



Contents lists available at ScienceDirect

Human Resource Management Review

journal homepage: www.elsevier.com/locate/humres

Advancing multilevel thinking in human resource management research: Applications and guidelines

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ARTICLE INFO

Article history:

Received 23 May 2016
Received in revised form 1 March 2017
Accepted 2 March 2017
Available online xxxx

Keywords:

Human resource management
Multilevel thinking
Multilevel theory building
Multilevelty

ABSTRACT

Strategic Human Resource Management (SHRM) researchers have recently turned their attention to using various levels of analysis in examining the relationship between HRM and performance. Despite several calls for research that integrates multiple levels of analysis, HRM research has yet to apply a multilevel approach to its full advantage. In our view, the paucity of multilevel research is rooted in the lack of what we label multilevel thinking: the application of multilevel principles. In this conceptual paper, we develop 9 guidelines based on tailored multilevel HRM principles that offer a course of action for scholars who are interested in conducting multilevel HRM research. Following Kozlowski and Klein (2000), we build these principles around the what, how, where, when, and why questions in multilevel HRM research. Based on an analysis of 88 empirical multilevel HRM studies, we identify the approaches commonly applied when using multilevel principles, explain the weaknesses in current multilevel HRM studies, and offer what we consider good examples of a rigorous approach.

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1. Introduction

Motivated by the evidence that human resource management (HRM) can have a positive effect on firm performance (Combs, Liu, Hall, & Ketchen, 2006; Jiang, Lepak, Hu, & Baer, 2012), strategic HRM researchers have recently turned their attention to the various levels at which this interaction occurs. In the past, HRM scholars tended to focus on single-level effects, among others, on the effect of organizational HRM policies on organizational-level performance. There have been regular calls for multilevel HRM research (e.g. Boselie, Dietz, & Boon, 2005; Kepes & Delery, 2007; Wright & Boswell, 2002), and an increasing number of studies have examined HRM–performance relationships across various levels of analysis (Jiang, Takeuchi, & Lepak, 2013). Integrating levels of analysis, so-called multilevel research, grew out of two ideas. First, organizational HRM policies influence organization-level performance by affecting lower-level variables such as individual-level attitudes and behaviors (Ostroff & Bowen, 2000; Paauwe, 2009; Wright & Boswell, 2002). Second, these cross-level relationships reflect the reality that strategic HRM (SHRM) is inherently multilevel and, consequently, that its assumptions are built upon multilevel theory (Kozlowski & Klein, 2000; Ostroff & Bowen, 2000).

Examining cross-level effects is important for at least two reasons. First, models that integrate multiple levels of analysis are able to explain how lower-level entities, such as employees, become aligned with higher-level entities such as organizational goals (Wright & Boswell, 2002). Second, due to the hierarchical nature of organizations, the majority of problems encountered by managers are anything but single level in nature. Since managerial problems are rooted in causes that reside on various levels,

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a multilevel perspective can offer a nuanced view that is closer to the organizational HRM reality. By building on a multilevel perspective, HRM studies have shown that organization-level HRM practices have a positive, top-down effect on individual-level outcomes (Aryee, Walumbwa, Seidu, & Otaye, 2012; Bal, Kooij, & De Jong, 2013; Liao, Toya, Lepak, & Hong, 2009; Takeuchi, Chen, & Lepak, 2009), and that individual employees' traits, attitudes, and behaviors can be aggregated to higher hierarchical organizational levels thereby having a bottom-up effect on organizational-level outcomes such as organizational innovation, service quality, and financial performance (Aryee et al., 2012; Den Hartog, Boon, Verbarg, & Croon, 2013; Nishii, Lepak, & Schneider, 2008). Notwithstanding the attention given to both these top-down and bottom-up effects, multilevel HRM research has yet to achieve conceptual and empirical maturity (Molloy, Ployhart, & Wright, 2011; Shen, 2016). More specifically, this paper argues that the majority of multilevel HRM studies have only limitedly applied conceptual insights from multilevel theory. This caveat regarding multilevel HRM research is rooted in the deficiency in what we term multilevel thinking, or the application of multilevel principles (Costa, Graça, Marques-Quinteiro, Santos, Caetano et al., 2013). These principles were introduced by Kozlowski and Klein (2000) and represent the fundamental processes to be addressed in developing multilevel theory. These principles can aid researchers in specifying the WHAT, HOW, WHERE, WHEN, and WHY constructs and relationships that occur across various levels. So far, as we will show in this paper, multilevel HRM studies have either overlooked some of these principles or applied them in a somewhat implicit or arbitrary manner.

Further attention to multilevel thinking in HRM research is necessary because, ultimately, applying multilevel principles will enable the development of better, contextualized, and nuanced explanations of how HRM and performance are related across various levels of analysis. To advance multilevel thinking in strategic HRM research, we have developed a set of guidelines based on multilevel principles that explain the what, how, where, when, and why of multilevel relationships between HRM and performance. In so doing, we contribute to the field by outlining a research agenda to inform future multilevel HRM research and which, once addressed, will improve our understanding of the multilevel nature of HRM–outcome relationships. Furthermore, we contribute to multilevel research, which has traditionally applied the multilevel principles for examining relationships across hierarchically ordered entities (e.g. industries, organizations, units, and employees), by showing that principles of multilevel theory building can be applied to types of nested structures that traditional multilevel research has overlooked.

The paper is structured as follows: we begin with an introduction to multilevel theory and its evolution in HRM research. This is followed by a structured literature review of the application of multilevel principles in existing HRM research. Based on the analysis of 88 empirical multilevel HRM studies, we identify approaches commonly applied when using multilevel principles in HRM research, explain the weaknesses in current studies, offer what we consider good examples of a vigorous approach, and propose guidelines for advancing multilevel HRM research.

2. The evolution of multilevel SHRM research

Central to multilevel thinking is the proposition that organizational entities exist in so-called nested arrangements (Hitt, Beamish, Jackson, & Mathieu, 2007). Although such entities generally refer to units that consist of hierarchically ordered individuals – such as employees nested in a team, teams nested in an organization, and organizations nested in an industry – they can also refer to components of systems that are hierarchically arranged. Although not using the term 'multilevel', one of the earliest streams of strategic HRM research that examined such nested entities addressed HRM systems (Becker & Gerhart, 1996; Schuler, 1992). We elaborate on three crucial directions that have been taken in the past two decades and that, in our view, have assembled building blocks for multilevel research in HRM.

Back in the early 1990s, Schuler (1992) was one of the first to argue that HRM systems consist of at least three hierarchically ordered components: HR philosophies, policies, and practices. An HR philosophy amounts to “a statement of how the organization regards its human resources, what role the resources play in the overall success of the business, and how they are to be treated and managed” (Schuler, 1992, p. 21). They can be seen as guiding principles that are fundamental to the choice of HR policies and practices, and indicate how workers contribute to organizational goals (Arthur & Boyles, 2007; Becker & Gerhart, 1996). The HR philosophy provides guidelines for the development of HR policies that should help realize the HR philosophy (Kepes & Delery, 2007). HR policies describe objectives for managing human resources and outline the relative emphasis that an organization places on HR choices. As such, HR policies reflect WHAT organizations want to achieve rather than HOW to achieve people-related business objectives (Kepes & Delery, 2007; Schuler, 1992). While HR philosophies represent the values, beliefs, and norms about how success can be achieved through employees (Arthur & Boyles, 2007), HR policies are specific objectives for realizing employee performance. For example, Schuler (1992) referred to the need to hire skilled workers or to appraise workers as examples of HR policies. Ultimately, the HR policies should be translated into HR practices, which are the specific instruments that are used to manage employees' abilities, motivations, and opportunities to perform (Jiang et al., 2012). As such, researchers have already recognized that the HRM system, as a construct, is multilevel in nature, consisting of different levels of abstraction with HRM practices being nested in HRM policies which are nested in HRM philosophies (Arthur & Boyles, 2007).

A decade later, the seminal book chapter by Ostroff and Bowen (2000) integrated different levels of analysis in conceptualizing the multilevel relationships between HRM systems and performance. They argued that organization-level HRM systems affect organizational performance by creating organizational and psychological climates. Since these climates reside at (i.e. are a feature of) the organization and individual levels respectively, Ostroff and Bowen (2000) showed that, conceptually, HRM systems, company performance, and the relationships between them can manifest themselves at least at two organizational levels of analysis. That is, organization-level HRM practices create a psychological climate at the employee level in terms of the employee's perceptions of what behavior is expected, which in turn can also manifest itself as an organizational climate at the organization-level

once all employees in the organization share the expected behaviors. Hence, to investigate the relationship between HRM and performance, Ostroff and Bowen (2000) argued that research should include constructs that exist at both the organization and employee levels. Later, other researchers added further levels at which the HRM – performance relationship manifests itself, such as the team level (Jiang et al., 2013) and the department level (Liao et al., 2009). Thus, the second crucial step in multilevel HRM research highlighted that the relationships between HRM and performance exist at various levels that can be coarsely classified as the individual, the unit, and the organization (Banks & Kepes, 2015; Jiang et al., 2013).

The third key step we identify was the proposal of a multilevel model consisting of “a rudimentary process that must take place in order for HRM practices to impact organizational performance” (p. 8). (Wright and Nishii, 2007). This so-called HRM process model consists of *intended*, *actual*, and *perceived* HRM practices, and focuses on how HRM systems lead to performance. Intended HRM practices are seen as being rationally designed during HR strategy development in order to realize desired employee behaviors. However, HRM practices are not always fully implemented in line with the original intentions. This leads to the second level of HRM implementation: the realization of the intended HRM practices, termed the *actual* HRM practices (Wright & Nishii, 2007). Variations may occur at the level of the actual HRM practices because the intended practices are usually implemented by many people within an organization, including front-line managers (e.g. Nehles, van Riemsdijk, Kok, & Looise, 2006) and employees themselves (Meijerink, Bondarouk, & Lepak, 2016). Ultimately, the HRM practices exist objectively, but some have to be experienced and understood by the employees if they are to affect employee behaviors, highlighting the relevance of the variation in individual experiences (Wright & Nishii, 2007). At the same time, some HR activities need not be experienced by employees to achieve the intended results. For example, employee selection tests or procedures affect the human capital of an organization and thereby influence employee-related outcomes (e.g. customer satisfaction), without having to work through employees' perceptions (Liao et al., 2009).¹ Nevertheless, the third crucial direction in multilevel HRM research has been the recognition that the process of HRM implementation does not always achieve the intended results because of variations at various levels in the internalization process (i.e. the intended, introduced, and experienced HRM activity levels).

On the basis of these developments in strategic HRM research, we argue that the multilevel nature of HRM research reflects an amalgam of complex relationships among three multilevel HRM dimensions: system abstraction levels, hierarchical organizational levels, and HRM internalization levels. Fig. 1 integrates these three dimensions into a concept that we call the multilevel cube of strategic HRM research. First, the system abstraction dimension involves the multilevelity of the HRM construct itself, covering the various levels of the HRM system components. Second, the hierarchical levels dimension concerns the integration of multiple organizational levels in the analysis of HRM relationships, and addresses the influence of HRM system components on outcomes across different levels of analysis in the organizational hierarchy. Third, the internalization dimension addresses the multilevelity associated with the implementation of HRM activities, and distinguishes between how HRM practices are intended, how they are actually applied, and how they are perceived and routinized by targeted employees.

In combination, these three dimensions reflect the various aspects and complexity of contemporary multilevel HRM research and highlight the importance of covering these dimensions when adopting a multilevel perspective. Current multilevel HRM studies illustrate how these intersections are studied. For example, Nishii et al. (2008) studied HRM attributions in the form of *employee-level* HRM constructs that describe *experienced* HRM *philosophies*. Further, Liao et al. (2009) examined the intersections of *introduced* and *experienced* HRM *practices* on the *unit* and *employee* levels respectively, while Whitener (2001) focused on *introduced* HRM *practices* at the *organizational* level. Notwithstanding these examples, the multilevelity cube highlights that there are a large number of possible combinations and research scenarios, such that it is not feasible to integrate them all in a single study. Therefore, in this paper, we elaborate on specific guidelines, derived from the multilevel principles, that could form the basis for individual studies to further advance multilevel HRM research.

3. Principles for multilevel research

The principles of multilevel theory building constitute the fundamental theoretical building blocks that underpin the development of multilevel theory (Kozlowski & Klein, 2000). Some claim that, compared to others, the approach of Kozlowski and Klein (2000) is thorough in that it includes an overarching theory-building process that integrates existing work (Upton & Egan, 2010). Therefore, in this paper, their principles are discussed in relation to existing multilevel HRM research. The primary goal of multilevel thinking is to “... identify principles that enable a more integrated understanding of phenomena that unfold across levels in organizations” (Kozlowski & Klein, 2000, p. 7). One of the fundamental underpinnings of multilevel theory is that phenomena at the micro-level of the organization are embedded in macro-contexts, and that macro-phenomena will emerge through the interaction and dynamics of micro-level features. The argument for embeddedness is based on the view that an individual's behavior is constrained by social relationships and, for that reason, should not be seen as independent from its social context (Granovetter, 1985). The key assumption of the multilevel approach is that various phenomena can only be explained by combining factors at different levels of analysis (House, Rousseau, & Thomas-Hunt, 1995; Rousseau, 1985). On this basis, macro- and micro-level research need to be integrated to understand how organizations function.

We borrow five sets of principles from Kozlowski and Klein (2000) that can assist researchers in developing multilevel theoretical models. These principles address the what, how, where, when, and why of multilevel effects, but are not simple rules that researchers can follow because they require elaboration regarding the content of multilevel models. Rather, they should be seen

¹ We would like to thank the anonymous reviewer for this remark.

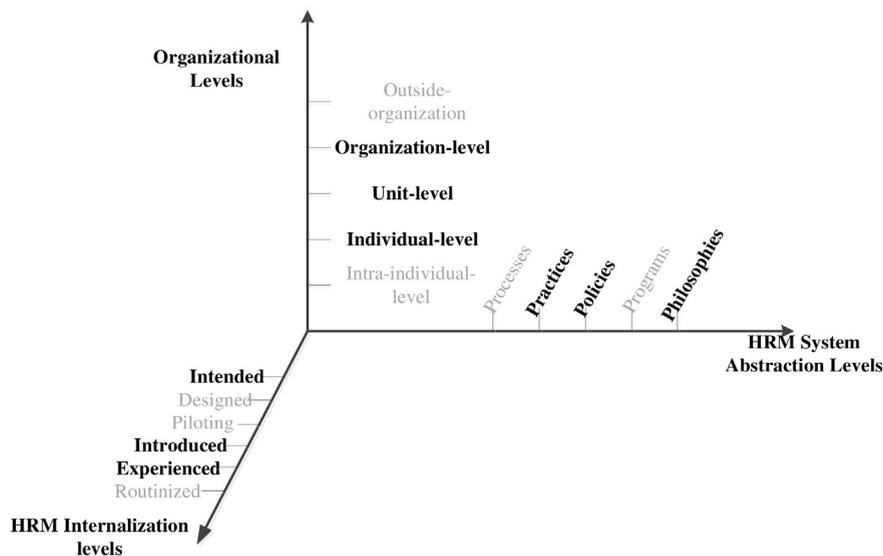


Fig. 1. The multidimensional “multilevelty cube” of SHRM research.

as fundamental building blocks for developing multilevel models. Based on these principles, we have developed a non-exhaustive set of guidelines for multilevel HRM research. As such, these multilevel principles can steer researchers when conducting multilevel HRM research. To identify future research avenues that would advance multilevel HRM research, we conducted a review of the multilevel HRM literature to assess which multilevel principles have (or not yet) been applied, and how, in existing multilevel HRM studies.

4. Selection and review of multilevel HRM studies

To analyze key trends in multilevel HRM research and thereby uncover the current application of multilevel principles in HRM we followed a systematic literature review approach (Cropanzano, 2009; Short, 2009). We searched for relevant multilevel HRM studies in the *Scopus* and *ISI Web of Knowledge* databases. These two databases were selected for two reasons: they are among the most comprehensive databases of peer-reviewed journals in social sciences and, at the same time, neither includes all the potentially relevant academic journals (Falagas, Pitsouni, Malietzis, & Pappas, 2008).

In line with the three dimensions of our multilevelty cube, we adopted three sets of search terms and thus conducted three rounds of literature searching to avoid excluding HRM studies that did not explicitly state they were multilevel. During each round, studies were identified for further analysis when they were published in a peer-reviewed journal, published in English, were empirical, and were multilevel along at least one of our three multilevelty cube dimensions. More specifically, a study was included when it empirically examined a multilevel model or tested hypotheses with HRM and its outcomes conceptualized at different organizational levels, and/or studied at least two HRM abstraction levels, and/or examined at least two HRM internalization levels. To minimize the risk of excluding relevant articles and boost the reliability of the results, two authors independently assessed whether each study should be included. The intercoder reliability was 92% and, after discussion, there was full agreement over which articles to include. In Appendix A we discuss the search process in each of the three rounds and the number of studies included in our review. In the end, our literature search yielded 88 original multilevel HRM articles.

5. The multilevelty cube of HRM in practice

Reflecting the ideas behind the multilevelty cube, a single HRM study could incorporate multiple levels of analysis along two or even three multilevel dimensions. To see whether that was happening, we identified those studies in our sample that studied cross-level relationships along multiple multilevel dimensions (see Fig. 2). As can be seen in Fig. 2, we identified 30 such studies, of which 29 examined multiple internalization levels alongside multiple hierarchical levels. A reason for this overlap predominating can be identified in Table 1: most of the publications studied experienced/perceived HRM perceptions on the employee level while introduced/actual HRM was conceptualized at the unit level. This suggests that the internalization dimension is often equated to the organizational-hierarchical dimension. As a consequence, there are, for example, no studies that have examined the degree to which HRM is intended or introduced to individual employees. This is remarkable given that other streams of research into idiosyncratic deals and job crafting argue that individual employees differ in the degree to which they actually receive HRM policies/practices (e.g. Rousseau, Ho, & Greenberg, 2006). Furthermore, Fig. 2 indicates that all the studies into multilevel relationships among HRM philosophies, policies, and practices (i.e. abstraction dimensions) also incorporate multiple

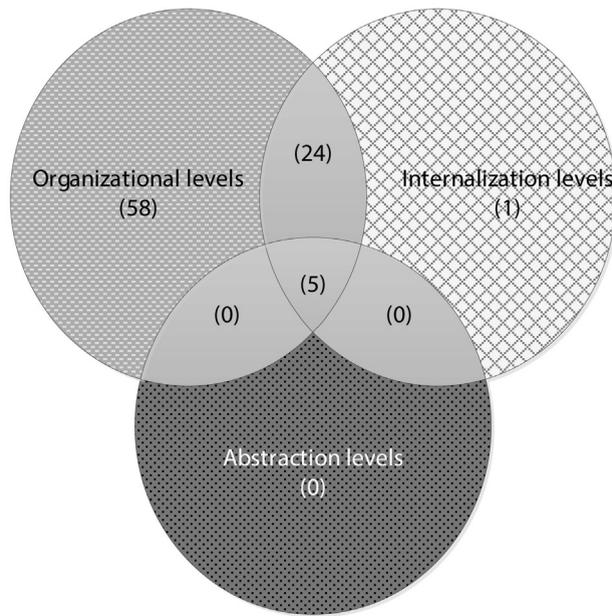


Fig. 2. Venn diagram of the studies that incorporate multilevel dimensions.

hierarchical and internalization levels of analysis. As can be seen in Table 1, the majority of these studies examined HRM practices (or bundles thereof) in relation to HRM policies, and that HRM philosophies are largely overlooked. HRM practices are studied at all levels (organization, unit, and individual employee) of analysis, indicating that the abstraction and hierarchical levels are not equated and thus treated as conceptually different in existing HRM studies.

6. Application of principles in multilevel HRM research

We first briefly discuss each principle before presenting findings related to the application of the principles in the studies included in our sample. Finally, based on these findings, and examples from both within and beyond the sample, we offer guidelines for future multilevel HRM research. We have analyzed studies that explicitly included at least two organizational levels since the principles were developed for research that included relationships across different hierarchical-organizational levels. Where possible, we also reflect upon the application of the principles on the internalization and abstraction levels.

6.1. The WHAT of multilevel HRM research

The WHAT principle concerns the level at which the focal phenomenon manifests itself (Kozlowski & Klein, 2000). Researchers who use multilevel thinking should start by defining and justifying the level at which the main constructs are placed in their theoretical model (Kozlowski & Klein, 2000). In general, a dependent construct is both embedded in higher-level contextual settings as well as emerging from lower-level constructs because of the nested arrangements in which most organizational entities exist (Hitt et al., 2007). As discussed by Reynolds Fisher (2000), a multilevel theory need not include every level of a hierarchical system, but it should at least take into account the effects on the dependent variable of independent variables that are a level higher or a level lower.

Table 1
Multilevel dimensions of multilevel HRM studies.^a

	Abstraction levels	Internalization levels								
		Intended HRM			Introduced HRM			Experienced HRM		
		Philosophies	Policies	Practices	Philosophies	Policies	Practices	Philosophies	Policies	Practices
Organizational-hierarchical levels	Organization-level	2	3	12	1	2	20	1	1	11
	Unit-level	0	0	0	0	1	33	0	0	6
	Individual-level	0	0	0	0	0	0	1	0	28

^a The number of studies reported exceeds our sample size of 88 since some studies include multiple levels of analysis.

6.1.1. Current application and key findings related to the WHAT principle in HRM research

In the HRM studies in our review, dependent constructs were positioned at the individual, team, work-unit, department, and organization levels. The most frequent level at which the dependent constructs were analyzed is the individual employee level (78%), followed by the unit level (18%), and the organization level (15%)². In 48% of the articles, HRM was studied at the organization level, followed by 45% and 29% at the unit and individual levels respectively. Fifteen papers studied HRM at both the unit and the individual levels, with the explicit goal of determining whether employees' perceptions of HRM differ from the HRM introduced at the unit level. Most of the multilevel HRM–outcome relationships studied are at the lower hierarchical levels. All but four of the papers included in our review studied no more than two nested hierarchical levels and therefore only looked up or down, not both. Although some conceptual models have integrated multiple levels of analysis (Farr & Tran, 2008; Jiang et al., 2013), the majority of the empirical papers adopted a perspective that included only the individual level and one higher level (predominantly the unit level). A notable exception is the article by Chang, Jia, Takeuchi, and Cai (2014) who examined a three-level top-down model in which team-level constructs moderate the effect of an organization-level HR system on individual-level creativity. Hong, Liao, Raub, and Han (2016) also examined a three-level model, including the establishment, department, and individual levels, to explain personal initiative. In the sample identified through the internalization dimension, there are more studies that examine the multilevel links between intended, actual, and perceived HRM (e.g. Piening, Baluch, & Ridder, 2014). In the abstraction-level dimension papers, the study of Monks et al. (2013) provides a good example of multilevel research by exemplifying how nested HRM systems work. They found that HRM processes are used to uphold a particular HRM philosophy, and that a configuration of HRM practices is used to execute this philosophy. As such, they exposed the embeddedness of HRM practices and processes in HRM philosophies.

Although incorporating multiple levels of analysis, none of the studies discussed above looked up and down simultaneously. Of our total sample, 96% examined higher-level antecedents, and thus 'looked up', and around 16% investigated whether lower-level antecedents affected higher-level outcomes. We identified 12 studies that examined mixed multilevel models, including both top-down and bottom-up relationships (e.g. Aryee et al., 2012; Den Hartog et al., 2013), although none of these examined three levels. As such, the main impression gained from our review is that the WHAT principle (i.e. looking up and down to identify the levels of independent constructs) seems to be hardly applied in existing multilevel HRM research. This is a concern since, to account for the embeddedness of HRM outcomes, it is important to consider three levels of analysis since, ultimately, an identified top-down effect of HRM on performance will be biased if lower-level variables that also affect the performance outcome of interest are excluded.

6.1.2. Directions and guidelines related to the WHAT principle

We would encourage using three levels of analysis, looking both up at contextual factors and looking down at emergent processes. Many combinations are possible: studies examining HRM–performance relationships at the organization-level could include both industry-level factors that influence these relationships, and business unit-level factors that affect the performance of firms as a whole. Here, future research needs to incorporate the extra-organizational level. Alternatively, if researchers want to explain team-level innovativeness, they could look at how individuals contribute to innovation within a team (lower level) and, at the same time, consider how strategic processes affect the possibilities for team innovation (higher level).

Given that the majority of the multilevel HRM studies have examined individual-level outcomes, it is striking that there has been little attention given to 'looking down' to see whether intra-individual constructs can explain individual-level outcomes. Intra-individual constructs refer to personal characteristics, such as affective attitudes and satisfaction, that can fluctuate over situations and occasions (Ilies, Scott, & Judge, 2006). Recently, management researchers have started to draw attention to intra-individual differences (e.g. Fisher & To, 2012; Laureiro-Martínez, Brusoni, Canessa, & Zollo, 2015). One way to include the intra-individual level is to model the sequential changes in individual characteristics over time (Ten Brummelhuis, Bakker, Hetland, & Keulemans, 2012). For example, Bakker and Bal (2010) showed that intra-individual variability in employees' work engagement can explain their weekly job performance. By incorporating variables at the intra-individual level, multilevel HRM research can address the intra-individual differences that partly explain individual-level outcomes. Integrating intra-individual level variables could, for example, help to uncover the effect of variations in introduced HRM activities over time on individual performance outcomes; or the effect of perceptions of HRM changing over time on individual performance outcomes. Some HRM activities (e.g. feedback or information sharing) could affect employees more strongly when more recently applied and thereby might influence intra-individual antecedents of performance. Including these intra-individual differences, for example by examining the effect of HRM practices such as information sharing or feedback on affect, mood, fatigue, or the perception of HRM over time, would improve the understanding of HRM–performance relationships. Given that HRM activities can vary over time on an individual basis, and can be expected to influence intra-individual constructs, we would encourage scholars to include within-individual differences in multilevel HRM models. One particularly suitable method for including the intra-individual level is the "experience sampling methodology (ESM)"³. Here, intra-individual-level variables, such as engagement or affect, are measured repeatedly over time for each person; while the more-stable individual-level variables, such as demographics, stable attitudes, or traits, are usually measured once (Fisher & To, 2012). In essence, ESM entails repeated measurements over time of the same participants, for example using methods such as daily diaries. Multilevel HRM research could adopt this approach to examine the relationship between

² The sum of these percentages exceeds 100% because some studies included multiple levels.

³ We like to thank the anonymous reviewer for this remark.

HRM activities and both individual and intra-individual variables. Thus, both the intra-individual and the extra-organizational levels could be incorporated to further advance multilevel HRM research:

Guideline 1. Future multilevel HRM research should stretch the nominal boundaries and include constructs at the intra-individual and extra-organizational levels when examining HRM–performance relationships since HRM activities influence both intra-individual and extra-organizational variables over time and these, in turn, influence HRM–performance relationships.

6.2. The HOW of multilevel HRM research

Following Kozlowski and Klein (2000), we describe two ways in which levels are linked: through top-down and bottom-up processes. Top-down processes describe the influence of higher-level contextual factors on lower-level phenomena. Higher-level units may have a direct effect on lower-level units, and higher-level constructs may also shape relationships in lower-level units, referred to as cross-level moderator effects. Bottom-up processes describe the manner in which lower-level constructs result in, or aggregate to, higher-level constructs. This so-called *emergence* is defined as a phenomenon that originates in the affective, behavioral, and cognitive components of individuals, and is then amplified through interactions to manifest itself as a collective phenomenon (Allport, 1954; Katz & Kahn, 1978; Kozlowski & Klein, 2000). Many collective phenomena in organizations, such as human capital, organizational capabilities, and climates, have their theoretical foundations in the characteristics of individuals. These characteristics have emergent properties in that they manifest themselves as collective phenomena at levels that transcend the individual when individuals interact and exchange ideas, knowledge, or attitudes (Kozlowski & Klein, 2000).

Emergence has three features: content, process, and structure (Fulmer & Ostroff, 2016). The *content* of emergence refers to its elemental content, that is, the ‘raw element of emergence’ that is provided by the individuals and aggregated at a higher level. As such, elemental content can consist of concepts such as the cognitions or behaviors of individuals (Ostroff, Kinicki, & Muhammad, 2012). As an example, Ployhart and Moliterno (2011) argue that the cognitive and the non-cognitive attributes of individuals are the elemental contents of collective human capital resources. Another example is the organizational climate, a concept that resides at the organization-level but is based on the psychological meanings that individuals attach to a situation (Rentsch, 1990) that form the elemental content of emergence. Therefore, the content of emergence can be seen as the individual parts of a system that together create the higher-level whole (Fulmer & Ostroff, 2016). Second, the *process* of emergence refers to the interactions among individuals that provide the means for lower-level elemental content to become higher-level content (Kozlowski & Klein, 2000; Ployhart & Moliterno, 2011). This process involves acts where individuals share ideas, communicate feelings, and jointly perform tasks, through which affections, cognitions, and behaviors become shared and form a collective phenomenon. Finally, emergence has a *structure* formed by higher-level contextual factors that shape the process of emergence. These higher-level factors can be both formal (e.g. organizational structure) and informal (e.g. cross-department networks) structures that enable or constrain individual interaction. Following Kozlowski and Klein (2000), we distinguish two opposing types of emergence models based on their elements, processes, and structures: composition and compilation. Composition models assume isomorphism, and describe phenomena that essentially remain the same as they emerge upwards to higher levels, such as an organizational climate that reflects the common perceptions shared among employees. In contrast, compilation is based on assumptions of discontinuity (i.e. the lack of a logical sequence), and describes phenomena that share a common domain but are distinctively different across levels. Compilation occurs, for example, in teams where highly-interdependent employees perform different tasks that enable the team to collectively succeed.

6.2.1. Current application and key findings related to the HOW principle

Our sample was heavily dominated by top-down relationships (discussed in 71 studies), and 62 of these examined the top-down effect of HRM on lower-level outcomes such as affective commitment (Ang, Bartram, McNeil, Leggat, & Stanton, 2013) or employee job performance (Chang & Chen, 2011). Further, 27 studies examined a cross-level moderator model of which 20 investigated whether HRM–outcome relationships are moderated by constructs such as team cohesion and task complexity (Chang et al., 2014) and 7 that conceptualized HRM as a moderator of lower-level relationships such as between perceived organizational support and commitment (Whitener, 2001). Bottom-up relationships have not been studied frequently, with only 12 studies examining a model with a bottom-up relationship between HRM and a higher-level outcome. This could be a consequence of the limited amount of longitudinal multilevel research, which is necessary to analyze bottom-up effects as they generally take a significant period to appear (Kozlowski & Klein, 2000). Nevertheless, the scarcity of bottom-up multilevel HRM research is surprising given that strategic HRM may “lose its *raison d’être* if individual employees’ outcomes influenced by HR systems cannot be related to firm-level outcomes” (Jiang et al., 2013, p. 1468).

Further, all the studies that had examined bottom-up relationships used composition models, where individual scores are aggregated to establish a collective construct. Typically, these studies measured individual-level concepts and aggregated them at a higher organizational level using mean scores based on a combination of theory, measurement method (e.g. a referent-shift model), and statistics to justify aggregation. An archetypical multilevel HRM study that applied a composition model is the one by Liao and Chuang (2004) who argued that store-level performance will emerge through bottom-up processes from individual performances and exists as a collective phenomenon. Based on attraction-selection-attrition, socialization, and social information processes, they proposed that the behaviors and performance of employees within the same unit will be homogeneous. Furthermore, this study, like most of the studies in our sample, used intraclass correlation scores to justify aggregating variables.

We observed that the bottom-up studies in our sample mainly draw on two theories to justify using a composition model: the attraction-selection-attrition model (Schneider, Goldstein, & Smith, 1995) and social-information processing (Salancik & Pfeffer, 1978). The former argues that employees are similar because individuals with certain characteristics are attracted to, selected by, and retained by a particular organization. Over time, these processes lead to employees demonstrating similar behaviors and attitudes (e.g. Nishii et al., 2008). Social-information processing theory argues that employees' work-related perceptions are filtered through contextual influences and collective sensemaking. Employees are therefore likely to develop similar perceptions because they are working under similar contextual influences and thus collectively make sense of the available HR practices (Kehoe & Wright, 2013).

Although these theories help explain why composition effects can lead to individual-level phenomena aggregating on higher levels, HRM researchers have yet to examine how individual-level phenomena emerge, through compilation, on a higher level. This is surprising given that many of the outcomes of interest to this stream of research have their origins in heterogeneous elemental contents.

6.2.2. Directions and guidelines related to the HOW principle

Given the scarcity of studies that use compilation models to examine how heterogeneous content leads to collective outcomes, we address the possibilities for applying such models in HRM research. HRM outcomes that could be studied using a compilation model include innovation performance, human capital resources, and team configuration. For example, as noted by Veenendaal, Van Velzen, and Looise (2014), organizations realize explorative innovations by drawing on heterogeneous human capital. Given this requirement for heterogeneous elemental content, a compilation model would be appropriate for studying innovation performance. Human capital resources are also considered to emerge from compilation processes. Ployhart and Moliterno (2011) argue that the emergence of human capital resources reflects a compilation model in that, as task complexity increases, team members require specialized knowledge that allows the collective to adapt to the heightened complexity. When it comes to managing heterogeneity, some individuals may be more important than others. For example, in a sports team, performance is not a linear sum of individual performances but is formed through irregularity, non-uniformity, and configuration (Kozłowski & Klein, 2000). One player can have exceptional talent and contribute disproportionately to the performance. Likewise, in organizations, there might be star individuals who contribute more than others to performance. For example, research has shown that star scientists and non-star scientists contribute differently to innovation performance (Rothaermel & Hess, 2007). In such cases, emergence models need to reflect the variability in the individual inputs that eventually determine the collective outcome.

Compilation can be empirically examined either using minimum/maximum models that distinguish between the qualitatively different contributions of individuals, or by using a variance form of emergence that focuses on variability in the elemental content (Kozłowski & Klein, 2000). All these models analyze the composition of units or teams based on the characteristics of individual members (Mathieu, Tannenbaum, Donsbach, & Alliger, 2014). Team performance can then be related to the minimum and maximum general mental abilities of team members (Bell, 2007). A good example of such a study, albeit from outside our sample (as it did not address HRM activities), is the work of Stewart, Fulmer, and Barrick (2005). They examined the link between individual roles and role structure across organizational levels and examined emergence as a complex process in which the individual-level elements (roles) combine into a higher-level phenomenon of the team (role structure) through composition and compilation.

In a similar way, future multilevel HRM research could examine bottom-up effects across different levels of abstraction. For example, researchers could study how HRM philosophies are realized in a top-down manner through the implementation of HRM practices, or how HRM systems are built from different HRM policies and practices. That is, different HRM practices might substitute for each other in realizing a selected policy (Jiang et al., 2012) such that achieving HRM policies could follow from heterogeneous lower-level elemental content (i.e. HRM practices). Lastly, strategy-as-practice research shows that strategies can emerge from actual managerial behavior (e.g. Jarzabkowski, 2004). For multilevel HRM research, this implies that actual HRM, i.e. as introduced by managers, might play an important role in the (re)formulation of intended HRM, rather than the other way around as is currently often assumed. Following these examples, HRM researchers investigating higher-level outcomes (e.g. collective human capital, creativity, innovation, and intended HRM philosophies and policies) could examine the diversity in lower-level inputs (e.g. human capital, creativity, or actual HRM practices), and how this influences the collective outcomes.

Guideline 2. Future multilevel HRM research should analyze the variability in lower-level phenomena to explain the emergence of higher-level phenomena.

A second insight gained from the review is that all of the multilevel bottom-up HRM studies only examined the elemental content component of emergence, and overlooked its other two dimensions. More specifically, these studies examined the extent to which HRM practices affect employee-level outcomes, such as job satisfaction, commitment, or human capital, but overlooked the extent to which HRM practices support the processes through which these outcomes aggregate at higher levels. This is remarkable given that HRM practices can represent the structural dimension of emergence in that they are contextual factors that regulate how individuals interact and, thus, facilitate the process of emergence. A rare example of a study that examined emergence processes is the paper by Wang and Zatzick (2015) who examined how emergence-enabling strategies – such as participation in decision-making – support emergence processes. They found support for their hypothesis that these strategies enhance the relationship between the knowledge, skills, and abilities of new employees at the individual level and innovation at the organization level.

Following these results, we argue that it is possible to distinguish between the effects of HRM practices on the process and on the elemental contents of emergence. Actual HRM practices such as staffing, training, and development appraisal can shape elemental content such as an individual's knowledge, skills, and abilities (KSAs) that aggregate into collective unit-level human capital resources (Nyberg, Moliterno, Hale, & Lepak, 2014). However, the process of emergence is likely to require HRM practices such as teamwork and group incentives since these allow and motivate employees to exchange and interact (Collins & Smith, 2006; Kozlowski & Klein, 2000). These practices form a structure that enables individual-level elemental content to emerge as collective phenomena. For example, through enabling states – such as behavioral processes, cognitive mechanisms, and affective states – individual-level human capital can be transformed into unit-level human capital resources (Kozlowski & Ilgen, 2006; Ployhart & Moliterno, 2011). These concepts can be viewed as the process of emergence, and they can be influenced by HRM. In this role, HRM focuses on the creation of a workforce with high abilities, motivation, and opportunities to interact effectively with each other. As such, ability-enhancing HRM can be expected to be the most strongly related to the content of emergence, whereas motivation-enhancing and opportunity-enhancing HRM are expected to be more strongly related to the process of emergence. Therefore, we propose the following:

Guideline 3. Future multilevel HRM research should examine whether HRM has differential effects on the process and on the content of emergence.

6.3. The WHERE of multilevel HRM research

This principle considers where top-down and bottom-up processes originate and culminate. It addresses the so-called unit specification (i.e. the organizational units where cross-level effects occur) and bond strength (i.e. the strength of cross-level relationships). *Unit specification* recognizes that multilevel effects can become manifest in formal and in informal organizational entities. Formal organizational entities are those collectives of individuals whose boundaries are formalized on the basis of the organizational structure, whereas informal entities are collectives of individuals that transcend organizational structures, such as informal networks or friendships. In multilevel research, it is important to determine whether multilevel effects appear in formal or informal organizational entities because individuals interact with others from both formal entities (e.g. co-workers) and informal entities (e.g. friends), and this affects the sensemaking processes (Rentsch, 1990). Basing unit specification on formally designated units and levels can lead to an overestimation of their influence when phenomena are also affected by informal networks. *Bond strength* – also referred to as embeddedness – refers to the extent to which characteristics, behaviors, dynamics, and processes at one level affect these elements at another level or in a unit (Simon, 1973). The idea behind bond strength is that links between levels are stronger when the levels are more proximate, and that this explains the extent to which constructs at different organizational levels are expected to be related (Kozlowski & Klein, 2000). For example, when considering the effect of climate, the team climate is likely to be more strongly related to individual behavior than the organizational climate. Summarizing, bond strength determines the interconnectedness of phenomena at different levels and influences the effect sizes that can be found in cross-level relationships. The more a unit is involved in a higher level unit, the more impact the cross-level relationships will have (House et al., 1995).

6.3.1. Current application and key findings related to the WHERE principle

All the studies in our review looked at effects in formal organizational entities, such as branches of a bank (Aryee et al., 2012), hairdressing shops (Chang & Chen, 2011), and teams in a hospital (Ang et al., 2013). Some studies have used very precise unit specifications by including all the hierarchical levels in their hypotheses. For example Hong et al. (2016) were explicit as to the organizational levels at which they expect and examine multilevel effects. The fact that multilevel HRM research on multilevel effects focuses on formal entities is further demonstrated by the aggregation procedures adopted in which lower-level phenomena are aggregated to a formal organizational entity. As such, it seems that *informal* unit specifications have largely been overlooked in multilevel HRM research.

Although all the multilevel HRM studies in our sample investigated cross-level relationships between HRM and selected outcomes, none of them explicitly conceptualized the strength of these relationships. This is evidenced by the formulation of hypotheses that question whether HRM has a positive or a negative effect on an outcome, without addressing whether the effects are weak or strong. Although some studies have hypothesized moderator effects that strengthen or weaken cross-level HRM–outcome relationships, these studies do not conceptualize how the proximity of the different levels in the analysis affects these relationships. However, there are some studies that do examine how the similarity of constructs at two organizational levels affects cross-level relationships. For instance, Li and Frenkel (2016) studied how the “status similarity” of supervisors and employees affects the cross-level link between the HR perceptions of both parties. Nevertheless, studies explicitly examining bond strength remain rare and multilevel HRM research has not yet explicitly examined how bond strength affects HRM–outcome relationships across different levels of analysis.

6.3.2. Directions and guidelines related to the WHERE principle

To date, multilevel HRM researchers have focused on cross-level HRM–outcome relationships in formal organizational entities, and we see a need for further research into HRM–outcome relationships in both formal and informal organizational entities. Although the formal structures and hierarchies in organizations influence organizational members by determining with whom

they will most likely interact (Kozlowski & Chao, 2012), informal structures and horizontal linkages between organizational members also exist and influence their behavior and interactions. As an illustration of this, Liao et al. (2009) examined the perceptions of HRM held by employees in certain employment groups, but did not address the possibility that employees in these groups might also interact with employees outside their own employment group. By not taking these informal structures into account, difficulties in isolating the effects of HRM can arise. Social information processing theory (Salancik & Pfeffer, 1978) suggests that employees' perceptions of organization-level HRM philosophies can be informally shared since almost all employees are exposed to them and can then share their perceptions in informal entities with those outside their own organizational unit. For example, the climate in a friendship network can influence, both positively and negatively, the effect of HRM on performance because these informal networks can change the perceptions of employees regarding the quality and quantity of the HRM activities in their formal unit. Further, Jiang, Hu, Liu, and Lepak (2017) show that employees' perceptions of HRM are affected by their co-workers' perceptions. As such, employees' attitudes and behaviors can be affected by HRM in both formal and informal organizational entities. Taking both these potential influences into account would prevent an overestimation of the effects stemming from a formal unit and potentially expose how HRM outcomes are affected by mechanisms within informal units.

Furthermore, unit specification is also relevant for research that includes constructs at levels outside the organization. For example, organizational membership of informal business networks could influence the adoption of HRM practices. Being part of an informal inter-organizational network could affect the decision to adopt certain HRM practices, for example because of institutional pressures (Paauwe & Boselie, 2003), which will potentially affect multilevel HRM relationships and therefore should be incorporated in multilevel HRM research (Renkema, Meijerink, & Bondarouk, 2016). Although some of the studies included in our review examined extra-organizational level constructs, none of them incorporated the unit-specification principle by investigating informal extra-organizational entities, such as business networks, and their multilevel effect on HRM phenomena. Therefore, we propose the following:

Guideline 4. Future multilevel HRM research should examine the effect of antecedents at both formal and informal levels on intended, actual, and perceived HRM and on selected HRM performance outcomes.

As already noted, current HRM research pays insufficient attention to the influence of the organizational level on relationship strengths (i.e. bond strength). Current multilevel HRM research is mostly concerned with cross-level relationships and, as we have argued, these are likely to have high bond strengths because these relationships connect proximal organizational entities on the unit and individual levels. As an example, Ang et al. (2013) studied the relationship between unit-level HRM and individual-level affective commitment. In contrast, Wu and Chaturvedi (2009) examined whether individual-level affective commitment is influenced by HRM while conceptualizing HRM at the organization-level. Such differences make it difficult to compare findings across levels and, therefore, it is dangerous to draw conclusions about the impact of bond strength and the extent to which cross-level HRM–outcome relationships can be generalized across levels. However, it would be valuable to know the scale of the differences in effect sizes between organization-level HRM and unit-level HRM because this could have implications when it comes to deciding which HRM activities to introduce and implement at which levels of the organization. Bond strength principles argue that HRM–outcome relationships will be stronger when the unit in which an HRM outcome is conceptualized is more strongly coupled to, or embedded in, the unit where the HRM predictor is conceptualized.

For example, teams that are more autonomous when it comes to introducing HRM policies and practices will be less embedded in the contextual processes on higher levels of the organization. In other words, when work-units have more autonomy, the bond strength between the organization and team levels is weaker, and HR-related phenomena on the unit level are less likely to be influenced by the organizational-level phenomena. Further, and in terms of abstraction levels, it is likely that HRM philosophies are more strongly related to HRM policies than to HRM processes because, conceptually, HRM philosophies influence HRM processes through HRM policies and practices. Finally, House et al. (1995) argue that the bond strength is greatest when a unit is embedded within a single higher-level unit. As illustrations, they mention a team whose activities are only linked with one higher-level division, and an employee who only services one customer. The more an employee interacts with only one team or one supervisor, the more influence that higher-level entity is expected to have. As such, employees who only work for one team, or with one supervisor, will be more strongly affected by the HRM practices on the team-level than employees who work in multiple teams or a team with multiple supervisors. As these examples show, the strength of the effect of HRM on performance, and the strength of the interrelationships among HRM system components, are likely to depend on the level of analysis. Therefore, we propose the following:

Guideline 5. Future multilevel HRM research should develop theory and conduct research into how and why the cross-level effects of HRM on an outcome are stronger when the level at which HRM is conceptualized is closer to the level of the selected outcome.

6.4. The WHEN of multilevel HRM research

Although time influences many organizational phenomena, it rarely features in multilevel organizational models. Following Kozlowski and Klein (2000), we discuss three ways in which time could be incorporated in a multilevel model. First, *time as a boundary condition* could reflect the reality that the direction of multilevel relationships can vary depending on the point in time and the position in the relevant work cycle. For example, organizational climate is defined as the shared perception of

employees (Schneider, 1990), and this implies that changes in organizations will first lead to changes in perceptions (i.e. top-down) and then to a changed shared perception (i.e. bottom-up). Given this reality, a multilevel theory needs to explicitly specify the point in time in order to capture the direction of the relationships of interest (Kozlowski & Klein, 2000). Therefore, depending on the time, or position in the cycle of events, a phenomenon can be modeled at different levels and the direction of a relationship can change from top-down to bottom-up, or vice-versa. Second, *time-scale variation across levels* addresses differences in the nature of links between lower-level and higher-level phenomena, that is, the time that is required before an effect occurs on other levels (Kozlowski & Klein, 2000). In general, lower-level phenomena tend to change faster than higher-level and emergent phenomena because they can adapt easier and require less coordination. For example, training programs can immediately increase the abilities of individual employees, but the effect of training on organizational outcomes is an emergent phenomenon and, therefore, requires more time. Finally, *entrainment* refers to changes in multilevel linkages over time due to variations in the coupling between levels. The degree of entrainment is higher when units at different levels are more tightly coupled. Since the coupling between levels and units can vary over time, this can change the effect of multilevel phenomena (Kozlowski & Klein, 2000). For example, at some point in time, an employee may be influenced by attitudes and behaviors of colleagues and supervisors because they are actively collaborating with them while, at another point in time, the employee may be working independently and be less influenced by the context. In the latter situation, multilevel effects may well be weaker because embeddedness and interaction are less influential.

6.4.1. Current application and key findings related to the WHEN principle

Since the early days of HRM research, it has been argued that there might be a time lag between the adoption of HR practices and the effect on firm performance (Huselid & Becker, 1996). However, in current multilevel HRM research, the time dimension is largely implicit. This is primarily because longitudinal research using multilevel models in HRM is still the exception, with only 8% of studies adopting a longitudinal design (10% if time-lagged studies are included). Further, applying multilevel models in cross-sectional research is problematic because cross-level effects take longer to appear than single-level effects (Kozlowski & Klein, 2000). In particular, bottom-up effects require a significant amount of time to appear. As such, we would add to the methodological criticisms of cross-sectional research that these models are unable to analyze the emergence of cross-level effects. If time is not included in a model, one cannot gain knowledge about the kinds of cross-level influence present, where these effects originate and appear, and when these effects can be expected. Further, time was not an explicit boundary condition in many of the studies included in this review. Although almost all the studies referred to the problems of using cross-sectional approaches, virtually none referred to the position, or time, in the cycle of events of a phenomenon and as such did not designate a time boundary or specify the generalizability across event-cycles. An exception is the study by Chang (2005) that argued that the mediating effect of procedural justice may vary over time, and could be stronger immediately after a performance appraisal.

Similarly, we found no evidence of the explicit use of the concept of entrainment in our sample: no study referred to the pace or the cycle of events across units of analysis, or how these might influence multilevel relationships.

6.4.2. Directions and guidelines related to the WHEN principle

In multilevel HRM research, *time as a boundary condition* is an important concept because cross-level relationships can have bidirectional effects. For example, Takeuchi et al. (2009) studied the link between establishment-level HRM and employee climate, and viewed climate as a unit-level construct. They argued that climate is a shared construct in that employees will have similar perceptions of the climate because they are exposed to similar stimuli. As such, climate is conceptualized as a reciprocal variable: it is based on individual perceptions and influences individual attitudes. This relationship illustrates the influence of time as a boundary condition: the relationship between individual-level and unit-level constructs differs depending on the stage in the development cycle of a phenomenon. Takeuchi et al. (2009) assumed the climate was shared, and therefore identified only a top-down effect. If we followed this, and applied the time as a boundary condition principle, the model would not be able to draw conclusions about the process of creating a shared climate because this part of the cycle of events would be outside the boundary condition. To find out more about the relationship between HRM and climate, it would be worth studying simultaneously the bottom-up process of creating a shared climate and the top-down process of influencing individual attitudes, and testing whether HR systems are related to both the individual-level psychological climate and the organizational climate, as suggested by Ostroff and Bowen (2000). To achieve this, a longitudinal research design would be required to shed light on both the top-down and bottom-up cross-level effects throughout the cycle of an organization's events. The organizational lifecycle could be such a cycle, and this generally consists of the following phases: birth (start-up), growth, maturity, and decline (Milliman, Von Glinow, & Nathan, 1991). In the start-up phase, the organizational climate is developing and HRM has a bottom-up effect on climate, whereas, in the mature phase, the organizational climate has been developed and now affects the attitudes and behaviors of employees in a top-down fashion. To conclude, multilevel HRM research should take temporal requirements and boundary conditions into account.

Guideline 6. Future multilevel HRM research should study whether multilevel HRM–performance relationships vary (between top-down or bottom-up) across the lifecycle of organizational phenomena.

Further, Ostroff and Bowen (2000) highlighted the importance of organizational context in determining the direction of cross-level relationships: in stable organizations, HRM systems and climates tend to have a stronger top-down influence whereas, in changing organizations, the influence of HRM systems and climates is more bottom-up. This is explained by the greater influence of individuals on the HRM systems, climate, and normative contracts in changing organizations. In stable organizations, employees

are influenced by the existing organizational climate, which has been established over time and produced by the shared perceptions of employees about practices, procedures, and behaviors that are rewarded and supported in a particular setting (Schneider, 1990). In essence, organizational stability means that perceptions are more alike and that the climate determines how individuals behave. However, in changing organizations, for example during restructuring, perceptions about desirable behaviors change, and individuals influence the new climate. Further, employees can have a bottom-up influence on the HRM systems that are being introduced, since these might require, or the unstable situation might necessitate, a change in the HRM system(s). Furthermore, bottom-up changes to collective structures are more prevalent when the institutional environment is unstable (Bitektine & Haack, 2015). To analyze these processes, researchers need to study the influence of HRM systems and climates on individual attitudes and behaviors over longer cycles.

Further, not only does the direction of these cross-level relationships change, but also the speed of change. In general, bottom-up processes tend to take longer than top-down processes (Kozlowski & Klein, 2000). For example, some HR practices, such as information sharing and feedback, can immediately affect individual employees and their performance (a top-down process), while it may require much longer before the performance of a unit is affected by the increased performance of its individual members (bottom-up). This relates to the concept of time-scale differences: some relationships manifest themselves fairly quickly, while others require longer (Kozlowski & Klein, 2000). It is also possible that the time it takes for a given process to manifest itself might vary. For instance, one could expect collective constructs to emerge faster when there are strong emergence-enabling strategies in place (Ployhart & Moliterno, 2011; Wang & Zatzick, 2015). Given the more nuanced approach that the inclusion of *time-scale variation across levels* allows, we propose the following guideline:

Guideline 7. Future multilevel HRM research should examine differences in the time it takes for bottom-up and top-down effects to manifest themselves, and the factors that determine the time required for these effects to appear.

The last aspect of time to be considered is entrainment – defined as “the adjustment of the pace or cycle of an activity to match or synchronize with that of another activity” (Ancona & Chong, 1996, p. 253). In multilevel research, entrainment reflects a situation where the rhythm, or the pace and cycle, of activities is aligned across levels. In our view, organizational rhythm in this sense refers to factors related to when, how fast, and in what sequence organizational processes take place. For example, Orlikowski and Yates (2002) argued that organizational rhythm can be shaped by larger economic or institutional pressures such as the fiscal year, the academic cycle, or quarterly sales cycles. In these examples, the timing of organizational processes is adapted based on when organizations need to report financial figures or audits. Following this argument, multilevel HRM research could examine how higher-level constructs, at the unit, organization or institutional level, affect the rhythm of lower-level constructs such as employee behavior. A stronger entrainment means that two or more organizational levels are more tightly coupled or aligned and, therefore, the overall rhythm is more synchronic. We refer to the alignment of organizational levels over time as a *temporal fit*. A higher temporal fit means that the cycles of events are more congruent across organizational levels and, therefore, that cross-level effects are stronger. For example, the timing of processes in business units may be similar to the sequence and timing of those in the firm's headquarters; or the timing of an individual's work – when and in what order certain tasks are conducted – may be adapted to the work at the business unit level. With a high temporal fit, the cycle and pace of employee tasks are aligned with the pace of the higher-level unit. HRM practices such as feedback or annual appraisals will affect individual attitudes and behavior more strongly when they are contemporaneous with the work cycle. HRM practices such as recruitment or training may be better aligned with organizational processes if they fit within the normal work processes. Furthermore, one could expect that introducing HRM practices at the appropriate time in the sequence of work could lead to better results because they will fit better with other processes and/or are perceived as more useful.

Consequently, implementing HRM at different organizational levels might not be straightforward. Moreover, changes in HRM activities that have positive effects at one organizational level might have other effects on another organizational level due to differences in entrainment. A good example of an article that addressed this issue is that of Elorza, Harris, Aritzeta, and Balluerka (2016). These authors showed that there is a gap between management-HRM and employee-HRM, and argued “this might suggest that managers are trying to “move along” their employees perceptions of the system, which would imply a time gap between managers' implementation and employees' perceptions” (p. 135). One way to take these entrainment issues into account would be to conceptualize the influence of time lags and entrainment, and to be more explicit about when changes at one level will lead to changes at another (Ancona, Goodman, Lawrence, & Tushman, 2001).

Guideline 8. Future multilevel HRM research should theorize on the time lags between causes and their effects that result from entrainment, on the basis that the effect of HRM on an outcome of interest is faster when the temporal fit is better.

6.5. The WHY of multilevel HRM research

The WHY principle demands the provision of theoretical explanations and justifications for the assumptions underlying multilevel models. Selecting a composition model rather than a compilation model for describing a bottom-up relationship requires an explanation: WHY, for example, is a composition model, as in Liao and Chuang (2004), justified for the relationship between individual service performance and unit-level service performance? Here, the underlying assumption could be that employees will demonstrate homogeneous behaviors because they are influenced by similar processes. Following Kozlowski and Klein (2000), theorists should explicitly provide such theoretical justifications for such underlying assumptions in support of their multilevel models.

6.5.1. Current application and key findings related to the WHY principle

In our review, we have considered the three dimensions of the multilevel cube, whose contents could function as underlying assumptions to justify the need for multilevel research. Most of the studies in our review referred to [Ostroff and Bowen \(2000\)](#) and, as such, to the *organizational levels dimension* of the multilevel cube in explaining the need for multilevel research. These studies refer to the view, as discussed by [Wright and Boswell \(2002\)](#) and by [Nishii et al. \(2008\)](#), that HRM influences organizational performance through the attitudes and behaviors of individual employees. The least frequently referred to dimension of the cube in attempting to underpin multilevel models has been the *abstraction level* as discussed by [Arthur and Boyles \(2007\)](#) and [Schuler \(1992\)](#).

The most frequently used theoretical basis for cross-level models in our sample of multilevel HRM studies was the Social-Exchange Theory of [Blau \(1964\)](#), which argues that HRM activities elicit certain employee attitudes and behaviors because employees want to reciprocate the support received from their organization. Of the studies included in our review, 29 used SET to underpin their theoretical arguments. The Resource-Based View ([Barney \(1991\)](#)) that explains the competitive advantages of organizations as stemming from human resources that are valuable, rare, and difficult to imitate was referred to in seven studies in the review. Signaling theory, HRM system strength, HRM process theory, and the AMO framework are other theoretical concepts that have been used on occasions.

6.5.2. Directions and guidelines related to the WHY principle

Following [Kozlowski and Klein \(2000\)](#), we argue that it is relevant, in order to test the underlying assumptions of theoretical models, to examine why, and in what circumstances, cross-level relationships do not always lead to shared outcomes or to constrained behavior. For example, [Liao et al. \(2009\)](#) found that the cross-level relationship between management-rated HRM and employee-rated HRM was insignificant. One possible explanation is a disconnect between different HRM levels (see [Fig. 1](#)), for example because employees experience different practices ([Bowen & Ostroff, 2004](#); [Lepak & Snell, 2002](#)). Testing the underlying assumptions could lead to an understanding of why HRM is unrelated across levels, or why HRM on a higher organizational level does not influence employees' attitudes and behaviors. In this way, existing theories and assumptions that underlie multilevel models could be tested and further developed.

In general, research is needed to clarify why HRM contributes to better performance: to open the so-called black box ([Paaauwe & Blok, 2014](#)). In particular, bottom-up theories and processes that link individual employees to organizational performance have received scant attention by HRM researchers. Our review found that the ASA framework and social information processing theories have been used to explain why employees have similar perceptions, and then to aggregate individual scores to explain higher-level outcome variables. Future research could investigate if the explanatory power of the various theories used to explain emergence differ, and if different theories need to be applied for various types of elemental content and processes of emergence. For example, differences in explanatory and predictive powers could depend on the fit between the theory and the model of emergence (e.g. composition or compilation). Further, theories that address dissimilar contributions are necessary in order to explain the complex processes of integrating and coordinating individual performances. There remains a lack of theory to explain the mechanism that links individual outcomes with organizational performance. [Paaauwe and Blok \(2014\)](#) have proposed using relational coordination theory ([Gittell, 2000](#)) because this is concerned with the management of interdependence between people and tasks, and thereby focuses on increasing organizational performance. To investigate these types of relationships further, we propose adopting a configurational approach as this will enable theorizing on, and examination of, different combinations, and the alignment of individual contributions, that lead to organizational outcomes. In this sense, compilation means combining different dimensions, and thus establishing a configuration of employee characteristics that lead to higher-level performance. Furthermore, a theoretical process approach could advance understanding of how HRM–performance relationships emerge and change over time by analyzing how key events and time shape change processes ([Langley, 1999](#)).

Guideline 9. Future multilevel HRM research should explore mechanisms that underlie multilevel HRM–performance relationships and develop theories that connect individual-level constructs with organization-level constructs.

7. Implications and interplay between principles and guidelines

Our review of multilevel thinking in HRM research suggests that progress has been made in developing and examining multilevel models. However, our review also revealed that multilevel thinking is only partly applied, and that further progress needs to be made. We now discuss two main contributions from this review of applications of multilevel thinking: implications for HRM research, and contributions to multilevel research beyond the boundaries of HRM research.

7.1. Implications for HRM research

The proposed conceptualization of HRM with three multilevel dimensions has important implications for HRM research. First, we are convinced that multilevel HRM research starts from the acceptance of the notion that HRM is an inherently multilevel construct with multiple dimensions. Building on diverse HRM research streams, we explored and integrated three dimensions (multilevel cube of HRM; see [Fig. 1](#)). These dimensions are helpful in distinguishing HRM constructs in multilevel models because they highlight that HRM at various levels is conceptually different, leads to different outcomes, and needs to be measured

in different ways. To cope with these complexities, we analytically separated the principles of multilevel theory building to uncover ways in which HRM scholars could learn from them. The systematic review showed that neither the fully-fledged application of the dimensions of multilevel HRM nor the use of multilevel thinking have yet been institutionalized in multilevel HRM research. Based on this evaluation, we have proposed future research directions in the form of guidelines. In particular, we observed that there has been only limited attention to the WHERE and WHEN principles of multilevel research. Given that theoretical arguments and findings from other fields have shown the importance of these principles, a more profound approach to multilevel HRM research is needed to understand where multilevel effects originate and emerge, and when these effects will occur. Future research will benefit from going beyond the conventional examination of how HRM influences individual outcomes in a top-down fashion. This requires conceptualizing different ways to aggregate individual characteristics into collective outcomes.

Although we divided the principles into separate categories to clarify the current state of multilevel thinking in HRM, in reality they are interrelated and, therefore, we propose applying a *combination* of these principles to increase understanding of multilevel HRM–outcome relationships. This approach will provide a more nuanced explanation of multilevel phenomena than selecting only one or a few principles by taking several interconnected aspects of multilevel theory building into account. When adopting a multilevel approach, we would suggest starting from the phenomenon of interest and then, apply the principles of multilevel HRM theory building provided in this paper. However, we suspect that it is impractical to examine every aspect of multilevel HRM in every study. Nevertheless, we would encourage researchers, when following the guidelines, to adopt the principles of multilevel theory building in multilevel HRM research. The principles and guidelines are interdependent in that the choice for a specific theoretical model and the methodological choices made should be closely related to the application of the principles. Whereas the guidelines reflect research areas that deserve more attention, the principles can be applied in any multilevel research design. Studies should start by identifying the relevant levels of the phenomena of interest, and then look up and down to analyze whether these phenomena are influenced by concepts at other levels (WHAT). This cannot be separated from the questions of how these phenomena are related across levels, whether there is a top-down or a bottom-up relationship, and the form of these relationships (HOW). At the same time, researchers should evaluate where these relationships originate and culminate, whether they are established in formal or informal units (WHERE), and they need to address the time required for cross-level effects to occur (WHEN). Finally, multilevel models need theories that can explain cross-level relationships (WHY), which are related to the direction and form of cross-level relationships.

7.2. Implications for multilevel research

The second contribution is that the review of multilevel thinking in HRM research is also valuable for multilevel theory building and research beyond the boundaries of HRM. Despite our prime aim being to assist the development of multilevel thinking in HRM research, we hope that the discussion on principles and guidelines will also inspire multilevel research in other management fields. Below we discuss two ways in which HRM research can contribute to multilevel thinking.

First, our research shows that multilevel principles can also be applied to dimensions other than hierarchical levels. We have seen that the principles of multilevel theory building can be applied not only to organizational levels but also to internalization and abstraction levels. As such, we have argued that multilevel research amounts to more than including nested data in hierarchical structures. Other management research domains could learn from this approach and similarly conceptualize their main phenomena of interest in a multilevel framework. Furthermore, HRM research shows that constructs can be conceptualized at many different hierarchical levels, levels of internalization, and abstraction levels, and that these conceptualizations do not necessarily refer to the same construct (see Table 1). Rather, conceptualizing HRM at different levels of these three dimensions could potentially lead to different HRM–outcome relationships being identified.

Second, we identified research areas in which we think multilevel research could particularly provide new insights. However, the analysis of multilevel principles could also be thought provoking for other management domains such as entrepreneurship, innovation management, and service management. Molloy et al. (2011) compared six subdomains of management research and found that some of these domains were more advanced in bridging micro- and macro-level research than others. Our research could inspire those fields lagging behind to apply the basic principles of multilevel theory building to advance the application of multilevel thinking. Some of the guidelines could be used in other fields of management research. For example, researchers could examine whether entrepreneurs' intra-individual variability affects their business success. In this way, this paper contributes to multilevel research by showing how the somewhat abstract principles of multilevel theory building described by Kozlowski and Klein (2000) can be applied in a specific research domain.

7.3. Methodological challenges and limitations

In this paper, we have focused on multilevel *theory building*, but conceptualizing HRM as a multilevel construct also has important implications for empirical research. The resulting methodological choices are beyond the scope of this paper, but should be closely related to the development of multilevel theoretical models. Various conceptual studies have focused on how to measure the multilevel HRM construct at different levels. The predominant approach is to measure HR principles, or intentions, on the organization level, HR practices at the unit level, and HR perceptions at the individual level (Arthur & Boyles, 2007; Minbaeva, 2013). We beg to differ in that we argue that the multilevel cube of HRM reflects a more inclusive approach. That is, the many intersections of the three dimensions provide many opportunities to measure the HRM construct. Theoretically, all these intersections are valid, but measuring the concepts sets various challenges. First, there are practical challenges because of the time-consuming process of conducting multilevel research and the methodological and analytical requirements. An explanation

for the lack of multilevel research might be the statistical specificity required and the pressure on academics to publish, which conflicts with the time required to conduct multilevel research. Further, there are design challenges. For example, HR philosophies can be measured at the organization level, by asking senior management about the philosophy of the whole organization, at the unit level, by asking a unit-manager about the philosophy of a specific unit or sub-unit, or at the individual level, by asking employees about their perceptions of the HR philosophy. Scholars could advance the HRM field by, when theorizing, more clearly specifying the dimension of the HRM construct addressed, and then operationalizing the HRM measurement at the appropriate level. Given the goal of this paper, to advance multilevel thinking in HRM, these methodological aspects have not been discussed in detail. This is a limitation, and the next step in advancing multilevel HRM research could be to focus on the methodological and statistical challenges. Another limitation of the current study is that our sample is an incomplete subset of multilevel HRM studies. We did not include studies that used data from different levels but conceptualized variables at only one level – for example the collective level (e.g. Gardner, Wright, & Moynihan, 2011), as we centered our analysis around the principles of multilevel theory building. Further, although we also drew on some examples from outside the HRM field, there is no doubt that more lessons can be learnt from other fields. Here, the HRM field might benefit from the management and organizational science fields that are more advanced in terms of multilevel thinking. Despite these limitations, we are confident that the growing number of researchers conducting multilevel studies will be able to develop new insights based on the multilevel HRM principles and guidelines that we have discussed.

8. Conclusions

During the past decade, an increasing number of scholars have been investigating various aspects of the multilevel HRM construct. Nevertheless, our in-depth analysis has shown that HRM research has still to reap the full benefits of multilevel thinking. Although many studies have conducted HRM–performance research at more than one level, few have gone beyond top-down empirical considerations, composition-based emergence, and two levels of analysis. We argue that the relationship between HRM and performance is far more complicated, and that future research would greatly benefit from a systematic application of multilevel theory. Based on the multilevel theory building principles of Kozlowski and Klein (2000), we reviewed a sample of the current literature and found that many aspects of these principles were implicitly, arbitrarily, or not at all applied. We have argued that using these principles would contribute to a more integrated understanding of HRM–performance relationships. The paper reveals the inherently multilevel nature of HRM, and shows that multilevel research has only recently gained attention in the HRM field. In adopting a multilevel theoretical approach, we have highlighted three *multilevel* dimensions of HRM: internalization levels, organizational levels, and levels of abstraction. These dimensions formed the basis of the proposed research framework – the multilevelity cube – that integrates the principles of multilevel theory building. By drawing on these principles, we were able to illustrate the WHAT, HOW, WHERE, WHEN, and WHY of HRM–performance relationships across levels. In so doing, we highlighted some areas in which the HRM field could learn from multilevel theory. We attempted to reveal multilevel thinking – the application of the principles of multilevel theory building – in the HRM literature, and provide guidelines based on multilevel theory to improve our understanding of how this could be utilized. This paper should not be seen as a criticism of current developments in HRM research, rather our aim has been to provide guidelines that can help future research use multilevel HRM models to define and then populate a research landscape. We would urge researchers to adopt multilevel principles to gain a more integrated understanding of HRM as a multilevel reality and hope that our guidelines can serve as a basis for generating relevant research directions.

Acknowledgements

This work is part of the research program Innovating Human Resource Management for Employee-Driven Innovation with project number 409-13-204, which is (partly) financed by the Netherlands Organization for Scientific Research (NWO).

Appendix A. Systematic literature review process

During Round 1, we searched for articles that explicitly conducted multilevel HRM research in terms of relationships that crossed hierarchical (e.g. employee, unit, or organizational) levels. Therefore, we used the following search terms and keywords combined with Boolean Operators: “HRM” OR “human resource management” AND “multilevel” OR “multi-level” OR “cross-level”. This search yielded over 400 articles, reduced to 309 after duplicates were removed. We excluded a further 119 studies since they were not peer-reviewed, in English and/or empirical in nature, reducing the remaining total to 190 studies. We then considered the title of each of the remaining studies to assess whether they studied HRM systems, philosophies, policies, and/or practices (including recruitment, selection, training, development, performance management, compensation, benefits, job design, and/or involvement). A total of 86 did not fit this criterion and were therefore removed. Next, the abstracts and full texts of the remaining 104 studies were read to assess whether they were multilevel in nature along at least one of our three multilevelity cube dimensions, leading to 43 studies being excluded. We conducted back-and-forward reference checks on the remaining 61 articles in Google Scholar, and also looked at calls for papers for a special issue⁴ to check if there were important articles we had missed. This yielded 12 additional articles. As such, we had a list of 73 studies that explicitly conducted multilevel HRM research.

⁴ A special issue of The International Journal of Human Resource Management (“Call for Papers”, 2014).

During Round 2, we searched for articles that had studied at least two HRM internalization levels. Therefore, we used the following search terms and keywords: “intended HRM” OR “actual HRM” OR “perceived HRM” OR “experienced HRM” OR “HRM implementation” OR “HRM internalization” OR “HR* perceptions”. This search yielded 112 articles from the two databases, of which 20 were excluded because they were not peer-reviewed, written in English and/or empirical. The remaining 92 articles were reduced to 76 as 16 did not study HRM. After reading the abstracts and full texts of the remaining studies, 55 studies were excluded since they studied only one internationalization dimension (often employees’ perceptions of HRM). As such, we retained a final sample of 21 studies that studied two or more HRM internationalization levels.

During the final round, we searched for articles that studied at least two HRM abstraction levels. Therefore, we used the following search terms and keywords: “HRM philosophies” OR “HRM policies” OR “HRM practices” OR “HR philosophies” OR “HR policies” OR “HR practices” OR “HRM systems” OR “HR syst*”. This search yielded 125 articles from the two databases, of which 25 were excluded as they were not peer-reviewed, written in English and/or empirical. The remaining 100 articles were reduced to 92 after 8 were removed as they did not study human resource management. After reading the abstracts and full texts of the remaining studies, we excluded 88 studies because they used the terms ‘policies’ and ‘practices’ interchangeably, rather than systematically differentiating between the two. As such, we had a final sample of 4 studies that explicitly studied two or more HRM abstraction levels.

Some of the studies that had met our selection criteria could have focused on multiple multilevel dimensions (e.g., studying both introduced HRM policies at the unit-level and experienced HRM practices at the employee-level). Indeed, 10 studies had been identified in more than one round and, after the duplicate entries were removed, our final sample consisted of 88 HRM studies that were multilevel in nature along at least one of our three multilevel cube dimensions. These 88 studies were analyzed by two researchers in terms of the organizational, internalization, and abstraction levels studied, and how each of the multilevel principles were applied.

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⁵ In the reference list, multilevel studies included in our sample are indicated by an asterisk.

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