3. Antecedents and consequences of work engagement: a multilevel nomological net

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Most studies on employee work engagement have treated the concept as a relatively persistent work-related motivational state, characterized by vigor, dedication, and absorption (Schaufeli & Bakker, 2010). Engaged employees feel full of energy, are enthusiastic about their work, and often lose track of time when they are working. The typical work engagement study uses a survey design to identify employees scoring high on engagement – an observation that is assumed to be consistent across time and work contexts. However, research over the past two decades has indicated that even employees who are generally highly engaged may have off-days during which they have limited energy, little enthusiasm for their work, and lack of concentration (Sonnentag et al., 2010). Thus, it is currently acknowledged that work engagement can be conceived as a rather stable concept that allows distinguishing engaged from disengaged employees, *and* as a dynamic concept that varies considerably within the same employee across time and situations. The situational approach allows determining when employees exceed or fall behind their average engagement levels (Xanthopoulou & Bakker, 2013). Lately, scholars argued that work engagement can also be defined at the organizational or team level of analysis as a "shared, positive and fulfilling, motivational state of work-related well-being" (Costa et al., 2014a; p. 418), enabling a distinction between highly versus less engaged teams and organizations. Hence, it follows that the antecedents and consequences of collective, individual (i.e., stable) and situational (i.e., variable) work engagement can be found at different – yet interrelated – levels of analysis, namely the organizational/team level (that concerns differences between groups), the person level (that concerns differences between employees), and the situation level (that concerns short-term, within-employee variations), respectively.

To capture this triple nature of work engagement, scholars have adopted a multilevel perspective to determine how more fixed (e.g., organizational resources, team work, personality traits) but also more dynamic (i.e., job-related, socio-emotional, behavioral) factors may explain work engagement, and which are the psychological processes that link its antecedents and consequences across levels of analysis (Bakker, 2015; Bakker & Demerouti, 2018; Daniels, 2006). This multilevel perspective is in line with job demands-resources (JD-R) theory (Bakker & Demerouti, 2017, 2018), which suggests that the characteristics of the work environment that determine work engagement can be found at different, hierarchical levels of analysis. In this chapter, we draw on this theorizing and review existing empirical evidence in order to (1) detect the meaning as well as the predictors and outcomes of work engagement (i.e., its nomological net) at the organizational/team, individual, and situational level of analysis; and (2) unravel the cross-level psychological processes and boundary conditions that explain how factors from different analytical levels interrelate in determining work engagement and its outcomes.

Addressing the first issue is relevant to better understand the multilevel nature of the construct. If the meaning of the concept and the links between work engagement and its predictors and outcomes are not isomorphic across analytical levels, it may mean that collective, individual, and situational engagement capture unique conditions explained by different psychological processes. For example, employees working in a resourceful work environment may generally be more engaged than those working in a suboptimal environment, and perform better because they are generally able and willing to invest considerable effort in their work. However, during episodes when employees are more engaged and absorbed in their task than usual, they may disregard information in the environment that may be particularly relevant for the execution of the task – thus failing to fulfill the task in the best possible way. This potential lack of isomorphism will require reconsideration of the conceptual definition of work engagement, as well as the theorizing explaining its antecedents and consequences at different analytical levels (Kozlowski & Klein, 2000). Addressing the second issue will reveal how factors from different analytical levels may contribute to explain work engagement. By discussing these two issues, our central goal is to identify gaps in our understanding of the multilevel nature of work engagement that may guide future studies.

Antecedents and outcomes of work engagement: a short overview

During the past two decades, JD-R theory (Bakker & Demerouti, 2017, 2018) has dominated research on the predictors and outcomes of work engagement. Accordingly, job resources (i.e., organizational, social, physical, or psychological aspects of one's job that facilitate goal attainment and promote personal growth, learning, and development) and personal resources (i.e., personal beliefs about the control employees can exert on their work environment) are the main drivers of work engagement. The underlying assumption is that employees who have access to high levels of job resources (e.g., autonomy, skill variety, feedback) and who possess personal resources (e.g., self-efficacy, optimism) are likely to find meaning in their work, feel responsible for their work outcomes, and know where they stand at work (Hackman & Oldham, 1980). These critical psychological states satisfy employees' basic needs for autonomy, competence, and belongingness (Deci & Ryan, 2008). When basic psychological needs are satisfied, employees feel autonomously motivated (i.e., engaged), which has a positive impact on job performance and productivity, as well as health and well-being. Another central proposition of JD-R theory is that job and personal resources are particularly relevant for work engagement when they are most needed – namely, when employees are confronted with high levels of job demands. In demanding work conditions, employees are urged to make better use of the available resources, thus boosting their work engagement.

The most recent version of JD-R theory (Bakker & Demerouti, 2017, 2018) also acknowledges that employees are active agents in their work environment and, as such, they make attempts to craft their job characteristics in order to achieve a better job–person fit and find meaning in their work. Accordingly, employees who try to increase the structural (e.g., autonomy) and social (e.g., colleague support) resources in their work environment, to optimize their demands, and to increase their challenges, are likely to become more engaged and perform better. Job crafting results in a more enriched work environment, while it also strengthens employees' personal resources and volition. Further, JD-R theory assumes that engaged employees are more likely to use such job-crafting strategies producing a positive reinforcing cycle.

Previous empirical studies on work engagement provided strong support for the main assumptions of JD-R theory (Bakker & Demerouti, 2017, 2018). For instance, meta-analytical evidence showed that job and personal resources are the core antecedents of work engagement (Crawford et al., 2010), and

that engagement relates to enhanced performance and well-being (Christian & Slaughter, 2007; Halbesleben, 2010; Nahrang et al., 2011). Furthermore, recent meta-analyses (Lichtenthaler & Fischbach, 2019; Oprea et al., 2019; Rudolph et al., 2017) revealed that job crafting in the form of increasing job, structural, and social resources and increasing challenges relates positively to work engagement and job performance. In contrast, job crafting in the form of reducing (instead of optimizing) job demands relates negatively to work engagement and job performance. Also, Lichtenthaler and Fischbach (2019) found that engaged employees are more likely to actively increase their job resources and look for more challenges at work. Although these meta-analyses used evidence from both between- and within-person studies, they did not account for the relationships between work engagement and its antecedents and outcomes across different levels of analysis.

Numerous studies have investigated the antecedents and outcomes of collective, individual (i.e., stable) and situational (i.e., variable) work engagement. At the collective level, Costa et al. (2015) showed common perceptions of team members' job resources relate positively to collective (i.e., team) work engagement and consequently, to team performance. Similarly, Barrick et al. (2015) found motivating work design, human resources management (HRM) practices, and CEO leadership relate positively to collective organizational engagement, which associated positively to firm performance. At the individual (i.e., stable) level, there is evidence suggesting that relatively stable organizational resources (e.g., psychosocial safety climate, organizational support; see Albrecht, this volume) and individual characteristics that function as personal resources (see Hough & Oswald, this volume) enhance employees' stable work engagement that, in turn, contributes positively to job performance and overall employee well-being (see Halbesleben and also Salanova, this volume). Finally, at the situational level, evidence reveals that on days employees have access to or actively seek job resources, they are more engaged in their work and perform better (for a review, see Bakker, 2014). In addition, on interesting and challenging workdays (Tadić Vujčić et al., 2017), on days employees feel recovered from previous-days' effort (Sonnentag, 2003), or on days they take short recovery breaks during work (Kühnel et al., 2017), employees report higher levels of vigor, dedication, and absorption.

Despite the relevance of this empirical evidence within levels, studies on work engagement across different levels of analysis (i.e., organizational/team, individual, and situational level) are still scarce. In the following sections, we review empirical evidence with the aim to address certain emerging multilevel issues. Do collective, individual (i.e., stable), and situational (i.e., variable) work engagement mean the same? Are the causes and consequences of engage-

ment at each level similar? How do psychological processes unfold across different levels of analysis in explaining work engagement, and under which boundary conditions are these processes more likely to occur?

Multilevel work engagement: investigating the nomological net

When trying to understand the concept of work engagement from a multilevel perspective, it is important to account for two issues. The first is to address the factorial invariance of the work engagement construct across levels of analysis. The second is to determine the antecedents and consequences of engagement at the different analytical levels.

When it comes to the issue of factorial invariance, studies that operationalized work engagement as a motivational state characterized by vigor, dedication, and absorption; have used the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2006) to measure the construct as a collective experience, as a stable individual experience, and as a variable, situational state. The UWES includes three items for each of the three underlying dimensions: vigor (e.g., "At my work, I feel strong and vigorous"), dedication (e.g., "I am enthusiastic about my work"), and absorption (e.g., "I am immersed in my work"). Since the scale was initially developed to capture work engagement as a rather stable experience, items ask how employees *generally* feel regarding their work. However, the scale items have been adapted to capture within-person variations in work engagement either on a weekly (e.g., "Last week at work, I felt strong and vigorous"; Bakker & Bal, 2010), daily (e.g., "Today at work, I felt strong and vigorous"; Sonnentag, 2003), or even momentary (e.g., "Right now, I feel strong and vigorous in my work"; Bledow et al., 2011) level. Also, the UWES items have been adapted to capture collective experiences of vigor (e.g., "At our work, we feel strong and vigorous"), dedication (e.g., "We are proud of the work we do"), and absorption (e.g., "We get carried away when we are working") within teams that were then aggregated to the team level of analysis (Costa et al., 2014b). Thus, the question is whether the construct captured with the general version of the UWES means the same as the constructs captured with the situational and collective versions.

To answer this question, Breevaart et al. (2010) performed a multilevel factor analytic study on the situational version of the UWES. The authors pooled data from three different diary studies among a total of 271 Dutch employees, where situational (i.e., daily) work engagement was assessed with an adapta-

tion of the UWES across five workdays. Results of multilevel confirmatory factor analyses revealed that the model that captured the proposed three-factor structure across levels of analysis (i.e., the between-person and within-person levels) was the best-fitting model. Furthermore, factor loadings and factor correlations were significant and in the expected direction at both levels, while partial metric invariance across levels of analysis was also supported. Support for partial metric invariance indicates that employees generally perceive the UWES items assessing stable work engagement in the same way as the UWES items assessing situational (i.e., variable) work engagement. Thus, the concept of work engagement, as measured with the UWES, means the same across the individual and situational levels of analysis.

However, when it comes to the factorial invariance of work engagement across individuals and teams, research evidence is not straightforward. Costa et al. (2014b) adapted the UWES scale at the team level (e.g., "In our work, we feel bursting with energy") and used aggregated scores of individual employees to test the factor structure of the instrument. They found that, at the team level, the one-factor structure fit better to the data than the hypothesized three-factor structure. These findings question whether individual and collective work engagement are the same constructs. However, although Costa and colleagues tested the factor structure of team work engagement (by using aggregated scores), they did not test factorial invariance across analytical levels (team vs individual) by means of multilevel confirmatory factor analysis. Thus, studies that use more elaborate statistical techniques are needed to shed light on the invariance of the collective work engagement construct.

As concerns evidence on the predictors and outcomes of work engagement across analytical levels, we were only able to locate two studies that simultaneously tested the same relationships between work engagement and its predictors across teams (i.e., work units) and individuals. Huhtala et al. (2015) investigated whether an organization's ethical culture related to work engagement at both the individual and the work-unit levels. They collected data from more than 2,000 employees working in 245 different work units in one public sector organization. Results of multilevel structural equation modeling (MSEM) analyses revealed that shared perceptions of ethical culture related positively (standardized estimate = 0.81, $p < 0.001$) to shared experiences of work engagement at the work-unit level, while individual perceptions of ethical culture related positively to individual work engagement (standardized estimate = 0.40, $p < 0.001$) at the individual level of analysis. Watanabe and Yamauchi (2018), in their study among over 1,000 nurses nested in 54 wards in four hospitals in Japan, investigated the reasons why nurses work overtime and how this relates to their work engagement. MSEM results showed that invol-

untary overtime work due to high workload related negatively to engagement both at the ward (standardized estimate = -0.44, $p < 0.05$) and at the individual (standardized estimate = -0.11, $p < 0.05$) level. However, involuntary overtime work due to conformity pressure (i.e., overtime generated from implicit pressures from supervisors/colleagues) associated negatively to engagement at the individual level (standardized estimate = -0.12, $p < 0.05$), but was unrelated to engagement at the ward level (standardized estimate = 0.05, $p > 0.05$). All in all, these findings suggest that the favorable role of organizational ethical culture for work engagement holds across levels of analysis. This is in line with JD-R theory (Bakker & Demerouti, 2017, 2018) since ethical culture is an organizational resource that may promote employee motivation and engagement. However, results are mixed when it comes to the role of demanding work aspects, suggesting that job demands may matter differently for work engagement at different analytical levels (for a further discussion, see Xanthopoulou & Bakker, 2013).

Given the relevance of work engagement for employees and organizations, it was surprising to find only two empirical studies that simultaneously tested the same antecedents of work engagement across levels and no studies on the invariance of the relationship between work engagement and its outcomes across analytical levels. Hence, it is not possible to make safe conclusions as to whether the links between engagement, its antecedents, and its consequences are invariant across analytical levels. Based on JD-R theory (Bakker & Demerouti, 2017, 2018), we would expect isomorphic relationships across levels of analysis. However, given the very small body of research to date, future studies should shed light on the issue of isomorphism of both the operational definition, as well as the causes and consequences (i.e., the nomological net), of work engagement across levels of analysis by investigating whether different findings across levels are true or attributed to methodological artifacts (e.g., use of only self-report measures instead of combining different sources of information across levels). To this end, it is necessary to test the investigated processes simultaneously across the different levels of analysis by using advanced MSEM techniques (see González-Romá, this volume).

Cross-level processes and boundary conditions

Our second aim with this chapter is to unravel the psychological processes and boundary conditions that explain how causes from different analytical levels interrelate in determining work engagement and its outcomes. To this end, we

focused on empirical studies that investigated cross-level mediating processes, and cross-level moderators in explaining work engagement.

Cross-level mediating processes

As concerns the mediating processes that develop across levels of analysis in explaining work engagement, as well as its causes and consequences, empirical studies have mainly supported theoretical propositions that endorse a multilevel framework in their analysis (e.g., Bakker & Demerouti, 2018; Daniels, 2006). For instance, Daniels (2006) distinguished job characteristics into latent (i.e., institutional, social, or technological developments that refer to the macro level), perceived (i.e., employees' overall perceptions of the work environment that refer to the individual level) and enacted (i.e., events and activities at work as they happen that capture the situation level). Further, he suggested that latent job characteristics form employees' overall perceptions of their job that – in turn – stimulate them to endorse those characteristics that they think are part (or should be part) of their job, determining how they feel at a specific moment. Similarly, Bakker and Demerouti (2018) suggested that high performance HR practices may promote a positive organizational climate and enhance organizational performance, and that this positive process at the organizational level of analysis may promote resources at the team level of analysis (e.g., quality coaching from the leader, that may in turn determine team members' work engagement levels).

In line with these theoretical propositions, studies accounting for cross-level effects showed that resources at the organizational/team level of analysis, such as empowering leadership as measured by the leaders (Tuckey et al., 2012) or authentic leadership rated by leaders (Penger & Černe, 2014) and by both leaders and employees (Hsien & Wang, 2015), enhanced individual team members' work engagement through the enrichment of their work environment (e.g., increases in cognitive resources, challenges, perceived support, or trust). Similarly, a study among 511 employees nested in 88 teams showed that the quality of the leader–member exchange relationship (rated by the followers) mediated the positive link between leader work engagement and followers' work engagement, while followers' engagement was consequently related to enhanced follower performance and reduced turnover intentions (Gutermann et al., 2017). Tims et al. (2013) studied the consequences of job crafting at the team level, using the referent-shift model. Their study among 525 employees working in 54 teams showed that seeking resources and challenges at the team level stimulated team work engagement, which, in turn, facilitated individual team performance through the enhancement of individual vigor. In a weekly diary study, van Woerkom et al. (2016) found that support for strengths use

from the organization (i.e., employees' overall beliefs regarding the extent to which the organization supports them actively to use their strengths at work) improved employees' weekly actual strengths' use, which, in turn, promoted their weekly self-efficacy beliefs, work engagement, and proactive behaviors.

Importantly, a few studies indicated that work engagement at lower levels of analysis may explain engagement and performance at higher levels of analysis. For instance, Bakker and Oerlemans (2019) in their study of work episodes found that daily job-crafting strategies of seeking job resources facilitated employees' momentary basic need satisfaction that, in turn, enhanced momentary work engagement which related positively to work engagement at the day level. Also, Ogbonnaya and Valizade (2018) used secondary data from the British National Health Service and showed that the negative relationship between high-performance work practices and staff absenteeism (both assessed at the organizational level of analysis) was mediated by work engagement and job satisfaction at the individual level.

In sum, with regard to cross-level mediating processes research evidence so far suggests that resourceful working conditions at the collective and the individual level may explain collective-, individual-, and situational-level outcomes through the enhancement of individual or situational (i.e., variable) work engagement. Importantly, it is also evident that resourceful working conditions at the situational (i.e., variable) level of analysis may enhance employees' stable work engagement via an increased frequency of work engagement episodes.

Cross-level moderators

The role of moderators is important for theory development because it helps understanding under which conditions work engagement is more likely to occur, or more likely to result in favorable outcomes for employees and organizations. First, leadership style seems to be a relevant moderator that determines when (job and personal) resources are particularly relevant for employee engagement. Zhang et al. (2017) studied 324 employees nested in 74 groups of high-technology companies in China and found that employees' core self-evaluations (i.e., personal resources) related positively to their work engagement particularly when their leaders had higher (vs lower) levels of psychological capital (i.e., hope, self-efficacy, resilience, and optimism). Thus, mutually high levels of personal resources in leaders and employees boosted employees' work engagement. Tuckey et al. (2012) came to similar conclusions after they found evidence for a three-way interaction effect suggesting that follower work engagement was highest under conditions of high follower cogni-

tive demands, high cognitive resources, and simultaneously high empowering leadership (as rated by the leaders).

Second, employee individual differences have been found to moderate the within-person processes explaining variations in engagement. In line with the main assumptions of JD-R theory (Bakker & Demerouti, 2017, 2018), this evidence generally suggests that job and personal resources may reinforce or substitute for each other in explaining work engagement, and that they are particularly relevant when combined with job or individual demands. Bakker et al. (2019b) followed 87 Norwegian naval cadets for 30 consecutive workdays and found a three-way interaction suggesting that daily strengths' use (i.e., use of those individual characteristics that allow goal attainment) related positively to daily work engagement, particularly for those cadets characterized by lower levels of neuroticism and higher levels of extraversion (see Hough & Oswald, this volume). Also, Bakker et al. (2019a) conducted a weekly diary study in which they followed 185 employees who had experienced a major life event in the previous year (e.g., health problem, death of a family member, divorce). They found a three-way interaction suggesting that weekly self-efficacy (i.e., personal resource) related positively to weekly work engagement only for those employees who experienced high detachment from the major life event that week and who generally considered work a central component of their lives. Finally, scholars showed that weekly job-crafting strategies (i.e., increasing social and structural job resources and challenging job demands) related positively to weekly work engagement for those employees who were characterized by higher (vs lower) levels of occupational role salience (i.e., one's belief that one's work is an important determinant of self-definition; Petrou et al., 2017), and lower (vs higher) impression-management motives (i.e., employees' efforts to present a favorable image to others; Rofcanin et al., 2019).

In summary, as concerns cross-level moderators, studies suggest that resource availability at the collective level of analysis boosts the positive relationship between resources and work engagement at the individual level of analysis. Also, individual characteristics or experiences may determine the strength or the direction of the relationship between situational antecedents and variations in work engagement.

A cross-level model guiding future research on work engagement

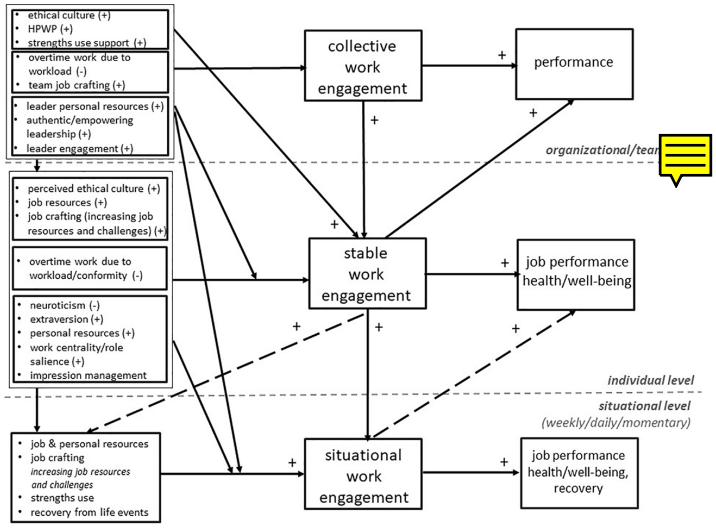

Figure 3.1 Work engagement: a multilevel nomological net

Note: Solid lines represent relationships that have been supported by empirical data from cross-levels studies presented in this chapter. Dotted lines represent theory-based relationships that are yet to be tested. HPWP = high-performance work practices.

Figure 3.1 summarizes the presented evidence on cross-level mediating processes that explain how engagement unfolds across levels of analysis, as well as the boundary conditions (i.e., moderators) that determine when engagement is more or less likely to occur. Solid lines in Figure 3.1 correspond to relationships that have been supported by empirical evidence presented in this chapter. Dotted lines represent effects that have not yet been tested with empirical data but are relevant from a theoretical point of view. For instance, it seems plausible that individual (i.e., stable) levels of work engagement may enhance situational (e.g., daily) work engagement and performance via the improvement of daily job and personal resources. Furthermore, high levels of situational (i.e., daily or momentary) work engagement may be generalized to the individual level, promoting overall performance and physical and psychological health and well-being. Similarly, it is important to test collective resources (e.g., HRM practices) that have been found to enhance collective

engagement as moderators of the relationships between individual- and situational-level resources and work engagement (see Barrick et al., 2015). Hence, the nomological net presented in Figure 3.1 may be used as a basis for future studies aiming to further support the proposed relationships across the different levels of analysis, as well as to extend this net by pointing out additional links that will advance our understanding of the development of the construct across analytical levels.

Next to extending these within- and cross-level relationships, future studies should also shed light on the issue of invariance of work engagement across analytical levels. The issue of invariance concerns both the operational definition of engagement across the collective level, the individual level, and the situational level, and the invariance of the relationships linking work engagement with its causes and consequences. As concerns the former, the empirical evidence presented in this chapter suggests that work engagement has the same factorial structure (i.e., means the same) across the individual and situational level of analysis. However, evidence of invariance across the collective and individual levels is weak since no study so far addressed the factorial structure of engagement across these two levels simultaneously. Therefore, future empirical endeavors should address this gap in the literature. As concerns the latter issue, the studies that test the invariance of the same psychological processes across different levels of analysis simultaneously are very limited. Thus, scholars should apply elaborate methodological and statistical approaches (see ~~chapter,~~ González-Romá, this volume) and should preferably make use of data from different sources (e.g., objective organizational indicators, leaders, individual employees) whenever possible to test not only whether the same causes and consequences relate in a similar way with work engagement across levels, but also whether the strength of these relationships varies across levels. Such evidence is necessary in order to conclude whether relationships are isomorphic or not across analytical levels and whether a shift in the theoretical paradigm of work engagement is needed or not (Kozlowski & Klein, 2000).

Overall conclusion

In this chapter, we reviewed recent studies on the multilevel nature of work engagement in order to determine the state of art. We synthesized this evidence in a multilevel nomological model outlining how various predictors at the organizational/team, individual, and situational levels interrelate in explaining work engagement and the resulting outcomes at different levels of analysis. Based on our review of the literature, we identified gaps in our

understanding of the multilevel nature of work engagement. We hope that our analysis will stimulate cross-level studies that will address these gaps and help organizations and employees to stay energized and enthusiastic at work.

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