Examining the Work Environment Hypothesis: A Multilevel

Analysis of Role Stressors and Workplace Bullying

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Abstract

This study investigates the moderating effect of a stressful work environment on the relationship between role stressors, i.e., role ambiguity, role conflict and role overload, and workplace bullying, in line with the work environment hypothesis. Data were collected among 15 524 employees across 69 organizations in Belgium. Using a multilevel hierarchical regression analysis, the results revealed significant main effects of all three role stressors on workplace bullying. The study also indicates that a stressful work environment strengthens the relationship between role ambiguity and workplace bullying, and between role conflict and workplace bullying, although the effect sizes are limited. Hence, the study has important theoretical implications for the scientific literature, as it suggests that the work environment hypothesis may have a greater significance in theoretical terms than in terms of practical implication at the organizational level.

Keywords: role stressors, workplace bullying, multilevel analysis, work environment hypothesis

Sammendrag

Denne studien undersøker den modererende effekten av et stressende arbeidsmiljø på forholdet mellom rollestressorer, det vil si rolletvetydighet, rollekonflikt og rolleoverbelastning, og mobbing på arbeidsplassen, i tråd med arbeidsmiljøhypotesen. Data ble samlet inn blant 15 524 ansatte i 69 organisasjoner i Belgia. Ved hjelp av flernivå hierarkisk regresjonsanalyse viste resultatene signifikante hovedeffekter for alle tre rollestressorene på mobbing. Studien indikerer også at et stressende arbeidsmiljø styrker forholdet mellom rolletvetydighet og rollekonflikt, og mobbing på arbeidsplassen. Effektstørrelsene var likevel begrensede. Derfor har studien viktige teoretiske implikasjoner, da den antyder at arbeidsmiljøhypotesen kan ha større betydning på det teoretiske plan enn med hensyn til praktiske implikasjoner på gruppenivå.

Nøkkelord: rollestressorer, mobbing på arbeidsplassen, flernivåanalyse, arbeidsmiljø-hypotesen

Preface

From August 2022 until April 2023, we have been working hard to present this thesis, with which we proudly conclude our master's degree in work and organizational psychology at the University of Bergen. Our goal was to enrich the literature about workplace bullying by studying a crucial yet rather unexplored part of the work environment hypothesis. Hopefully our revelations may inspire much future research and ultimately improve the working life of many employees. Writing this thesis has taught us much about the topics studied and how to conduct research, but it has also showed us how much we can achieve. We have learned how far our abilities reach on our own, and how much further we can reach when collaborating with others.

We would like to express our sincere gratitude to Prof. Guy Notelaers for tireless supervising, genuine interest, and enthusiasm, for challenging tasks, and providing access to data. We would also like to thank our families and friends, who have supported us every day. Lastly, we would like to thank one another for all the effort, all the happiness, and all the discussions that led to this final version.

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Introduction

Workplace bullying was once a taboo subject, but in 1990 the first English article about the topic was published in an international peer-reviewed journal (Leymann, 1990). Ever since, the interest has grown and much has become known about its causes and consequences. Workplace bullying happens in all countries across a variety of different organizations, it targets both sexes, all ages, and managers as well as employees (Nielsen & Einarsen, 2018; Reknes et al., 2019; Zapf & Gross, 2001). Meta-analyses have shown that as many as 11.3%-18.1% of workers can be considered victims of workplace bullying (Nielsen et al., 2010). This is considered one of the most perilous social stressors (Hauge et al., 2010), and its negative outcomes are of both psychosomatic and mental character. Among the first one may find headache, chronic neck pain and fibromyalgia (Kääriä et al., 2012; Kivimäki et al., 2004; Tynes et al., 2013), and among the latter is post-traumatic stress, anxiety and depression (Nielsen & Einarsen, 2018). Work-related negative outcomes like increased intention to leave, reduced job satisfaction and organizational commitment have also been connected to workplace bullying (Nielsen & Einarsen, 2012).

In order to better understand the high prevalence of workplace bullying, scientists have looked for preceding factors. This has led to the work environment hypothesis, which states that a stressful work environment functions as a strong trigger for workplace bullying (Einarsen et al., 1994; Hauge et al., 2007; Leymann, 1996). Prominent contributors to workplace bullying that belong to the work environment are role ambiguity, role conflict and role overload (Bowling & Beehr, 2006). However, less is known about how the relationship between workplace bullying and its predictors or outcomes are moderated by third variables. The consequences of harassment may be more severe for some people than for others, and some circumstances may increase the likelihood for workplace bullying to occur while others reduce it (Cortina, 2003; Rai & Agarwal, 2018). The work environment is one such factor that

may influence the relationship between role stressors and workplace bullying (Rai & Agarwal, 2018). Furthermore, most studies concerning the work environment hypothesis have been conducted at the individual level of measurement, and little is known about how the work environment hypothesis might contribute to workplace bullying when investigated at a higher level of measurement.

Delving into that research gap, this thesis is going to explore whether a work environment that is characterized by stress will enhance the correlations between role ambiguity, role conflict, role overload, and workplace bullying. The extent to which a work environment is stressful will be measured using employees in multiple organizations' aggregated scores on recovery need, in other words their symptoms of previous effort and how long they need to recover after performing work-related tasks (Veldhoven et al., 2008). While this ascends the work environment to the organizational level of measurement, the predictors and outcome variable will remain measured on the individual level.

Workplace Bullying

Partly inspired by the Swedish-Norwegian researcher Dan Olweus' studies on bullying in the schoolyard (1993), studies on workplace bullying (WB) appeared first in the Nordic countries during the nineties (Einarsen et al., 1994; Einarsen & Skogstad, 1996; Kile, 1990; Leymann, 1988, 1990, 1992, 1996; Matthiesen et al., 1989; Vartia, 1996). As the amount of research on the subject grew (Nielsen & Einarsen, 2018), the interest spread to the United Kingdom and Europe (Hoel & Beale, 2006; Hoel & Cooper, 2001), and WB is now studied globally. While attempting to define and label the phenomenon, scholars have emphasized different aspects of WB. The most common definition used today is presented below:

> Bullying at work means harassing, offending, socially excluding someone or
> negatively affecting someone's work. In order for the label bullying (or mobbing) to
> be applied to a particular activity, interaction or process it has to occur repeatedly and

regularly (e.g., weekly) and over a period of time (e.g., about six months). Bullying is

an escalating process in the course of which the person confronted may end up in an

inferior position becoming the target of systematic negative social acts. A conflict

cannot be called bullying if the incident is an isolated event or if two parties of

approximately equal 'strength' are in conflict. (Einarsen et al., 2020, p. 26)

While inspecting definitions of WB from the last three decades, Notelaers & Van der

Heijden (2021) discovered that scholars mainly have agreed (80% of the studied definitions)

that behavior can be labelled as WB when a person is repeatedly exposed to repeated negative

social behaviors at the workplace. Many of them (37.5%) also explicitly mention that the

repeated actions need to take place over a longer period of time. This excludes isolated cases

of being told off once or twice or having a disagreement that is forgotten quickly. Many

definitions (40%) also demand a perceived or actual power imbalance between the perpetrator

and the target, meaning that the target must find it hard to escape from or defend him or

herself against the negative actions. Lastly, a few of the definitions (16%) mention the

negative consequences WB leads to among the victims.

The Self-Labeling Method

There exists two main ways to measure whether WB is present, and possibly to what

extent. The phenomenon may be considered action-dependent and thus measured by reporting

experienced negative behaviors at the workplace. Yet, different persons can assess the same

situation in different ways (Einarsen et al., 2020; Lazarus, 1984), meaning that it may also be

appropriate to consider the subjective experiences belonging to the individuals in question.

During the 90's and 2000's the self-labeling method was the most frequently used

measurement method of WB. This is a quick and easy way to get data, as the researcher

simply ask respondents whether they think that they have been bullied or not during a given

time period (usually six months). The question if often accompanied by a description of

typical bullying actions or a theoretical definition, but not always (Nielsen et al., 2010). Including a definition increases the already high face-validity of the self-labeling approach, because it heightens the probability that everyone is considering the same concept (Cozby, 2020). Yet, it does also lower prevalence rates – perhaps excluding cases that otherwise might have been considered WB (Nielsen, 2009; Nielsen et al., 2010). This may be due to the very subjective nature of this approach, which opens for several biases to affect our judgement. One such inflicting feature is that considering yourself a victim of bullying has shown to provoke feelings of shame and self-blame (Felblinger, 2008). These are unpleasant feelings with negative effects on one's self-esteem, and people may very well refuse to admit that they are bullied in order to avoid such feelings (Lutgen-Sandvik, 2008; van Beest & Williams, 2006). Gender brings another bias, in that men have shown to report lower exposure to WB than women, perhaps due to feelings of masculinity, perceived ability to defend oneself, or actual lower exposure (Salin, 2003; Salin & Hoel, 2013).

In sum, different people may report different levels of exposure to WB with the self-labeling method not just due to actual differences in exposure, but also because of individual differences and bias in e.g., thresholds for labeling oneself as a victim or different understandings of the concept.

The Behavioral Experience Method

Another way of measuring that is more in line with the objective view on WB, is the behavioral experience method. Although based on self-report, it asks respondents to state how frequently they experience a range of negative behaviors associated with WB without mentioning WB explicitly. If the replies tell us that someone is experiencing bullying-related acts repeatedly over time, it is reasonable to assume that this person is exposed to WB. A well-known inventory for measuring WB in this way is the Negative Acts Questionnaire (NAQ) (Einarsen & Raknes, 1997). This questionnaire has been revised (NAQ-R), and now

consists of twenty-two items representing negative work experiences typically associated with WB, all representing one out of three underlying factors: person-related bullying, work-related bullying, and physically intimidating forms of bullying (Einarsen et al., 2009). There has also been developed a shorter nine-item version of the inventory (SNAQ), including items relating to person-related bullying, work-related bullying, and social exclusion (Notelaers et al., 2019).

<div align="center">**Role Stressors**</div>

Work Environment Hypothesis

A substantial amount of WB research has been carried out at the individual level, where personality is a central field of interest. From a target perspective, the five-factor model (McCrae & Costa Jr, 2008) has been used to examine whether or not there exists a victim personality (Nielsen et al., 2017). From a perpetrator perspective, the ability for empathy and perspective taking has been studied (Parkins et al., 2006). In addition to such personal predispositions, WB has been studied together with situational factors in the work environment. As early as 1976, Carroll M. Brodsky claimed that for harassment to occur, there must be an environment which rewards or at least permits such behavior (Brodsky, 1976).

Since then, empirical studies have connected WB to an extensive list of environmental factors, most of which are different kinds of job characteristics. This has culminated in the work environment hypothesis, an umbrella term for stressful work environment factors that contribute to WB (Einarsen et al., 1994; Hauge et al., 2007; Leymann, 1996). Among these we find the amount of control at work (Einarsen et al., 1994; Vartia, 1996), job insecurity and organizational change (Baillien & De Witte, 2009; Hauge et al., 2007), leadership practices (Francioli et al., 2018), lack of skill utilization, participation in decision making, task-related feedback (Notelaers et al., 2010), a stressful work environment (Leymann, 1996), and role

stressors (Bowling & Beehr, 2006). Role stressors, i.e., role ambiguity (RA), role conflict (RC) and role overload (RO), are the predictors in focus in this thesis, as various studies show that these are among the job characteristics with the strongest correlations to WB (Bowling & Beehr, 2006; Hauge et al., 2007; Notelaers et al., 2010). Role theory in general and particularly the concepts of RA, RC, and RO will be further inquired, and established theories will be used to explain their connections to WB.

Role Theory

According to role theory, individual social behavior is predictable, based on the specific social position in a given context (Biddle, 1986). A role is most typically defined as a set of expectations about behavior for a position in a social structure (Rizzo et al., 1970). This concept has been thoroughly researched in sociology and psychology, and different perspectives exist. In accordance with the functionalist perspective, roles are tightly knit to formal position or functional role, and are taught, learned, and shared within a stable social structure (Biddle, 1986). The social interactionism perspective does not induce conformity in the same way, because it has a more dynamic view on role theory. It considers roles to be formed and reformed continuously based on informal relational features such as attitudes, trust, and motivation (Biddle, 1986).

While it might be assumed that workplace roles and shared expectations provide a stable foundation for employees to carry out their tasks, thereby prompting predictability and security, the reality is often quite the opposite. Roles may just as well be sources for ambiguity, conflict, and overload. In many cases, roles become stressors that lead to negative outcomes like emotional exhaustion, job satisfaction, organizational commitment, and most importantly in our case: workplace bullying (Hauge et al., 2007; Kahn et al., 1964; Örtqvist & Wincent, 2006).

Role Ambiguity

RA can be defined as a state where expectations and information about a specific role in the organization is uncertain or inadequate (Kahn et al., 1964). There are mainly two categories within RA. The first one is known as task ambiguity (King & King, 1990). This type of RA is mainly the result of a shortage in the information regarding the job definition, goals and permissible means to achieve objectives (Kahn et al., 1964). Task ambiguity may be divided into three classes. First, ambiguity regarding requirements deals with the individual's range of responsibilities and uncertainties associated with this. Second, ambiguity regarding responsibilities is linked with the uncertainty about role behaviors needed to fulfill responsibilities. Third, ambiguity regarding role senders lead to uncertainty about expected role behaviors (King & King, 1990). The second category of RA is known as socioemotional ambiguity, consisting of only one specific class. This is ambiguity due to consequences of role behaviors, which occurs due to uncertainty concerning the effects of different actions on the role set, the organization or the well-being of oneself (King & King, 1990).

There are different reasons why RA occurs, and it is believed to originate from both individual and environmental sources (King & King, 1990). On an individual level, RA may be the outcome of poor communication between role sender and the focal person, the inability to interpret the communicated signals, or due to contradictory messages from the role sender (Kahn et al., 1964). Sources of RA at the organizational level are proposed to include rapid expansion into complex organizational structures, high levels of turnover, and dysfunctional information exchange processes. Furthermore, potential environmental factors outside organizational control may be world market shifts or technological innovation (Siegrist, 1996, 2005; van Vegchel et al., 2005).

Hence, when RA is present the established expectations towards the certain role of an employee, (e.g., duties, objectives, and responsibilities) are unclear, leaving him or her

without the necessary information to perform the job (Maden-Eyiusta, 2021; Rizzo et al.,

1970). Unclarity about the established expectations has in turn led to RA being linked with

multiple negative emotions such as anxiety, anger and tension (Spector, 1998; Spector & Goh,

2001). Furthermore, several studies indicate that RA, when present, is a central stressor in the

work environment (Bowling & Beehr, 2006; Van den Brande et al., 2016). According to

Beehr (1995), RA as a perceived stressor in the working environment correlates negatively

with job satisfaction, life satisfaction, mood and self-esteem.

Role Conflict

RC occurs when one experience simultaneous, incompatible demands and

expectations, making compliance between roles difficult (Balducci et al., 2012; Kahn et al.,

1964; Rizzo et al., 1970). According to Beehr (1995) and Kahn et al. (1964), several types of

RC exist, divided by two dimensions: by role or by sender. When dividing by role, this yields

two sub-categories named inter-role conflicts or intra-role conflicts. The former implies that

an individual occupies multiple roles and positions at once, leading to the experience of

incompatible demands. The latter is associated with conflicting expectations regarding a

single role or position.

When dividing by sender, this results in three specific types of RC. First, the intra-

sender role conflict occurs when expectations from a single role sender are incompatible.

Secondly, RC based on incompatible expectations from one role sender with another role

sender are known as inter-sender role conflict. Thirdly, person-role conflict is RC where the

expectations held by a role incumbent are incompatible with other expectations accompanied

by the position of the individual (Beehr, 1995; Kahn et al., 1964; Van Sell et al., 1981).

Additionally, based on perceptions of incongruence and incompatibility, Rizzo et al. (1970)

identified inter-sender conflict, inter-role conflict, intra-sender conflict and person-role

conflict as the four basic types of interrelated RC.

While different forms of RC exist, there are also different reasons to why these develop at work. Early work on RC provide insight in potential causes for RC in general, but does not offer a lot in terms of antecedents for specific forms of RC (Beehr, 1995). For instance, there are reports of RC being negatively related to commitment, involvement, payment satisfaction, supervision, co-workers and ability to participate in decision making (Fisher & Gitelson, 1983). Jex (1998) investigated the relationship between stress and job performance, reporting that substandard communication between the role senders may in turn lead to RC occurring more frequently in the organization.

Several former studies have linked RC with unfavorable organizational and personal outcomes (Miles & Perreault Jr, 1976), such as job-related anxiety and tension, job dissatisfaction, propensity to leave the organization, lack of confidence in the organization, futility, negative attitudes towards the role senders and an inability to influence decision making (House & Rizzo, 1972; Kahn et al., 1964; Rizzo et al., 1970). Additionally, Manning (1981) reported dysfunctional behavioral and affective outcomes related to RC, suggested to further underline that RC may lead to significant cost implications for an organization (Fisher & Gitelson, 1983).

Role Overload

RO refers to situations where role demands exceed an employee's resources such as time, energy, and capability (Beehr, 1995; Eatough et al., 2011; Rizzo et al., 1970; Tang & Vandenberghe, 2021). Two kinds of RO exist: quantitative overload and qualitative overload. Quantitative overload (work pressure/work pace) occurs when demands are too high and the time available to meet them is too short. Qualitative overload on the other hand, appears when the demands exceed the knowledge and skills of the individual (Van Veldhoven, 2014). RO was initially considered a subtype of RC, combining inter-sender and person-role conflicts (Kahn et al., 1964; King & King, 1990). It has later been viewed as a construct on its own

with distinctive characteristics. The separation is needed because it is possible to experience more demands than one has the resources to handle, without this necessarily meaning that they are contradicting each other. For example, someone who works in a warehouse may be required to pack more pallets than he or she has time for, but still not be required to unpack any of the pallets. Thus, the employee will experience quantitative RO, but not RC. One might also experience incompatible demands that by themselves do not tax too much energy (Coverman, 1989). For example, if a soccer referee that does not know the rules of handball must referee a handball match, the referee will experience qualitative RO.

Just like RA and RC, experiencing RO is also empirically linked with several negative outcomes. A comprehensive meta-analysis connected RO to lower work performance (Gilboa et al., 2008), while Jensen et al. (2013) found RO to be significantly correlated to turnover. Another extensive international study found significant correlations between RO and higher anxiety, intention to leave, and lower affective commitment to the organization (Glazer & Beehr, 2005).

The Frustration-Aggression Theory

There are several theories which offer some explanation as to how RA, RC and RO may be linked with WB, one of which is the frustration-aggression theory (Breuer & Elson, 2017) formerly known as the frustration-aggression hypothesis. The frustration-aggression theory states that aggression is caused by frustration, i.e., that aggressive behavior requires the preexistence of frustration and that the existence of frustration itself will lead to aggression (Berkowitz, 1989; Dollard, 1939). It is further suggested that such frustration may be behaviorally manifested through aggressive acts and bullying (Nielsen, 2013).

Different stressors in the workplace may lead to both physical and psychological strain. In such an environment, the presence of frustration in employees is likely to lead to more aggressive behaviors and confrontations, or to the search of scapegoats within the

organization, which may trigger further bullying (Einarsen et al., 2005). WB has also been positively correlated with self-reported burnout (Kivimäki et al., 2000), and suggestions have also been made about WB being a mediator for burnout (Giorgi et al., 2016). According to the stressor-emotion model, a refined model based on the frustration-aggression theory, counterproductive work behavior (such as WB) in stressful environments may be viewed as an emotion-based response to anger-inducing stressors (Fox et al., 2001; Hauge et al., 2007; Spector & Fox, 2005). This means that impersonal environmental provocations may lead individuals to engage in WB, often as retributions for actions performed by another individual that are considered as being unjust. For that reason, even if both the perpetrator and the victim face the same stressor, they may respond differently. For instance, the victim may respond with burnout, the perpetrator may respond with aggressive behavior.

Social Interactionist Theory

Another theory which may explain how job demands lead to WB is the social interactionist theory, stating that experiencing stress and negative affect cause people to behave in ways that provoke incivility from others (Felson, 1992). The theory predicts that events which are stressful will impact the aggression of employees indirectly, leading to behaviors such as violation of workplace norms or working less competently, reducing their performance (Hauge et al., 2007). Such behavior, i.e., violation of norms and performance decline, stimulate behavioral and affective reactions, often expressed as WB (Felson, 1992; Felson & Tedeschi, 1993). Additionally, distressed employees that are violating the accepted and established social norms in the workplace are likely to further evoke aggressive behavior in supervisors and co-workers, perhaps through venting emotions and triggering revenge (Reknes et al., 2014). The social interactionist theory also offers an explanation regarding displaced aggression, with such displacement being the result of unclarity about the origin of the stressful event (Felson, 1992).

Stress Theory

When trying to understand WB and its antecedents, Baillien et al. (2009) suggests a three-way model. Intrapersonal frustrations, i.e., strains and stress, are suggested as one of three pathways towards the development of WB, the other two being through conflict, and through characteristics of the team or the organization. Typical sources of strain and stress at the workplace are negative workload, hours worked, RA, RC, isolation, career barriers, difficult relationships at the workplace, harassment, managerial bullying and the organizational climate (Lazarus, 1984; Mausner-Dorsch & Eaton, 2000). Stress is often considered an alarming response, leading to neurophysiological activation, and often occurs when an individual experience a homeostatic imbalance (Ursin & Eriksen, 2004). According to the cognitive activation theory of stress (CATS), stress can be defined as a general non-specific increase in activation due to the subjective experience of a stimulus (Ursin & Eriksen, 2004). This stimulus causes stress because it is associated with earlier experiences that have induced stress, creating unpleasant emotions that motivates us to counteract it. Hence, the stress response is a natural response which stimulates an organism to act and reestablish homeostasis. However, if the response does not diminish after actions have been taken, the allostatic overload may lead to physical and mental illness and disease (McEwen, 1998; Ursin & Eriksen, 2004). Since WB is defined as repeated negative acts, it seems likely that exposure to WB limits the ability to regain homeostasis. Thus, according to CATS theory WB seems a potential stressor that can make it more likely for the victim to experience allostatic overload.

In addition to frustration being present, Baillien and colleagues (2009) specify that it must be coped with in an inefficient way to increase the likelihood of WB. Inefficient coping may be done actively or passively, where actively means directing your frustration towards someone else, thus becoming a perpetrator of WB yourself. Passive coping implies distancing yourself from the work situation that is causing the frustration and from the violation of

organizational or team norms. By doing the latter, performance at the workplace is often negatively influenced, resulting in a negative attitude towards the passively coping individual who is unintentionally increasing his or her chance of being bullied.

Conflict Theory

In addition to the frustration-path, Baillien and colleagues' three-way model (2009) suggests that WB can develop through a conflict-path. Van de Vliert (1998, p. 351) proposed that "two individuals, an individual and a group, or two groups, are said to be in conflict when and to the extent that at least one of the parties feels it is being obstructed or irritated by the other". WB might then signal an unresolved social conflict that has reached a higher escalation level and often an increased power imbalance (Fisher & Keashly, 1990; Glasl, 2009; Zapf & Gross, 2001). Both work-related and personal problems have the potential to obstruct or irritate colleagues at the workplace. The three-way model proposes that the escalation of problems into conflict or ultimately WB is contingent upon whether it is addressed in a de-escalating or escalating manner. Examples of constructive actions are listening and compromising, while examples of worsening actions are model I communication (e.g., blame and criticism, Argyris, 1978) and spontaneous escalating behaviour (e.g., yelling and fighting, Van de Vliert, 1998). Performing escalating conflict management actions can create both victims and perpetrators of WB, depending on formal or informal power. More power increases the likelihood of perpetrating WB, while less power increases the likelihood of becoming a victim (Baillien et al., 2009). While conflict is not always considered a negative process in an organization (Van de Vliert & De Dreu, 1997), conflict in regards to bullying is always negative for the victim (Zapf & Gross, 2001), i.e., the situation is so serious that there can be no doubt it is considered a conflict, no matter how narrow the definition.

Role Ambiguity and Workplace Bullying

Higher levels of RA show a positive relation to subsequent exposure to WB (Reknes et al., 2014), in addition to some studies indicating a prospective relationship between WB and subsequent experience of RA (Hauge et al., 2011; Nielsen & Knardahl, 2015). Furthermore, Van den Brande (2016) identified RA to be one of the most relevant stressors in terms of WB, based on several positive cross-sectional associations between the two. Several studies also show RA to be a predictor of WB (Baillien & De Witte, 2009; Notelaers et al., 2010; Van den Broeck et al., 2011). From the perspective of social interactionist theory and the frustration aggression theory, the increased stress and strain levels which employees experiencing RA tend to show, may be the main perpetrator as to why these employees become bullying victims. In terms of conflict escalation theory, one may argue that the presence of RA forms the basis of conflicts in the workplace. Such conflict may later escalate into WB.

According to Matthiesen & Einarsen (2007), the experience of role stress due to confusing work roles, i.e., RA, stimulates micropolitical behavior in the workplace. Additionally, perpetrators of WB seem to experience significantly more RA than individuals with no experience of bullying, with WB victims also reporting exposure to micropolitical behavior due to RA, among other demands (Matthiesen & Einarsen, 2007). Bullied targets also tend to report higher levels of RA, compared to non-bullied individuals (Matthiesen & Einarsen, 2007). Thus, the presence of RA increase role stress which is manifested as WB. This is in line with the Michigan model of job stress which thoroughly emphasize that RA is a stressor leading to strain (Kahn et al., 1964) and several other studies on RA and WB (Reknes et al., 2014; Van den Brande et al., 2016).

Role Conflict and Workplace Bullying

Studies also report that using RA in itself as a predictor for WB is not sufficient, consequently it is necessary to investigate other demands as well (Ågotnes, 2022; Hauge et

al., 2011). RC is one such demand that may lead to increased stress, in terms of role stress (Matthiesen & Einarsen, 2007). Additionally, unclear role description leads to strain and potentially other negative organizational consequences, such as WB (Bowling & Beehr, 2006), with longitudinal studies suggesting higher levels of RC as a predictor of subsequent bullying exposure (Balducci et al., 2012; Reknes et al., 2014). Several studies indicate that increased RC encourage WB, by increasing the amount of existing negative behavior in the workplace (Einarsen et al., 1994; Notelaers & De Witte, 2003). In addition, Matthiesen & Einarsen (2007) found that bullying targets report higher levels of RC than perpetrators and individuals not involved in bullying. These findings are very much in line with the core message in social interactionist theory, stress theory and conflict escalation theory because they all emphasize the importance of stress and social factors in shaping individual behavior. Thus, the stress caused by conflicting roles may lead to negative behavior such as WB.

Another point of view is that of conflict escalation. Leon-Perez et al. (2015) propose that the escalation from a task related conflict to a relationship conflict may explain bullying behavior to some extent. Thus one may reduce the chance of WB to occur by lowering the chance of conflict escalation, through actively managing conflict by focusing on problem solving (Leon-Perez et al., 2015). An important differentiation is that interpersonal conflict, such as relationship conflicts, and WB are not the same. They differentiate in terms of frequency, negative social behavior, length, power imbalance and perceived intensity (Baillien et al., 2017). There may be relationship conflicts at the workplace, without the presence of WB. However, the difference between relationship conflict and WB are perceived differently depending on how often the employee is exposed to acts of bullying and conflict-aggression (Notelaers et al., 2018). Considering conflict escalation theory, one may argue that the tension and frustration generated from unclear tasks and lack of information, would further stimulate the escalation process, and eventually lead to WB. Like RA, WB victims

also report exposure to micropolitical behavior reflected by high levels of RC (Matthiesen & Einarsen, 2007). **Role Overload and Workplace Bullying**

In addition to RA and RO, there exists empirical evidence linking RO to WB. An international systematic review conducted by Van den Brande et al. (2016), found evidence for RO predicting WB in several of the studies included. Moreover, Notelaers et al. (2010) studied a large and heterogenous sample of Belgian workers, and found that workload was related to exposure to WB. Chen & Spector (1992) also found correlations between workload and hostility at work. These findings may be because having too many demands and lacking the means to handle them is likely to cause strain (Karasek Jr, 1979). This sparks the frustration-path of the three-way model. As specified by Baillien et. al. (2009) and Ursin & Eriksen (2004), frustration (strain) results in WB when the individuals involved actively (e.g., venting frustration at others) or passively (e.g., violating norms and lowering performance) apply inefficient coping strategies. Furthermore, the cognitive load that follows strain has shown to increase retaliation in conflicts (Baron, 2004). Following the three-way model, this is an escalating conflict management style that makes it more likely for WB to appear (Baillien et al., 2009). The connection between strain and conflict also illustrates that there is an interaction between the frustration-path and the conflict-path, as perceiving someone else as a source of frustration may give rise to interpersonal conflict.

It also seems reasonable that the experienced strain is accompanied by frustration, hence one can look at the frustration-aggression theory and assume that the worker is more likely to exhibit aggression (Berkowitz, 1989; Dollard, 1939). RO might thus provoke workers to become perpetrators of WB through increasing stress and frustration. From a target perspective however, it is more appropriate to consider the social-interactionist theory (Felson, 1992). If the experienced stress and negative affect caused by RO does not elicit aggression, it might instead cause employees to behave in ways that violate norms of

behavior, thus provoking negative behaviors from others by triggering frustration and aggression.

Taking into consideration the empirical evidence and the theoretical considerations presented above, we suggest the following three hypotheses:

Hypothesis 1 (H_1): RA correlates positively with WB.

Hypothesis 2 (H_2): RC correlates positively with WB.

Hypothesis 3 (H_3): RO correlates positively with WB.

Moderator

Even though the role stressors belong to the work environment, they still represent the individual level of measurement, i.e., the employee's perception of their work. Workers are, however, embedded in multi-layered organizations with structures such as departments and work groups, and a shared work environment. Attempting to understand individual-level behavior without considering the person's higher context too, represents a potential overlook of information. Bronfenbrenner (1996) famously proposed that human development happens through interactions with a multi-layered ecological system. Development occurs through social exchanges not just with one's immediate surroundings (microsystem), but also with surroundings not currently present (mesosystem), and even through interactions between surroundings the person may never encounter self, but that in turn influence other more proximal surroundings (exosystem). Furthermore, many cultures and societies have their own generalized patterns of ideology and social organization (macrosystem), causing the structure and substance of the micro-, meso-, and exosystem to be more similar within than between different macrosystems.

In the same way the understanding of human development may benefit from such a holistic perspective, the understanding of WB may also improve if studied within the context of the work environment. Predictors and moderators of WB can be found at all levels, and the

same is true for outcomes of WB (Samnani & Singh, 2013). For example, RC has been identified as a fairly strong predictor of WB on a departmental level in organizations (Hauge et al., 2011). In organizations where RC exists, reports of bullying from observers, victims and perpetrators often coincide with reports of unclear tasks and inadequate access to information (Agervold & Mikkelsen, 2004; Hauge et al., 2007). In order to develop a better understanding of and effective countermeasures to WB, it is important to study the cross-level direct effect of group- and organizational-level predictors on WB in addition to the individual-level predictors.

For instance, the importance of cross-level direct effects was shown in a meta-analytic review by Lesener et al. (2020) where job resources at all levels of an organization, i.e., individual, group and organizational level, predicted work engagement, a lower-level variable. In other words, job resources at all levels seems to predict work engagement over time. However, it is emphasized that the organizational-level resources, such as work design, work management and how work is organized, contributed much more strongly to the lower-level variable (work engagement) than did group- and individual-level resources (Lesener et al., 2020). Similarly, the presence of bullying at a workplace may be influenced by cross-level interaction effects, where higher-level moderator variables influence the direct effect between two or more lower-level variables (León-Pérez et al., 2021). Such an interaction effect is exactly what we expect will happen when we investigate the moderating effect of the work environment on the relationship between role stressors and WB. However, very little research exists on moderators (and mediators) of the job characteristics-workplace bullying relationship, and especially not across levels (Rai & Agarwal, 2018).

Work Environment

Baillien and colleagues' three-way model (2009) suggests a third path WB can develop along, which is through the characteristics of the team or the organization. Negative

aspects of the group may directly stimulate WB, for example if there is a culture for talking

behind each other's backs or pranking new employees. In such a case, this enabling of

negative behavior forms a part of the work environment. The shared perceptions of employees

regarding the workplace constitute a significant part of the higher-level measurement in

organizations. As such, it may serve as a predictor of WB on a higher level and also as a

moderator on the relationship between WB and other predictors (James & James, 1989).

In the general factor of psychological climate (PCg) model, work environment is

measured along five dimensions; leadership, role characteristics, work group aspect, job

characteristics and organization (James & James, 1989; van Veldhoven, 2005). In addition,

Samnani & Singh (2016) suggests a multilevel interactionist model of WB which incorporates

several factors at the individual-, dyadic-, group- and organizational level. Their findings

indicate that the work environment is among the factors that are central in terms of WB and

conflict development. However, to the best of the authors' knowledge, there seems to be a

research gap. There are few which offer an explanation about which specific climates exist,

and few studies which examine the role of the work environment in facilitating WB

(Samnani, 2013; Samnani & Singh, 2016). Even so, there are some noteworthy exceptions.

Psychosocial safety climate (PSC) and conflict management climate (CMC) are two

kinds of work environment that have been studied and found to have connections to WB.

Dollard & Bakker (2010, p. 580) defined PSC as "policies, practices, and procedures for the

protection of worker psychological health and safety". If the organization does not provide

such protection it becomes increasingly difficult for the employees to defend themselves

against bullying, i.e., PSC moderates the positive relationship between bullying and

psychological health problems (Dollard et al., 2012; Law et al., 2011). The policies, practices

and procedures specific for managing conflicts, and the fairness of those, represent the CMC

(Rivlin, 2001). Empirical studies have shown that this too has a negative correlation with WB

(Einarsen et al., 2018), but also a moderating effect on the relationship between job stressors and WB (Zahlquist et al., 2019).

Extending this line of research, this thesis aims to investigate whether a stressful work environment moderates the relationships between role stressors and WB. When operationalizing this concept former studies have typically measured job stressors such as interpersonal work relationships, organizational roles, career development, the home-work interface, and organizational factors like office politics and organizational structure (Cooper et al., 2001; Hauge et al., 2007; Hoel & Salin, 2002). However, these can be viewed as precursors that may lead to stress in the future, rather than indicators of whether and to which degree a stressful work environment is present today (Baillien et al., 2011; Lazarus, 1984; Mausner-Dorsch & Eaton, 2000). Furthermore, these are individual-level variables that reflect a single employee's opinion rather than the organizational-level climate. Another way of measuring a stressful work environment might thus be the level of RN in each organization, as this is a successor rather than a predecessor of stress and that it to a larger degree will represent a feature of the entire work environment than individual opinions. Below, established theories are used to explain stressful work environment in depth, as well as how it may influence the relationship between role stressors and WB.

Emotional Contagion

There are different theories that can explain the moderating effect of a stressful work environment on the relation between said predictors and WB, one of which is the emotional contagion theory. Emotional contagion refers to a process where an individual or a group influence behavior or emotions of others via conscious or unconscious induction of emotional states and behavioral attitudes (Barsade, 2002; Hatfield et al., 1993; Schoenewolf, 1990). This means that employees experiencing stress may in turn make their colleagues stressed. Studies have shown how burnout and fatigue may spread due to emotional contagion, as the

expressed behavior is visible to others (Bakker et al., 2006). Especially the emotional exhaustion-dimension of burnout is easily observed and picked up by others through facial expressions of tiredness and bodily postures (Maslach et al., 1997). Hence a stressful environment is formed.

Conservation of Resources Theory

In work and organizational psychology, the notion of resource caravan passageways (RCP) is often used to investigate the positive force of the environment. These RCP are pivotal in conservation of resources (COR) theory (Hobfoll, 2011b), and involve several environmental conditions, i.e., physical safety, wealth, good schools, availability of good employment among others. Such conditions may support an individual's resource reservoir, which further influence physical and mental health and ability to cope with stress. In other words, individuals with a resource-enriching environment with the ability to utilize these safe passageways, will also be able to gain additional resources (Hobfoll, 2011b). For instance, children with access to good schools and education are likely able to learn new skills, further bolstering their pool of resources, unlike children without access to such privileges. RCP may also be used to investigate negative influences from the environment. Indeed, RCP may also detract, impoverish, obstruct or undermine an individual's resource reservoir (Hobfoll, 2011a). An example of such may be an organization which has a policy of mandatory overtime during busy work periods, without properly compensating employee or providing time off in lieu. Thus, the policy of mandatory overtime is an environmental work condition which may detract the resource reservoirs of employees, i.e., the employees' available time for rest and recreational activities outside of work are reduced. The RCP indicate that environmental conditions also play a vital part in the outcome of WB. On that account, one must identify which environmental conditions would influence the prevalence of WB.

Safety Signal Theory

A third theory which may explain the relation between role stressors and WB, is safety signal theory. Safety signal theory is based on the safety signal hypothesis which originally was used to understand behavior in rats depending on predictable and unpredictable electrical shocks (Seligman, 1968). One of the most important revelations coming from this is that if an individual can identify safety signals, then this allows the initiation of adaptive behavior to ensure further safety (Lohr et al., 2007). In the workplace, safety signals in the environment are perceived by the employees as signals which either promote or impede safety. One such safety signal may be a satisfactory PSC, which indicates that there are supportive resources available in the workplace even if WB is being conducted (Lohr et al., 2007). Studies have suggested that safety signals may function both as inhibitors of stress and fear, and as mitigators of the consequences of stressors (Christianson et al., 2012; Mineka et al., 1984; Weiss, 1971). However, the facilitating effect of safety signals to create a sense of psychological and physical safety, depends on the PSC, arisen from workplace practices, policies and procedures, in the organization (Dollard et al., 2012; Law et al., 2011).

Particularly the inhibiting effect of safety signals on the default stress response is explained in the Generalized Unsafety Theory of Stress (GUTS) (Brosschot et al., 2018). This theory says that when an individual has a generalized perception of unsafety in the environment, he or she will experience increased psychological hyperarousal (Huskey et al., 2022). This also links with CATS theory, in that if stress does not diminish after actions have been taken, it leads to allostatic overload and illness (McEwen, 1998; Ursin & Eriksen, 2004). Hyperarousal is the primary symptom of post-traumatic stress disorder (PTSD) (Weston, 2014) and also strongly linked with insomnia (Bonnet & Arand, 2010). Furthermore, both arousal and sleep disturbances have been associated with burnout (Melamed et al., 1999).

Also, a meta-analysis by Aronsson et al. (2017) suggest that high demands, high workload, low reward, low job control and job insecurity increase risk for burnout in the workplace.

Interplay of Theories

Taking these theories together, one could argue that the absence of safety signals in an organization may lead to a generalized feeling of unsafety that spreads among employees due to emotional contagion. GUTS propose that safety signals inhibit the default stress response, leading to increased psychological hyperarousal in individuals with a generalized perception of unsafety in their environment. Harvey et al. (2007) propose that emotional contagion is a mechanism by which observers of bullying, through their observations, potentially begin to assimilate bullying behavior into their own behavioral range. Thus, the bullying behavior is informally sanctioned within the organization, which in turn leads to additional bullying behavior. This is in line with GUTS and is of importance for the moderating effect of the working environment. Adding COR theory and RCP to the line of thought (Hobfoll, 2011b), one would expect burnout, especially emotional exhaustion (Maslach et al., 1997), to indicate a lack of resources expressed as higher RN in the organization (Giorgi et al., 2016; Kivimäki et al., 2000).When resources are threatened and employee stress levels increase, the need to recover resources after work also increases (Bakker et al., 2008; Demerouti et al., 2009) which may make employees more vulnerable, an easy target (Baillien et al., 2009). In addition, contagion may lead to the perception that there are less resources to deal with role stressors.

Considering the empirical evidence and the theoretical explanations presented above, it seems reasonable to suggest the following hypothesis:

Hypothesis 4 (H_4): Stressful work environments are positively correlated to WB.

Furthermore, these considerations allow us to expect a stressful work environment to moderate the relation between each of the role stressors and WB. Lastly, we therefore suggest the three following hypotheses:

Hypothesis 5 (H_5): Stressful work environments influence the connection between RA and WB.

Hypothesis 6 (H_6): Stressful work environments influence the connection between RC and WB.

Hypothesis 7 (H_7): Stressful work environments influence the connection between RO and WB.

Methods

Procedure and Sample

The sample used in this study stem from a statistical consulting agency which focuses on measuring stress levels among health and safety executives. The data was collected between January 2014 and January 2019. A total of 15 524 employees from 69 organizations participated in the study by answering the Short Inventory to Monitor Psychosocial Hazards (SIMPH) questionnaire (Notelaers et al., 2007) containing 39 items. Additionally, the participants answered a short version of the Negative Acts Questionnaire-Revised (NAQ-R) (Einarsen et al., 2009), i.e., the Short Negative Acts Questionnaire (SNAQ), which consists of nine items measuring WB (Notelaers et al., 2019). Control variables (age, sector and leadership position) were chosen on the background of earlier research exploring social demographics characterizing risk groups of bullying (Notelaers et al., 2011). 4 693 participants were excluded due to incomplete data. We report complete data from a total of 10 831 participants between the age of 18-64 years old ($M = 41.67$ $SD = 10.38$), working in 50 different organizations.

Ethics

None of the participants were given access to the completed questionnaires, neither in paper nor electronic form. All email addresses were also removed and demographic information such as age or tenure was kept confidential. As a result, the researchers worked with anonymous data.

Individual Level Measurements

Our predictor variables were measured using the SIMPH (Notelaers et al., 2007). RA was measured with three items (e.g., "do you know exactly what is expected of you at work?"), and Cronbach's alpha was .79. RC was measured with four items (e.g., "do you get conflicting assignments?"), with Cronbach's alpha .74. RO was measured with three items (e.g., "do you work under time pressure?"), with Cronbach's alpha .86. The items measuring all three predictors had four response categories: "never", "sometimes", "often", and "always", but due to coding the scores were reversed in order to concur with the moderator and outcome variables. Our outcome variable, WB, was measured using the SNAQ (Notelaers et al., 2019), an abbreviated version of the NAQ-R (Einarsen et al., 2009), which consists of nine items (e.g., "Rumors about you are being spread") with four response categories ("never", "occasionally", "monthly", "weekly or more often"). Cronbach's alpha was .833.

Higher-Level Measurements

It seems that earlier studies have generally measured a stressful work environment by the presence of job stressors (e.g., RA, RC and RO), but as we consider these to be individual-level precursors of a stressful work environment it is in this study more logical to measure a higher-level outcome of said stressors. Choosing to measure a stressful work environment using RN is to the authors' knowledge a new way of thinking that takes into consideration the multilevel perspective. Hence, our moderator variable RN was also measured with items from the SIMPH questionnaire (e.g., "I think it's hard to relax after work"), but unlike the other

variables these five items had dichotomous response categories, namely "yes" and "no". Cronbach's alpha was .765. To justify the aggregation of RN to the organizational level, the inter-rater agreement was computed. The resulting RWG value for RN was .944, which justifies measuring RN at the organizational level. ICC1 for RN was also measured as an additional step and indicated that 4.5% of the variance was between organizations and 95.5% was within organizations. Taken together, this indicates that the average scores on RN do meaningfully vary between organizations, and that it is reasonable to measure a stressful work environment by using the higher-level variable RN.

Factor Analysis

To be certain that the items we measured conformed to the expected factor structure, we performed a factor extraction using the principal axis method (Attachment 1). A scree plot including all the items was also used (Attachment 2). As expected, this yielded a total of five factors with an eigenvalue greater than one (6.21-1.14). Factor scores smaller than $\pm$ .3 were suppressed. After rotating the factors using varimax with kaiser normalization, one of the items measuring WB (WB_1) had a rather high loading in the factor for RC (factor 3). Even so, its factor loading for WB was the highest, allowing us to retain it as a measure of WB and avoid alterations of the SNAQ and SIMPH questionnaires. All items belonged in the same factors as the questionnaires described earlier. This confirms that the measured items resemble the expected factor structure.

Statistical Design

The hypothesis testing was done using a two-level hierarchical regression model. In order to make the intercept more interpretable (Heck et al., 2013), individual level variables, i.e., RA, RC, RO, were first centered on the group mean. The group mean is the mean of the organization. This process involved aggregation of the focal variables to the organizational level, followed by the readjustment of the individual mean according to the group mean.

Group mean centering will lead to a different standard deviation because of the variance from the non-centered variables. This artifact is important in the subsequent analysis (Heck et al., 2013). The company level variable RN was centered on the grand mean, i.e., unit-level means were adjusted to account for variations among individuals within the units, thus the distribution remained the same, but a shift in the scale occurred (Heck et al., 2013).

The following procedure of analysis was repeated for each predictor variable. We evaluated the multivariate significance of the effects at each step by calculating the improvement in model fit relative to the preceding step. Decrease of the Δ -2*loglikelihood statistic (-2LL) represent an improvement in model fit. The -2LL follows a χ^2 distribution and reflects the model's deviance, or residual variance. As we added one parameter at a time, the change in degrees of freedom (df) was 1. Due to the χ^2 distribution, this means that the decrease of the -2LL must be greater than 3.84 to be significant. Thus, as the model is constructed, the deviance should decrease. The Schwarz Bayesian Criterion (BIC) was also calculated, and the values were compared to the previous model. When the value decreased, we considered the model fit as having improved (Schwarz, 1978).

Firstly, a model including all control variables was added (Model 0). In the next model, we added the group mean centered RA variable as a predictor (Model 1), followed by the addition of the group mean centered RC (Model 2) and group mean centered RO variables (Model 3) as predictors. Next, random intercept-slope models were built for the variables RA, RC, RO, respectively, allowing the relationship between WB and the predictors to vary across groups (Model 4, Model 5, and Model 6). In model 7, the grand mean centered higher level variable RN was introduced. In order to test the moderation hypotheses, the cross-level interactions RA*RN and RC*RN were introduced one at a time (Model 8, Model 9), thus controlling for any potentially existing between-level interactions in the data (Enders &

Tofighi, 2007; Hofmann & Gavin, 1998). No cross-level interaction for RO*RN was performed.

Pseudo R^2 values were calculated after each step, explaining the within and between-group variance each time a variable was added to the model (Snijders & Bosker, 1994). Similar to R^2 values, pseudo R^2 values describe how much the current model explains the data. As such, comparing pseudo R^2 values from model to model can be utilized to show model fit improvement as additional variables are added (Ng et al., 2022). As such, in this study the between-group variance in the outcome variable (WB) should be explained by the between-group moderator variable (RN). In order to accept our individual level hypotheses, we need to observe significant changes in R^2 values as well as -2LL for all our variables and the beta (b) must be significant. In addition, for the organizational-level hypotheses to be confirmed the interactions must go in the expected directions. To visualize the interaction effects, plots were made using Preacher's hierarchical linear modeling tools (2006) and RStudio (R version 4.2.0) (for script, see Attachment 3 and Attachment 4).

Results

Descriptives

The descriptive statistics of the variables included in the study are presented in Table 1. Table 1 describes the number of respondents, mean values, standard deviations, and correlations between several variables. On an individual level, WB correlates positively with all three predictor variables (RA: $r = .303$; $p < .01$, RC: $r = .478$; $p < .01$, RO: $r = .184$; $p < .01$). Additionally, there was a significant, but weak, correlation between WB and the control variable sector ($r = -.076$; $p < .01$). However, on a company level, WB correlates positively with RA, RC, and RN (RA: $r = .307$, $p < .05$; RC: $r = .728$, $p < .01$; RN: $r = .425$, $p < .01$), but not with RO ($r = .125$, $p > .05$).

Table 1

Frequencies, means, standard deviations and correlations between variables.

	N	M	SD	1	2	3	4	5	6	7	8	N	M	SD
Individual level														
1 Sector	10 831	,546	,498	-										
2 Leader Position	10 831	,266	,442	-0,031*	-									
3 Age	10 831	41,667	10,38	0,037**	0,167**	-								
4 Bullying	10 831	1,417	,450	-0,076*	-,008	,005	,833	,307*	,728**	,125	,425**	50	1,434	,128
5 Role Ambiguity	10 831	1,012	,613	,015	-,012	-0,052*	,303**	,792	,559**	,421**	,306*	50	,967	,167
6 Role Conflict	10 831	1,718	,466	-0,062*	0,097**	0,034**	0,478***	,559**	,739	,496**	,645**	50	,717	,138
7 Role Overload	10 831	1,586	,649	0,051**	0,153**	0,048**	0,184***	0,149**	0,330**	,856	,726**	50	1,562	,214
Group level														
8 Recovery Need	10 831										,765	50	0,392	0,086

* p < .05 (two-tailed)

** p < .01 (two-tailed)

Chronbachs Alpha in diagonal

Company level coefficients above diagonal

Multilevel Analysis

The results from the multilevel regression analysis are shown in Table 2 and table 3. For the convenience of the reader, we include some of the numbers in the text. Firstly, Model 0 confirmed that enough of the variance in WB was attributable to differences between groups (4.67%, compared to 95.33%), justifying the construction of a multilevel model. In the three following models, the fixed effects of level 1 predictor variables RA, RC and RO were added. In Model 1, RA ($b = .2343$, $SE = .0068$, $p < .001$) was added to fixed effects (*Pseudo R^2 Within Variance* = 10%, $p < .001$). RC ($b = .3959$, $SE = .0089$, $p < .001$) was added to fixed effects in Model 2 (*Pseudo R^2 Within Variance* = 15.5%, $p < .001$). In Model 3, RO ($b = .0398$, $SE = .0064$, $p < .001$) was added to fixed effects (*Pseudo R^2 Within Variance* = .35%, $p < .001$). All the predictors contributed to an increase in within-level explained variance. The amount of explained within-group variance was small for RO indicating that this variable does not contribute much to the individual differences in WB. Nevertheless, these results lend support to H_1, H_2 and H_3.

In Model 4, 5 and 6, randomly varying slopes were added to assess whether the correlations between the predictor variables and WB varied across different organizations. In Model 4 a randomly varying slope for RA was added ($b = .0012$, $SE = .0007$, $p < .05$). The model improved, given the change in -2LL (*Δ-2LL* = 10.2838, $p < .01$) and reduction in BIC. In Model 5, the RC random slope was added ($b = .0045$, $SE = .0019$, $p < .01$). Change in -2LL (*Δ-2LL* = 21.1459, $p < .001$) and reduced BIC indicate an improvement of the model. When adding RO, the slope was not significant ($p > .05$), change in –2LL was not significant (*Δ-2LL* = 1.4537, $p > .05$) and BIC increased, meaning that Model 6 showed a worse fit than Model 5. Overall, this means that no support was found for the correlation between RO and WB to vary across organizations, making H_7 invalid. As such, the RO random intercept-slope was removed.

Table 2

Multilevel regression analysis with unstandardized beta (β) values.

	Model 0	Model 1	Model 2	Model 3	Model 4
Fixed Effects					
Intercept	1,4058*** (0,0282)	1,3693*** (0,0275)	1,3576*** (0,0268)	1,3548*** (0,0268)	1,3555*** (0,0268)
Sector	0,0646** (0,0310)	0,0647* (0,0310)	0,0667* (0,0317)	0,0671* (0,0317)	0,0671* (0,0318)
Leadership Position	0,0111 (0,0099)	0,0028 (0,0094)	0,0388*** (0,0087)	0,0459*** (0,0088)	0,0457*** (0,0088)
Age	-0,0003 (0,0004)	0,0007 (0,0004)	0,0003 (0,0004)	0,0003 (0,0004)	0,0003 (0,0004)
Role Ambiguity (RA)		0,2343*** (0,0068)	0,1159*** (0,0068)	0,1151*** (0,0067)	0,1130*** (0,0092)
Role Conflict (RC)			0,3959*** (0,0089)	0,3784*** (0,0093)	0,3780*** (0,0093)
Role Overload (RO)				0,0398*** (0,0064)	0,0402*** (0,0064)
Recovery Need (RN)					
RA*RN					
RC*RN					
Random Parameters					
Level 1					
Within Residual (σ^2)	0,1942*** (0,0026)	0,1747*** (0,0024)	0,1475*** (0,0020)	0,1470*** (0,0020)	
Level 2					
Between Variance Intercept (τ_{00})	0,0095*** (0,0025)				
RA Slope					0,0012* (0,0007)
RC Slope					
Pseudo-R 2 (Within variance %)		10,0421	15,5444	0,3518	
Pseudo-R 2 (Between variance %)					
Pseudo-R 2 (Between slope variance %)					
Model Fit Statistics					
BIC	13137,5553	12003,7393	10191,5879	10160,9995	10160,0052
-2 loglikelihood	13118,9757	11985,1599	10173,0086	10142,4204	10132,1366
Δ -2*loglikelihood		1133,8157***	1812,1513***	30,5882***	10,2838**
Δn parameters		1,0000	1,0000	1,0000	1,0000

Note: Standard errors in parantheses

* $p < .05$, ** $p < .01$, *** $p < .001$

† Model 7 compares to Model 5

Table 3

Multilevel regression analysis with unstandardized beta (β) values.

	Model 5	Model 6	Model 7†	Model 8	Model 9
Fixed Effects					
Intercept	1,3522*** (0,0268)	1,3516*** (0,0268)	1,3502*** (0,0259)	1,3468*** (0,0259)	1,3442*** (0,0258)
Sector	0,0672* (0,0317)	0,0672* (0,0317)	0,0685* (0,0301)	0,0696* (0,0301)	0,0694* (0,0300)
Leadership Position	0,0463*** (0,0088)	0,0464*** (0,0088)	0,0477*** (0,0087)	0,0466*** (0,0087)	0,0458*** (0,0086)
Age	0,0003 (0,0004)	0,0003 (0,0004)	0,0003 (0,0004)	0,0003 (0,0004)	0,0003 (0,0004)
Role Ambiguity (RA)	0,1145*** (0,0082)	0,1147*** (0,0081)	0,0983*** (0,0084)	0,0952*** (0,0083)	0,0967*** (0,0084)
Role Conflict (RC)	0,3751*** (0,0148)	0,3745*** (0,0148)	0,3568*** (0,0147)	0,3571*** (0,0148)	0,3524*** (0,0148)
Role Overload (RO)	0,0390*** (0,0064)	0,0401*** (0,0073)	0,0003 (0,0068)	0,0010 (0,0068)	0,0008 (0,0068)
Recovery Need (RN)			0,1935*** (0,0123)	0,1886*** (0,0123)	0,1857*** (0,0123)
RA*RN				0,1056*** (0,0173)	0,0756*** (0,0188)
RC*RN					0,1017*** (0,0249)
Random Parameters					
Level 1					
Within Residual (σ^2)					
Level 2					
Between Variance Intercept (τ_{00})	0,0105*** (0,0027)		0,0093*** (0,0024)		
RA Slope				0,0007 (0,0005)	
RC Slope		0,0045** (0,0019)			0,0046** (0,0020)
Pseudo-R^2 (Within variance %)					
Pseudo-R^2 (Between variance %)			11,2231		
Pseudo-R^2 (Between slope variance %)				43,4057	0,0000
Model Fit Statistics					
BIC	10148,1488	10155,9845	9911,3835	9880,6629	9869,5723
-2 loglikelihood	10110,9907	10109,5369	9874,2258	9843,5056	9832,4153
Δ -2*loglikelihood	21,1459***	1,4537	236,7649***	30,7202***	11,0903***
Δn parameters	1,000	1,000	1,000	1,000	1,000

Note: Standard errors in parentheses

* $p < .05$, ** $p < .01$, *** $p < .001$

† Model 7 compares to Model 5

In order to explore its main effect, RN was added as a fixed effect in Model 7. By removing the RO slope, Model 7 was compared to Model 5. The change in df and number of parameters remained equal to 1. The addition of RN was associated with significant changes in both the between-level intercept variance ($\tau00$ = .0093, SE = .0024, $p <$ .001) and the model fit (Δ-$2LL$ = 236.76, $p <$ .001) from Model 5 to Model 7. Based on these results, one may confirm H$_4$. In Model 8 and 9 the interaction effects of RA*RN and RC*RN were tested, respectively. Model 8 showed a significant effect (b = .1056, SE = .0173, $p <$ .001) and a better model fit (Δ-$2LL$ = 30.7202, $p <$ .001), and indicate that RN explained 43.4057% of between-slope variance. Model 9 showed a significant effect (b = .1017, SE = .0249, $p <$ .001), a better model fit (Δ-$2LL$ = 11.0903, $p <$ .001), but RN did not explain between-slope variance. This means that a considerable proportion of the variance between organizations in the relation between RA and WB is attributable to RN, while the variance of the relation between RC and WB is not influenced by the moderator.

Figure 1 and Figure 2 show plots visualizing both interaction effects at +1 and -1 SD of RN. They both go in the expected directions, with RN enhancing the relation between the role stressors and WB as it increases. This ultimately confirms H$_5$ and H$_6$. However, even though the interactions were significant and the correlations in fact do vary across organizations, the actual difference in the strengths of these relations seems to be small.
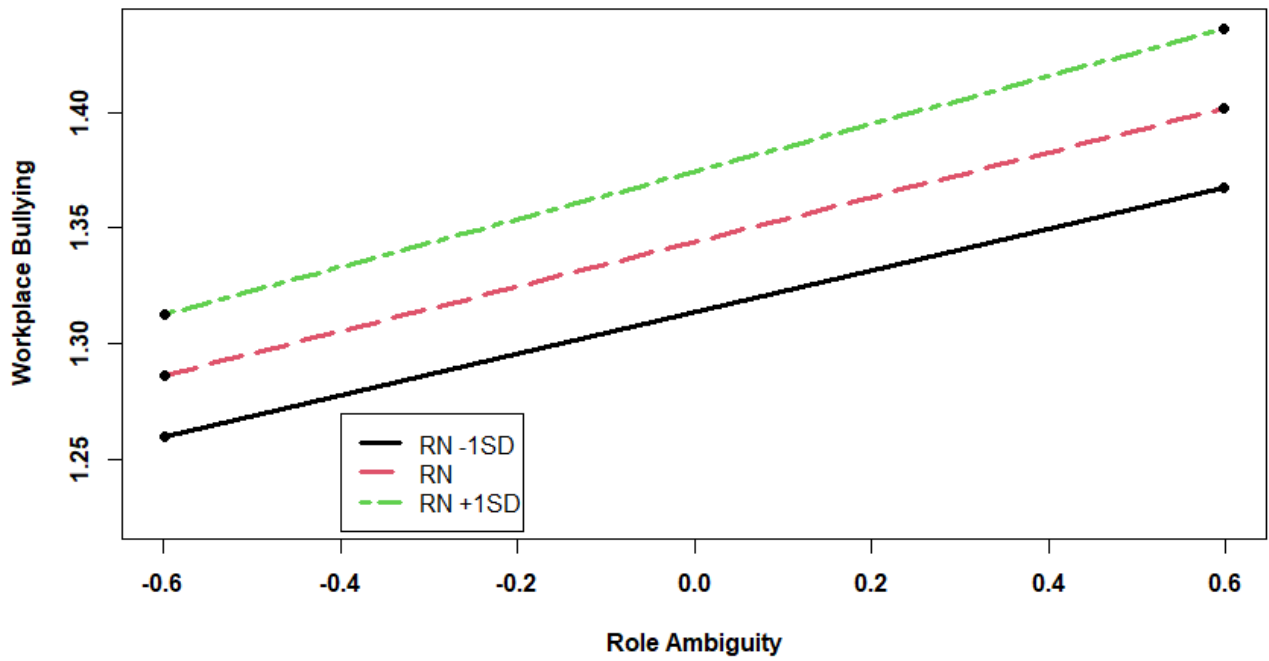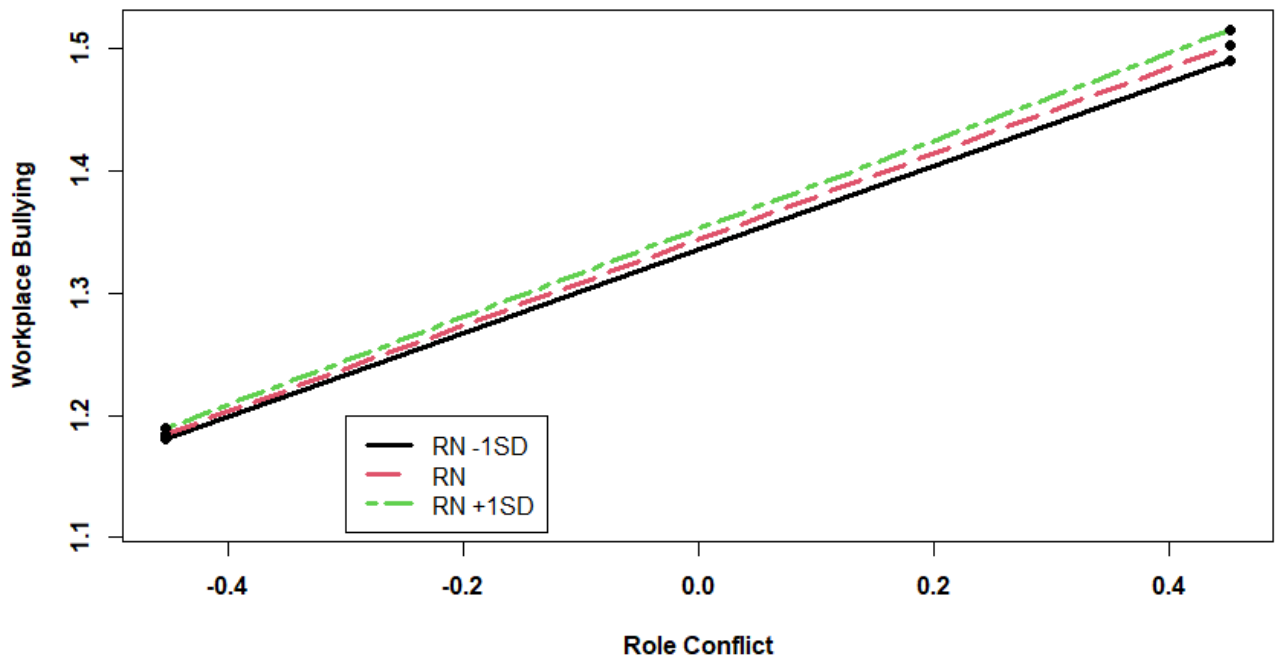
Figure 1

Interaction plot of interaction effect RA*RN.

Figure 2

Interaction plot of interaction effect RC*RN.

Discussion

Contrary to most former WB studies, we investigated the work environment hypothesis not just at the employee level, but also at the organizational level. Firstly, we replicated earlier findings about role stressors predicting WB. This was based on established stress and conflict theories (Argyris, 1978; Breuer & Elson, 2017; Felson, 1992; Van de Vliert, 1998). Secondly, we investigated the role of a stressful work environment, operationalized by RN, both as a higher-level predictor of WB and as a moderator of the relationship between RA, RC and RO, and WB. Based on studies both at the individual (Baillien et al., 2008; Bowling & Beehr, 2006; Skogstad et al., 2011) and the organizational level (Agervold, 2009; Hamre et al., 2023; Zahlquist et al., 2023; Zahlquist et al., 2019), we expect organizations characterized by high RN to also exhibit higher levels of WB. The hypotheses about a stressful work environment amplifying the connections between role stressors and WB are based on emotional contagion theory (Harvey et al., 2007), COR theory (Hobfoll, 2011b) and safety signal theory (Lohr et al., 2007). Our results showed a significant main effect and some significant cross-level interaction effects, i.e., a stressful work environment moderates the connection between RA, RC and WB. However, the effects are small.

Direct Effects

Based on four theoretical reasons we expect the role stressors to be positively related to WB. The frustration-aggression hypothesis (Breuer & Elson, 2017) claims that the presence of stressors in the workplace may lead to frustration, which manifests itself in aggressive behavior, search for scapegoats and perhaps bullying (Einarsen et al., 2005; Nielsen, 2013). Social interactionist theory suggests that experiencing stress leads to the violation of workplace norms, something which again may provoke retaliation and WB (Felson, 1992; Felson & Tedeschi, 1993; Hauge et al., 2007). This also corresponds with the frustration

pathway leading to WB in the three-way model, as it says that passive and inefficient ways of coping with frustrations, such as distancing yourself, violating norms, or reducing productivity, in turn may lead to increased WB (Baillien et al., 2009). In addition to these theories, the relationship between role stressors and WB can also be explained by conflict theory. Indeed, the three-way model also says that if a problem, for instance RC, is handled in an escalating way, it may eventually result in WB (Baillien et al., 2009). Relevant examples of escalating behavior in this case, are for instance model 1 communication (Argyris, 1978) and spontaneous escalating behavior (Van de Vliert, 1998).

When investigating the direct effect hypotheses about the role stressors, we replicated findings from earlier research. We found that H_1, H_2 and H_3 are all valid, i.e., WB correlates positively with the role stressors RA, RC, and RO at an individual level (see Table 2). Former studies clearly found that RA is related to WB on the individual level (Baillien & De Witte, 2009; Notelaers et al., 2010; Van den Broeck et al., 2011). Former studies also found RC to be a valid predictor of WB (Balducci et al., 2012; Reknes et al., 2014), and also RO has been found to be a predictor of WB (Notelaers et al., 2010; Van den Brande et al., 2016). Thus, the results in this study are in line with previous studies on correlations between role stressors and WB (Bowling & Beehr, 2006; Hauge et al., 2007; Notelaers et al., 2010).

An interesting discovery in this part of the results is that, even though significant at $p < .001$, the fixed direct effect of RO on WB is very close to zero. Earlier empirical findings have also shown weaker or absent relations between RO and WB, than between the other two predictors and WB (Zahlquist et al., 2023; Zahlquist et al., 2019). Unfortunately, given that our regression coefficients are unstandardized we cannot directly compare our findings. Nevertheless, we see similar results in our correlation matrix, where the Pearson's R correlation between RO and WB is weak and not significant, while the correlations between the other two stressors and WB are stronger and significant.

Considering the explanations provided above, it is possible that the theories do not apply as well to RO as they do to RA and RC. One common feature of the theoretical literature on RA and RC, is that the role stressors are quite interpersonal in nature, i.e., negatively related to supervisory leadership and group process (Bedeian et al., 1981). The nature of RO on the other hand may be more objective than relational in nature. Perhaps frustration is less likely to lead to aggression or norm violation the less personal the source of frustration is, e.g., if one has many spreadsheets to make, one is less likely to experience interpersonal aggression than when dealing with contradicting emails from superiors.

The literature also distinguishes between hindrance stressors and challenge stressors. While the former only depletes energy and counteracts employees' goal achievement, the latter kind may both counteract and stimulate goal achievement (LePine et al., 2005). Similar to job complexity and cognitive demands, RO has been found to be a challenge stressor. RA and RC on the other hand, are considered hindrance stressors (Van den Broeck et al., 2010). This supports that RO is of a different nature than RA and RC, and the distinguishment makes the weaker direct effect of RO on WB more reasonable.

Cross-level Direct Effect

Bronfenbrenner (1996) suggested that human development not only occurs within each individual, but also within higher contexts like social groups and cultures. Earlier studies have followed up this suggestion and found that higher-level variables have an important effect on individual-level outcomes, perhaps even more so than individual-level variables (Hauge et al., 2011; Lesener et al., 2020). At the individual level, studies supporting the work environment hypothesis (Baillien et al., 2008; Bowling & Beehr, 2006; Skogstad et al., 2011) state that stressful features within the work environment increases the likelihood for WB to occur. The work environment may be considered a manifestation of an overall characteristic of the whole work group. If this characteristic is negative, it may according to the three-way

model be a pathway for WB to develop (Baillien et al., 2009). Contrary to this individual-level study by Baillien (2009), we conducted a study on the organizational level, investigating whether organizational level RN may account for WB. Based on other organizational-level studies investigating the work environment hypothesis (Agervold, 2009; Hamre et al., 2023; Zahlquist et al., 2023; Zahlquist et al., 2019), we expect that a high RN among employees has a strong direct effect on the presence of WB, similar to RA, RC and RO.

As expected, the results show support for a relationship between a stressful work environment and WB (H_4). Comparing the direct effect of RN in table 3 to the direct effects of RA, RC and RO in Table 2, our results also concur with the findings of Zahlquist et.al (2023) and Zahlquist et.al (2019) who investigated hostile work climate and CMC, and found that higher-level environmental variables may affect the presence of WB. These findings are also in line with former studies claiming workplace environment to be among the factors that are central in terms of WB and conflict development (Samnani & Singh, 2016). However, the amount of between-level variance in WB that was explained by RN in our study barely exceeded 11% (see table 3). This is a rather weak effect, and considering the theoretical importance of the work environment hypothesis we expected a stressful work environment to have greater actual impact on the presence of WB in an organization than what our results show.

Interaction Effects

When it comes to the interaction effects, we expected RN to moderate all three relations between RA, RC, RO, and WB (H_5, H_6 and H_7, respectively). León-Pérez et al. (2021) suggested that higher-level moderator variables can influence the direct effect between lower-lever variables. Several other multilevel studies indicate that the presence of role stressors in stressful work environments correlates with, and potentially precedes WB (Agervold, 2009; Hamre et al., 2023; Hauge et al., 2011; Zahlquist et al., 2023; Zahlquist et

al., 2019). This suggests that the moderation effect of RN on the relation between RA and WB, and RC and WB may be due to a lack of resources, as suggested by COR theory (Hobfoll, 2011b). A stressful work environment may lay claim to many of the employees' resources, thus reducing his or her ability to deal with challenges such as RA and RC. For instance, following the Michigan model of role stress (Kahn et al., 1964), one may expect social support to have a buffering effect on the negative aspects of role stressors. Thus, a lack of social support may lead to less resources being available to deal with role stressors. This in turn may increase the risk of WB exposure.

Another explanation might be found in safety signal theory, where perceiving psychological and physical safety has a mitigating effect on stressor consequences (Christianson et al., 2012; Mineka et al., 1984; Weiss, 1971). It seems likely that a stressful work environment reduces or removes the presence of safety signals, perhaps even functions as an unsafe signal by itself. We expect high scores on RN to obstruct any mitigation effect to take place. Moreover, feelings of unsafety may have an increasing effect on stressor consequences, i.e., feelings of unsafety yields prolonged stress-related physiological activation which is manifested as slow recovery after exposure to stressors (Brosschot et al., 2018). Thus, the stressor consequences would be high RN, a need which is not adequately met. One could argue that never knowing what comes next in a stressful work environment might not only moderate the role stressor-WB relationship through denying mitigation, but also through increasing the feeling of unsafety, i.e., the perception of a threat towards ones resources (Brosschot et al., 2018; Hobfoll, 2011b).

The results in table 3 shows significant effects for RA*RN and RC*RN, supporting our expectations for H_5 and H_6. This suggests that a stressful work environment not only influences WB directly (as in H_4), but also strengthens the already potent correlations between RA and WB, and RC and WB. This corresponds to earlier findings regarding CMC, PSC, and

a hostile work climate, acting as higher-level moderators in the relationship between individual job stressors and WB (Hamre et al., 2023; Zahlquist et al., 2023; Zahlquist et al., 2019). Despite support for H_5 and H_6, we present neither an interaction effect with RN nor a random slope for RO (H_7). This comes because the addition of the random slope for RO did not yield significant results ($b = .0003$, $SE = .0003$, $p > .05$) and overall worsened the model fit (Δ-$2LL = 1.45$, $p > 0.1$; Δ-$BIC = -7.8$). Contrary to our expectations, this means that the correlation between RO and WB does not vary across organizations, something which also implies that a potential interaction effect between RN and RO would be meaningless. In recently published work, Zahlquist et al. (2023) report similar findings, i.e., no significant strengthening effect of hostile work environment on the relationship between workload (RO) and bullying behavior (WB).

Even though previous explanations regarding H_5 may have some relevance to H_7, there is no evidence to support this claim. It is possible that stress associated with RA and RC is more demanding for the employee to handle than that of the more objective nature of the stress related to RO. Considering the distinction between challenge demands (RA and RC) and hinderance demands (RO), it appears the former category has more serious implications than the latter (Kim & Beehr, 2018; LePine et al., 2005). According to COR theory (Hobfoll, 2011a), this would mean that the resource loss related to RA and RC is in fact greater than that of RO, i.e., the presence of RA and RC is more burdening and draining on an individual's RCP, than that of RO related issues. This line of thought can also be followed by emotional contagion theory (Barsade, 2002), i.e., the draining of passageways leads to emotional exhaustion or burnout, which further spreads in organizations. The mechanisms involved require observation of actual behaviors exhibited by other individuals (Harvey et al., 2007). One may therefor argue that the experience of RA and RC are based on the expression of other individuals' behaviors, while RO is not. This is important for the moderating effect of

the working environment. For instance, when looking back at COR theory and RCP (Hobfoll, 2011b) one would expect burnout, especially emotional exhaustion, to indicate a lack of resources. Studies suggest that this burnout effect is expressed as higher RN in the organization (Giorgi et al., 2016; Kivimäki et al., 2000).

When considering safety signal theory, it is possible that safety procedures and policies have a more social and relation-oriented nature, rather than being objective and task oriented. This implies that safety signals may improve employees' abilities to manage stress related to RA and RC, but not stress related to RO. If safety signals are removed due to a stressful work environment, this should strengthen the interaction effects of RA*RN and RC*RN. This statement is further bolstered and reflected in the SIMPH questionnaire (Notelaers et al., 2007). The RO items are limited to employee circumstances and capabilities, i.e., they are objective and task-oriented and disregards any social or relational conditions. RA and RC items on the other hand are more co-worker oriented, i.e., social and relational circumstances are of greater importance than tasks and objectives. To exemplify, a typical RO item is "do you experience time pressure?", while a typical RC item is "do you experience conflicts with your colleagues about the content of your tasks?" (Notelaers et al., 2007).

A noteworthy observation from the study is that while the results demonstrate a significant interaction for RA*RN and RC*RN, the actual effects of these interactions are negligible (see Figure 1 and Figure 2). The hypotheses did not explicitly address the effect size, but nevertheless these outcomes are somewhat surprising. The minimal interaction effects imply that the incremental effects of RA and RC on WB that is experienced by employees in stressful work environments are barely perceptible, thus unlikely to amplify the spread of emotions beyond the levels in work environments that are not stressful. The WB average is also very low, showing that within the range of -1SD to +1SD, scores vary between 1.2 and 1.4 for RA*RN (Figure 1) and 1.2 and 1.5 for RC*RN (Figure 2). This means that

even in stressful work environments, employees have 'never' or 'occasionally' been exposed to negative acts during the last six months (Notelaers & Van der Heijden, 2021). This implies that there may simply not be enough WB present in the sample to expect sizeable interaction effects.

Despite low intercepts and limited interaction effects, the findings are significant and must be acknowledged. Being close to the 'never' response category, it is reasonable to consider the averages as low-frequent negative acts of workplace incivility, a concept related to WB. Workplace incivility has been defined as "[…]low-intensity deviant behavior with ambiguous intent to harm the target[…]" (Andersson & Pearson, 1999, p. 457). This kind of behavior resembles WB, but the actions are less intense and the intent to harm is more uncertain (Hershcovis, 2011). Given that Einarsen and colleagues (2020) define WB as an escalating process, one may argue that workplace incivility is a pre-stage of WB. It is possible that a stressful work environment has a more prominent contribution to the earlier stages of WB, thus serving as a catalyst for the development of WB through conflict escalation (Zapf & Gross, 2001).

Limitations and Future Research

The statistical design used in this study considered the fact that the data used in research concerning working life are often nested within teams and organizations that expand beyond the individual level of analysis. Ignoring or failing to recognize the nested structure of a dataset is an error that in the end may lead to less accurate inferences, especially concerning standard errors and significance (Hox et al., 2017). This also counts for very large sample sizes, as is the case in this study. One way to limit the potential error is by using a significance level that is more conservative than $p < .05$, e.g., $p < .001$ (see Notelaers et al., 2010), but one may also use a statistical model designed especially for nested data. By building a multilevel hierarchical regression model we aim to decrease the probability of

Type 1 error and provide reliable and valid results, thus making the literature about WB and its predictors and moderators even more solid. This also strengthens the replicability of this study, compared to single level studies (Notelaers et al., 2010).

The current thesis also expands on the present knowledge about the work environment hypothesis. Stressful work environments, measured as aggregated RN within the organization, was investigated as a moderator on the relationship between role stressors and WB. Having many organizations in the sample enabled the use of multilevel modelling to test the work environment hypothesis beyond the employee level. Furthermore, the heterogeneity of the sample may allow us to conclude that the findings are generalizable across a variety of occupations and economic sectors. However, a rather heterogeneous sample is no guarantee for a representative sample. Hence, the findings from this study may not be applied without proper caution, not even for a Belgian workforce where the data was gathered.

There are several other limitations to be taken into consideration. Firstly, we did not perform pre-analyses to determine the statistical distribution of our sample, hence it cannot be established to what degree our analyses meet the statistical assumption about normality. If the data is not normally distributed, the mean does not provide a representative value for the data and drawing conclusions becomes questionable (Mishra et al., 2019). However, with a large enough sample size this is no longer considered a major problem and tests of skewness and kurtosis are not recommended (Ghasemi & Zahediasl, 2012; Pallant, 2016). As our sample size was very large (N = 10 831), we did not consider it necessary to explore the distribution.

Secondly, the use of self-reported data may lead to skewed results due to common method variance (Podsakoff & Organ, 1986). Using a multilevel design may have reduced the potential for common method variance, but collecting information from sources other than self-reports might have been even more beneficial to avoid this issue (Evans, 1985). One could argue that assessing role stressors and WB from different viewpoints might be

beneficial. However, this may in turn pose its own issues seeing that these concepts are subjective and individual in nature (Notelaers et al., 2011; Parzefall & Salin, 2010). In this thesis, countermeasures were applied to avoid common method bias. We aggregated RN to the organizational level. Given that some of the hypotheses in this study include cross-level interactions, one may argue that common method bias is of less concern (Conway & Lance, 2010).

Thirdly, the data used in this thesis are of a cross-sectional nature, hindering any inferences of causality. Nevertheless, some existing verification of causality exists in other studies at the individual level, suggesting that role stressors indeed do predict WB (Reknes et al., 2014). Higher levels of RA show a positive relation to subsequent exposure to WB, i.e., higher levels of RA may lead to more WB exposure, even though the effect is limited. Additionally, there are reports of a weak reverse effect regarding RA and WB, and RC and WB i.e., reporting WB at baseline predicts reporting increased levels of RA or RC (Reknes et al., 2014). Moreover, both Hauge et al. (2011) and Nielsen & Knardahl (2015) report a causality effect of WB on RC. However, this weak reverse relationship has little practical impact compared to the relationship from role stressors to WB (Reknes et al., 2014). Thus, while a clear inference of causality may not be drawn from this thesis, earlier studies indicate that role stressors and WB are causally linked, albeit in more than one direction.

An additional fourth limitation is the validity of the SNAQ given the definition of bullying utilized in this thesis, specifically the statement regarding a conflict not being classified as bullying if the parties involved are of equal strength (Einarsen et al., 2020). While the items in SNAQ do measure the frequencies of negative acts associated with bullying (Notelaers et al., 2019), they do not provide any measurement on the power balance between the parties involved. Therefore, the adequacy of SNAQ to measure WB given the previous definition (Einarsen et al., 2020), is debatable. Next to the SNAQ, future researchers

may also include self-measurements of WB or base their study on a different definition to avoid this. Considering the argument that the work environment contributes more to WB at an earlier stage of development, it can also be mentioned that the SNAQ does not measure low-intensity negative behaviors (Notelaers et al., 2019). Future research would have to apply a different, milder outcome variable than WB to explore this idea.

Another, fifth limitation to point out is the operationalization of a stressful work environment. In this study, RN, a variable defined as symptoms of previous effort and how long one needs to recover after performing work-related tasks (Veldhoven et al., 2008), is utilized to operationalize a stressful work environment. Although significant, it is possible that the small size of both the direct effect and the interaction effects is because RN does not operationalize a stressful work environment in the expected way. There may be other organizational-level variables within the work environment that better captures a stressful work environment than RN, but such variables are poorly defined in the literature. Hence, this decision has to a large degree been left to each scientist (Cox & Ferguson, 1994).

On the other hand, it is possible that RN does operationalize a stressful work environment like theorized, but that using organizations' average scores is not an adequate way to measure the variable. Perhaps RN has a larger impact the more stressful the work environment is, thus focusing on organizations with high scores on RN could have yielded larger effect sizes both for the direct effect of RN on WB, and for the interaction effects. The same may be true for the role stressors, in that larger scores on RA, RC and RO could have increased their interaction effects with RN. Both cases would concur well with the theories presented, as they all claim that the greater the levels of stress, the consequences become more severe. This sample had low average scores both on the role stressors and RN, hence there may not have been enough stress present to expect large effects with the current sample and study design. However, if future research is going to focus on organizations and

employees with high scores rather than averages, it should be taken into consideration that deciding what to label as high or low scores will require many arbitrary cutoff-points. To limit bias in this process, a latent class analysis may help by identifying qualitatively different subgroups in the sample (Goodman, 1974; Notelaers et al., 2007; Vermunt & Magidson, 2004). In our study we wanted to explore these ideas at least partially, and so we modelled another multilevel hierarchical regression model in which we focused on the percentage of employees scoring very high on RN, rather than using average scores. Interestingly, this alteration did not increase, but on the contrary decreased the effect sizes. This contributes to the robustness of our findings.

Another alternative is that there are other organizational-level variables which explain a larger portion of the between-level variance in WB than RN does and have stronger interaction effects with role stressors. Examples of variables that have already been investigated and found to have a significant impact are hostility at the workplace (Zahlquist et al., 2023), CMC (Zahlquist et al., 2019), and PSC (Hamre et al., 2023). There is, however, a need for more studies exploring the work environment hypothesis with different organizational-level variables, for example organizational justice (Hoy & Tarter, 2004). To be sure that the work environment hypothesis has equal importance on the organizational level and the individual level, future studies will need to identify stronger effect sizes.

A final limitation that has important implications for future research is the low average scores on WB (see Table 1) in our sample. With few people exposed to WB it becomes difficult to expect any interaction effect to take place, something which may be the reason why the effect sizes are limited. This suggests that the findings of this study are perhaps of more importance in the field of incivility research, than for WB research, depending on how one operationalize WB.

Practical Implications

The findings of our study suggests that a stressful work environment has an impact on the relationship between certain role stressors (RA and RC) and WB at the organizational level. However, this effect is not observed in the relationship between RO and WB. These results do not necessarily confirm or refute previous findings on the association between role stressors and WB (Bowling & Beehr, 2006; Hauge et al., 2007; Notelaers et al., 2010), as these were primarily investigated at the individual level. Rather, our study provides further insights into how work environment, role stressors and WB are interconnected. Based on our results, we recommend that organizations consider the following approaches to reduce WB: (1) Reducing RA and RC to mitigate WB. While some organizations may consider reducing RO, our findings suggest that this may not be the most effective approach to specifically address WB. (2) Changing the work environment and reducing RN, may further minimize the development of WB when RA and/or RC are present. Notably, reducing RN does not influence the relationship between RO and WB. However, we did not investigate other outcomes such as health, engagement, performance, or innovation.

The significant direct effects found means that role stressors do contribute to the variation in WB within organizations. This indicate that reducing the prevalence of RA, RC, RO and RN, may limit WB. In practice this means that organizations can benefit from providing their employees with resources suitable for coping with role stress, such as job crafting, increased decision latitude, and empowerment (Karasek Jr, 1979; Singh & Singh, 2018; Tripathi & Manaswita, 2019). However, the existing empirical evidence considering the effect of intervention programs targeting job stressors is varied (Escartin, 2016; Kraaijeveld et al., 2014; Li et al., 2023). Looking at the results from our multilevel study, this is less surprising than when looking at the results from individual-level studies, because our correlations are weaker. This is especially true for RO, which had a very small direct effect.

This finding suggests that any intervention program intended to limit WB by reducing role stressors should target RA, RC, or RN rather than RO, if expecting to achieve any results at all.

In terms of reducing the negative effects related to role stressors, there are several strategies an organization may utilize. Organizations may strive to ensure that employees understand expectations and duties related to their work, i.e., clarifying their responsibilities and job roles. For instance, the use of regular performance evaluations, clear job descriptions and precise communication from supervisors, may all be viable options to reduce the effects of role stressors (Leon Rohr, 2016; Rodriguez & Walters, 2017). By encouraging and fostering open communication, one may also identify and address potential issues before they escalate. For instance, employees could be encouraged to communicate openly and honestly about workload. In line with COR theory, organizations may also aim to provide adequate resources and support for their employees. This includes having the ability to utilize safe RCP (Hobfoll, 2011b). Employers may provide feedback and recognition for good performance, address poor performance in a constructive manner and provide support such as mentoring or coaching to reduce the prevalence of role stressors (Eatough et al., 2011).

In an organization where the presence of role stressors such as RC are high, the implementation of suitable conflict resolution strategies is likely to be efficient in reducing the negative effects related to role stressors (Friedman et al., 2000; Tidd & Friedman, 2002). Such strategies may consist of mediation, negotiation, or other conflict resolution techniques such as providing policies and procedures for resolving and reporting conflicts and grievance. Efficiently utilized, such strategies may help employees to manage conflicts and in turn reduce the presence of RC in the organization. It is likely that such strategies will also signal a safe and respectful work environment, where one does not tolerate bullying or harassment.

When it comes to RN, however, the primary focus of this study was the potential intensifying effect of a stressful work environment on the relationship between role stressors and WB. The limited effects found implies that a stressful work environment does not meaningfully interact with existing role stressors in increasing WB. Compared to earlier individual-level studies, these results suggest that the work environment hypothesis has less practical importance for an organizational-level variable. Thus, to reduce WB it might be better to focus on improving individual-level features within the work environment, rather than the work environment itself. However, as it may be that the work environment contributes stronger to WB at an early stage of development, RN should be monitored continuously together with role stressors to prevent an interaction effect that may spark a bullying process.

Conclusion

Former studies claim that several environmental factors and job characteristics are connected to WB (Baillien & De Witte, 2009; Bowling & Beehr, 2006; Einarsen et al., 1994; Francioli et al., 2018; Hauge et al., 2007; Notelaers et al., 2010; Vartia, 1996). Yet, with the notable exception of some empirical research (Hamre et al., 2023; Zahlquist et al., 2023; Zahlquist et al., 2019) the main focus was solely on the individual level. Our study raises the question as to what extent the work environment hypothesis at the organizational level is relevant for understanding bullying in workplaces.

The present study enriches the current body of knowledge by testing the moderating effect of a stressful work environment on how role stressors relates to WB. The results demonstrate that a stressful work environment does not influence the effect all three role stressors on bullying in the same way, and that the effect size of this influence is limited. Taken together, the our results of this study suggest that the work environment hypothesis and especially the idea that a taxing work environment is largely responsible for bullying in

workplaces seem to be rather an urban legend than something of greater theoretical and practical importance.

In the meanwhile, our study also replicated earlier research findings pointing to the importance of role stressors to explain workplace bullying. Hence, organizations may benefit more from targeting RA or RC when designing interventions against WB. The interaction plots showed in addition the importance of monitoring closely RN together with the role stressors to avoid sparking the development of WB. Finally, to enrich our understanding of the work environment hypothesis at the organizational level, future research should focus on identifying relevant organizational-level features.

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Appendix

Attachment 1

Principal Axis Factor Analysis

Item List	Factor Loadings				
	1	**2**	**3**	**4**	**5**
Factor 1: Workplace Bullying					
WB_1	0,344		-0,342		
WB_2	0,669				
WB_3	0,600				
WB_4	0,708				
WB_5	0,654				
WB_6	0,612				
WB_7	0,645				
WB_8	0,468				
WB_9	0,554				
Factor 2: Recovery Need					
RN_1		0,673			
RN_2		0,591			
RN_3		0,674			
RN_4		0,711			
RN_5		0,342			
Factor 3: Role Conflict					
RC_1			0,588		
RC_2			0,565		
RC_3			0,466		
RC_4			0,662		
Factor 4: Role Overload					
RO_1				0,697	
RO_2				0,751	
RO_3				0,832	
Factor 5: Role Ambiguity					
RA_1					0,757
RA_2					0,749
RA_3					0,639

Attachment 2

Scree Plot from Principal Axis Factor Analysis
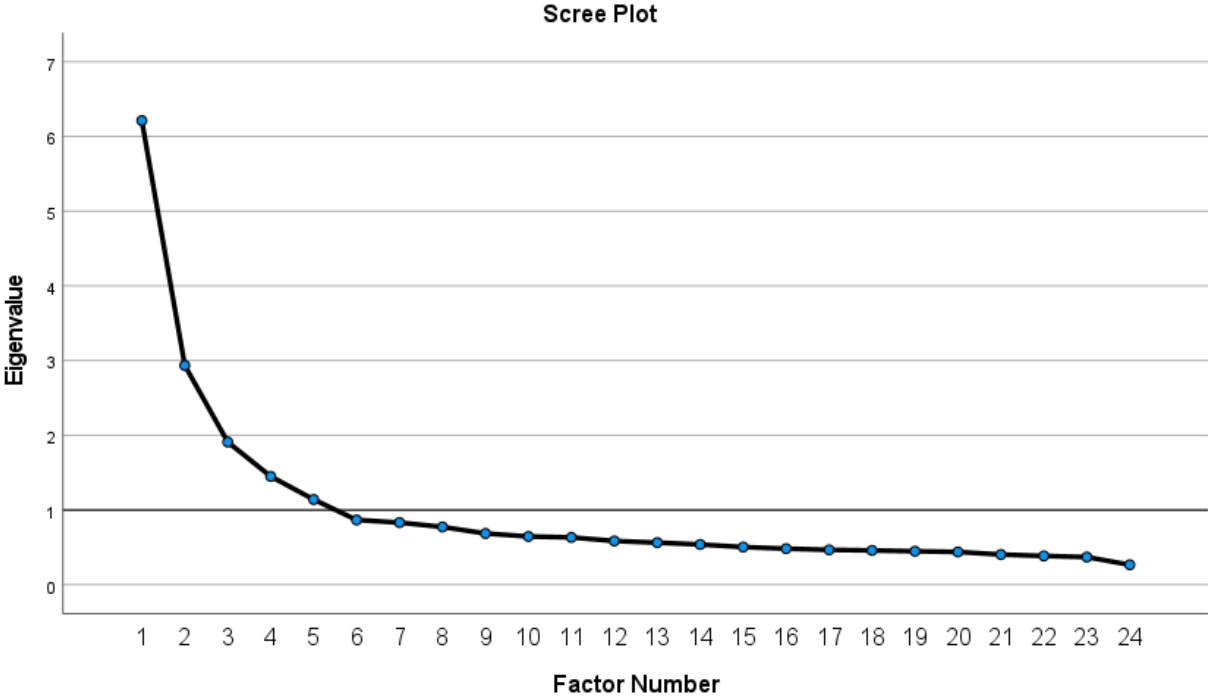
Attachment 3

Interaction Plot Script RA*RN.

```
 1  xx <- c(-0.5987,0.5987)    #  <-- change to alter plot dims
 2  yy <- c(1.2247,1.4359)     #  <-- change to alter plot dims
 3  leg <- c(-0.4,1.27)    #  <-- change to alter legend location
 4  x <- c(-0.5987,0.5987)     #  <-- x-coords for lines
 5  y1 <- c(1.2599,1.3677)
 6  y2 <- c(1.2862,1.4018)
 7  y3 <- c(1.3126,1.4359)
 8  ##Change Font for labels
 9  windowsFonts(A = windowsFont("Arial"))
10  plot(xx,yy,family="A",type='n',font=2,font.lab=2,xlab='Role Ambiguity',
11       ylab='Workplace Bullying')
12  lines(x,y1,lwd=3,lty=1,col=1)
13  lines(x,y2,lwd=3,lty=5,col=2)
14  lines(x,y3,lwd=3,lty=6,col=3)
15  points(x,y1,col=1,pch=16)
16  points(x,y2,col=1,pch=16)
17  points(x,y3,col=1,pch=16)
18
19  ##Change Legend Font to "A" = Arial
20  op <- par(family = "A")
21  legend(leg[1],leg[2],legend=c('RN -1SD','RN','RN +1SD'),lwd=c(3,3,3),
22         lty=c(1,5,6),col=c(1,2,3))
```

Attachment 4

Interaction Plot Script RC*RN.

```
 1  xx <- c(-0.453,0.453)     #  <-- change to alter plot dims
 2  yy <- c(1.1134,1.5155)    #  <-- change to alter plot dims
 3  leg <- c(-0.3,1.2)    #  <-- change to alter legend location
 4  x <- c(-0.453,0.453)      #  <-- x-coords for lines
 5  y1 <- c(1.1804,1.491)
 6  y2 <- c(1.1848,1.5032)
 7  y3 <- c(1.1891,1.5155)
 8  ##Change Font for labels
 9  windowsFonts(A = windowsFont("Arial"))
10  plot(xx,yy,family="A",type='n',font=2,font.lab=2,xlab='Role Conflict',
11       ylab='Workplace Bullying')
12  lines(x,y1,lwd=3,lty=1,col=1)
13  lines(x,y2,lwd=3,lty=5,col=2)
14  lines(x,y3,lwd=3,lty=6,col=3)
15  points(x,y1,col=1,pch=16)
16  points(x,y2,col=1,pch=16)
17  points(x,y3,col=1,pch=16)
18
19  ##Change Legend Font to "A" = Arial
20  op <- par(family = "A")
21  legend(leg[1],leg[2],legend=c('RN -1SD','RN','RN +1SD'),lwd=c(3,3,3),
22         lty=c(1,5,6),col=c(1,2,3))
```