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Exploring Work Addiction in the Job Demands-Resources Model:

What is the Association Between Job Demands, Social Support, Perfectionism, Occupational Self-Efficacy, and Work Addiction?

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Preface

The current thesis was part of the empirical bachelor project “Exploring the Landscape of Psychosocial Work Factors in Healthy Workplaces,” which was planned and supervised by Professor Marit Christiansen, Professor Siw Tone Strand, Associate Professor Emmanuel Aboagye, and Associate Professor Leon De Beer. The project employed a cross-sectional design, using an online survey provided to us by our supervisors, and the project consisted of 20 fellow students who collectively collected data for the project. In addition, a third-party research company collected additional data. After getting an introduction to the topic of the “positive” and “dark” side of the work environment by our supervisors, my interest quickly pulled towards the field of work addiction. The literature used in the present thesis was found through independent searches in Oria, Google Scholar, and Scopus, providing a deeper understanding of work addiction. This further developed into the idea of investigating the potential antecedents and causes of this problematic working behavior.

The project has provided valuable experience in conducting psychological research and insight into the field of organizational psychology. A special thanks goes out to my supervisor, Emmanuel Aboagye, for initial guidance and ongoing support throughout the research and writing process. His insightful feedback has been instrumental in shaping this thesis. Furthermore, I want to thank student assistant Kjell Solem Slupphaug for their excellent help with the statistical analyses. Finally, I want to thank my girlfriend, mother, father, and good friend Fabian Bratli Nikqi for their support, feedback, and proofreading.

Thereby, I declare this paper as my own.

This bachelor thesis is written in line with the Publication Manual of the American Psychological Association, Seventh Edition (2020).

Abstract

Work addiction is a problematic working behavior leading to adverse health outcomes. This study aimed to investigate whether integrating work addiction into the health impairment process could enhance the Job Demands-Resources (JD-R) Model. Utilizing the JD-R framework, the present study explored how job demands, social support, perfectionism, and occupational self-efficacy related to work addiction. A cross-sectional survey was conducted involving 630 employees across various occupations in Norway. The findings from the hierarchical regression analysis revealed that both job and personal characteristics significantly predict work addiction, accounting for 44% of the variance. Specifically, high job demands and the personal demand perfectionism notably predicted higher work addiction levels. In contrast, the job resource social support and the personal resource occupational self-efficacy are linked to reduced work addiction levels. The study also explored the buffering role of social support in the relationship between job demands and work addiction, though the results did not reach statistical significance. This research contributes to the existing literature by applying the JD-R model to work addiction and confirms the importance of both environmental and individual characteristics in understanding the phenomenon. These findings advocate for expanding the JD-R model to include work addiction, providing valuable insight for future research and practical applications in organizational settings.

Keywords: work addiction, JD-R model, job demands, social support, perfectionism, occupational self-efficacy

Sammendrag

Arbeidsavhengighet er en problematisk arbeidsatferd som fører til negative helseutfall. Denne studien hadde som mål å undersøke om integrering av arbeidsavhengighet i helseskadeprosessen (the health impairment process) kan forbedre Jobbkraft-Ressursmodellen (JD-R). Ved å bruke JD-R-rammeverket utforsket denne studien hvordan jobbkraft, sosial støtte, perfektjonisme og yrkesmessig mestringstro er relatert til arbeidsavhengighet. En tverrsnittsundersøkelse ble gjennomført med 630 ansatte i forskjellige yrker i Norge. Funnene fra den hierarkiske regresjonsanalysen viste at både jobbkraft og personlige egenskaper signifikant predikerer arbeidsavhengighet, og står for 44% av variansen. Spesifikt predikerte høye jobbkraft og det personlige kravet perfektjonisme merkbart høyere nivåer av arbeidsavhengighet. I motsetning er jobbkraftressursen sosial støtte og den personlige ressursen yrkesmessig mestringstro knyttet til reduserte nivåer av arbeidsavhengighet. Studien undersøkte også den dempende rollen sosial støtte har i forholdet mellom jobbkraft og arbeidsavhengighet, selv om resultatene ikke nådde statistisk signifikans. Denne forskningen bidrar til eksisterende litteratur ved å anvende JD-R-modellen på arbeidsavhengighet og bekrefter viktigheten av både miljømessige og individuelle faktorer for å forstå fenomenet. Disse funnene taler for å utvide JD-R-modellen til å inkludere arbeidsavhengighet, noe som gir verdifull innsikt for fremtidig forskning og praktiske anvendelser i organisatoriske settinger.

Nøkkelord: Arbeidsavhengighet, JD-R-modellen, jobbkraft, sosial støtte, perfektjonisme, yrkesmessig mestringstro

Exploring Work Addiction in the Job Demands-Resources Model

Technological advancements have significantly transformed the workplace in recent years, enabling people to always stay connected to their work. Additionally, many Western societies prioritize achievement and success, with work viewed as a fundamental aspect that shapes our identity, self-worth, and overall psychological well-being (Molino et al., 2016). For a minority of the population, these changes have led to a compulsive inner drive or an uncontrollable urge to work, a phenomenon referred to as “workaholism” or “work addiction” (Morkevičiūtė et al., 2021).

Work addiction has been linked to chronic stress, both at work and in personal life, burnout (Andreassen, Pallesen, et al., 2018), depression (Clark et al., 2016), cardiovascular disease (Salanova et al., 2016), anxiety (Andreassen, Schaufeli, et al., 2018), and other health issues (Gillet et al., 2021; Sandrin et al., 2019; Spagnoli et al., 2019). Depression related to stress at work alone has been estimated to cost the European Union €617 million annually (Atroszko et al., 2020). Recent research has shown that the prevalence of workaholism continues to escalate globally (Andersen et al., 2023), raising concerns due to the well-established negative impact it has on individuals’ health and well-being, and potential cost for organizations and the society.

Despite its prevalence and severe consequences of this working behavior, research has primarily focused on describing workaholism rather than explaining it, making antecedents the least understood aspect of this phenomenon (Morkevičiūtė et al., 2021). Understanding the antecedents of work addiction is not just a matter of academic interest but a pressing need to identify potential risk factors and apply appropriate interventions.

The Job Demands-Resources Model (JD-R; Bakker & Demerouti, 2007) is a well-established framework explaining the health impairment process at work, such as burnout,

through the impact of job characteristics and individual differences (Bakker et al., 2023). Recently, it has been suggested that the model should be expanded to include workaholism (Langseth-Eide, 2019; Molino et al., 2016). However, further research is required to identify workaholism's causes and consequences and determine whether extending the JD-R model is appropriate. While the relationship between job demands, job resources, and work addiction has been investigated within the JD-R framework in previous studies (Langseth-Eide, 2019; Molino et al., 2016), research on the relationship between personal demands, personal resources, and work addiction within the JD-R framework is lacking. With this in mind, the current study will contribute to the literature by taking personal demands/resources into account and exploring the role of both job demands/resources and personal demands/resources in relation to work addiction. Taken all together, this gives rise to the following research question:

Research question: *What is the association between job demands/resources, personal demands/resources, and work addiction, within the framework of the JD-R model?*

Defining Work Addiction

The term "workaholism" was initially coined by Oates (1968) over 50 years ago, where he described a workaholic as an individual whose compulsion for work has reached such extreme levels that it significantly disrupts personal well-being, happiness, relationship with others, and social interactions. Since then, terms such as "workaholism," "work addiction," and "excessive work" have been used interchangeably with several different conceptualizations, making the terms ambiguous and hindering theoretical and empirical progress (Andreassen et al., 2012; Clark et al., 2016).

Recent studies have suggested that workaholism and work addiction have different meanings (Clark et al., 2020; Griffiths et al., 2018; Morkevičiūtė & Endriulaitienė, 2023). It has been proposed that work addiction could be distinguished from workaholism as a psychological construct with several addiction criteria (i.e., salience, conflict, mood modification, tolerance, withdrawal, and relapse; Griffiths et al., 2018), while workaholism could be seen as a more generic term indicating everyday work-related behavior rather than pathology (Griffiths et al., 2018). However, the attempts at distinguishing between these terms have been characterized by considerable inconsistencies, and it has been pointed out that most scholars in the field use the words as synonyms (Atroszko, 2024). In addition, it has been emphasized that “workaholism” was initially named after “alcoholism,” where the latter refers to an addictive disorder, implying that the two terms refer to the same construct (Andreassen, Schaufeli, et al., 2018)

Although an agreed-upon definition of workaholism/work addiction still needs to be improved, there is a consensus on its crucial dimensions (Clark et al., 2016). The majority of scholars view workaholism/work addiction as an addiction to work characterized by compulsion, preoccupation, loss of self-control, and continued engagement despite adverse consequences (Clark et al., 2016; Ng et al., 2007). This idea is present in all the most widely used scales to assess workaholism (Andreassen et al., 2012; Robinson, 1999; Schaufeli et al., 2009). In the present study, workaholism and work addiction are seen as the same construct and considered within the framework of behavioral addiction.

Different theories could be applied to explain work addiction. However, there are conflicting conclusions about the factors determining the phenomenon (Morkevičiūtė et al., 2021). For example, trait theory views work addiction as a stable behavior pattern that is dispositional and exacerbated by environmental stimuli (McMillan et al., 2001). Learning theory suggests that work addiction is a durable behavior established through operant

conditioning (McMillan et al., 2001). Cognitive theory implies that work addiction arises from core beliefs, assumptions, and automatic thoughts (Beck & Wright, 1997; Morkevičiūtė et al., 2021). Meanwhile, from the socio-cultural perspective, work addiction may be influenced by observing obsessive work behavior in significant others or role models (Bandura, 1986; Morkevičiūtė et al., 2021).

Explanatory models within occupational health psychology have also been applied to explain the process by which an individual gets addicted to work (e.g., the Effort-Reward Imbalance Model and the Demand-Control-Support Model; Andreassen et al., 2017; Andreassen, Pallesen, et al., 2018). Perhaps the most influential model within organizational psychology is the Job Demands-Resources Model (JD-R), which has been used to predict both work engagement and burnout (Bakker et al., 2023; Bakker et al., 2014). Recent research has suggested that the model also could be used to predict work addiction, but more research is needed to determine if the expansion of the model is appropriate (Langseth-Eide, 2019; Molino et al., 2016). Therefore, the current study will use the JD-R model as the theoretical framework for hypothesis development and exploring the potential antecedents of work addiction.

The Job Demands-Resources Model

The Job Demands-Resources model is a framework that explains how job and personal characteristics can impact employee well-being (Bakker & Demerouti, 2007). The main assumption in the model is that different aspects of the workplace can give rise to stress and motivation, whereas these aspects can be classified into job demands and job resources (Bakker & Demerouti, 2007). The focus of the present study will be on the health impairment process of the model as it can best be related to work addiction.

Job demands refer to the physical, mental, emotional, or social effort required at the workplace. These demands can significantly impact an individual's physical and

psychological well-being (Bakker & Demerouti, 2007). Examples of job demands include facing a high workload, working under time pressure, dealing with role ambiguity, and performing emotional labor. If these demands exceed an individual's coping abilities, they can lead to adverse outcomes such as burnout and other health issues (Bakker & Demerouti, 2007). On the other hand, job resources refer to the various physical, psychological, social, and organizational aspects of a job designed to support the individual in achieving their work goals. They also help to reduce job demands, stimulate personal growth, and enhance overall well-being (Bakker & Demerouti, 2007). Examples of job resources include social support, feedback, autonomy, growth opportunities, and job security. These resources are essential in boosting work motivation, engagement, and satisfaction (Bakker & Demerouti, 2007).

The JD-R model can also be expanded to include personal resources and demands (Bakker & Demerouti, 2017). Personal resources are “aspects of the self that are generally linked to resiliency,” such as how individuals perceive their ability to successfully control and impact their environment, especially during challenging circumstances (Hobfoll et al., 2003, p. 632). For instance, individuals with high levels of optimism and self-efficacy believe that good things will happen to them and that they can overcome unexpected events (Bakker & Demerouti, 2017). Thus, personal resources are expected to have the same effect as job resources and help reduce the negative impact of job demands on an individual's mental and physical strain (Bakker & Demerouti, 2017).

In contrast, the workers' personal demands can be defined as “all aspects of the self that force individuals to invest disproportionate effort in their work and/or hamper them to successfully coping with their environment and are therefore associated with psychological and/or physical costs” (Zeijen et al., 2021, p. 3). It's suggested that personal demands influence the perception of job demands, i.e., individuals with high personal demands experience higher job demands, leading to a higher risk for burnout. For example, individuals

with high scores on perfectionism are likely to generate their own stress because they are more likely to perceive situations as a hassle (Zeijen et al., 2021). Hence, personal demands, such as the trait of perfectionism, contribute to the health impairment process.

According to the health impairment process of the JD-R model, the frequency and/or severity of job demands leads to increased effort. This, in turn, depletes employees' physical, emotional, and cognitive resources and may lead to exhaustion and health problems (Bakker et al., 2023). The buffering hypothesis of the JD-R model posits that ample job resources can counteract the adverse impacts of job demands on employee well-being, such as the potential for burnout (Xanthopoulou, Bakker, Dollard, et al., 2007). In this study, the association between job demands/resources, personal demands/resources, and work addiction will be investigated. Ultimately, the buffering hypothesis of the JD-R model will be tested in relation to work addiction.

Job Demands, Job Resources, and Work Addiction

The role of job demands in the health impairment process has been thoroughly examined during the last 20 years, and it has been established a positive relationship with burnout (Bakker & Demerouti, 2017; Bakker et al., 2023). Far less attention has been devoted to the relationship between job demands and work addiction, but the results of these studies also indicate a positive relationship (Andreassen et al., 2017; Andreassen, Pallesen, et al., 2018; Langseth-Eide, 2019; Molino et al., 2016). For instance, job demands such as high workload, interpersonal conflicts, and role conflicts at work are related to higher levels of work addiction (Morkevičiūtė et al., 2021).

There are many different types of job demands depending on the profession, but in general, every workplace has a set of quantitative, cognitive, speed, and emotional demands. Quantitative demands refer to the amount of work that needs to be accomplished within a given time frame. These demands can cause stress when there is a discrepancy between the

number of tasks and the time available to complete them (Burr et al., 2019). Work pace involves the speed at which tasks must be performed. The higher intensity of work, the higher the levels of stress (Burr et al., 2019). Cognitive demands refer to the mental effort required to complete a task. The complexity of the task can influence these demands, the level of attention required, and the amount of information to be processed (Burr et al., 2019). Emotional demands arise when an employee must manage or respond to the feelings of others at work. This can include interactions with customers, clients, colleagues, superiors, or subordinates. These demands can also be a source of stress and can impact an employee's well-being (Burr et al., 2019).

The JD-R model suggests that the frequency and severity of job demands can lead to increased effort (Bakker & Demerouti, 2007, 2017; Bakker et al., 2023). Individuals may engage excessively in work as a way to meet different demands or cope with stress. Therefore, it is reasonable to assume that higher job demands increase the risk of getting addicted to work.

When it comes to the role of job resources in the health impairment process, previous research has established a negative relationship between job resources, such as job control and workplace support, and burnout (Aronsson et al., 2017; Bakker et al., 2023). In the context of work addiction, little attention has been given to the role of job resources. Additionally, the few studies that have been conducted on the relationship between job resources and work addiction have shown ambiguous results (Morkevičiūtė et al., 2021). For instance, one study found that job control was positively associated with work addiction (Andreassen, Pallesen, et al., 2018), while other studies have found a negative relationship between social support and work addiction (Andreassen et al., 2017; Torp et al., 2018).

In the present study, social support will be investigated to examine the relationship between job resources and work addiction. According to the JD-R model, social support is

one of the most well-known situational variables that act as a buffer against job strain (Bakker & Demerouti, 2007). The acknowledgment and encouragement of leaders can be a valuable resource in coping with job demands, providing feedback, and acting as a protector against ill health. Colleagues offering practical assistance can contribute to getting work done in time and mitigate the impact of work overload on strain (Bakker & Demerouti, 2007). Moreover, support from close family and friends could help reduce work-related stress outside work. Thus, it is reasonable to assume that a lack of social support could have a direct effect on work addiction because employees may feel additional pressure from supervisors to perform, be forced to complete most of their tasks alone or be unable to disconnect from the job outside the workplace.

Taken all together, it is reasonable to assume that both job demands and job resources (social support) are associated with work addiction in the opposite direction. Hence, aligning with previous research and the JD-R model, the following two hypotheses can be articulated:

Hypothesis 1: *Job demands are positively associated with work addiction.*

Hypothesis 2: *Social support is negatively associated with work addiction.*

Personal Demands, Personal Resources, and Work Addiction

The role of personal resources within the JD-R framework has been widely explored in the last century. It has been suggested that personal resources, such as optimism and self-efficacy, can play a similar role as job resources (Bakker & Demerouti, 2017). For example, Bakker and Sanz-Vergel (2013) found that self-efficacy and optimism reduce the impact of job demands, thus reducing the risk of burnout. The role of personal demands, on the other hand, has been given far less attention. However, it has been proposed that personal demands have a reciprocal relationship with job demands in a similar way as personal resources have

with job resources (Zeijen et al., 2021). For instance, it has been found that personal demands, such as perfectionism, predicted burnout via the perception of study demands (Zeijen et al., 2021). In the context of work addiction, the role of personal demands and resources has yet to be investigated within the JD-R framework.

In this study, perfectionism will be viewed as a personal demand, and occupational self-efficacy will be viewed as a personal resource. Previous research has widely explored the association between perfectionism and work addiction, and the results from these studies indicate a positive relationship (Aldahadha, 2019; Clark et al., 2010; Falco et al., 2017; Stoeber et al., 2013; Tziner & Tanami, 2013). In fact, it has been suggested that perfectionism is the most important factor leading to workaholism (Morkevičiūtė et al., 2021). According to the JD-R model, perfectionism can influence the perception of job demands, seeing them as more demanding due to their high standards and fear of failure (Zeijen et al., 2021). Hence, it is reasonable to assume that perfectionism could have a direct impact on work addiction, where individuals high in perfectionism are more prone to be addicted to work.

The relationship between self-efficacy and work addiction has been given far less attention, and the results are more ambiguous. One study found that self-efficacy was positively related to work addiction when the workplace displayed a high overwork climate (Mazzetti et al., 2014), while another study found no significant relationship between self-efficacy and workaholism (Falvo et al., 2013). This study will examine occupational self-efficacy, which is a domain-specific type of self-efficacy that refers to a person's belief in their ability to perform the tasks required by their job (Rigotti et al., 2008). According to the JD-R model, individuals with high self-efficacy believe that they are capable of handling unforeseen events (Bakker & Demerouti, 2017). When a person believes that they can perform specific job tasks required, it is reasonable to assume that this will reduce or buffer

the impact of job demands. Thus, occupational self-efficacy could have a direct impact on work addiction, reducing the risk of getting addicted.

Taken all together, based on the JD-R model, it is expected that both personal demands and personal resources are associated with work addiction in the opposite direction. Hence, the following two hypotheses are proposed:

Hypothesis 3: *Perfectionism is positively associated with work addiction.*

Hypothesis 4: *Occupational self-efficacy is negatively associated with work addiction.*

The Buffer Hypothesis

Several studies have shown that job resources can mitigate the impact of job demands in relation to burnout (Bakker et al., 2005; de Jonge & Huter, 2021; Lavoie-Tremblay et al., 2014), thus, underscoring the importance of job resources in the health impairment process. In work addiction research, evidence for the buffering hypothesis has been found in a few studies. Molino et al. (2016) found interactions equal to 63% between two different job resources (opportunities for professional development and job security) and four different job demands (workload, cognitive demands, emotional demands, and customer-related social stressors). In another study, Langseth-Eide (2019) tested three different job resources (independence in task completion, social community, and goal clarity) with three different job demands (illegitimate tasks, interpersonal conflicts, and role conflicts) and found interactions in eight of nine combinations.

In the present study, to test the buffer (moderation) hypothesis of the JD-R model, the interaction between social support and job demands will be investigated. According to the JD-R model, social support can buffer the impact of job demands by aiding how to cope with the demands, facilitate performance, and through instrumental help from colleagues to get work

done on time (Bakker & Demerouti, 2007). Hence, it is reasonable to assume that social support can prevent addictive working behavior by reducing the impact of job demands.

Thus, the following hypothesis is proposed:

Hypothesis 5: *Social support moderates the relationship between job demands and work addiction. Specifically, the relationship between job demands and work addiction will be stronger for employees who report low social support than for employees who report high social support, particularly under conditions of high job demands.*

Method

Design

This study was carried out by bachelor students at the Department of Psychology at the Norwegian University of Science and Technology, with guidance from Professor Marit Christiansen, Professor Siw Tone Strand, Associate Professor Emmanuel Aboagye, and Associate Professor Leon De Beer. This research is built upon the foundation of an extensive cross-cultural study named '*Exploring the role of macro-, meso-, and micro-level factors in work addiction and related health problems*,' led by Dr. Edyta Charzynska (University of Silesia in Katowice, Poland) and Dr. Pawel A. Atroszko (University of Gdańsk, Poland). The study had a cross-sectional design using an online survey, which ensured an efficient and secure process for data submission. The study design allowed us to collect a large amount of data from participants across the whole working population of Norway, which is an advantage when exploring correlations and associations.

Participants

The study included a convenience sample consisting of 630 employees recruited from various organizations in Norway. The sample consisted of 271 men (43%) and 359 women (57%), whereas 317 worked within the private sector (50%) and 313 in the public sector (50%). Age was categorized into five different groups with ten-year intervals; most were in the age group 50-59 (32%, $n = 204$), followed by the age group 40-49 (24%, $n = 148$), age group 30-39 (17%, $n = 109$), and age group 18-29 (15%, $n = 93$). Fewest was in the age group 60-69 (12%, $n = 76$). The sample was overall highly educated, whereas 429 (68%) had higher education (bachelor, master, or PhD.), and the participants worked within organizations with either 10-49 employees (31%, $n = 197$), organizations with 50-249 employees (26%, $n = 164$), or organizations with 250 or more employees (43%, $n = 269$). Among the participants, 43 had a top-level leader position (7%), 85 had a middle-level leader position (13%), 98 had a lower-level leader position (16%), and the rest of the sample did not have a managerial position (64%, $n = 404$).

The snowball sampling procedure was used to recruit participants. The study required participants to be Norwegian citizens over 18 years old, reside in Norway, work for an organization with at least ten employees, and have worked there for at least one year. Also, the participants had to be able to give their informed consent. In the context of work addiction, only full-time employees (or almost full-time employees) are relevant to examine. Therefore, an extra inclusion criterion was added; participants had to be at least 50% employed (at least 19 and under 85 weekly work hours). Participants with missing values, who did not give their informed consent, failed the attention check questions, or had under 19 or above 85 working hours were excluded from the analysis.

Data Collection Procedure

A link to the online survey was shared with potential participants through social media posts and emails, and the data collection was conducted between January and February. The survey was advertised as a voluntary and anonymous study exploring the landscape of psychosocial work factors in healthy workplaces.

The bachelor project consisted of 20 students, and each student was responsible for recruiting at least 20 participants, with the goal of reaching 400 participants. In addition, a third-party research company called Bilendi was used to collect additional data. This company is known for its extensive panel of participants in European countries. We chose this approach to distribute the survey widely among individuals from various occupational backgrounds, providing a naturalistic sample of the working population in Norway. The third-party company incited their panel members to participate in our study using the same inclusion criteria. This broad, non-restrictive method introduced an element of self-selection. As a result, our sample was not designed to represent a specific population but intended to capture a wide range of insights across the workforce. Although this approach may not yield a representative sample, it was valuable for the richness and variety it brought to the exploratory dimensions of our analysis.

An information letter about the study, developed by our supervisors, was sent out along with the link to the online survey. The information letter informed the participants about the study's purpose and the survey's length. Moreover, the letter informed that the project follows the guidelines for privacy in consultation with the Knowledge Sector's service provider (Sikt, 2024), and that their answers will be handled confidentially and remain anonymous. The participants had to give their informed consent before answering the rest of the survey. As an incentive to finish the survey, the respondents got an immediate overview of

their results with an interpretation of their meaning. The participants were not compensated for their time in the study.

When data collection ended, 347 participants were recruited by bachelor students, the rest were recruited by Blendi. After removing the participants who fell outside the inclusion criteria, the final dataset had 630 respondents.

Measurements

The survey employed standardized and validated instruments, which were translated into Norwegian by our supervisors before data collection started. It consisted of questions regarding demographic characteristics, job demands, working climate, social support, burnout, work addiction, personality traits, etc. An attention check was included in the organizational support and perfectionism scales. Only the scales for work addiction, job demands, social support, occupational self-efficacy, and perfectionism were used in the present study.

Work Addiction

The International Work Addiction Scale (IWAS), a new work addiction scale developed by the researchers behind the survey (Charzyńska & Atroszko, 2024), was used to assess work addiction. All items were translated into Norwegian. Different versions of the IWAS have been tested across several cultures. For the present study, the IWAS-7 was assessed. The IWAS-7 is a seven-item questionnaire that contains three items from the established Bergen Work Addiction Scale (BWAS) (Andreassen et al., 2012), two items from the BWAS alternative (Orosz et al., 2016), and two new self-developed items. Each item is rated on a five-point scale ranging from “never” (1) to “always” (5), assessing the frequency of symptoms over the past year (e.g., “hvor ofte i løpet av det siste året har du jobbet for å redusere følelser av skyld, angst, hjelpsløshet eller depresjon?”). Scores on the IWAS-7 range from 7 to 35, with a cut-off value of 24 indicating work addiction. The IWAS-7 has

shown good fit and psychometric properties (e.g., all factor loadings were high), and Cronbach's alpha for the current study was high, $\alpha = .88$.

Job Demands

For the assessment of job demands, eight items from the Norwegian version of the **Copenhagen Psychosocial Questionnaire (COPSOQ III)** were utilized (Ose et al., 2023). The COPSOQ is a globally recognized and validated questionnaire measuring various psychosocial working conditions (Burr et al., 2019; Kristensen et al., 2005; Pejtersen et al., 2010). The eight items are rated on a five-point scale ranging from “never” (1) to “always” (5), and covered four job demands; quantitative, work pace, cognitive, and emotional (e.g., “Krever arbeidet ditt at du må huske på mange ting?”). The four job demands were covered by two items each, and the overall Cronbach's Alpha was $\alpha = .80$, indicating good internal consistency.

Social Support

One item from Bianchi and Schonfeld (2020) and three self-developed items based on the item from Bianchi and Schonfeld (2020) were used to assess social support. The four items were rated on a seven-point scale ranging from “not at all” (1) to “very strongly” (7), and covered support from supervisors, work colleagues, and close family and friends. Three of the items covered social support on work related issues (e.g., “Når det oppstår vanskeligheter i ditt arbeidsliv, i hvilken grad får du støtte fra din nærmeste leder?”), while the last item covered social support on issues outside work. The Cronbach's Alpha was $\alpha = .69$.

Perfectionism

Four items from the **Short Almost Perfect Scale (SAPS)** were used to assess perfectionism. SAPS is a condensed version of the Revised Almost Perfect Scale, a widely used measure of perfectionism (Rice et al., 2014). The short version contains eight items and

two subscales: Standards (four items) and Discrepancy (four items). Two items from each subscale were included in our survey and translated into Norwegian. The items contain self-descriptive statements (e.g., “Jeg setter høye standarder for meg selv”) and are answered using a seven-point scale ranging from “strongly disagree” (1) to “strongly agree” (7). The current Cronbach’s Alpha was $\alpha = .70$ for the present study.

Occupational self-efficacy

Two items from the **Short Occupational Self-Efficacy Scale** (Rigotti et al., 2008) were translated into Norwegian and used to assess occupational self-efficacy. The Short Occupational Self-Efficacy Scale is a concise and robust instrument designed to measure an individual’s confidence in their ability to handle job-related tasks and challenges. The scale has been validated across multiple countries, including Germany, Sweden, Belgium, the United Kingdom, and Spain, demonstrating good internal consistency and construct validity. The two items were rated on a seven-point scale ranging from “not true at all” (1) to “completely true” (7), and were formulated as statements (e.g., “Jeg kan takle alle utfordringer jeg måtte ha i jobben”). The Cronbach’s Alpha was $\alpha = .83$ for the current study, showing good internal consistency.

Statistical Analysis

The data was analyzed using the open-source statistics program JASP, version 0.18.2. First, descriptive and correlation analyses were run to describe the sample and calculate the relevant variables' mean and standard deviations. Index variables were constructed for the independent variables (job demands, social support, perfectionism, and occupational self-efficacy) by calculating the average score of all the items for each variable. The index variable for the work addiction scale was made by summing up all the items in the IWAS-7. This was done to get a better overview and make it practically easier to carry out the analysis.

The study hypotheses were tested by conducting a hierarchical regression analysis with job demands, social support, perfectionism, and occupational self-efficacy as predictors of work addiction. The hierarchical regression was conducted in three blocks. First, job demands and social support were entered (model 1), followed by perfectionism and occupational self-efficacy (model 2), and finally, the interaction effect between social support and job demands was added in the last step (model 3). Such an order allowed for examining the variance explained by different classes of variables (job variables and personal variables). Hypotheses 1-4 regarding the relationship between job demands/resources and work addiction, and between personal demands/resources and work addiction were tested in model 2. Hypothesis 5 regarding the moderating effect of social support on job demands in relation to work addiction was tested in model 3.

For the linear regression, preliminary analyses were conducted to ensure no violation of normality, linearity, multicollinearity, and homoscedasticity assumptions. Assumptions for the normality and homoskedasticity of residuals were visually inspected and met. A few outliers were detected by observing the residual histogram and Q-Q plots but were not removed due to being deemed not influential, given low values on Cook's distance. Multicollinearity was not a problem, and the assumption of independence between residuals was met. Findings were deemed significant at $p < .05$.

Results

Descriptive statistics and correlation analysis

Table 1 displays the sociodemographic characteristics of the study participants. The sample worked an average of $M = 38.91$, $SD = 6.85$ hours per week, and had $M = 23.31$, $SD = 12.36$ years of working experience. The prevalence of work addiction in the current sample was 11%.

Table 2 presents the means, standard deviations, and correlations between the study variables, and their internal consistencies. Relatively high average scores were found on both social support, $M = 5.44$, $SD = 1.01$, and occupational self-efficacy, $M = 5.43$, $SD = 1.11$, given that the max score possible was 7. As expected, a moderate to strong positive correlation was found between work addiction and both job demands, $r(628) = .49$, $p < .001$, and perfectionism, $r(628) = .44$, $p < .001$. These results suggest that higher scores on both job and personal demands are associated with higher scores on work addiction, with the biggest effect on job demands. Furthermore, a moderate negative correlation was found between work addiction and both social support, $r(628) = -.29$, $p < .001$, and occupational self-efficacy, $r(628) = -.34$, $p < .001$, suggesting that higher scores on work addiction are associated with lower scores on both job and personal resources. Interestingly, job demands and social support did not have a significant relationship. The rest of the correlations were in the expected direction.

Table 1*Sociodemographic Characteristics of Participants (N = 630)*

Characteristic	Categories	<i>n</i>	%	<i>M</i>	<i>SD</i>
Gender	Male	271	43		
	Female	359	57		
Age	18-29	93	15		
	30-39	109	17		
	40-49	148	24		
	50-59	204	32		
	60-69	76	12		
Higher Education ^a	Yes	429	68		
	No	201	30		
Occupational sector	Private	317	50		
	Public	313	50		
Organizational size	10-49	197	31		
	50-249	164	26		
	>=250	269	43		
Managerial position	Higher level	43	7		
	Middel level	85	13		
	Lower level	98	16		
	No	404	64		
Work addiction ^b	Yes	67	11		
	No	563	89		
Years experiance				23.31	12.36
Weekly work hours				38.91	6.85

^a 14 missing values on higher education^b Scores on or above the cut-off value of 24 are considered as work addiction

Table 2*Descriptive statistics and Pearson's correlation coefficient with study variables (N = 630)*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. IWAS-7 ^a	15.84	5.62	(.88)				
2. Job Demands	3.18	0.66	.49***	(.80)			
3. Social Support	5.44	1.01	-.29***	-.01	(.69)		
4. Perfectionism	4.33	1.12	.44***	.25***	-.12**	(.70)	
5. OSE ^b	5.43	1.11	-.34***	-.18**	.25***	-.17***	(.83)

Note: Cronbach's alpha on the diagonal in bold

^aIWAS-7 = International Work Addiction Scale 7

^bOSE = Occupational self-efficacy

** $p < .01$, *** $p < .001$

Hierarchical regression analysis

The results from the hierarchical regression analysis are presented in Table 3. Job demands and social support (model 1) accounted for 32% of the variance in work addiction, $R^2 = .32$, $p < .001$. This increased to $\Delta R^2 = .11$, $R^2 = .43$, $p < .001$ when the personal factors perfectionism and occupational self-efficacy were added (model 2). All the independent variables were statistically significant predictors of work addiction. Job demands were the strongest predictor, $\beta = 0.38$, $p < .001$, followed by perfectionism, $\beta = 0.29$, $p < .001$, and social support, $\beta = -0.21$, $p < .001$, while occupational self-efficacy had the weakest effect, $\beta = -0.17$, $p < .001$. The results suggest that work addiction is affected by both situational and personal factors. High job demands and perfectionism are linked to higher work addiction scores, while high social support and occupational self-efficacy are linked to lower scores. These predictors play a crucial role in explaining the variance in work addiction. In the third model, the interaction effect between job demands and social support was added (model 3). The interaction effect was deemed not significant, $\beta = -0.36$, $p = .052$.

Table 3.

Summary of a hierarchical regression analysis to predict work addiction (N = 630)

Variable	<i>b</i>	95% CI		<i>SE b</i>	β	R^2	ΔR^2
		<i>Lower</i>	<i>Upper</i>				
Model 1						.32***	.32***
Job Demands	4.10***	3.55	4.64	0.28	0.48***		
Social support	-1.58***	-1.94	-1.22	0.18	-0.28***		
Model 2						.43***	.11***
Job Demands	3.23***	2.71	3.75	0.27	0.38***		
Social Support	-1.16***	-1.50	-0.81	0.17	-0.21***		
Perfectionism	1.46***	1.15	1.77	0.16	0.29***		
OSE ^a	-0.87***	-1.18	-0.55	0.16	-0.17***		
Model 3						.44***	.01***
Job Demands	5.47***	3.15	7.79	3.90	0.64***		
Social Support	0.15	-1.21	1.51	0.69	0.03		
Perfectionism	1.45***	1.14	1.76	0.16	0.29***		
OSE	-0.86***	-1.17	-0.54	0.16	-0.17***		
Job Demands x Social Support	-0.42	-0.85	0.00	0.22	-0.36		

*** $p < .001$

^aOSE = Occupational Self-Efficacy

Discussion

The growing problem of work addiction can lead to adverse physical and psychological health outcomes for individuals and the organizations they work for. Until now, research has primarily focused on describing workaholism rather than explaining it, making antecedents the least understood aspect of this phenomenon (Morkevičiūtė et al., 2021). To better understand the antecedents of work addiction, it has been suggested that the JD-R model should be expanded to include work addiction in its account of the health impairment process, in addition to burnout (Langseth-Eide, 2019; Molino et al., 2016). To the best of my knowledge, this is the first study to investigate both job demands/resources and personal demands/resources in the framework of the JD-R model in the context of work addiction. Hence, the present study contributes to the literature on the topic and verifies whether expanding the JD-R model is appropriate.

The hierarchical regression analysis results show that both work environment and personal characteristics play a significant role in explaining work addiction. Specifically, job demands, perfectionism, a lack of social support, and low occupational self-efficacy are linked to higher scores on work addiction. The interaction effect between social support and job demands was deemed not significant, but the results are still worth discussing since the results seem to show a buffering effect, albeit statistically nonsignificant.

The Role of Job Demands and Job Resources

The study's findings indicate that job demands are a significant factor in predicting work addiction, supporting the first hypothesis (H1 confirmed). This finding aligns with previous research on the relationship between job demands and workaholism (Andreassen et al., 2017; Andreassen, Pallesen, et al., 2018; Langseth-Eide, 2019; Molino et al., 2016). High job demands could be seen as a stressor that drives individuals to spend excessive time

working. Job stress may feel uncomfortable, leading individuals to work harder to escape the negative feelings (Andreassen et al., 2017). Additionally, constant high demands may signal to employees that working excessively hard is the norm in the organization, thus serving as a motivational cue for workaholic behavior (Mazzetti et al., 2014). The positive relationship between job demands and workaholism supports the JD-R model's assertion that higher job demands can lead to increased stress and potentially unhealthy coping mechanisms (Bakker & Demerouti, 2007, 2017; Bakker et al., 2023). In this case, this can manifest in addictive work behaviors.

The second hypothesis stated that social support would be negatively related to work addiction, which was supported by our results (H2 confirmed). This finding is consistent with previous studies (Andreassen et al., 2017; Torp et al., 2018). A socially supportive climate may work as a social distraction from work and as instrumental help so that one does not need to do everything alone (Andreassen et al., 2017). In addition, a lack of social support may contribute to compulsive working to gain support and social recognition (Andreassen et al., 2017; Andreassen, Pallesen, et al., 2018). The results align with the JD-R model's assumption that job resources, such as social support, can reduce or buffer the negative impact of job demands (Bakker & Demerouti, 2007, 2017), which, in this case, can further reduce work addiction.

The Role of Personal Demands and Personal Resources

The present study examined perfectionism, which is viewed as a personal demand. The results revealed a positive relationship between perfectionism and work addiction, consistent with previous findings (Aldahadha, 2019; Clark et al., 2010; Falco et al., 2017; Girardi et al., 2018; Stoeber et al., 2013; Tziner & Tanami, 2013), and supporting the third hypothesis (H3 confirmed). Perfectionistic individuals may be more likely to generate their own stress because they are more likely to perceive the job demands as a hassle (Zeijen et al.,

2021). Imperfection could lead to distress and self-condemnation, resulting in compulsive overworking to escape these feelings (Andreassen & Pallesen, 2016). Moreover, perfectionistic individuals may also work excessively hard to get recognition from supervisors and colleagues. Thus, when facing a heavy workload, perfectionists may impose higher demands on themselves, leading to workaholism over time (Girardi et al., 2018). This finding supports the proposition that personal demands can be included in the health impairment process of the JD-R model (Zeijen et al., 2021), in this case, as a predictor for work addiction.

Furthermore, the current study found that the personal resource occupational self-efficacy is negatively related to work addiction, supporting the fourth hypothesis (H4 confirmed). Only a few studies have examined the role of self-efficacy on work addiction, and the results from the present study conflict with previous findings (Falvo et al., 2013; Mazzetti et al., 2014). However, our results are consistent with what one can expect from the JD-R model (Bakker & Demerouti, 2017; Bakker et al., 2023). Individuals high in occupational self-efficacy have a strong belief in their ability to successfully fulfill the tasks involved in his or her job (Rigotti et al., 2008). One can assume that this can help reduce the impact of job demands by using better coping strategies and increasing work efficiency, thereby preventing excessive work behavior. The JD-R model proposes that personal resources have a reciprocal relationship with job resources (Bakker & Demerouti, 2017; Bakker et al., 2023). Thus, individuals with high occupational self-efficacy could also better utilize the available job resources. This, in turn, makes them more capable of handling job demands.

The Buffering Effect of Social Support on Job Demands

Finally, the study explored how social support moderates job demands in relation to work addiction. While the interaction term was not statistically significant (H5 refuted), the results are interesting. However, the results seem to suggest that high social support could slightly reduce work addiction when both job demands and social support are high. This

implies that high social support may lessen the impact of high job demands on work addiction. This finding aligns with the buffering hypothesis of the JD-R model, indicating that job resources can mitigate the negative effects of job demands on work outcomes (Bakker & Demerouti, 2017; Bakker et al., 2023). Further research is required to confirm these results due to their non-significance.

Theoretical Contribution

Overall, the results from the present study contribute to the literature in several ways. Firstly, the findings directly contribute to the JD-R model, supporting the extension of the model to include work addiction recently proposed by several scholars (Langseth-Eide, 2019; Molino et al., 2016). Traditionally, the JD-R model has been applied to study burnout and work engagement (Bakker & Demerouti, 2017; Bakker et al., 2023), but exploring work addiction through this lens extends the model's applicability.

By demonstrating that higher job demands are associated with increased work addiction, the study aligns with the JD-R premise that job demands cause strain (Bakker & Demerouti, 2007, 2017). This finding broadens the scope of demands considered in the model, emphasizing the need to study their role in more extreme outcomes like work addiction. The mitigating effects of social support on work addiction enrich the model by illustrating that resources could potentially do more than buffer stress; they could potentially reduce the risk of severe occupational issues like work addiction. The findings from the present study support previous research exploring the association between job demands, social support, and work addiction (Andreassen et al., 2017; Andreassen, Pallesen, et al., 2018; Molino et al., 2016; Torp et al., 2018).

Moreover, incorporating personal demands and resources into the JD-R model offers a novel perspective on how individual characteristics interact with environmental factors to influence work outcomes (Xanthopoulou, Bakker, Demerouti, et al., 2007). This approach

encourages a more holistic view of the workplace and highlights a new research area within the JD-R framework where personal and job-related factors intersect. The inclusion of both job demands and resources and personal demands and resources within the framework of the JD-R model has not been done before in the field of work addiction, to my knowledge.

The results from the present study suggest that perfectionism could be viewed as a personal demand, positively associated with work addiction, potentially by perceiving the work situation more as a hassle (Zeijen et al., 2021). Similar findings have been done by previous research (Aldahadha, 2019; Clark et al., 2010; Falco et al., 2017; Stoeber et al., 2013; Tziner & Tanami, 2013), and a recent meta-analysis suggested that perfectionism is the most important factor leading to workaholism (Morkevičiūtė et al., 2021). Although job demands showed the biggest effect in the current study, perfectionism still displayed a moderate effect, underscoring the importance of perfectionism in understanding the etiology of work addiction.

On the other hand, occupational self-efficacy could be seen as a personal resource, potentially reducing work addiction by believing in their ability to perform the tasks required in the job, without working excessively. Although the results from the present study supported our hypothesis and are aligned with the JD-R model, they conflict with previous findings (Falvo et al., 2013; Mazzetti et al., 2014). One reason for this may be the use of domain-specific occupational self-efficacy instead of general self-efficacy in the current study. Investigating occupational self-efficacy rather than general self-efficacy provides greater specificity and relevance and has the advantage of being more applicable to organizational contexts (Rigotti et al., 2008).

Ultimately, the study's exploration of the interaction between job demands and social support suggested a buffering effect, though it was not statistically significant. One plausible explanation for this result could be attributed to the properties of the measurement instrument

used for assessing social support. The social support scale employed in this study was self-developed and lacks validation across different studies. The absence of a validated universally accepted measure for social support may limit the reliability and generalizability of these findings, which could affect the detection of statistically significant interactions. Future research could benefit from employing a validated scale for social support to ascertain its moderating effect more accurately on the relationship between job demands and work addiction.

Practical Implications

The findings from the present study underscore the importance of considering both organizational and individual factors when addressing issues related to work addiction. In terms of situational factors, job demands were the most important predictor of work addiction in the present study, while social support was negatively related. In addition, social support might moderate the negative impact of job demands on work addiction. This suggests that interventions aimed at reducing work addiction should consider the interplay between job demands and social support. Specifically, enhancing social support could be particularly effective in environments where high job demands are inevitable. This could potentially offset some of the strain associated with those demands. In addition, social support interventions have demonstrated positive effects on several other health-related outcomes (Wagner et al., 2015). Otherwise, organizations should aim to decrease workload and external pressure, for example, by changing expectations and organizational norms. This could possibly help prevent work addiction from developing (Andreassen et al., 2017).

Regarding individual differences, organizations should aim for targeted interventions to decrease perfectionistic tendencies and increase occupational self-efficacy. Identifying individuals with high levels of perfectionism as at risk of work addiction is an important first step (Girardi et al., 2018). Targeted training programs can help perfectionists set realistic work

goals and reduce perseverative cognitions (Flett et al., 2016). In addition, interventions aiming to increase personal resources, such as occupational self-efficacy, could be effective in changing behavior in the context of addiction (Hyde et al., 2008).

Limitations and Suggestions for Future Research

This present study on potential antecedents of work addiction reflects limitations that are worth highlighting for future research. Since this study has a cross-sectional design, it's impossible to establish causal conclusions, and there is a greater chance of making erroneous inferences (Meltzoff & Cooper, 2018). For future research, it would be beneficial to conduct longitudinal studies to highlight causal relationships and track changes in job demands, social support, perfectionism, occupational self-efficacy, and their impact on work addiction over time. This approach would help in understanding the dynamic interactions and long-term effects of these factors on work addiction, providing more concrete evidence for developing targeted interventions.

Furthermore, it's worth noting that the data collected for this study were solely from one survey, which has inherent limitations. Additionally, the results are based entirely on self-ratings, which is a single-source data approach. Good and valid responses depend on the participants' interpretation of the questions correctly. In addition, self-report surveys always serve a risk of social desirability bias where respondents may answer questions in a manner they deem socially acceptable rather than truthful (Schwarz, 1999). This can affect the accuracy of the data. Future research should implement multi-source data collection to reduce bias. For instance, previous studies have utilized observer ratings to examine working conditions (Demerouti et al., 2001). This method may be useful in future research.

Moreover, the recruitment for the study was conducted using convenience sampling and an element of self-selection. This could be seen as a strength since it allowed us to reach out to individuals from various occupational backgrounds, providing a naturalistic sample of

the working population in Norway. However, this sampling method has limitations regarding the representativeness of the sample and does not allow to generalize to the whole population (Meltzoff & Cooper, 2018). For instance, the participants of the current study were highly educated with a bachelor's, a master's, or a PhD degree. Therefore, the study's findings cannot be generalized to the wider population and should instead be considered applicable only to a specific subset of individuals. In addition, by using Blendi to collect additional data, we introduced an element of self-selection. This serves a risk of self-selection bias. Future research should replicate the study's findings in specific organizations to obtain a representative sample given the organization's context and to identify appropriate practical implications.

Finally, the regression analysis showed that 44% of the variance of work addiction was explained in the current study. Although this could be considered relatively large, it suggests that there are still external factors leading to work addiction that have not been discovered in this study. Furthermore, the present study established a relationship between perfectionism and work addiction, as well as between occupational self-efficacy and work addiction. However, we did not test for any moderating or mediating effects of these personal demands/resources. According to the JD-R model, personal resources are expected to have a reciprocal relationship with job resources, and can also moderate the impact of job demands on employee well-being (Bakker & Demerouti, 2017; Bakker et al., 2023). Similarly, it has been suggested that personal demands have a reciprocal relationship with job demands and could predict the perceived level of job demands (Zeijen et al., 2021). It would be interesting to test these propositions in the context of work addiction in future research.

Conclusion

In conclusion, this study has contributed to the understanding of work addiction within the JD-R model framework. Exploring the impact of both job and personal demands and resources on work addiction confirms the crucial role these factors play in potentially enhancing or mitigating workaholic behavior. Findings from this study support the expansion of the JD-R model to include work addiction, highlighting how both environmental and individual factors contribute to the health impairment process. Future interventions could benefit from addressing job demands and perfectionism and promoting supportive environments and interventions to increase occupational self-efficacy to mitigate the risks associated with work addiction. Further research is needed to explore these interactions longitudinally to better understand the dynamics over time. This work sets a robust foundation for future investigations into the intricate balance of workplace and personal demands and resources and their effect on work addiction.

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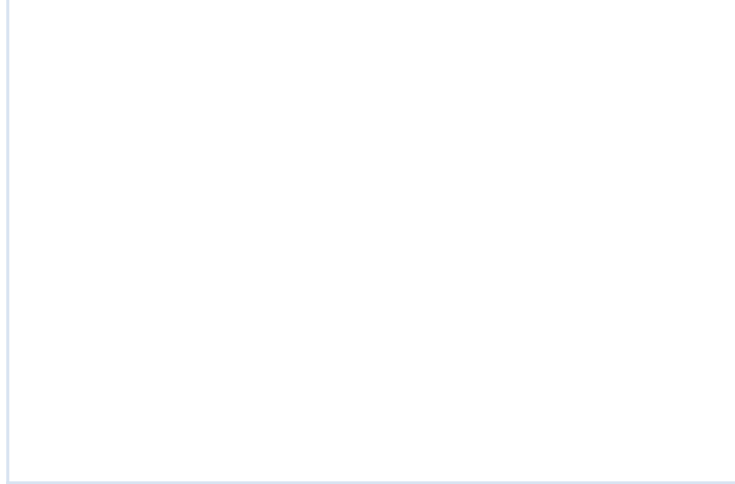
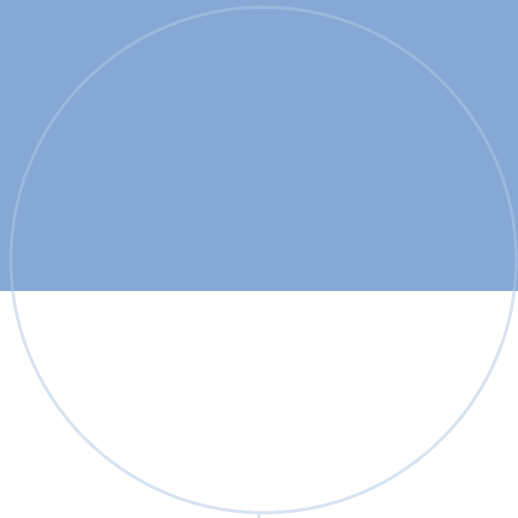
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