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Exploring the links between work characteristics, work-related rumination, and well-being: a systematic review

İş özellikleri, işle ilgili derin düşünme/ruminasyon ve iyi oluş arasındaki ilişkilerin incelenmesi: sistematik bir derleme

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ABSTRACT

Rumination is a global phenomenon in fields such as clinical psychology and organizational behavior that refers to having recurring thoughts about a particular theme and may have a detrimental impact on well-being. As a response style to the work environment, work-related rumination (WRR) is a thinking pattern that concentrates an individual's attention on a source of discomfort, resulting in stress and anxiety, which impairs well-being. In addition to a review of studies on work characteristics, WRR, and well-being, this article identifies gaps in the literature between the definitions of WRR, the classifications of work characteristics, and approaches to well-being. This study aims to elucidate how the variables in question have been addressed in various studies and to evaluate this accumulated knowledge to derive a comprehensive summary. The sample included 25 research papers. The systematic review identified job-related, contextual, and interpersonal factors regarding work environments that affect WRR and well-being. The findings indicate that WRR is an essential mechanism in the relationship between work characteristics and and offers suggestions for future research. In addition, this study is considered valuable for researchers and practitioners such as human resources professionals and organizational/workplace psychologists by exploring the theoretical underpinnings of these factors.

ÖZET

Derin düşünme/ruminasyon, belirli bir tema hakkında tekrar eden düşüncelere sahip olmayı ifade eden ve iyi oluş üzerinde olumsuz etkilere yol açabilecek bir olgu olarak klinik psikoloji ve örgütsel davranış gibi disiplinlerde yaygın biçimde ele alınmaktadır. Çalışma ortamı taleplerine bir yanıt stili olarak işle ilgili derin düşünme/ruminasyon, bireyin dikkatini bir rahatsızlık kaynağına yoğunlaştırarak, iyi oluşu azaltmakta, stres ve kaygıyı ise arttırmaktadır. Araştırmacılar iş özellikleri, işle ilgili derin düşünme ve iyi oluş arasındaki ilişkileri bazı açılardan açıklamaya çalışsa da işle ilgili derin düşünmenin tanımı, iş özelliklerinin sınıflandırılması ve iyi oluş yaklaşımları konusunda bir görüş birliği henüz gözlenmemiştir. Bu çalışma, söz konusu değişkenlerin çeşitli çalışmalarda nasıl ele alındığını açıklamayı, kapsamlı bir özet elde etmek için mevcut literatürü değerlendirmeyi ve gelecekteki araştırma çabaları için önerilerin sağlanmasını amaçlamaktadır. Bu çalışmanın örneklemini 25 görgül araştırma makalesi oluşturmaktadır. Bu sistematik inceleme sayesinde işle ilgili derin düşünme ve iyi oluşu etkileyen iş özellikleri, işle ilgili faktörler, kişilerarası faktörler ve bağlamsal faktörler olarak gruplandırılmıştır. Elde edilen bulgular işle ilgili derin düşünmenin iş özellikleri ve iyi oluş arasındaki ilişkilerde önemli bir mekanizma olduğunu göstermektedir. Bu çalışmanın söz konusu değişkenlerin kuramsal arka planını inceleyerek araştırmacılar, insan kaynakları uzmanları ve örgüt/işyeri psikologları gibi uygulamacılar için faydalı olacağı düşünülmektedir.

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1. Introduction

The modern workplace is a complex setting, and employees encounter a variety of challenges on a daily basis. One of these obstacles is replenishing the resources used in cognitive or physical efforts. Extensive research in industrial psychology, organizational behavior, and health psychology supports the notion that recovery time after work is essential for preventing harmful health effects. Scholars have struggled for decades to answer how work characteristics impact employee health. Psychological and psychical recovery are two significant variables that influence employee well-being (Fritz et al., 2010). Rumination is one of the psychologically detrimental cognitive responses to negative experiences and involves constant thinking of these adverse events or recalling unpleasant life circumstances (Papageorgiou & Wells, 2004). Work-related rumination (WRR) refers to focusing on work-related events, which hinders recuperation and creates vulnerability to stress-related health issues (Newman & Nezlek, 2019). The impact of rumination on employee performance and well-being is highlighted in the literature on rumination and work-related rumination, which covers a range of occupational health psychology topics. Prior studies have examined the connection between rumination, workplace rudeness, and sleep quality, emphasizing the need for recovery experiences to lessen the damaging impacts of mistreatment at work (Demsky et al., 2019). Furthermore, studies on the psychological elements of rumination and its consequences for depression, burnout, and stress at work have highlighted the need for rumination-specific treatment programs like therapies (Vandevala et al., 2017). Occupational health psychology has been interested in the relationship between rumination and rumination connected to one's job, and research has investigated this relationship from several angles. For instance, Syrek et al. (2017) discovered that affective rumination mediates the within-person link between incomplete tasks and sleep, emphasizing the influence of work-related rumination on sleep quality. Even though there are studies that show that WRR is linked to some positive outcomes (e.g., Vahle-Hinz et al., 2017), the most common problems with WRR are sleep disorders and fatigue (Akerstedt et al., 2002; Kompier et al., 2012). Therefore, given that WRR could lead to favorable and unfavorable employee outcomes, it is crucial to identify the specific individual and contextual elements that influence it.

Some individual and contextual factors have been studied to shed insight into the antecedents and consequences of WRR (Cropley et al., 2006; Sonnentag & Fritz, 2015; Vahle-Hinz et al., 2014). According to previous research, the organizational environment is associated with WRR in nonwork time and causes impaired well-being due to WRR (Berset et al., 2011; Syrek et al., 2017). Also, job demands were shown to trigger WRR and lead to impaired well-being (Cropley et al., 2006; Kinnunen et al., 2011; Perko et al., 2017). Due to its relationship with rising physiological and psychological arousal in response to prolonged demands (Brosschot et al., 2006), WRR is commonly accepted to emerge when work-related stress occurs (Wach et al., 2021). Though attempts to assess the relationship between work characteristics, WRR, and well-being were made from different perspectives and using other research methods (Blanco-Encomienda et al., 2020; Tuerktorun et al., 2020), there is a lack of comprehensive assessments of how these variables were studied together. Also, systematic reviews, bibliometric analyses, and meta-analyses are particular research types with their own constraints, including a focus on certain research criteria and a specific time frame. Therefore, the present study aims to provide a concise overview of existing literature investigating the links between work characteristics, WRR, and well-being and identify potential implications for future research. So, this study contributes to the WRR and well-being literature in several ways. First, the notion of rumination has been widely studied within clinical samples with cases of depression or trauma (Morrison & O'Connor, 2008). In this systematic review, we focused solely on WRR and studies involving employees. Secondly, a systematic approach contributes to a better understanding of the relationship between work characteristics, WRR, and well-being. In addition, evaluating the theoretical frameworks utilized to explain WRR-well-being linkages contributes to a more in-depth knowledge of the conceptual foundation of these links. This study concludes with an overview of the reviewed studies'

characteristics, data collection instruments, and theoretical and methodological recommendations for future research.

2. Theoretical Background

2.1. Work-Related Rumination and Work Characteristics

According to Martin and Tesser (1989: 7), rumination is *"a class of conscious thoughts that revolve around a common instrumental theme and that recur in the absence of immediate environmental demands requiring the thought"*. Rumination is simply the process of focusing on a life event, person, or situation and constantly thinking about it despite the lack of any demand. It is a broad term encompassing various types of persistent thinking that differ in frequency and deterrence. In other words, ruminating inhibits individuals from operating in a healthy way that may improve their affective states (Lyubomirsky & Nolen-Hoeksema, 1993). Rumination is widely studied from the clinical perspective (Querstret et al., 2016) as a negative cognitive style since it is described as a recurrent and persistent preservative self-focus on unpleasant events (Spasojevic et al., 2004). For instance, rumination is usually accepted as a predictor of depressed mood (Ciesla & Roberts, 2007). Rumination, in general, could be connected to any life event, situation, or stressor that disturbs an individual, whereas WRR is related explicitly to work factors. Frone (2015:3) defined rumination as *"preoccupation with and repetitive thoughts focused on negative work experiences that may extend past the workday." Their definition shows that* WRR tends to be conceptualized as a negative concept because it involves repetitive thinking regarding unpleasant incidents. However, according to Cropley and Zijlstera (2011), rumination should be divided into two categories: affective rumination, which hinders the recovery process, and problem-solving pondering, which helps overcome work-related issues. Furthermore, Querstret and Cropley (2012) showed that affective rumination is more significant for increased fatigue than problem-solving pondering. This result indicates that problem-solving pondering could be beneficial for making plans for overcoming a problem or dealing with a task, ultimately facilitating recovery (Syrek et al., 2017). Also, problem-solving pondering has been demonstrated to be beneficial regarding recuperation and enhanced work engagement (Hamesch et al. 2014). According to some authors, another sub-dimension of WRR is called psychological detachment, meaning *"refraining from job-related activities and mentally disengaging from work during time off-job"* (Sonnentag & Fritz, 2007). In other words, the absence of positive or negative work-related thoughts during non-work periods is called "psychological detachment." Prior research has shown that three concepts are related but distinct from each other (e.g., Cropley & Milward Purvis, 2003; Sonnentag & Fritz, 2015).

Many diverse conceptual perspectives underpin WRR research. Previously, Fritz and Sonnentag (2005) proposed a form of thinking about work, which they called *"positive work reflection,"* which indicates "*thinking about the positive aspects of one's job."* Also, Casper et al. (2018) suggested negative work reflection, which means focusing on the unpleasant aspects of one's job. In addition, Weigelt et al. (2019) said that positive and negative work reflections differ in some facets of WRR. Their study underlines that affective rumination, psychological detachment, problem-solving pondering, negative work reflection, and positive work reflection relate differentially to emotional exhaustion and work engagement.

Though there are slight differences, the typical focus of these conceptualizations is the emphasis on balancing work-related stressors and demands with personal resources to maintain a healthy mental and physical state. In prior studies, WRR is generally conceptualized in the context of The Effort-Recovery Theory (E-R) (Meijman & Mulder, 1998) and The Conservation of Resources Theory (COR) (Hobfoll, 1989). E-R assumes that individuals preserve and develop individual resources to cope with work-related demands. To meet these demands for facilitating work recovery, physical, emotional, and mental effort are required (Zijlstra & Sonnentag, 2006). On the other hand, COR suggests that people are motivated to protect their internal or external resources to survive.

Especially under stress, the drive to preserve one's resources becomes more substantial and more evident. For instance, in cases of energy loss, people look for alternative ways of regaining energy.

According to COR and E-R, WRR could considerably limit an individual's capacity to disengage from the work setting and participate in essential recovery activities to replenish their resources. Research confirms that rumination about stressful situations negatively distorts thinking processes and impairs actions (Lyubomirsky & Nolen-Hoeksema, 1993). According to research, people who suffer workplace stress are more likely to engage in WRR (Cropley & Zijlstra, 2011). As a strategy for dealing with job strain, an individual may be more inclined to ruminate on their unfavorable experiences when they are no longer physically at work.

Prior research has demonstrated that job stressors or demands have been shown to trigger WRR (Cropley et al., 2006). The main idea behind the connection between work stressors and WRR is that recovering after a stressful work event is more challenging if the thoughts regarding the stressful event are brought up again in non-work time (Vahle-Hinz et al., 2014). Stress factors such as a heavy workload, social conflict at work, and role ambiguity might persist in non-work time when individuals constantly have them on their minds (Brosschot et al., 2006). Querstret and Cropley (2012) suggested that WRR is an extension of work demands and a determiner of work-related stress. They argued that WRR responds to work demands, which continue after leaving work and hinder recuperation. Also, Cropley and Milward Purvis (2003) claimed that individuals who experience high job strain could not quickly recover from ruminative thinking related to work because they could not *"switch off"* at the cognitive level. In addition, time pressure, which refers to an imbalanced amount of time between the given time and the amount of work, creates a situation where individuals are not able to finish their tasks on time fall into recursive thinking, and eventually fail to detach (Sonnentag et al., 2014) psychologically.

More recent research also shows the relationships between job demands and WRR (e.g., Burch & Barnes, 2020; Kinman, 2017; Payne & Kinman, 2019; Sousa & Neves, 2021). A cross-cultural study by Karabati et al. (2019) revealed that dissatisfied workers spend more time thinking about their situation, which underlines the significance of job satisfaction as a critical determiner of WRR. Other work factors leading to WRR include workplace incivility (He et al., 2020), after-hours e-mailing frequency and duration (Minnen et al., 2021), and perceived daily workload (Pindek et al., 2021).

2.2. Work-Related Rumination and Well-being

Researchers have proposed two primary approaches for conceptualizing well-being: objective and subjective well-being. Health, income, and safety factors determine one's quality of life and are commonly used to assess objective well-being. On the other hand, subjective well-being refers to subjective assessments of one's life based on life experiences (Diener, 2000). Thus, objective well-being is focused on the accurate dimensions of a good life, whereas subjective well-being mainly concentrates on subjective judgments (Voukelatou et al., 2021).

The main idea underlying the relationship between well-being and WRR is that what people think influences how they feel and act (Karabati et al., 2019). Rumination is a response style that focuses an individual's attention on a source of discomfort and prevents problem-solving (Nolen-Hoeksema, 1991). Since rumination occurs when a person repetitively imagines the possibilities of a particular event, it may trigger negative thoughts. Imagining stressful events repeatedly is found to increase stress and anxiety (Michl et al., 2013). Prior research demonstrated that ruminating leads to a distorted perception of incidents and that rumination-prone individuals tend to isolate themselves from their social surroundings and limit their involvement in pleasurable activities (Ciesla & Roberts, 2007). In other words, constant thinking about work could negatively impact people's emotions and actions by depleting both psychological and physical resources.

The links between WRR and well-being were studied from numerous perspectives. The Conservation of Resources Theory (COR) suggests that work-related rumination could adversely impact well-being and productivity. Studies have shown that negative work context, work-related rumination, and sleep quality are all linked to decreased well-being (Berset et al., 2011). Some studies assessed well-being using physical factors (e.g., fatigue, sleep quality), whereas others used psychological characteristics (e.g., emotional exhaustion, engagement, life satisfaction). The health state of individuals is a crucial aspect of their well-being (Voukelatou et al., 2020). As an essential component of health status, fatigue is a global phenomenon, given the growing intensity of work conditions (Dawson et al., 2011; Querstet & Cropley, 2012).

Individuals working in a high-demanding work setting generally face sleep disturbance and believe these results from WRR (Berset et al., 2011). Recuperation is necessary for replenishing personal resources in the face of the increase in emotionally taxing job demands that have multiple negative health consequences. So, recovery may only be possible if a person physically and emotionally disengages from work. Due to its nature, WRR could occur at or outside work, such as at home. Rumination has been found to have adverse effects on sleep quality since it makes falling asleep difficult (Kompier et al., 2012). Therefore, emotionally charged, recurrent thoughts after work could pose a health threat to employees (Kinnunen et al., 2017).

Typical subjective well-being indicators often include emotional exhaustion or burnout, work engagement, and life satisfaction. A study among academics revealed that worrying and ruminating about work enhanced participants' exhaustion after returning to work (Kinman et al., 2017; Perko et al., 2017). Similarly, continuous cognitive engagement with work-related ideas during non-work time caused burnout (Söderstrom et al., 2012). Some studies used physical and psychological indicators to investigate the effects of job demands and WRR on well-being. For instance, Minnen et al. (2021) measured well-being with engagement and fatigue using self-report scales. While Karabati et al. (2019) concentrated on the happiness and life satisfaction elements of subjective well-being, Zoupanou and Rydstedt (2019) examined the connections between affective rumination and psychosomatic symptoms, demonstrating the existence of a wide range of well-being approaches within the literature.

3. Method

3.1. Study Design

The Preferred Reporting Items for Systematic Reviews and Meta-Analyzes (PRISMA) (Page et al., 2021) were used in this study. The search was based on Web of Science, EBSCOhost, PubMed, and PsycInfo articles. The data collection and analysis lasted between October 2022 and November 2023. Search terms included the combinations of "work-related rumination," "work rumination," "affective rumination," "employee rumination," "rumination," "well-being," "burnout," "exhaustion," and "engagement"in the topic, title, and abstracts of publications. An example search query is "*(work-related rumination) AND (well-being) OR (work-related rumination) AND (burnout).”* The initial search yielded the following: PsychInfo (N = 20), PubMed (N = 56), Web of Science (N = 39), and EBSCO (N = 33). The first step was to determine the duplicate records. Secondly, all titles and abstracts were screened to eliminate articles that did not fit the research purpose.

3.2. Selection Criteria and Data Extraction

For inclusion, original research publications in English were evaluated. This study excluded unpublished research, abstracts, conference proceedings, and dissertations to achieve accurate results. There were no restrictions on the types of participants. However, only studies with employee samples were included because ruminating should be related to work. The titles and abstracts of the collected publications were evaluated for

eligibility and had if WRR, well-being, and work characteristics were investigated simultaneously. Some articles explored only WRR and well-being relationships; hence, they were excluded from the research. Also, the main focus of this search was to find peer-reviewed articles that included the concept of rumination regarding work. Some of the articles focused on rumination in general, which refers to constant thinking about adverse events in life. Thus, those articles were eliminated from the sample.

Figure 1 shows the PRISMA flow diagram of the sample selection process. The first step was to search databases and find duplicate records. Secondly, the titles and abstracts of each record were reviewed to see if they met the inclusion criteria. These criteria excluded articles: review papers, conference papers, and book chapters. Then, all the articles were thoroughly assessed for eligibility. The articles that did not fulfill the inclusion criteria (e.g., non-employee samples, rumination regarding general life events) were excluded. Finally, the study included 25 articles, all systematically evaluated.

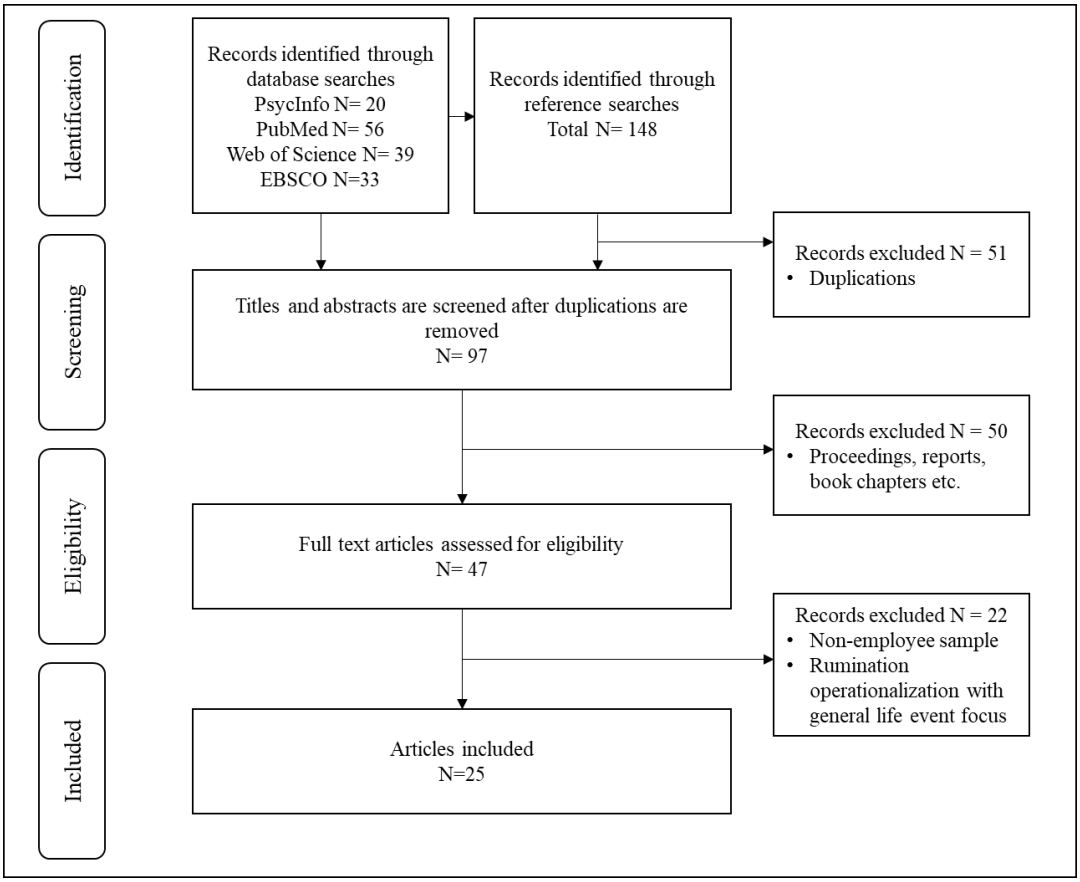

Figure 1. PRISMA protocol
Source: Figure by the authors

4. Results

As seen in Table 1, the most used theoretical framework in studies was The Effort-Recovery Theory (E-R) (n= 6). The second most used model is the Job Strain Model (JSB) / Job Demand-Control-Support (JDCS) Model (n = 5). COR (n = 3) and Cognitive Activation Theory (CATS) are also (n = 3) preferred when looking into connections between work demands or stressors, WRR, and well-being. By looking at the study findings, it was seen that the majority of the studies provide evidence that work characteristics have significant effects on well-being and WRR has a role in that relationship (e.g., Kinnunen et al., 2011; Minnen et al., 2021; Pindek et al.,

2021). On the other hand, there is some contradictory evidence regarding the mediating role of WRR. For instance, Cropley et al. (2006) found that WRR, job strain, and sleep quality are significantly related. Still, WRR did not moderate or mediate the relationship between job strain and sleep quality. Also, Kinman et al. (2017) reported that conflict at work was a predictor of rumination; however, rumination was not a predictor of heart rate variability, which conflicted with the previous research by Vahle-Hinz et al. (2014). Nevertheless, contradicting results may result from adopting different sample characteristics, study designs, and measurement tools.

Table 1. Characteristics of studies included in the systematic review

					Measured constructs and data collection tools			
No	**Authors**	**Study Region**	**Sample characteristics and study design**	**Work characteristics**	**Work-related rumination**	**Well-being**	**Theoretical Approach**	**Findings**
1	Berset et al. (2011)	Switzerland	N1=100 N2=294 Cross-sectional study Survey method	*Time pressure: Instrument for Stress Oriented Task Analysis* *Effort-reward imbalance: Six items on exchange relationships*	*Work-related rumination: Three items on rumination*	*Sleep quality: Pittsburgh Sleep Quality Index*	Effort–Recovery Model (Meijman & Mulder, 1998)	Work-related rumination mediated the relationship between work stressors and impaired sleep.
2	Blanco-Encomienda et al. (2020)	Multicultural	N=19 Meta-analysis	*Toxic work environment characteristics* *Healthy work environment characteristics*	*Negative emotion* *Positive emotion*	*Well-being* *Discomfort*	*	Links were found between negative work context, WRR, and decreased well-being
3	Chen et al. (2022)	Taiwanese	N= 823 Taiwanese full-time workers. Survey method	*Recovery experience: Recovery Experience Scale developed by Sonnentag and Fritz (2007) The scale includes 15 items and four factors: autonomy, detachment, relaxation and mastery*	*Work-related rumination: Work-Related Rumination Questionnaire with 5 items developed by y Cropley and Zijlstra (2011).*	*Hedonic well-being: It was measured using a four-item scale. Eudaimonic well-being is measured with eight items.* *Respondents' overall satisfaction with their stay: It is measured using a four-item, seven-point semantic differential scale.*	Response Styles Theory (RST) s (Nolen-Hoeksema et al., 2008)	According to the results, recovery effects contribute to customer satisfaction and hedonic and eudaimonic well-being.
4	Cropley et al. (2006)	UK	N=143 School teachers Daily diary method	*Job strain: Ten items on job demands, job control and skill utilization*	*Work-related rumination: Seven items on ruminations about the negative aspects of the job*	*Sleep: Items on sleep quality*	Job Demand-Control/Strain model (Karasek & Theorell, 1990)	Significant correlations were discovered between work rumination, job strain, and sleep quality.
5	He et al. (2020)	USA	N=154 Cross-sectional study Faculty	*Workplace incivility: Ten items on frequency of disrespectful, rude,* *or condescending*	*Negative rumination: Negative Work Experience*	*Burnout: Oldenburg Burnout Inventory* *Life Satisfaction: Five items on life*	Conservation of Resources Theory (Hobfoll, 1989)	Rumination mediated the relationship between workplace

			members Longitudinal survey method	*behaviors by colleagues* *Perceived organizational support: Survey of Perceived Organizational Support* *Family supportive work environment perception: Family-Supportive Organizational Perceptions Scale*	*Scale*	*satisfaction* *Work-family conflict: Inter-Role Conflict Scale*		incivility and burnout, work-to-family conflict and life satisfaction.
6	Kerman et al. (2022)	-	N= 93 Health sector employees Daily diary method and HRV measurement	*Interpersonal conflict at work: The Interpersonal Conflict at Work Scale*	*Negative rumination: Negative Work Experience Scale*	*Heart rate variability assessment: Electrocardiogram (ECG) heart rate monitor*	*	Daily conflict at work was found to predict rumination; however, rumination did not predict nocturnal heart rate variability.
7	Kinman et al. (2017)	UK	N=1628 Police officers Survey method	*Job-related demands: UK Health and Safety Executive Indicator Tool* *Aggression at work: Six items on verbal threats, verbal abuse, intimidation, physical assault, sexual* *harassment and sexual assault*	*Affective rumination: Nine items measure the extent to which respondents ruminate about work during their free time* *Psychological detachment: Five items assess participants' ability to detach themselves from work issues*	*Emotional exhaustion: Maslach Burnout Inventory* *Work-life conflict: Work-Life Conflict Scale*	Work-Home Resource Model (ten Brummelhuis & Bakker, 2012)	Affective rumination and detachment were revealed to have moderating effects on the association between workplace aggression and emotional exhaustion.
8	Kinnunen et al. (2011)	Finland	N=664 Employees Cross-sectional study Longitudinal survey method	*Job demands & Job resources: QPSNordic Questionnaire*	*Affective rumination* *Problem-solving pondering: Work-Related Rumination Questionnaire Psychological detachment: Recovery Experience Questionnaire*	*Burnout: Maslach Burnout Inventory-General Survey* *Work engagement: Utrecht Work Engagement Scale)* *Occupational well-being: Need for Recovery Scale*	Job Demands–Resources Model (Bakker & Demerouti, 2007)	Psychological detachment fully mediated the effects of job demands on fatigue at work.
9	Kompier et al. (2012)	Netherlands Survey method	N= 5210 Employees Cross-sectional study	*Pace and amount of work* *Emotional load* *Physical effort* *Work variety* *Work control* *Colleague support:*	*Work-related rumination: Three items on rumination*	*Sleep quality: 12 items on difficulties* *with initiating sleep,* *difficulties maintaining sleep* *and*	Effort-Recovery Theory (Meijman & Mulder, 1998)	The results indicated that work characteristics and rumination affected sleep quality, fatigue, and well-being.

				62 items on work characteristics		*sleep quality in general* *Fatigue: 11 items on feeling fatigue* *Affective well-being during work: Six items on well-being (eg., optimistic, relaxed)*		
10	Minnen et al. (2021)	USA	N=59 Employees Cross-sectional study Five-day dairy survey method	*After-hours e-mailing frequency, duration: Three items on frequency and duration* *Perceived negative tone: Single item on negative tone*	*Affective rumination* *Problem-solving pondering: Work-Related Rumination Questionnaire*	*Vigor: Vigor sub-scale of the Utrecht Work Engagement Scale* *Fatigue: Work Fatigue Inventory*	*	Perceived after-hours e-mail frequency and tone influenced both vigor and fatigue via affective rumination.
11	Payne & Kinman (2019)	UK	N=909 Cross-sectional study Firefighters Survey method	*Workload* *Work patterns* *Work environment* *Conflict* *Control* *Role clarity* *Manager support* *Coworker support* *Change management: Health and Safety Executive (HSE) Management Standards Indicator Tool*	*Affective work-related rumination* *Problem-solving pondering* *Psychological detachment: The Work-Related Rumination Questionnaire*	*Work-related anxiety and depression: 12 items on anxiety and depression*	Effort-Recovery Model (Meijman & Mulder, 1998)	Job demands had significant effects on well-being. WRR was the strongest predictor of work-related anxiety and depression.
12	Perko et al. (2017)	Finland	N=189 Municipal employees Longitudinal survey method	*Workload: Quantitative Workload Inventory* *Cognitive Demands: Copenhagen Psychosocial* *Questionnaire* *Transformational leadership: Global Transformational Leadership* *Scale* *Supervisor fairness: Two items from QPS Nordic Questionnaire* *Conflict management: 3-item conflict* *management scale* *Abusive supervision: Abusive Supervision Scale*	*Work-related rumination: Three items on rumination*	*Exhaustion: Maslach Burnout Inventory*	Conservation of Resources Theory (Hobfoll, 1989)	Participants in the higher work-related rumination classes reported higher levels of job demands, less supervisor fairness, more abusive supervision and exhaustion.
13	Pindek et al.	USA	N=137	*Daily perceived workload: Four*	*Rumination: Ruminative*	*Following morning negative*	Cognitive Activation	WRR mediated the relationships

	(2021)		Non-teaching faculty staff 9-day diary method	*items based on Quantitative Workload Inventory*	*Response Scale*	*emotions & trait negative affectivity: Positive and Negative Affect Scale (PANAS)*	Theory (Ursin & Eriksen, 2004)	between daily workload and negative emotions.
14	Querstret et al. (2016)	UK	N=102 (Experiment group) N=125 (Control group) Employees Experimental design	*Job control and job demands: Job Content Questionnaire*	*Work-related rumination: Work-Related Rumination Questionnaire*	*Fatigue: Occupational Fatigue Exhaustion Recovery Scale* *Sleep quality: The Pittsburgh Sleep Quality Index*	Effort-Recovery Theory (Meijman & Mulder, 1998) and Conservation of Resources Theory (Hobfoll, 1989)	Job demands and control was correlated with affective rumination and chronic fatigue.
15	Rodríguez-Muñoz et al. (2022)	-	N= 124 Employees Cross-sectional study Weekly Diary Method	*Workplace bullying: Short-Negative Acts Questionnaire*	*Work-related anger rumination: Anger Rumination Scale*	*Emotional exhaustion: Spanish version of Maslach Burnout Inventory-General Survey*	Cognitive Activation Theory of Stress (Ursin & Eriksen, 2004)	Rumination mediated the relationship between workplace bullying and well-being.
16	Rosario-Hernandez et al. (2018)	Puerto Rico	N= 1046 Cross-sectional study Survey method	*Workplace bullying: Inventory of Psycho-Terror*	*Work-related rumination: Work-Related Rumination Questionnaire*	*Sleep well-being: Sleep Well Being Indicator*	Cognitive Activation Theory of Stress (Ursin & Eriksen, 2004)	Affective rumination and detachment mediated the relationship between workplace bullying and sleep well-being.
17	Sousa & Neves (2021)	-	N=152 Cross sectional study Longitudinal survey method	*Work overload: Eight items on work overload* *Boredom at work: Boredom Scale*	*Affective work-related rumination* *Problem-solving pondering* *Psychological detachment: Work-Related Rumination Questionnaire*	*Emotional exhaustion* *Disengagement: Oldenburg Burnout Inventory*	Effort-Recovery Model (Meijman & Mulder, 1998)	Boredom and overload caused emotional exhaustion and disengagement via affective rumination. Additionally, work overload increased emotional exhaustion via reduced detachment.
18	Syrek and Antoni (2014)	Germany	N=118 Knowledge workers Survey method	*Time pressure: Instrument for Stress Oriented Task Analysis* *Unfinished tasks: Two items on unfinished tasks*	*Rumination: Two items on rumination*	*Sleep: Insomnia Severity Index*	Job-Demand Resources Model (Bakker & Demerouti, 2007)	The perception of not having accomplished the week's activities triggers rumination and hinders sleep.
19	Syrek et al. (2017)	Germany	N=59 Employees Cross-sectional study Three-month diary method	*Unfinished tasks: Items on unfinished tasks*	*Affective work-related rumination* *Problem-solving pondering* *Psychological detachment: Work-Related*	*Sleep impairment: Insomnia Severity Index*	Lewin's Field Theory (Lewin, 1939), Zeigarnik Effect Theory	Affective rumination mediated the relationship between unfinished tasks and sleep.

					Rumination Questionnaire			
20	Vahle-Hinz et al. (2014)	Finland	N=55 Cross-sectional study Survey method and HRV measurement	*Work stress: Salutogenesis Job Analysis*	*Work-related rumination: One item from the Irritation Scale*	*Sleep: Single item on sleep quality* *Heart rate variability: the Actiheart monitor (Cambridge Neurotechnology, Cambridge, U.K.)*	*	WRR was related to sleep and WRR was positively related to nocturnal heart rate variability.
21	von Hippel et al. (2019)	Australia	N= 1288 Employees Cross-sectional study Survey method	*Age-based stereotype threat event: Stereotype Threat Scale*	*Work-related rumination: Five items on rumination*	*Workplace well-being: 12 items on well-being* *Job engagement: Three items by Rich et al. (2010)*	Stress Appraisal Style Theory (Lazarus & Folkman, 1984)	Rumination mediated the relationships between age-based stereotype threat and job satisfaction, commitment, wellbeing, and intentions to quit.
22	Wach et al. (2021)	-	N=55 Entrepreneurs 12-day diary survey method	*Challenge stressors* *Hindrance stressors: Demand-Induced Strain Compensation Questionnaire (DISQ)*	*Affective rumination* *Problem-solving pondering: Work-Related Rumination Questionnaire*	*Well-being: Well-Being Index (WHO-5)*	*	Challenge and hindrance stressors inhibited psychological detachment through problem-solving pondering and work-related affective rumination, which diminished well-being.
23	Weigelt et al. (2023)	Germany	N= 357 employees. Survey method	*Overcommitment: six items of the Overcommitment subscale (OVC) of the German Effort–* *Reward Imbalance Questionnaire (ERIQ) by Siegrist et al.*	*Work-related rumination: ten facets of work-related rumination, namely* *(1) overcommitment, (2) psychological detachment, (3) affective rumination, (4) problem-solving* *pondering, (5) positive work reflection, (6) negative work reflection, (7) distraction, (8) cognitive* *irritation, (9) emotional irritation, and*	*Mental and Emotional fatigue: Sis items of the mental fatigue subscale and six items of the emotional fatigue of the Work Fatigue Inventory* *(WFI-3D) developed by Frone and Tidwell is used.* *Psychosomatic Complaints: 8 out of the 12 items of the somatic complaints subscale of the Symptom Checklist 90 (SCL-90) by Derogatis is used.* *Satisfaction with Life : five items of the validated*	Action Regulation Theory (Hacker, 2003)	The results indicate that several measures of work-related rumination (e.g., over-commitment and cognitive irritation) could be used interchangeably. Affective rumination predicts fatigue, burnout, psychosomatic complaints, and satisfaction with life.

					(10) inability to recover is analyzed.	*Satisfaction with Life Scale (SWLS) by Diener et al. is used*		
24	Wu and Zhou (2023)	China	N= 536 married Chinese university teachers. Survey method.	*Work Stress: Work stress is measured by the 22-item Revised Sources of Faculty Stress scale (R-SFS) (Yin et al., 2020).* *Sense of Control: Sense of control is measured by the personal mastery scale with 4 items (Lachman and Weaver, 1998).*	*Work-related rumination: Affective rumination subscale of the work-related rumination scale with 5 items is used (Cropley, 2012).*	*Personal Well-Being: Personal well-being was indicated by life satisfaction, which was assessed by the 5-item Satisfaction With Life Scale* *(SWLS) (Diener et al., 1985).* *Relational Well-Being: Relational well-being was indicated by relationship satisfaction, which was measured by the Relationship Assessment Scale* *(RAS) (Hendrick, 1988)*	Conservation of Resources Theory and the Stress Process Model.	Work stress is indirectly related to life satisfaction through sense of control, work-related rumination.
25	Zoupanou and Rydstedt (2019)	UK	N=139 Employees Cross-sectional study Survey method	*Work interruptions: Single item from Effort-Reward Imbalance Model*	*Affective rumination: Work-Related Thoughts Questionnaire*	*Well-being: General Health Questionnaire* *Psychosomatic symptoms: A short version of The Pennebaker Inventory of Limbic Languidness (PILL)*	*	Affective rumination was a mediator in the link between stressful work interruptions and psychosomatic symptoms.

Notes. * represent that there was no specific theory.

The studies were presented in alphabetical order.

Source: Table by the authors

It is also worth noting that all studies included in this study had work characteristics, WRR, and well-being; however, some considered WRR as a mediator while others did not. As previously stated, WRR arguably mediates the relationship between work characteristics and well-being (Berset et al., 2011), and most studies have taken WRR as a mediator. Also, Kinman et al. (2017) considered affective rumination and psychological detachment as moderators between aggression and emotional exhaustion. Moreover, Payne and Kinman (2019) examined the relationships between job demands, WRR, and well-being and found significant correlations. According to study findings and theoretical assumptions, we propose a conceptual framework for relationships between work characteristics, WRR, and well-being (see Figure 2).

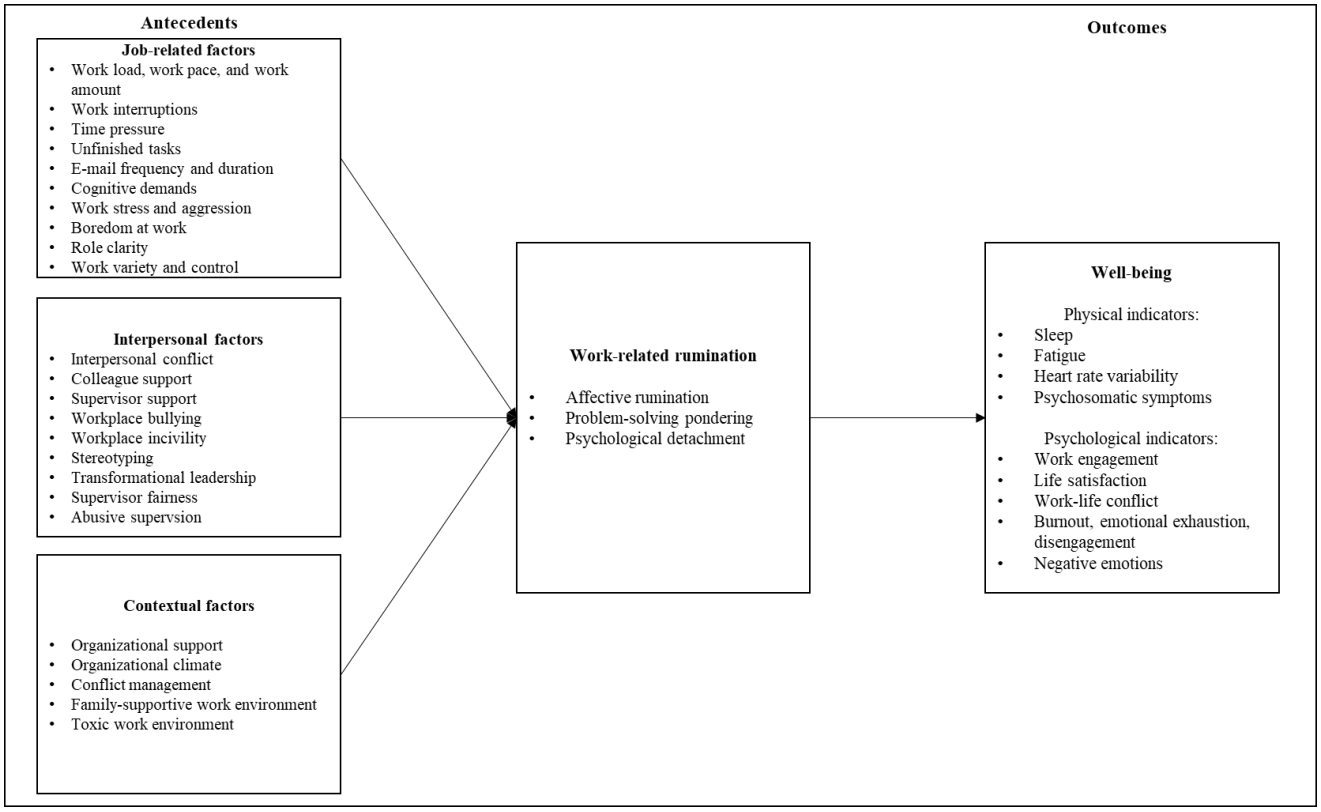

Figure 2. A Conceptual Framework of Work Characteristics, WRR and Well-Being
Source: Figure by the authors

Factors related to WRR and well-being in terms of work were categorized as job-related factors. In some studies, job demands have been evaluated in a generic sense (Kinnunen et al., 2011), while in others, particular characteristics such as workload or cognitive demands have been recognized (Perko et al., 2017). Job strain was also considered by Querstret et al. (2016) based on the Job Strain Model. Workload, work pace, work amount, interruptions, and time pressure (Perko et al., 2017; Sousa & Neves, 2021; Zoupanou & Rydstedt, 2019) were some factors related to WRR and well-being. Minnen et al. (2021) found that after-hours e-mail frequency and duration, which could be considered extended work availability (Dettmers et al., 2016), influence vigor and fatigue via WRR. Also, role clarity, work variety, and control (Kompier et al., 2012) were positively related to WRR and well-being.

Supervisor and co-worker support were positively related to affective rumination and sleep quality (Kompier et al., 2012). Von Hippel et al. (2019) revealed that WRR mediated the relationships between age-based stereotype threat and well-being. Additionally, supervisor fairness and transformational leadership were positively related to WRR (Perko et al., 2017). On the other hand, WRR played a mediator role between workplace bullying and well-being in some studies (Rodríguez-Muñoz et al., 2022; Rosario-Hernandez et al., 2018). Also, negative rumination played a mediator role in the relationship between workplace incivility and burnout (He et al., 2020).

Organizational support, a family-supportive work environment, and interpersonal conflict were categorized as contextual factors. He et al. (2020) showed that organizational support and a family-supportive work environment moderate the impact of incivility on WRR. Kerman et al. (2022) found that daily conflict at work predicted WRR. According to Perko et al. (2017), effective conflict management by supervisors was negatively related to WRR and exhaustion. In terms of the COR, organizations could better support their employees and improve their overall well-being. Additionally, Choi & Miyamoto (2022) provided insights into cultural differences in the association

between rumination and negative psychological correlates, shedding light on the contextual factors influencing the relationship between rumination and its outcomes (Choi Miyamoto, 2022).

WRR was primarily measured in terms of affective ruminating, problem-solving pondering, and psychological detachment aspects using Cropley et al.'s (2012) measuring approach. However, some studies have also assessed negative work reflection or negative work rumination (e.g., He et al., 2020). According to the systematic review, well-being falls into two categories: physiological and psychological. Physiological factors included sleep, weariness, heart rate variability, and psychosomatic symptoms. Engagement, life satisfaction, work-life conflict, exhaustion or burnout, disengagement, and negative emotions were grouped as the psychological indicators of well-being.

5. Result and Discussion

This systematic literature review explored the relationship between work characteristics, WRR, and well-being. Twenty-five empirical studies were systematically reviewed to determine how work characteristics, WRR, and well-being were associated, and which theoretical and practical approaches were employed. This systematic study will enhance our understanding of the link between work characteristics and well-being by emphasizing the role of WRR. The findings of the study generally support the idea that work characteristics have direct relationships with well-being and that, in some cases, WRR acts as a mediator (Kinnunen et al., 2011; Pindek et al., 2021; Rosario-Hernandez et al., 2018). Blanco-Encomienda et al. (2020) carried out a meta-analytic study on the links between WRR, work environment, and well-being; however, their focus was to find the main effects between variables and possible moderator effects of age and seniority. Their results indicated that the link between negative work context and decreased well-being with the rumination strategy is related. However, their study does not include information about the components of a toxic or healthy work environment identified in earlier research.

Each study in the sample was unique in its methodology and data collection techniques. Regarding work characteristics, contextual factors such as the attitudes of coworkers and leaders, organizational climate, and support were found to be correlated with WRR and well-being. Multiple conceptualizations of WRR and well-being assessments exist, leading to challenges in generalizing or comparing past research findings. For example, some studies considered WRR regarding negative work rumination (He et al., 2020), whereas most research adopted Cropley et al.'s (2012) approach. As it comes to well-being, self-report measures have been typical in research on well-being since they reflect the individual's assessment of their state of mind. However, it was found that some studies used heart rate monitors (Kerman et al., 2022), which is a more objective approach, whereas in some studies, sleep was measured with self-report scales (e.g., Syrek et al., 2017).

According to this study, two studies had conflicting findings. Cropley et al. (2006) observed a strong association between WRR, work strain, and sleep quality, although WRR did not moderate or mediate the relationship. Kerman et al. (2022) revealed that work conflict predicted rumination but not heart rate variability, contradicting Vahle-Hinz et al. (2014). Given the diversity of study techniques and theoretical approaches, not all studies have produced the same results. Yet, it is possible to conclude that there are relationships between work characteristics, WRR, and well-being by looking at the theoretical and empirical body of prior research.

This study has some theoretical contributions. Firstly, looking at the study's results, it could be concluded that WRR is an essential mechanism in the relationship between work characteristics and well-being. We comprehensively assessed the literature that explored work characteristics, WRR, and well-being. This study revealed that the components of work characteristics have the potential to predict well-being via WRR. It should be noted that work characteristics could positively or negatively affect WRR depending on the operationalization

of the concepts. Time pressure, for example, could have a negative impact on well-being when WRR is operationalized as an affective or negative rumination. However, time pressure could also improve employees' problem-solving skills by increasing their problem-solving pondering. An employee who thinks about a problem related to his job outside of work could find a solution to the issue, which could positively affect his well-being. Therefore, it could be argued that the content of work-related thoughts will also impact whether the results will be destructive or constructive (Vahle-Hinz et al., 2017). Thus, evaluating WRR in terms of its sub-dimensions (e.g., affective rumination, problem-solving pondering, psychological detachment) could yield more meaningful and accurate results.

Secondly, this study reveals in detail how these concepts are defined, which theoretical frameworks are adopted, and which measurement tools are used in examining the relationships between work characteristics, WRR, and well-being. Among the theoretical infrastructures discussed are approaches such as the E-R Model, the J-DR Model, the COR Model, the CAT Model, and the JDC Model. From the perspective of the J-DR model (Bakker & Demerouti, 2007), different occupations may have distinct risk factors for work stress, and some employee groups would be experiencing highly emotionally and physically demanding work. So, showing how different employee groups react to work demands could reveal important insights. In addition, the sub-dimensions of WRR that have been examined and information on how well-being is evaluated are presented. In some studies, Diener's (1984) subjective well-being approach was adopted, and well-being was measured in terms of life satisfaction with positive and negative effects (He et al., 2020). On the other hand, some studies have measured burnout or exhaustion in addition to engagement, as in Seligman's (2011) approach (Kinman et al., 2017). Depending on the purpose of the research, different approaches could be adopted in the future.

The study findings underline the fact that the content of work-related thoughts determines whether the outcome is detrimental or beneficial. Therefore, organizational health actions may need to be more sophisticated than telling workers to put work aside during their free time. Given that considering work is a regular activity, exposing employees to cease thinking about it after hours may be pointless. The findings and propositions could benefit researchers and professionals because they show that using and developing strengths in the workplace could improve well-being and eliminate negative WRR consequences. Professionals are encouraged to optimize work characteristics through systematic efforts. However, it would be too simple to propose preventing WRR by changing job demands or work settings in general to hinder WRR and its negative consequences (Vahle-Hinz et al., 2017). It is unrealistic or possible to prevent individuals from ruminating about work during nonwork time; instead, the quality of those thinking processes might be improved. For example, research has shown that human interaction at work significantly predicts well-being (Rosario-Hernandez, 2018; He et al., 2020) because angry memories of unpleasant events could trigger rumination and negatively impact well-being. Thus, creating a supportive culture where employees feel comfortable discussing their work-related issues could encourage them to engage in positive rumination. Also, mindfulness training is effective in reducing the adverse effects of rumination on well-being (Deyo et al., 2009). Additionally, managers play a critical role in balancing workloads, reducing job strain, and facilitating employees to cope with their problems (Pindek et al., 2021). As a result, making evaluations and interventions that could reduce the adverse effects of work characteristics on employees' thoughts outside of work seems essential, as they could positively affect employees' well-being.

Some limitations regarding this review must be underlined. First, further theory and research on the relationships between work characteristics, WRR, and well-being are needed before any conclusive findings could be proposed. This literature review included only 25 studies. In addition, the majority of study participants are from Europe or the USA, which introduces a cultural bias that needs to be accounted for in the generalization of the results. The second limitation is that authors from various disciplines investigated work characteristics, WRR, and well-being using different operationalizations and measures. Also, most studies employ self-assessment measures for all variables, which may result in a common variance bias (Podsakoff et al., 2012). For instance,

some of the studies used a single-item question to measure WRR or well-being, while other studies adopted more comprehensive questionnaires with multiple questions to measure study variables. Studying variables with different indicators of sub-dimension hinders creating a unified and comprehensive theory between work characteristics, WRR, and well-being. Therefore, the results and proposed model do not present causality or are unified.

Given the changing nature of the concept of work in modern life, the characteristics of work in various sectors have become unpredictable. This study revealed that work characteristics included after-hours e-mail frequency, interruptions, incivility, bullying, and stereotyping. Future research could investigate the possible effects of some neglected variables, such as discrimination, emotional labor, extended availability, remote working, and work-to-family transitions, on well-being via WRR. Also, it was seen that WRR has been operationalized in different ways. In some studies, WRR was measured in terms of one dimension (affective or negative rumination), whereas in others, all three sub-dimensions were considered. In a recent study by Wiegelt et al. (2019), the authors underlined some issues regarding WRR research. They argued that the different facets of WRR have much common ground and should be researched together. They found significant correlations between five WRR factors: affective rumination, problem-solving pondering, psychological detachment, positive work reflection, and negative work reflection. So, in the future, WRR could be conceptualized as a five-factor structure. Another suggestion is that well-being is generally operationalized as subjective well-being in reviewed studies. More research could be done to explore the links between work characteristics, WRR, and objective well-being.

Author Contribution Rate Statement

Data were collected by Merve Gerçek and Cem Güney Özveren. The analysis was conducted by Merve Gerçek and Cem Güney Özveren. Literature review was conducted by Merve Gerçek. The conclusion and discussion section were written jointly by the authors.

Conflict Statement

There is no conflict of interest between the authors.

Statement of Support

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