extrinsic values in times of crises, we aimed to answer the question whether different levels of intrinsic or extrinsic value congruences lead to changes in positive and negative job outcomes. Our results show that both theoretical approaches complement each other as neither the value congruence theories nor the theories about the content of values can exclusively explain positive and negative effects along the value (in)congruence line.

We raised the question whether it is irrelevant what employees strive for as long as they fit organizations' values. Our results show that it is not irrelevant what employees strive for. Although OCB, engagement, and affective commitment increase with higher levels of value congruence, the increase is lower in case of extrinsic value congruence compared to intrinsic value congruence. Moreover, high levels of extrinsic value congruence are even associated with an increase in deviant behavior. Kasser and Ryan (1996) provide three explanations as to why extrinsic values are less nutritive. First, striving for extrinsic values are related to a certain personality structure characterized by higher values in neuroticism and emotional instability scales (Kasser et al., 1995). Extrinsic values like financial success, social recognition, and rewards are needed for compensating this insecurity. Second, extrinsic values are mainly associated with controlled, ego-involving behaviors. Behaviors that are necessary to achieve extrinsic values are more likely to be judged as distracting and negative, whereas behaviors that contribute to achieving intrinsic values (e.g. helping other colleagues) are associated as meaningful and positive. Referring to our study, deviant behavior at work could be necessary for achieving extrinsic organizational values. Once employees strive to pursue these extrinsic values they exhibit obstructive behavior at work. The third explanation of Kasser and Ryan (1996) is that extrinsic values are more difficult to achieve as

they are dependent on other people. So, Kasser and Ryan (1996) assume that high deviant behavior result out of the non-success of achieving one's values. Our study can refute this explanation because even when employees achieve their values (extrinsic value congruence), individuals show deviant behavior. Consequently, it is not necessarily the congruence that is important for less negative work behavior and low commitment, but a combination with the content of aspirations.

Our results further demonstrate that behavior, well-being, and commitment at work need to be differentiated when we consider positive or negative relationships with values. For instance, high extrinsic value congruence is associated with an increase in deviant behavior but also with high engagement. Organizations that enable their employees to get rich and receive a lot of social recognition support employees' engagement and drive, but at the same time, these organizational values may encourage negative work behaviors (e.g., acting rudely toward colleagues, taking property from the organization without permission). Thus, different levels of value congruence differently influence work behavior, commitment, and engagement.

Theoretical implications

Our findings provide new insights for future research on value congruence and the contents of values. Combining two approaches focusing either on the interaction between the individual and the contextual values or on the content of values, the results show that neither the value congruence theories nor the theories on the content of values can exclusively explain the effects. This is important because our chosen theory is decisive for the interpretation of our results which will differ between these approaches: While drawing on value congruence theories primarily let us attribute positive effects to the matching degree of values and suggests implications for incongruence and congruence scenarios (Greguras & Diefendorff, 2009), drawing on theories on the content of values let us center different value strivings and attribute positive and negative outcomes to different content of values (Deci & Ryan, 2000). Hypotheses on values in future studies should consider both effects. Our study does not question the interpretation of previous studies focusing on the respective theory but rather opens up a new perspective in psychological

value research and allows for complementation to supposedly contradictory approaches. We point out to adapt taxonomies and explain effects on positive and negative outcomes with regard to the according other perspective.

Furthermore, our study theoretically contributes to the fundament of SDT. We used the SDT to exemplify different content of values, since this theory goes beyond developing taxonomies and addresses clear implications of the distinction between intrinsic and extrinsic values leading to either positive or negative job outcomes. Our results emphasize intrinsic values, which are relevant for social and efficient behavior at work, and which are not accompanied by malicious obstructive behavior in case of a congruence. While intrinsic and extrinsic values represent core concepts of the SDT, the consequences of intrinsic and extrinsic value congruences have remained unspecified. By combining the value congruence literature with the SDT research, this study acknowledges the importance of promoting intrinsic values in companies and demonstrates the counterproductivity of extrinsic values even when there is a value congruence.

Practical implications

Organizational values are revealed to have the greatest main effects on positive and negative job outcomes compared to individual value striving. Thus, our findings advise that the content of values companies' support can be decisive for job outcomes. Rather than promoting power, financial success, or social recognition that encourages emotional exhaustion and may also lead to deviant workplace behavior, organizations should consider intrinsic values. This would focus on supporting employees to learn new things, to have an interesting work, encouraging a harmonious team climate and friendships between colleagues, as well as taking social responsibility in contributing to the improvement of society (e.g. Corporate Social Responsibilities) develops employees that do not act rude, false, or counterproductive at work. Furthermore, employees feel less exhausted when they subjectively perceive the values of their company to be intrinsically oriented, independently whether they personally strive for intrinsic values. Accordingly, our study advises for HR to enable intrinsic values, independently of what employees strive

for (e.g. by taking social responsibility). As people are more prone to extrinsic values in times of crisis, it is even more important to promote intrinsic values within the company. Also, as the attraction of a company is dependent on shared values and people are more likely to apply when they feel attracted to a company, companies supporting intrinsic values additionally attract intrinsic oriented people and encourage to apply (Sivertzen et al., 2013). When employees additionally pursue intrinsic values an organization not only prevents deviant work behavior but also develop engaged and committed employees that show organizationally functional, extra-role behavior. These employees are more likely to go beyond their job description and actively take the initiative, help new colleagues and assist supervisors. This behavior is essential for organizations to be effective and successful (Staw & Oldham, 1978) and it helps organizations to cope with changes and times of crises (Organ et al., 2006).

However, most important for positive outcomes is that employees perceive intrinsic values being supported by the organization. Our study is based on employees' assessments of the value orientations of their organization. Thus, a clear statement from the organization on what values are supported and commonly lived is relevant for positive job outcomes. In addition, a clearly communicated statement has advantages for the application process, because people who are attracted to these values are more likely to apply (Sivertzen et al., 2013).

Limitations and future research

As with every study, there are some limitations to consider. We used self-reported data that is prone to common method bias and consistency effects (Podsakoff et al., 2003). However, we have taken various precautions to reduce this bias. On the one hand, participants should assess the predictors and dependent variables at different measurement points. In this context, subjective value fit was measured by letting the participants rate their personal value orientation in the first questionnaire. Organizational values were measured twice, once together with the personal values in the first questionnaire, and additionally four weeks later to decrease the possibility of high correlations among the subjective personal and organizational values. In doing so, we also reduce the likelihood of hypothesis guessing. On the other

hand, we implemented quality checks in the survey and included only those participants who got at least 80 percent of the quality checks correct.

Second, one might argue that we worked with a panel provider whose pool of participants may represent a biased sample such as different demographic and employment characteristics relative to other traditional sampling techniques (Behrend et al., 2011). While we cannot ensure that participants of the panel provider may have different characteristics, Walter et al. (2019) demonstrated with 32,121 participants that samples from panel data shows similar construct relationships in applied psychology. Moreover, they recommend panel data for exploratory research questions. Nevertheless, a replication of the study with different data acquisition would be useful to compare and validate the results.

Third, the individual and organizational values measures are not commensurate as individual values are calibrated in terms of importance (“Please indicate how important the following value is to you.”), whereas organizational values are calibrated in terms of agreement (“To which degree do you see these values being promoted or supported in your work context?”). It was necessary to adjust the introductory sentence as our content focus was on whether important personal values are supported and thus, fulfilled by the organization. But as these metrics are not the same, we cannot determine the extent to which the importance individuals ascribe to their own values differs from the importance they ascribe to organizational values. Future studies should ask for both the importance they ascribe to organizational values and whether these values are being supported by their organizations or not.

In psychological research, there is substantial amount of empirical evidence on different types of values (e.g., Meglino & Ravlin, 1998; Pryor, 1981; Schwartz, 1992; Super, 1968). We should further explore these different contents of values and their effects in case of congruence with the environment. Our study set the first milestone for future research in combining these perspectives.

Future studies may also want to investigate the differentiation between intrinsic and extrinsic value orientation in greater detail. As already mentioned, intrinsic and extrinsic value strivings are not mutually exclusive. Our data show that intrinsic and extrinsic values significantly, positively correlate

with each other on both the individual and the organizational level. This finding is consistent with research on individual and organization values (Vanderstukken et al., 2016; Vansteenkiste et al., 2007) showing that people can strive for high intrinsic values and high extrinsic values. This underlines the necessity to not separate people based on one scale of value striving and conclude to the opposite effects for the other. Future studies should measure and examine both intrinsic and extrinsic value orientations independently.

Conclusion

This longitudinal study investigates values and combines the empirical work on value congruence with research on the content of values. It reveals that the content of values has main effects on positive and negative job outcomes, even in case of a congruence with the environment. By distinguishing between the congruence of intrinsic and extrinsic values, we reveal that an intrinsic value congruence between employee and organization has higher positive effects on positive work behavior, well-being, and commitment than an extrinsic value congruence. Higher levels of extrinsic value congruence are even associated with deviant behavior. Given that a congruence between the company's values and the individual's values is decisive for the attraction of a company, this study underlines the importance for HR to promote intrinsic values such as social responsibility and personality development instead of power and wealth to have committed employees that show extra-role behavior and it helps organizations succeeding in times of crises. In addition to this, it is an added value for our directions of future research to examine the value concepts considering the content as well as the congruence of values.

Study 3

Summary

Due to the climate change crisis, organizations are increasingly setting goals motivating employees to engage in pro-environmental behavior (PEB) at work. HR as interface between organizational management and employees need to frame these goals to motivate as many employees as possible to PEB. As employees' opinions about climate change are divers and employees' values change in times of crises, becoming more prone to extrinsic values, the challenge of HR is to provide motives that motivates the majority of employees, independently of their personal values. While theoretical research considers an intrinsic framing (e.g., PEB contributes to the preservation of nature) to outperform an extrinsic framing (e.g., PEB is associated with admiration in society), HR mostly establish extrinsic triggers that, interestingly, can sometimes be successful. As there is a need for a more nuanced prediction of organizational goal framing, we tested whether an extrinsic framing that was self-concordant (that is, fitted the employee's personal extrinsic values) enhanced employees' PEB and whether organizational pro-environmental support aided the extrinsic framing. Drawing on two pre-studies and a pre-registered longitudinal experimental design being properly powered to contribute to the PEB and SDT literature, we randomly assigned 1712 participants to four groups that received either extrinsic reasons, intrinsic reasons, information only or nothing. Results from the latent change score model applied show that self-concordant reasons do not have a direct effect on increase in PEB but providing extrinsic reasons lead to a higher increase than providing intrinsic reasons or information only. Moreover, organizational support had a direct effect on PEB's increase. Social norms and implications for HR and theory are discussed.

Introduction

The media are overflowing with articles about the dangerous consequences of global climate change (e.g., Kunelius & Roosvall, 2021; Peterson et al., 2013) and an established body of research has examined how we can best persuade people of the existence of anthropogenic climate change (e.g., Carmichael et al., 2017; McCright et al., 2016) depending upon factors such as their politics, cognitive

ability, or sociodemographics (e.g., Chen & Unsworth, 2019; Hornsey et al., 2016; Unsworth & Fielding, 2014). There has been a natural progression in the research such that persuading people to change their behavior has generally followed the need to change their attitude towards climate change – being environmentally-friendly for the environment’s sake (e.g., Lindenberg & Steg, 2007, 2014; Vansteenkiste, Lens, & Deci, 2006). Yet, organizations provide a context that usually draws on external regulation (e.g., incentives, to-do lists, performance management) and indeed, external triggers are shown to be successful for motivation (Jeno et al., 2020; Zhong et al., 2010). Thus, in order to persuade employees to engage in more pro-environmental behavior (PEB), there is a need to examine alternative forms of messaging other than an intrinsic form (that is, for the environment’s sake) that take into account an employee’s regulatory motivation and their organizational context.

This is particularly important as more and more organizations react to the climate issue and set up environmental goals (Osbaldiston & Schott, 2012). Environmental goals enhance the willingness of employees to engage in pro-environmental actions like turning off the lights, switching to no fossil-based energy sources, and taking public transport (e.g., Lindenberg & Steg, 2007, 2014; Spence & Pidgeon, 2010). These relate to the organization’s norms, culture, and policies (Norton et al., 2012; Robertson & Barling, 2013) that both increase the attraction of the company for applicants and customers (Behrend et al., 2009), enhance employees’ well-being and life satisfaction (Kaida & Kaida, 2016), and especially, contributes to the decrease of the carbon dioxide emissions on a larger scale (e.g., Ahmad et al., 2021). Thus, organizational environmental goals are of great importance for both practitioner and our planet.

By drawing on a pre-registered longitudinal study design grounded in two pre-studies, this study makes several contributions. First, it contributes to a better understanding of how HR can motivate employees to more PEB by framing different messages. While the common understanding is that an intrinsic framing usually performs best (e.g., Vansteenkiste, Lens, & Deci, 2006) and extrinsic framings are less successful, more recent research is showing that the widespread extrinsic triggers in organizations can be successful (Ling & Xu, 2021; Zibarras & Coan, 2015). We draw on the self-concordant approach

to provide a more nuanced perspective of why both intrinsic and extrinsic framings can be successful and examine moderators that enable an extrinsic framing to fit (or not) both employees' values and their organizational environment. Thereby, we will help to understand previous findings, identify a positive way forward for HR, and answer the call for more research on a theory-based understanding of how information should be provided to engage people in PEB (Pelletier & Sharp, 2008). Second, existing research on antecedents of PEB mainly focus on either the person such as attitudes, values (e.g., Davis & Challenger, 2013), motivation (e.g., Graves et al., 2013), emotions (e.g., Rothman et al., 2003; Rothman & Salovey, 1997), information processing (e.g., Rothman et al., 2006), or on the context such as leadership style, manager behaviors, organizational cultures (e.g., Egri & Herman, 2000; Graves et al., 2013; Papagiannakis & Lioukas, 2012) but only a few studies examine the interaction between individual values and organizational environments (Lu et al., 2019) and to our knowledge, few have considered the interaction between individual values, organizational environments, and message framing. Since human behavior is not separated from the context in which it takes place (Ajzen & Madden, 1986), examining the effects of both personal values and organizational environments allows us to explain behavior in a more encompassing way and, as companies and specifically HR, are able to adjust their support, investigating perceived organizational pro-environmental support, hereinafter referred to organizational support, allows us to determine the importance of pro-environmental measures.

We also make empirical and methodological contributions. Pre-registering the study reduces post-hoc hypothesis guessing, the longitudinal design provides insights into changes at PEB at work over two working weeks, and the pre-studies validated different reasons for acting pro-environmentally. In addition, we analyzed data with a LCS model that allows for capturing true changes over time and overcomes limitations of difference scores (Matusik et al., 2020). Taken together, this longitudinal experimental study contributes to the different findings in goal framing research and suggests guidelines for managers wishing to frame pro-environmental goals. The conceptual model can be seen in Figure 3.1.

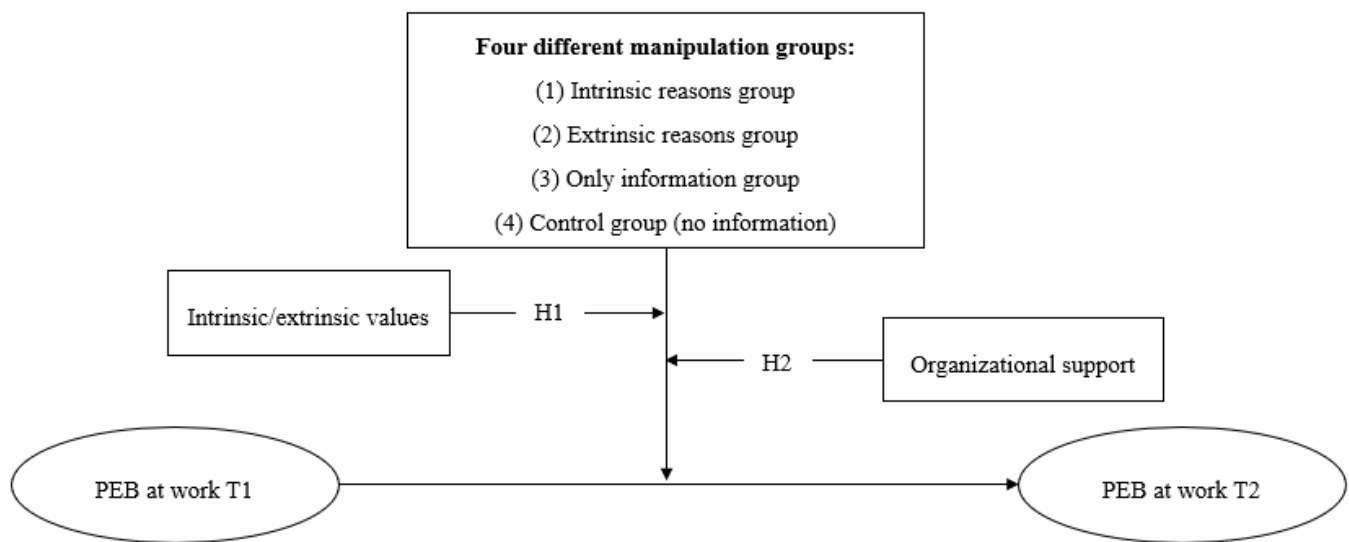


Figure 3.1. Conceptual model of study 3.

Theory development and hypotheses

Distinguishing goals and values in intrinsic and extrinsic orientations

Both the literature on goals and the literature on values distinguishes between different types of values or goals (Deci & Ryan, 2000; Kasser & Ryan, 1993; Lindenberg & Steg, 2007) which are not mutually exclusive but rather a continuum. In the current literature, the terms *values* and *goals* are used equally. However, we use the term “values” to describe individuals’ personal aspirations and long-term strivings. The term “goals” is used to describe a short-term objective or ambition. In the following, “goals” mainly refer to organizational goals and messages.

Similar characteristics in the distinction between values and goals can be identified that leads us to use the terms *intrinsic* and *extrinsic* values and goals. For example, the SDT explicitly differentiates between intrinsic values (e.g., striving for maintaining long and meaningful relationships or positively contributing to the community) and extrinsic values (e.g., striving for financial success, fame, and popularity or attaining power) (Kasser & Ryan, 1993, 1996). The goal framing theory, on the other hand, distinguishes goals in hedonic goals (e.g., targeting the improved feeling, decreased effort, or pleasure in PEB), gain goals (e.g., providing external resources such as money to motivate PEB), and normative goals

(e.g., targeting the importance and appropriateness of PEB such as contributing to the nature) (Lindenberg & Steg, 2007). By comparing these distinctions in values and goals, we identify that the definitions of intrinsic values and normative goals base on being sensitive to what is the right thing to do according to self and others upon environmental norms (Kasser & Ryan, 1993; Lindenberg & Steg, 2007) and the definitions of extrinsic values and gain goals base on being sensitive to what personal advantages they have according to individual status or individual resources such as financial resources (Kasser & Ryan, 1993; Lindenberg & Steg, 2007). Supporting this differentiation, research on PEB reveals that normative goals as well as intrinsic values are associated with higher PEB than gain goals or extrinsic values (Unanue et al., 2016). For a better understanding we therefore, use the terms *intrinsic* and *extrinsic* to separate these contents in values and goals.

Self-concordant goals instead of the widespread intrinsic framings

Most of the early literature examining pro-environmental persuasive messaging exemplifies moral behavior such as contributing to a clean nature and found that this was more effective than providing extrinsic reasons, independently of what people strive for (Ku & Zaroff, 2014b; Lindenberg & Steg, 2007; Vansteenkiste, Lens, & Deci, 2006; Vansteenkiste et al., 2008). One explanation for these findings can be that intrinsic goal framing may activate intrinsic motivation for behaviors that usually are not enjoyable. Specifically, research on obligation-based intrinsic motivation explains that people feel morally obliged to behave for a good cause and intrinsic framings remind individuals to do good when they behave pro-environmentally which in turn, will evoke positive feelings and obligation-based intrinsic motivation (Van Der Werff et al., 2013). Another explanation draws on the assumption that people may have an inherent tendency to strive for intrinsic values (Sheldon & Kasser, 1995) and intrinsic goals therefore, automatically addressing the individual's values. This is based on the goal hierarchy approach (for a better understanding, we use the term *value* hierarchy approach) (Cropanzano et al., 1993) stating that personal values follow a hierarchical structure and that some values are personally more important than others. The idea is that human behavior depends on connections and importance with a person's higher-order value

(Sheldon & Emmons, 1995) and connecting behaviors such as PEB to personal higher-order values should engage employees to enhance the targeted behavior. Given that people have an inherent tendency to strive for intrinsic values (Sheldon & Kasser, 1995), intrinsic framings speak to individual's higher-order values and therefore, might be more successful. However, although previous research shows that people assess the personal importance of intrinsic values higher than extrinsic values (Vanderstucken et al., 2016; Vansteenkiste, Lens, & Deci, 2006), high scores in intrinsic values can also result from social desirability rather than from inherent intrinsic value striving in society (Twenge et al., 2010).

A third explanation of why most research has found successful intrinsic framings and rather unsuccessful extrinsic framings may result from different contexts. As the fulfillment of extrinsic orientations (often made salient in an organizational environment) is dependent on the evaluation of others and the environmental context (Dittmar et al., 2014; Kasser, 2016; Unanue et al., 2014; Unanue et al., 2017), there may have been too little appreciation from the environment for successful extrinsic framings. Thus, extrinsic messages may have to fit the individual employee and their organizational context to succeed.

In line with the value-hierarchy approach, research on goal framing and persuasion that does not explicitly separate intrinsic and extrinsic contents suggests that tailoring messages towards personal values motivate behaviors like health behavior (Updegrav et al., 2006), physical activity (op den Akker et al., 2015), and PEB (Unsworth & McNeill, 2017). Unsworth and McNeill (2017) demonstrate that people engage in PEB as soon as the pro-environmental instruction activates self-concordant higher-order values. Thus, decreasing/increasing self-concordance concerning personal values might be an explanation of (un)successful intrinsic and extrinsic message framings. Therefore, we hypothesize that increasing self-concordance enhances PEB.

Hypothesis 1: Providing reasons that fit personal values, regardless of whether these are intrinsic or extrinsic, leads to higher increases in PEB than providing no reasons (control group).

The success of extrinsic goal framing is dependent on organizational support

Pro-environmental support and green work environments motivate employees to engage in PEB

(e.g., Paillé & Boiral, 2013; Paillé & Mejía-Morelos, 2014; Ruepert et al., 2017). The importance of the context is underlined by research on norm-guided behavior in public or private settings, showing that people are more likely to choose pro-environmental products rather than luxury products when these choices are made in public settings (Griskevicius et al., 2010) and that darkness decreases (Zhong et al., 2010) and publicly-observed behavior increases norm-guided behavior (Bateson et al., 2006).

This dependence on contexts vary between individuals that strive for different values. While people striving for intrinsic values engage in more PEB (Unanue et al., 2016), independently of whether the behavior is public or private, extrinsic value striving is more strongly associated with public PEB than with private PEB (Lu et al., 2019). One explanation is that the pursuit of intrinsic values is autonomously driven and engages people in behaviors that directly satisfy human's three psychological needs (need for autonomy, need for relatedness, need for competence), being related to well-being, motivation, and performance (e.g., Deci & Ryan, 2000; Greguras & Diefendorff, 2009; Van den Broeck et al., 2016); whereas the pursuit of extrinsic values is exclusively dependent on reactions of and the comparison with other people (e.g., Deci & Ryan, 2000; Duriez et al., 2007). Thus, the context in which extrinsically oriented people are supposed to act pro-environmentally plays a key role for PEB.

Research emphasizes that green organizational supportive norms motivate extrinsic-oriented employees to PEB (Lu et al., 2019; Ruepert et al., 2017). Specifically, when there is a fit between the employees' extrinsic values and the organizations' extrinsic orientation, PEB policies may even have a positive effect for PEB in both private and public settings. Matching organizational norms and reward accordingly may be a precondition for the success of PEB for extrinsic-oriented employees. Hence, extrinsic goal framing might be successful when there is a fit between both employees' extrinsic values and organizations' extrinsic goal framing and between extrinsic goal framing and organizational support.

Hypothesis 2: Organizational support strengthens the relationship between extrinsic values and the increase in PEB when receiving extrinsic reasons compared to intrinsic reasons (group 1), extrinsic reasons (group 2), only information (group 3), or nothing (control group).

In summary, we extended our understanding of pro-environmental persuasive messaging in

organizations by going beyond traditional intrinsic framings and developing more nuanced hypotheses based on self-concordance and organizational support. We now describe the pilot studies used to ground the research and the pre-registered study.

Method

Pilot Studies: Finding and validating intrinsic and extrinsic reasons

Before conducting our main study, two pre-studies were accomplished to collect and validate intrinsic and extrinsic reasons and to make sure that our chosen reasons are understandable and either related to intrinsic or extrinsic values. In the first pre-study, we built four focus groups of three participants each. They brainstormed intrinsic and extrinsic reasons to act pro-environmentally. We collected all reasons and matched similar ones. This resulted in a final list of 34 reasons.

These reasons were used in the second pre-study with 250 participants, 135 women and 86 men, that had to indicate how important these reasons were to them. Participants were, on average, 36.61 years old ($SD = 13.09$), worked 36.06 hours ($SD = 12.31$) per week, and had an average organizational tenure of 9.48 years ($SD = 10.03$). The five intrinsic and five extrinsic reasons with the highest correlation to the according value orientation were used for the final study.

Main study: Manipulating different reasons to act pro-environmentally

Transparency and Open Science

The study was pre-registered with OSF before data collection⁷ to provide the best possible transparency. The pre-registration can be seen here⁷. Data, syntax, and study materials can be received by emailing the corresponding author.

Sample

For the main study, the sample size was 1712 (842 women; 849 men) participants that were recruited with the ethical online panel provider Prolific (prolific.com). There has been 476 participants in

⁷ We reframed the hypotheses to make it easier for the reader. As results led to the same discussion, we report intrinsic values and extrinsic values separately (instead of 'extrinsic relative to intrinsic value score') to avoid restriction of variances and to provide the greatest information from data. Link to pre-registration: https://osf.io/6dw9m/?view_only=2c6ead7ef9564ff49fdf4cca12018b72

group 1, 466 participants in group 2, 460 participants in group 3, and 303 participants in the control group. To participate in the survey, respondents had to be currently employed and to have at least one leader (i.e., not self-employed). Most participants worked full-time (71.30 %), came from the United Kingdom and the average age was 38.40 years ($SD = 10.69$). Prior sensitivity analysis showed that a sample size of 339 participants in each group is sufficient to detect an effect size of $f = 0.20$, with $\alpha = 0.05$ and power of 0.85. Although our control group only has 303 participants, a post hoc analysis shows that a total sample size of 1712 for three treatment groups with an effect size of $f = 0.20$ and $\alpha = 0.05$ has a power of 0.98.

Procedure

After finding and validating different reasons to act pro-environmentally with two pre-studies, we conducted an experimental longitudinal study with two measurements with two weeks in between. At the first measurement, participants filled out an online questionnaire including items about personal values, organizational support, and PEB at work. At the end of the first questionnaire, participants were randomly assigned to four groups, receiving different reasons to act pro-environmentally.

To ensure rigor, the first sentence of the manipulation was similar for participants in groups 1-3 and included the specific PEB that we were trying to change with the manipulation. To ensure attention, participants had to rate the statements on a 5-point Likert scale ("How important are the following statements to you?"). Specifically, we framed the first sentence based on injunctive norms as current literature on persuasion and norms show that this framing already leads to the best possible outcomes (e.g., More and more people use energy-saving modes of electronic devices at work.) (Cialdini et al., 2006). The second sentence was provided to groups 1 and 2 only and contained the reason to act pro-environmentally. Group 1 received intrinsic reasons (e.g., "With this conscious behavior, they protect biodiversity and our environment."); group 2 received extrinsic reasons (e.g., "They often get admired for this environmentally conscious behavior."). Group 4 received neither the first nor second statement (control group) so their questionnaire ended one page earlier. See Appendix C for full details of the manipulation. Two weeks after the first questionnaire, PEB at work was measured again.

Measures

Extrinsic and intrinsic values

Values were measured with the 18-item German version of the Aspiration Index of Kasser and Ryan (1993) adapted from Klusmann et al. (2005) to fit the working context. Example items are: “It is important for me to have a job in which colleagues care about me and support me” and “It is important for me to have a job in which I have a lot of influence on others”. Participants rated each item on a 7-point scale (1 = not important at all, 7 = very important). Cronbach’s alpha was .84 for intrinsic values and .88 for extrinsic values.

Organizational support

In line with Paillé and Boiral (2013) and Paillé et al. (2010), we measured perceived pro-environmental support with three items of the organizational support scale developed by Eisenberger et al. (1986). An example item is: “My organization appreciates pro-environmental contributions”. Participants rated each item on a 7-point scale (1 = strongly disagree, 7 = strongly agree). Cronbach’s alpha was .92.

Pro-environmental behavior

PEB is measured with items that were taken from the behavior list of Markle (2013) and Pelletier et al. (1981). For our analyses, we used the five items that were targeted in the manipulation, that contained PEB at work and that had no ceiling effects⁸. The final items are: “I copy and print double-sided”, “I pay attention to environmental impact when planning my trips”, “I talk with my colleagues about energy consumption”, “I watch my water consumption”, and “I encourage my colleagues to think about their energy use”. Participants rated on a 7-point scale (1 = never, 7 = always). Cronbach’s alpha was .73 for PEB at Time 1 and .76 for Time 2.

Attention checks

Participants were invited for the second questionnaire only if they correctly responded to at least

⁸ As two of the manipulated items had a strong left-skewed distribution impeding a behavioral increase, we used two related items. Results confirm a positive effect of extrinsic reasons but not the one of intrinsic values or organizational support on adjusted PEB. Results are presented in the supplemental analyses.

three of the five attention checks (e.g., “For quality purposes, please select ‘never’”; less than 2% (N=32) were excluded). Six participants were excluded as they had the highest scores of PEB at Time 1 and were not able to increase their PEB any higher.

Results

Table 3.1 shows the means, standard deviations, and intercorrelations of the study variables. We calculated multiple analyses of variance (MANOVA) to test potential differences between the four groups. Gabriel Test known for good power for homogenous variances and tight control of the Type I error was used for post-hoc analysis (Toothaker, 1993). Means of intrinsic values, extrinsic values, PEB from Time 1 and Time 2, and organizational support do not differ between groups but age does (control group: $M_{control} = 37.89$; $SD_{control} = 10.37$ vs. intrinsic group: $M_{intrinsic} = 39.04$; $SD_{intrinsic} = 11.26$ vs. extrinsic group: $M_{extrinsic} = 39.00$; $SD_{extrinsic} = 10.54$, $F(2, 1378) = 3.19$, $p < .05$, $\omega^2 = 0.004$), therefore, age is included as a control variable. With a one-way repeated measures MANOVA, we found a significant increase in PEB from Time 1 ($M = 3.38$, $SE = 1.13$) to Time 2 ($M = 4.21$, $SE = 1.20$) in every group, $F(3, 1708) = 2.57$, $p < .05$, $r = .73$, $\omega^2 = 0.23$). The assessed importance of reasons differs between groups, $F(2, 1399) = 18.62$, $p < .001$, $\omega^2 = 0.24$. The importance of intrinsic reasons is assessed higher than the importance of extrinsic reasons or information. Additionally, the information group assessed the personal importance higher than the extrinsic group.

Table 3.1

Means, standard deviations, and correlations

	M	SD	1.	2.	3.	4.	5.	6.	7.
1. Intrinsic values	5.17	0.93							
2. Extrinsic values	3.37	..09	.37**						
3. PEB (T1)	3.98	1.13	.29**	.04					
4. PEB (T2)	4.21	1.19	.26**	.04	.73**				
5. Organizational support	4.74	1.35	.22**	.07**	.31**	.31**			
6. Importance of statements	5.11	1.29	.30**	.04	.43**	.42**	.28**		
7. Age	38.40	10.69	-.10**	-.21**	.44**	.44**	.28**	.02	
8. Gender	0.50	0.50	-.15**	.15**	.50**	.49**	.03	-.13**	.11**

Note. T1 = measurement Time 1. T2 = measurement Time 2. Importance of statements = mean of importance rating of all groups. Gender: Female (0), male (1). * $p < .05$. ** $p < .001$.

As can be seen, the PEB scale has high measurement accuracy and this does not change over time.

There is strict measurement invariance and interindividual differences in PEB are stable over time. The baseline model confirms the previous finding that PEB overall increased from Time 1 to Time 2 ($M\Delta = 0.21, p < .001$).

Baseline model

Prior to testing our hypotheses, the Kolmogorov-Smirnov test showed that none of the constructs follow a normal distribution thus, we followed the recommendation of Olivier and Norberg (2010) and illustrated the distributions with quantile-quantile (Q-Q) plots that have led us assume normal distributions for all constructs. Afterwards, we calculated confirmatory factor analyses (CFA) with the five items of PEB from Time 1 (CFI = .983, TLI = .958, RMSEA = .074, SRMR = .026) and Time 2 (CFI = .992, TLI = .979, RMSEA = .057, SRMR = .021) and built the baseline model by restricting the invariance in four steps (Table 3.2). First, we calculated a model with the two latent variables of PEB from Time 1 and Time 2, allowing them to correlate with each other. Second, referring to Geiser (2010), we included four

reference indicator specific variables⁹, that were not allowed to correlate with each other nor with other variables in the following models. Third, we assessed the measurement invariance of PEB by fixing the factor loadings of the same PEB items and the intercepts of the same PEB items. Fourth, the variances of PEB items were fixed. To compare these hierarchical nested models with each other, we used the Chi-square difference test. Table 3.2 shows that there is strict measurement invariance and interindividual differences in PEB are stable over time.

Table 3.2

Model fit results for restricting the baseline model

	Model 1	Model 2	Model 3	Model 4	Model 5
	(both latent variables)	(indicator specific variables)	(fixed intercepts)	(fixed intercepts + variances)	(LCS)
AIC	58833	56798	56786	57019	57037
BIC	59001	57043	56988	57166	57157
Chi-square (df)	2174 (34)	111 (20)	115 (28)	368 (38)	395 (43)
Df	34	20	28	38	43
RMSEA	.19	.05	.04	.07	.07
CFI	.72	.99	.99	.96	.95
SRMR	.12	.03	.03	.07	.07
Chi-square difference		-2063	4	253	28
Df-difference		-14	8	10	5

⁹ Except from the first reference item of the CFAs, the two identical items from Time 1 and Time 2 built one indicator-variable.

Hypothesis testing

Mplus 8 (Linda K. Muthén & Muthén, 2008) and the restricted maximum likelihood estimation method with robust standard errors were used for estimation because it provides fit indices and standard errors and is robust to both non-normality of data and the applied Likert scales (Hair et al., 2010). The latent construct was formed with the five items of PEB at Time 1 and at Time 2. Latent changes are predicted by personal values, organizational support, the different manipulated groups, and interactions (Figure 3.2). To compare not-nested models, we used Bayesian information criterion (BIC) and Akaike's information criterion (AIC) (lower values indicate better model fit) as we expect small or moderate effects. As recommended by Funder and Ozer (2019), we interpreted the standardized γ paths.

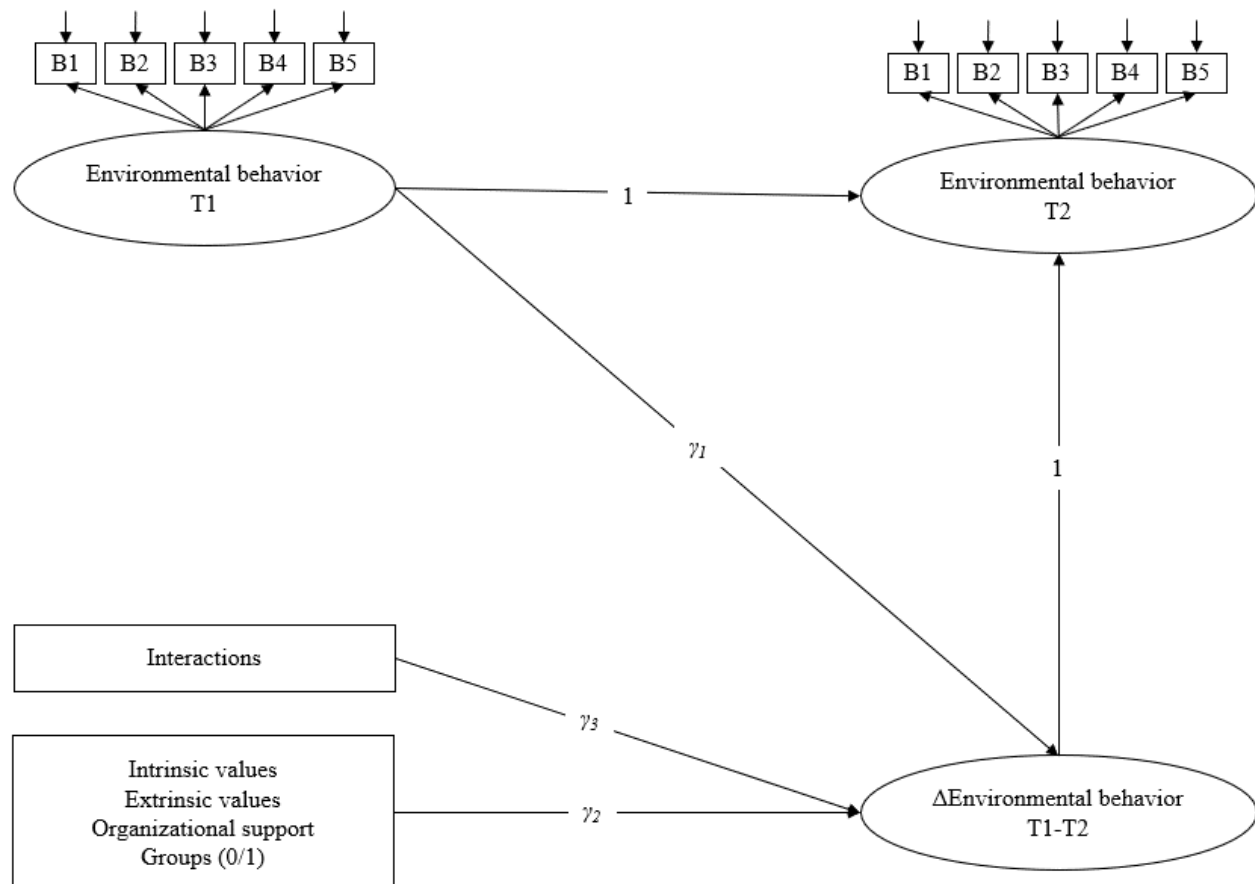


Figure 3.2. The two-factor latent change score model of study 3. γ_1 = proportional change from PEB from Time 1 to Time 2. γ_2 = effects of values, organizational support, and groups measured at Time 1 on proportional change. γ_3 = effect of interactions on proportional change (McArdle, 2009).

Hypothesis 1 stated that self-concordant reasons would lead to a greater increase in PEB than non-

self-concordant reasons. We built two models identical except that one was based on intrinsic self-concordance and the other on extrinsic. We built interactions between mean-centered values and the according dichotomous group variable (receiving intrinsic/extrinsic reasons vs. control group). We included the other value orientation (either intrinsic or extrinsic values) as a control as they correlate with each other. There was acceptable model fit for both models (Table 3.3). Intrinsic values had a positive effect on increase in PEB when providing extrinsic reasons ($\gamma_2 = .08$, $SE = 0.03$, 95% CI[0.01; 0.14], $p < .05$). However, neither the interaction between intrinsic values and the intrinsic reason group nor the interaction between extrinsic values and the extrinsic group affected the increase in PEB over time. We ran robustness checks without the control variables and comparing self-concordant against all other experimental conditions and in none of these was the interaction significant. We therefore reject the hypothesis that providing self-concordant reasons led to a higher increase in PEB.

To test hypothesis 2 stating that organizational support strengthens the relationship between extrinsic values and PEB, dependent on the framing provided, we calculated two-way and three-way interactions with mean-centered extrinsic values, organizational support, and the dichotomous variables of each group vs. all other groups. To confirm the hypothesis the three-way interaction has to be significant. The model fit was good (CFI = .93, TLI = .92, RMSEA = .04, SRMR = .04) but none of the interactions were significant (Table 3.3), indicating that organizational support is independent from extrinsic values and framing. We have to reject hypothesis 2. However, both organizational support ($\gamma_2 = .15$, $SE = 0.06$, 95% CI[0.02; 0.28], $p < .05$) and extrinsic reasons directly influence PEB over time ($\gamma_2 = .08$, $SE = 0.04$, 95% CI[0.01; 0.16], $p < .05$).

Table 3.3

Model fit and estimated path coefficients for each hypothesis

	Hypothesis 1		Hypothesis 2
	Intrinsic	Extrinsic	
	orientations	orientations	
AIC	81126	81454	119368
BIC	81437	81764	120626
Chi-Square (df)	586 (78)	578 (78)	721 (174)
RMSEA	.06	.06	.04
CFI	.94	.94	.93
TLI	.92	.92	.92
SRMR	.06	.06	.04
R^2	.08***	.08***	.10***
	γ (SE)	γ (SE)	γ (SE)
Intrinsic values	.08 (.06)	.08** (.03)	.06* (.03)
Extrinsic values	.02 (.03)	.01 (.06)	.01 (.07)
Intrinsic reason group	.01 (.25)		-.02 (.04)
Extrinsic reason group		.05 (.09)	.08** (.04)
Information group			.05 (.04)
Organizational support			.15** (.06)
Intrinsic values x Intrinsic reason group	-.05 (.25)		
Extrinsic values x Extrinsic reason group		.04 (.15)	.01 (.04)
Extrinsic values x Intrinsic reason group			<.01 (.04)
Extrinsic values x Information group			.01 (.04)

Support x Intrinsic reason group	-0.00	(.04)		
Support x Extrinsic reason group	-0.03	(.05)		
Support x Information group	-0.03	(.05)		
Extrinsic values x Support x Intrinsic reason group	-0.03	(.03)		
Extrinsic values x Support x Extrinsic reason group	-0.04	(.03)		
Extrinsic values x Support x Information group	.01	(.03)		
Age	.04	(.03)	.04	(.03)

Note. Standardized coefficients. R^2 = explained variance of LCS. Support = Organizational support. To reduce complexity, confidence intervals are not listed. One-sided p -value. * $p < .05$. ** $p < .01$.

Supplemental analyses

Due to the unexpected findings in hypothesis 2 that extrinsic reasons had a direct positive effect on increase in PEB, we tested whether sociodemographic variables such as gender or work time influenced the findings but they did not. We additionally tested whether intrinsic reasons (coded with 1) compared to extrinsic reasons (coded with 0) and intrinsic reasons (coded with 1) compared to the information group (coded with 0) had a significant impact on increase in PEB. In both models, intrinsic reasons were negatively associated with PEB (Intrinsic vs. extrinsic: $\gamma_2 = -.12$, $SE = 0.04$, 95% CI[-0.20; -0.04], $p = .003$; Intrinsic vs. information: $\gamma_2 = -.10$, $SE = 0.04$, 95% CI[-0.18; -0.01], $p = .062$). We tested whether this might be due to ceiling effects or imbalanced attention on extrinsic vs intrinsic reasons but these methodological causes can be excluded as we tested both the distributions of all constructs and the time taken on the according questionnaire page and did not find significant differences ($t(940) = -.36$, 95% CI[-13.62; 9.43], $p = .722$) or a change in results when they were controlled (full details available from the author). Thus, although our nuanced hypotheses on extrinsic framings were not supported, our study suggests that extrinsic reasons in the workplace may be more effective than intrinsic ones for employees.

As mentioned in section 3.3.3, we used two other PEB items than pre-registered because of

ceiling effects. However, analyses were also done with the pre-registered five items (in the following referred to as adjusted PEB). In line with the reported findings, adjusted PEB increased from Time 1 ($M = 4.77$, $SE = 0.94$) to Time 2 ($M = 4.91$, $SE = 0.98$), $t(1711) = -8.01$, $p < .001$, $r = .71$), intrinsic values are positively correlated with adjusted PEB ($r_{T1} = .28$, $p < .001$; $r_{T2} = .25$, $p < .001$) and extrinsic value striving does not correlate with adjusted PEB ($r_{T1} = -.04$, $p = .116$; $r_{T2} = -.04$, $p = .113$). Model fit of both CFAs were good (model fit of adjusted PEB Time 1: CFI = .994, TLI = .986, RMSEA = .022, SRMR = .013; model fit of adjusted PEB Time 2: CFI = .995, TLI = .987, RMSEA = .025, SRMR = .013). While we can confirm a positive effect of extrinsic reasons on increase in adjusted PEB, we cannot support neither the findings of a direct positive effect of intrinsic values nor of organizational support on increase in adjusted PEB.

Discussion

This study examined different ways of framing messages encouraging employees to act pro-environmentally at work. While the traditional understanding is that providing intrinsic reasons perform best (e.g., Vansteenkiste, Lens, & Deci, 2006), organizational contexts rather provide external motivators which sometimes seem to be successful (Ling & Xu, 2021; Zibarras & Coan, 2015). Providing a possible explanation of different performances in message framings on PEB, this study examined different reasons that HR should include in their messages and explored the alignment of employees' values with organizational contexts. Overall, PEB increased for all participants, independently whether or what information they have received which is consistent with methodological research showing that already the fact of asking questions influence later attitudes, behaviors, and feelings (Dholakia & Morwitz, 2002; Sherman, 1980). To control for this measurement effect and to be able to attribute differences between groups solely to our manipulation, a control group was included that only received questions about PEB twice. However, our results from a large pre-registered study were surprising.

First, our results showed that intrinsic values had a positive impact on the increase in PEB when receiving extrinsic reasons. In other words, when faced with an extrinsically framed message, people who

pursue self-development or societal contribution had greater increases in PEB than those who strive for extrinsic values such as popularity or wealth. Drawing on SDT, intrinsic values direct people to behaviors that are more closely related to psychological need satisfaction whereas extrinsic pursuits are rather common in competitive, pressured, and controlling environments being stressful and leading to destructive behaviors (Kasser & Ryan, 1993, 1996). However, it is interesting that we found positive effects of intrinsic values only in the group who received extrinsic framings and not in those who received intrinsic reasons. An explanation could be that intrinsic reasons negatively affect people striving for intrinsic values. Behaviors that elicit positive feelings by contributing to the good but that are not enjoyable itself – as it is likely the case with PEB – can be associated with feelings of guilt after refraining from such moral actions (Schwartz, 1970; Van Der Werff et al., 2013; van Zomeren et al., 2012). Especially, when people have a strong environmental self-identity, they experience feelings of guilt when avoiding PEB (Stets & Carter, 2012; Van Der Werff et al., 2013). Thus, providing morally ‘perfect’ reasons may elicit feelings of guilt for people having a strong altruistic self-identity as they feel obliged to act pro-environmentally and intrinsic values therefore, do not have a direct effect on PEB anymore.

Second, providing self-concordant reasons to act environmentally friendly that fit personal values did not lead to greater increases in PEB than either the non-self-concordant group or the control groups (information only and full control). Neither employees striving for intrinsic values and receiving intrinsic reasons nor employees striving for extrinsic values and receiving extrinsic reasons showed higher increases in PEB. A reason can be that behavior is dependent on the individual’s importance of the higher-order values involved and on the degree to which this behavior is effortful, connected with negative experiences, or negatively related to higher-order values (Sheldon & Emmons, 1995; Sheldon & Kasser, 1995). While we can see that the importance of intrinsic reasons is assessed as being personally important, we cannot ensure that PEB is not connected with negative experiences. Indeed, previous research reveals that PEB is likely to be assessed as less pleasurable, more time-consuming, or effortful (Steg, 2003) which may negatively influence the behavioral motivation and have a stronger impact than self-concordant

reasons.

Interestingly, supplemental analyses showed that providing intrinsic reasons lead to a significantly lower increase in PEB than both providing extrinsic reasons and providing information only. As the provided information was the same in all three groups, intrinsic reasons had a negative impact on employees' motivation to engage in PEB. We framed the reasons according to the guidelines of injunctive norm research, implying that *more and more* people not only manage to act pro-environmentally but because of altruistic reasons. These statements represent the social norm of morally perfect behavior that reflect what is the "right" thing to do. Recent research suggests that highlighting such positive examples can have countervailing effects (Lasarov et al., 2022). For instance, when people take others' behaviors as orientation for their own actions, sustainable social cues can be interpreted as a moral license that liberates people from sustainable behaviors (Kouchaki, 2011; Lasarov et al., 2022). Also, reading that more and more people are becoming 'perfect' citizens may evoke feelings of jealousy because we tend to compare ourselves with others and these statements imply an extreme upward comparison that seem unattainable (Diel et al., 2021; Salovey & Rodin, 1984). As such, they may decrease self-esteem (Lewis, 2021), demotivate (e.g., Diel et al., 2021) and thus, reduce PEB. Another explanation can be that intrinsic statements may make people feel guilty, sad, and desperate as they believe to morally fail in comparison to the majority. Especially, people with low self-esteem tend to underestimate their own abilities (Morrison & Morrison, 1978) and see themselves as worse than other people (Wood & Lockwood, 1999). They may feel entitled to being selfish and morally reprehensible which can result in swoon and demotivation (Holland et al., 2002) feelings that lead to less PEB (Cooke et al., 2016).

Especially interesting was the finding that providing extrinsic reasons led to the highest increase in PEB. Regarding information processing, providing both the injunctive norm formulation (more and more people act pro-environmentally friendly) and extrinsic reasons (to receive social recognition) may provide information that is new. This may lead to further reflection on one's own behavior and thus, increase PEB (Ratelle et al., 2017). However, this finding can also result from the extrinsic content itself.

Research shows that people tend to show more volunteer behavior in public than in private settings (Linardi & McConnell, 2008), people get addicted to social media likes (Dumas et al., 2017), people give higher tips when other people are looking (White et al., 2020; White & Peloza, 2009), people show more norm-guided behavior in light settings than in dark settings (Zhong et al., 2010), and a study in the context of mobile learning finds positive effects of extrinsic goal-framings on students' achievement in science learning (Jeno et al., 2020). All these extrinsic triggers are important, independently of personal values (Vallerand, 1997). We now explore possible explanations for the success of extrinsic framing in the theoretical implication section.

Theoretical implications

By combining the SDT and the self-concordant approach, our results show that intrinsic values can have positive effects on PEB but that neither intrinsic reasons nor self-concordant reasons increase PEB in a workplace setting. In contrast, our findings reveal that, for employees, extrinsic reasons lead to the highest increase in PEB, independently of what they strive for.

To explain these findings, we include research on social norms and differentiate between the *assessments* in the questionnaire and the *actual* values or drivers of people. While the *assessment* of different values and reasons differ between people being influenced by social desirability and contextual norms (Farrow et al., 2017; Nyborg et al., 2016), *actual* drivers of people may be the same. Concerning the value-hierarchy's perspective that self-concordant reasons lead to behavior change, the finding that PEB most strongly increased when participants received extrinsic reasons would insinuate that everybody strives for extrinsic values. Incorporating the SDT's principle that all individuals strive for satisfying their psychological needs (Deci & Ryan, 2000; Kasser & Ryan, 1996), we suggest that if extrinsic values help to satisfy psychological needs, we will pursue extrinsic values. For instance, extrinsic reasons such as receiving recognition and admiration for a specific behavior implies that people want to surround themselves with us and that we are a valuable part of a group that is likely to be perceived as competent (Ryan & Deci, 2000). If PEB let us become a highly appreciated group member, we may –

(un)consciously – be more motivated to engage in PEB as this satisfies our need for relatedness. Given that everybody strives for satisfying needs, everybody is dependent on extrinsic factors, independently of what we assess to pursue in life.

We found an ambivalence between assessing that extrinsic reasons are not important but actually having the highest effect on increase in PEB – indicating that we do not admit that extrinsic reasons such as social recognition are central reasons for PEB but, based on data, they are. Social desirability can be an explanation for this finding as extrinsic reasons are less accepted in society. Social desirability reflects the phenomenon that we claim socially desired traits and deny socially undesired behaviors to place us in an advantageous light in the current context (P. Grimm, 2010; Nederhof, 1985). Research shows that social desirability effects frequently occur in situations where we have to indicate widely expected attitudes, behavioral or social norms (P. Grimm, 2010). Common beliefs of societal mutual norms are the necessity to take care of others, being helpful, generous, altruistic, and abiding by the laws and rules in society (House, 2018). Accordingly, people believe that the society expects to act pro-environmentally friendly due to altruistic reasons such as contributing to the preservation of the environment. By admitting that instead social recognition is a personal central reason to act pro-environmentally friendly, people contrast the expected social norms (Farrow et al., 2017). A substantial amount of research - including our finding of perceived organizational support having a strong effect on increase in PEB, independently of what we strive for - has shown that social norms have a huge impact on human behavior (Farrow et al., 2017; Nyborg et al., 2016). However, this may not happen consciously. Previous research shows that the impact of social norms happens unconsciously, intuitive, and as psychological heuristic rather than intentionally (Bicchieri, 2002; Hao et al., 2015). People tend to deny or underestimate the impact of social norms (Cialdini et al., 2006). This may be a reason for why extrinsic reasons increased PEB although we denied them to be important. Taken together, this study provides important implications for the theoretical understanding of values, social norms, and the effect on behaviors.

Practical implications

Our results reveal that people assess intrinsic reasons as being highly important for PEB but that extrinsic reasons lead to greater behavior change. Therefore, HR should motivate employees to pro-environmental behavior by both using intrinsic and extrinsic reasons. Intrinsic formulations are important to provide the ostensible explanation of behavior for employees and extrinsic formulations have a stronger influence on actions.

In addition, the actual appreciation of environmentally friendly behavior is important. The *perceived* pro-environmental support directly increased employee behavior - even independent of the framings. All results are based on self-reported data, so it is important that employees feel valued and supported for PEB. For example, measures that do not provide an obvious benefit to the company can be introduced to emphasize that the environment is at stake and that any environmentally friendly behaviors are supported (e.g. in refectories: offering vegetarian and vegan menus at a lower price, providing oat milk at a discount/free of charge, providing lunch boxes for leftovers to prevent food waste). Such measures do not provide an obvious benefit to the company and thus, establish a green corporate culture and give employees the feeling that any environmentally friendly behavior is valued. However, actual recognition and acknowledgement of environmentally friendly behaviors are important. For example, managers can include environmental topics in their *jour fixe* or annual employee meetings to clearly communicate that PEB is welcomed, noticed and supported.

Limitations and future research

As usual, our research is not without limitations. First, we used self-reported questionnaire data that were collected with a panel provider and participants may differ in their characteristics relative to traditional sampling techniques (Behrend et al., 2011). However, research in applied psychology demonstrates that construct relationships of both sampling strategies are similar (Walter et al., 2019). Also, we aimed to reduce the likelihood of hypothesis guessing and the method bias by randomly displaying the items per page (Podsakoff et al., 2003), by including attention checks, by capturing the predictors and dependent variables at different measurement points, and by confirming measurement

invariance thus ensuring consistency. Nevertheless, investigating values, messages, and behavior changes with different acquisition and data collection techniques and real PEB data would be beneficial to validate the results.

While intrinsic reasons were assessed as being more important than extrinsic reasons to act pro-environmentally, extrinsic reasons lead to the highest increase in PEB. Future research may want to delve deeper into this ambivalence. More research is needed to investigate the relationships between value ratings, goal framings, environments, and the effects on behaviors. Given that we act according to higher-order values, the fact that extrinsic reasons lead to the highest increase in PEB may be an indicator for a common drive that cannot be explained by the assessment of values. Maybe the questionnaire assessments on intrinsic and extrinsic values mirror social desirability and draw on our context whether it is permissible to strive for extrinsic values or not.

Conclusion

This paper examines self-concordant intrinsic and extrinsic reasons that fit employees' values on changes in PEB over time. Drawing on two pre-studies and a pre-registered experiment, we found that neither self-concordant intrinsic nor self-concordant extrinsic reasons are positively associated with increase in PEB. However, extrinsic reasons and perceived organizational pro-environmental support positively influenced PEB. Independently of personal values, employees increase PEB when receiving extrinsic reasons and if employees perceive that their organization supports PEB, they are more likely to engage. Although our findings were not as hypothesized, our studies underline how extrinsic regulation affects PEB in the workplace and thereby, how HR should frame message to progress actions against climate change.

General discussion

In three empirical studies, this dissertation examines employees' resources and values during the COVID-19 crisis and climate crisis and shows what impact changing resources and values can have on

HR practices by exemplarily focusing on the three HR practices: **supporting, attracting, and motivating employees**. Specifically, I investigate what resources are necessary during remote work in the COVID-19 pandemic, whether a congruence of values between the individual and the company is beneficial, and whether values determine how employees can be motivated to climate actions. By building on the COVID-19 crises and the climate crises, this dissertation account for the contemporary importance of political, societal, and environmental crises which has an enormous impact on both practice and theory alike. For practice, the results of this dissertation provide guidelines on how to prioritize HR measures during the COVID-19 crises, how to attract employees in times of crises, and how to frame organizational pro-environmental goals. For research, this dissertation provides a new perspective for theoretical taxonomies by combining literature on different types of values with literature on the congruence of values. Additionally, all studies base on high-quality analysis methods and have been pre-registered in advance, ensuring the reliability of the findings and meeting the need for high-quality research in applied psychology (Matusik et al., 2021; Vantilborgh et al., 2018). In the following, the findings of the three studies are summarized, and theoretical and practical contributions, limitations, and ideas for future research are derived.

Summary of findings

Study 1 examined remote workers' resources during the COVID-19 pandemic and aimed to reveal what resources have been most important for maintaining remote worker's well-being, subjective productivity, and engagement during this new demanding work situation. By combining the event system theory with the transactional theory of stress, my co-authors and I hypothesized that the COVID-19 pandemic is a stressful event that weaken well-being, subjective productivity, and engagement of remote workers. We explored what resources – personal (self-goal setting, self-efficacy, home-office experience), external (equipment at home), and organizational (work-related and social) resources – are most important to mitigate this decrease. By drawing on diary data from the first lockdown in Austria (period from March to May 2020; 2222 employees) and the second lockdown in Austria (period from November to January

2021; 1268 employees), results confirmed that well-being, subjective productivity, and engagement decreased from the first to the second lockdown. The most important resources were self-efficacy and social support from colleagues, as they were crucial for reducing the decline in both, well-being and engagement. External resources such as a well-equipped working space were important for productivity. Findings from this study highlight that remote workers suffered from the COVID-19 pandemic and that HR has to focus on different resources depending on whether they want to support remote workers in their well-being, engagement, or productivity.

Study 2 investigated employees' values and their alignment with organizational values, and contributes to the knowledge about the attraction of organizations as people are more likely to apply when their values fit the organizations' values (Wallace et al., 2014). By drawing on value congruence theories and theories distinguishing different types of values, the aim of the second study was to reveal whether an alignment or different types of values (e.g., intrinsic vs. extrinsic values) is crucial for positive or negative job outcomes. We investigated positive and negative work behavior, well-being, and commitment and tested 678 employees in a three-way longitudinal study with a four-week interval. Findings indicate that different types of values have direct effects on the alignments of values and that an alignment not explicitly explains positive or negative effects. While a congruence of extrinsic values is even associated with negative work behavior, an incongruence of high personal *intrinsic* values but low organizational *intrinsic* values is associated with high engagement. Neither the congruence theories nor theories drawing on different types of values, that would argue that high intrinsic values always have positive effects can entirely explain positive and negative work outcomes. Given that people are more prone to extrinsic values in times of crises, our findings underline that it is even more important for organizations to promote intrinsic values.

Study 3 investigated employees' values to reveal how HR can motivate employees to crisis-relevant goals, namely acting more pro-environmentally. With two pre-studies and a longitudinal experimental study design, we investigated how HR should frame goals to engage as many employees as

possible to PEB. While the common understanding is that an intrinsic framing usually performs best (e.g., Vansteenkiste, Lens, & Deci, 2006) and extrinsic framings are less successful, more recent research is showing that the widespread extrinsic triggers in organizations can be successful (Ling & Xu, 2021; Zibarras & Coan, 2015). We draw on the self-concordant approach to provide a more nuanced perspective of why both intrinsic and extrinsic framings can be successful and examine moderators that enable an extrinsic framing to fit (or not) both employees' values and their organizational environment. By randomly assigning participants to four groups that receive different reasons to act pro-environmentally, our results show that providing extrinsic reasons lead to a significant higher increase in PEB than intrinsic reasons. Furthermore, providing only information without any reasons lead to higher increase in PEB and intrinsic reasons, independently of what we strive for. Moreover, organizational support has a direct effect on PEB's increase.

Theoretical contributions

By investigating the resources and values of employees in times of crises, this dissertation contributes to research in work and organizational psychology in several ways. While all of the studies draw on different theories, they share an emphasis on the interaction between individuals and the environment in times of crises. In the following, I outline the theoretical fundament and discuss the contributions for theory of each study.

First, all studies focus on times of crises. By combining the event system theory with the transactional theory of stress, we derive that crises are events that are likely to be assessed as stressful. Since environments and organizations interact with each other and the impact of this interaction is dependent on individuals' appraisal and the event's duration, events that are assessed as stressful and that occur repeatedly or persist long-term lead to greater strain in employees' environments. This is confirmed by the first study presenting the negative impact of the COVID-19 pandemic on employees through a decrease in remote workers' well-being, engagement, and productivity. Knowing that the COVID-19 crisis is a stressful event, investigating values that change during these times seems to be necessary

(Kasser, 2016). Thus, we draw on the findings of Study 1 and derive the importance to investigate values in the following studies.

Second, Study 2 and Study 3 exemplarily draw on the SDT for examining different types of values. While Study 2 theoretically contributes to the fundament of SDT by emphasizing the positive effects of intrinsic values on social and efficient behavior at work, Study 3 cannot entirely confirm the positive effects of intrinsic orientations by revealing that intrinsic orientations do not have a main effect on PEB when providing intrinsically framed goals. This finding is in line with recent research showing that both intrinsic as well as extrinsic values and goals can be associated with positive and negative outcomes (Lindenberg & Steg, 2007; Steg, 2003; Unanue et al., 2016; Unsworth & McNeill, 2017; Vansteenkiste et al., 2008). It is argued that the differentiation in intrinsic and extrinsic values may not adequately explain the outcomes as values are not mutually exclusive, meaning that people can strive highly for both, intrinsic and extrinsic values. Thus, this differentiation may not entirely account for the pattern of values and people strive for multiple goals and values (Unsworth et al., 2014). It may be useful to examine goals and values in a more encompassed way rather than differentiating content (Unsworth et al., 2014). It may be necessary to extend existing frameworks and discuss alternative differentiation than the contents of values in intrinsic and extrinsic orientations. In the discussion of Study 3, I provide social desirability as an explanation of different effects of intrinsic and extrinsic assessments. Since it would go beyond the scope of this dissertation to further discuss structures of goals and values, I would like to limit the contribution to stimulating the discussion on the differentiation of content of values into intrinsic and extrinsic orientations.

Third, Study 2 and Study 3 combine congruence theories and theories focusing on different types of values. Combining two approaches focusing either on the interaction between the individual and the contextual values or solely on the types of values, the results show that neither the value congruence literature nor the literature on the types of values can exclusively explain the effects. While the value congruence literature primarily attributes positive effects to the matching degree of values and suggests

implications for incongruence and congruence scenarios (Greguras & Diefendorff, 2009), research on the types of values centers different value strivings and attributes positive and negative outcomes to different types of values (Deci & Ryan, 2000). We suggest the adaptation of taxonomies and exploring the implications of positive and negative outcomes from different perspectives.

My contributions were underpinned by having pre-registered all studies in great detail before analyzing the data. Thereby, I ensure the quality of research and answer the call for more open practices to reduce research biases (Nosek et al., 2018). Moreover, using LCS models and polynomial regressions for analyzing the data meets the high-quality standards of work and organizational psychology research, and answers the call for more high-quality longitudinal examinations of work trends in applied psychology (Matusik et al., 2021; Vantilborgh et al., 2018).

Practical implications

By investigating resources and values in times of crises, several implications for HR emerge. In the following, I exemplarily draw on three implications for HR that are affected by changing resources and values and that were used as example challenges throughout this dissertation, namely on how to support, attract, and motivate employees in times of crises. With the aim to **support** employees in times of crises, HR needs to enhance resources to mitigate negative effects on well-being, engagement, and productivity. Focusing on remote work, it is necessary to provide the technical infrastructure such as technical equipment, access to necessary materials, and high ergonomic standards to maintain remote workers' well-being. Additionally, cultivating a video meeting culture and fostering informal interactions between colleagues is useful to improve social support at work and buffer the negative effects of crises on well-being. Moreover, remote workers' self-efficacy as a resource is revealed to have a positive effect on well-being and engagement thus, HR may want to provide coaching, specifically e-coaching, in times of crisis to foster this resource (Luthans et al., 2008).

With the aim to **attract** suitable employees in times of crises, HR needs to focus on both, resources and values. Being satisfied with the provided resources can strengthen the attractiveness of the

company for employees and outsiders, alike. Employees tend to talk with people about their job and working environments and thus, being satisfied with the provided resources can positively influence a company's attractiveness. For instance, our findings show that having a well-equipped working space was relevant for engaging employees during the COVID-19 crisis. Hence, HR can invest in employees' working environments to strengthen a company's attractiveness. Our findings from Study 2 suggest that companies should cultivate intrinsic values to attract individuals who share those values. While previous research has shown that congruence between the characteristics of applicants and organizations can have positive effects (Nolan et al., 2016), our results primarily support the idea of clearly communicating and cultivating intrinsic organizational values to achieve positive job outcomes. Prioritizing intrinsic orientations within the organization leads to positive outcomes and eliminates the possibilities of negative consequences such as emotional exhaustion or the negative work behavior of extrinsically oriented cultures.

With the aim to **motivate** employees to crisis-relevant goals, HR should focus on extrinsic goal framings, meaning that recognition and appreciation of behaviors in line with the goal are important to motivate employees. Regarding the climate crisis, establishing a culture in which pro-environmental interests are appreciated is important. However, as statements with intrinsic reasons were assessed as being highly important, intrinsic statements in organizational goals should be included, even if they had no direct effects on behavior change.

In addition, all three studies were based on self-reported data. Positive effects will therefore only occur, if employees are able to assess the culture and vision of the organization. It is necessary to clearly communicate supporting strategies and organizational goals in a way that employees are aware of these policies.

Limitations and future research

As with every research, several limitations have to be mentioned. Primarily, all studies are based on self-reported data which is prone to common method variances (Podsakoff et al., 2003), meaning that

the relationship between constructs may result from the measurement method rather than from the constructs themselves. My co-authors and I tried to avoid such artificial covariation between constructs by applying a longitudinal study design to all our studies. However, future studies may further want to reduce this bias by using ratings from multiple sources to gain a broader understanding of employees' values and resources (e.g., resources assessed by leaders and team members).

Second, the generalizability of the findings is limited. All three studies were conducted in times of crises. Data for Study 1 and Study 2 were collected between March 2020 and January 2021, representing the first year of the COVID-19 pandemic. Data for Study 3 was collected in Summer 2022, during a period where the climate crisis was very present in European countries' media. However, all crises have different characteristics and dynamics, so drawing conclusions and applying them to other difficult situations should be done with the utmost care, thinking about biases and distortions. Also, depending on the measurement time of data collection, findings may fluctuate as crises are characterized by a dynamic environment that oscillates in impact (Australian Bureau of Meteorology, 2019; De Jong, 1999). For instance, enduring crises situations may either result in habituation processes (Dan & Brosius, 2021) or cause even more suffering. Thus, empirical findings depend on the measurement time of data collection. Future studies should consider these fluctuations in times of crises.

In addition, although we have large samples in all three studies and conducted power analyses to ensure a correct sample size, given that Study 1 only includes Austrian employees and Study 2 and Study 3 are conducted with panel providers, caution is advised when generalizing the findings. Panel providers may represent biased samples such as different demographic and employment characteristics relative to other traditional sampling techniques (Behrend et al., 2011). Future studies may want to use traditional sampling techniques and investigate resources and values for specific business sectors to provide more nuanced findings.

A third limitation results from the assessment of values. Personal values are complex constructs, influenced by multiple factors such as environments (Kasser et al., 1995; Ku & Zaroff, 2014a; Lu et al.,

2019), social norms (Steg et al., 2014; Stern et al., 1995), emotional states (Agost & Vergara, 2014; Van den Broeck et al., 2019), and personal characteristics (Cennamo & Gardner, 2008; Duriez et al., 2012; Marcus et al., 2015). Even if there is consent in literature that values are core motivational constructs that influence behavior (Locke & Latham, 2013; Schwartz, 1992), values are dependent on several factors that are still not entirely understood (Unsworth et al., 2014). In addition, the analysis strategy of values differs, some literature examines different values not separately but with relative-scores such as calculating an extrinsic relative to intrinsic value score to account for striving for one direction relatively to the other¹⁰ (Duriez, 2011; Duriez & Klimstra, 2011). Also, research has primarily focused on single-value strivings, but scholars increasingly find that the norm is to pursue multiple values (Ashforth et al., 2008; Sun & Frese, 2013; Unsworth et al., 2014; Vancouver et al., 2010). Unsworth et al. (2014) call the complexity of values and the fact that human beings strive for multiple values as ‘elephant problem’ for value researchers. This dissertation examines different contents of values but treats values as single constructs and neglects the complex dynamics of values in Study 2 and Study 3. Future studies may want to account for the complexity of values by examining value structures or value activation and ask for more information on social environments (Unsworth et al., 2014). Another idea for future research can be to differentiate between people with high scores in values (both intrinsic orientations and extrinsic orientations) and people with low scores in values rather than to separate the contents.

General conclusion

This dissertation accounts for the unprecedented circumstances in times of crises and investigates the resources and values of employees and how they change in times of crises. With the aid of three exemplary challenges, namely, of supporting, attracting and motivating employees, this dissertation demonstrates that HR’s challenges are dependent on employees’ resources and values, and therefore, have to be reassessed in times of crises. By investigating employees’ changing resources and values during

¹⁰ In line with this research, we pre-registered ‘extrinsic relative to intrinsic value score’ in Study 3. However, a substantial amount of critique came up that these relative scores entail large methodological problems. That is why we reported the results with intrinsic and extrinsic values, separately.

those times, results confirm that crises negatively affect employees' work qualities and that resources such as self-efficacy, good working equipment at home, and social support need to be built up to mitigate this decrease. Furthermore, the findings suggest that relying on an alignment of values to attract new employees is not always beneficial but that intrinsic values of companies such as encouraging employees' self-development, or establishing initiatives for good causes have positive effects on employees' working behaviors, well-being, and commitment. However, the common understanding that intrinsic orientations are always more successful cannot be supported as extrinsic organizational goal framings have been surprisingly successful. Motivating employees with appreciation and recognition to higher engagement in pro-environmental actions than providing them with reasons about contributing to a good cause. Thus, the constructs of intrinsic values and intrinsically framed goals have to be separated. While the alignment of organizational and personal intrinsic values can be beneficial for employees' behavior, well-being and commitment, encouraging employees to showcase extra-role behaviors that go beyond their job descriptions is more efficient when providing extrinsic triggers and framing goals extrinsically.

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Appendix

Appendix A

Mean and standard deviation of remote workers' difference values in well-being, perceived productivity, and engagement with an increase or decrease in resources

Difference values	Well-being				Perceived productivity			Engagement		
	T2 – T1	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Job latitude	Decrease	579	-0.20	1.56	579	-0.07	1.02	579	-0.16	1.35
	Increase	386	-0.11	1.58	387	0.01	0.96	387	-0.11	1.29
Self-goal setting	Decrease	601	-0.20	1.54	602	-0.06	0.98	602	-0.20	1.27
	Increase	364	-0.11	1.61	364	0.00	1.02	364	-0.03	1.40
Remote work experience	Decrease	351	-0.17	1.54	351	-0.08	0.97	351	-0.20	1.35
	Increase	611	-0.16	1.58	612	-0.01	1.01	612	-0.11	1.31
Job security	Decrease	753	-0.23	1.53	753	-0.05	0.97	753	-0.16	1.34
	Increase	211	0.07	1.65	212	0.01	1.07	212	-0.08	1.27
Equipment at home	Decrease	671	-0.19	1.53	672	-0.05	1.00	672	-0.18	1.31
	Increase	293	-0.11	1.63	293	-0.02	0.99	293	-0.04	1.36

Note. Difference values of outcomes and decrease and increase in resources are calculated as difference values between T2 and T1. Decrease in resources also includes participants with no changes between T2 and T1 ($T2 - T1 = 0$). T1 = time 1, from March to May 2020. T2 = time 2, from November 2020 to January 2021.

Appendix B.1

Regression coefficients of the polynomial regressions underlying the surfaces

		Dependent Variable	b_0	b_1	b_2	b_3	b_4	b_5	R^2
H1	H1.1: Intrinsic values	a) OCB	3.36	0.45	0.14	-0.11	-0.03	0.02	.21
			[3.27, 3.47]	[0.18, 0.69]	[-0.02, 0.28]	[-0.26, 0.70]	[-0.13, 0.16]	[-0.04, 0.10]	
		b) Engagement	4.39	0.26	0.52	0.12	-0.06	0.04	.24
			[4.21, 4.56]	[-0.16, 0.66]	[0.24, 0.79]	[-0.13, 0.40]	[-0.33, 0.22]	[-0.07, 0.17]	
		c) Affective commitment	3.72	-0.03	0.73	-0.05	0.01	0.08	.29
			[3.57, 3.86]	[-0.38, 0.29]	[0.50, 0.96]	[-0.28, 0.20]	[-0.23, 0.27]	[-0.02, 0.20]	
	H1.2: Extrinsic values	a) OCB	3.70	0.03	0.09	0.01	0.07	0.01	.03
			[3.62, 3.79]	[-0.08, 0.15]	[-0.03, 0.21]	[-0.11, 0.12]	[-0.05, 0.20]	[-0.08, 0.09]	
		b) Engagement	4.97	0.08	0.32	0.13	0.09	-0.01	.08
H2	H2.1: Intrinsic values		[4.82, 5.11]	[-0.14, 0.31]	[0.09, 0.54]	[-0.11, 0.33]	[-0.19, 0.39]	[-0.17, 0.15]	
		c) Affective commitment	4.28	-0.12	0.50	-0.02	0.14	-0.12	.15
			[4.15, 4.41]	[-0.31, 0.08]	[0.28, 0.69]	[-0.21, 0.18]	[-0.12, 0.40]	[-0.29, 0.02]	
		a) Deviant behavior	2.36	-0.35	0.17	0.12	-0.15	-0.08	.03
			[2.20, 2.55]	[-0.80, 0.04]	[-0.06, 0.43]	[-0.11, 0.38]	[-0.39, 0.09]	[-0.19, 0.03]	
		b) Emotional exhaustion	2.96	0.01	-0.22	0.24	-0.34	-0.10	.10
			[2.72, 3.19]	[-0.62, 0.54]	[-0.54, 0.12]	[-0.10, 0.64]	[-0.67, -0.05]	[-0.25, 0.03]	
		c) Continuous commitment	4.12	-0.02	0.32	0.06	-0.13	-0.03	.03
			[3.95, 4.27]	[-0.48, 0.37]	[0.66, 0.58]	[-0.22, 0.36]	[-0.38, 0.13]	[-0.15, 0.10]	

H2.2: Extrinsic values	a) Deviant behavior	2.23 [2.09, 2.36]	0.28 [0.07, 0.48]	0.09 [-0.11, 0.31]	-0.04 [-0.21, 0.13]	-0.02 [-0.20, 0.15]	0.03 [-0.09, 0.17]	.08
	b) Emotional exhaustion	2.80 [2.62, 2.97]	0.54 [0.30, 0.79]	-0.40 [-0.64, -0.16]	-0.09 [-0.34, 0.18]	-0.02 [-0.37, 0.28]	0.05 [-0.13, 0.24]	.07
	c) Continuous commitment	4.22 [4.21, 4.31]	0.07 [-0.06, 0.26]	0.08 [-0.14, 0.04]	0.03 [-0.03, 0.30]	0.14 [-0.30, 0.24]	-0.08 [-0.13, 0.13]	.01

Note. *N* ranged from 553 to 678. Underlying equation: $Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2 + e$. X refers to personal values. Y refers to organizational values. Table entries are unstandardized regression coefficients calculated with scale-centered variables. 95% Confidence intervals are shown in parentheses [LL, UL]. R^2 is the squared multiple correlation coefficient.

Appendix B.2

Slopes and curvatures along the $Y = X$ and $Y = -X$ lines and intercepts and slopes along the $Y = X$ line of the first principal axis

Dependent variable			Y = X line		Y = -X line		Y = X line of the first principal axis	
			a_1	a_2	a_3	a_4	p_{10}	p_{11}
H1	H1.1: Intrinsic values	a) OCB	0.59	-0.06	0.31	-0.06	-18.06	9.14
			[0.43, 0.75]	[-0.15, 0.04]	[0.001, 0.62]	[-0.39, 0.16]	[-263362.93, -4.93]	[3.74, 12836.51]
		b) Engagement	0.78	0.10	-0.25	0.22	-9.86	-0.32
			[0.48, 1.08]	[-0.07, 0.28]	[-0.84, 0.33]	[-0.29, 0.73]	[-164.16, 153.30]	[-9.87, 3.90]
		c) Affective commitment	0.70	0.05	-0.76	0.02	13.99	20.82
			[0.41, 0.98]	[-0.12, 0.21]	[-1.31, -0.21]	[-0.46, 0.51]	[3.00, 22508.21]	[12.70, 13010.73]
	H1.2: Extrinsic values	a) OCB	0.12	0.09	-0.06	-0.06	1.00	1.02
			[0.04, 0.20]	[0.01, 0.16]	[-0.25, 0.14]	[-0.28, 0.17]	[-0.66, 1665.50]	[-1.66, 17.66]
		b) Engagement	0.40	0.21	-0.24	0.03	7.52	0.29
H2	H2.1: Intrinsic values		[0.26, 0.54]	[0.07, 0.35]	[-0.60, 0.12]	[-0.39, 0.45]	[2.09, 3824.28]	[2.49, 4392.61]
		c) Affective commitment	0.38	0.002	-0.62	-0.28	1.75	0.50
			[0.24, 0.51]	[-0.13, 0.13]	[-0.95, -0.28]	[-0.68, 0.11]	[0.41, 24.58]	[-0.50, 2.02]
		a) Deviant behavior	-0.17	-0.11	-0.52	0.19	0.28	-0.33
			[-0.45, 0.11]	[-0.27, 0.05]	[-1.06, 0.02]	[-0.29, 0.66]	[-0.25, 1.12]	[-1.24, 0.25]
		b) Emotional exhaustion	-0.21	-0.20	0.23	0.49	-0.63	-0.41
			[-0.60, 0.18]	[-0.43, 0.03]	[-0.53, 0.99]	[-0.18, 1.15]	[-3.27, 0.28]	[-1.17, -0.11]
		c) Continuous commitment	0.30	-0.10	-0.34	0.16	2.57	-0.53
			[0.002, 0.60]	[-0.27, 0.07]	[-0.91, 0.23]	[-0.34, 0.67]	[0.25, 87.95]	[-21.30, 1.90]

H2.2: Extrinsic values	a) Deviant behavior	0.36 [0.24, 0.48]	-0.03 [-0.15, 0.09]	0.19 [-0.11, 0.49]	0.002 [-0.35, 0.35]	29.32 [10.51, 148385.47]	-8.24 [-44565.38, -2.54]
	b) Emotional exhaustion	0.14 [-0.03, 0.31]	-0.06 [-0.23, 0.11]	0.94 [-0.02, 1.38]	-0.02 [-0.53, 0.48]	45.54 [-97.81, 95.29]	-16.77 [0.68, 873.20]
	c) Continuous commitment	0.15 [0.02, 0.27]	0.09 [-0.03, 0.22]	-0.01 [-0.33, 0.31]	-0.19 [-0.57, 0.19]	0.20 [-130.08, 0.50]	0.48 [-0.21, 1068.46]

Note. N ranged from 553 to 678. $a_1 = b_1 + b_2$ represents the slope and $a_2 = b_3 + b_4 + b_5$ represents the curvature along the $Y = X$ line. $a_3 = b_1 - b_2$ represents the slope and $a_4 = b_3 - b_4 + b_5$ represents the curvature along the $Y = -X$ line. p_{10} represents the intercept and p_{11} represents the slope of the first principal axis ($Y = X$ line). Table entries are unstandardized regression coefficients calculated with scale-centered variables. 95% Confidence intervals are shown in parentheses [LL, UL]. Confidence intervals of p_{10} should not include 0 and confidence intervals of p_{11} should not include 1 to indicate a significant effect. Underlying equation: $Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2 + e$.

Appendix C

The manipulated statements: Group 3 to 1

Group 3: Information only	And*	Group 2: Extrinsic reasons	Group 1: Intrinsic reasons
More and more people use energy-saving modes of electronic devices at work (e.g., switching off laptops or power strips).		Social media shows that this conscious behavior leads to more and more likes and recognition.	With this conscious environmentally behaviour, they make a small contribution to the preservation of the environment.
More and more people print double-sided and write as much as possible on one sheet at work.		They often get admired for this environmentally conscious behavior.	With this conscious behaviour, they make a small contribution to reducing deforestation.
More and more people are talking to colleagues about energy consumption and environmentally friendly alternatives.		They are often highly valued for this knowledge, as it is associated with a high level of education and self-reflection.	With this conscious behavior, they motivate people to find alternatives and help reduce CO ₂ emissions.
More and more people refrain from long-distance travel at work.		Social recognition for long-distance travel is falling, while it is rising for environmental awareness.	With this conscious behavior, they protect biodiversity and our environment.
More and more people bring their own reusable cup and water bottle to work.		Thereby, they are known for environmental awareness which often leads to	With this conscious behavior, they contribute to make the world a better place.

admiration.

Note. *And = Group 1 and 2 received the sentence of group 3 and the respective reason.