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Putting The Individual And Context Back Into National Human Resource Development Research: A systematic review and research agenda

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Putting the individual and context back into national human resource development research: A systematic review and research agenda

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Abstract

Conceptualization of national human resource development (NHRD) emphasizes that it is an ongoing development process of the individual that is shaped by context. However, the extant literature has focused primarily on describing and evaluating NHRD policies and interventions in different countries with limited consideration of NHRD across the lifespan and the interaction of life stage with context. Using ecological systems theory (EST) and a lifespan development perspective (LDP), we present a systematic review of the NHRD literature based on 310 sources. We identify key themes and gaps in research across the lifespan and at distinct levels of the ecological system. We build on this review to suggest future research informed by both EST and an LDP. We propose a future research agenda focused on several key areas, including: the developing individual as the primary focus of NHRD; the dynamic relationship between NHRD microsystems and how this evolves over time; the exosystem and macrosystem, which provide the context of the NHRD development experience for the individual over their lifespan; and the imperatives of directing research attention to top-down and bottom-up influences within the ecological system. We also propose three methodological innovations to address many of the questions raised by our review, drawing on national archive databases, the use of historical methods and a focus on longitudinal data analysis. Finally, we highlight the practical implications of our analysis for ecosystem and microsystem NHRD actors.

INTRODUCTION

The research base concerning national human resource development (NHRD) has grown significantly during the past two decades (Garavan et al., 2018) and has an important presence across disciplines such as economics, vocational education and training (VET), labour studies and human resource development (HRD). As an area of

research investigation and policymaking, NHRD is concerned with the formulation and implementation of HRD systems, policies and practices at national level to address human development within the context of economic, cultural, societal and global development (Abadi et al., 2022). Its prominence has also risen on the agendas of governments and international development agencies, and there is a broad consensus that NHRD is critical for the

achievement of economic and social development outcomes (Byrd, 2018; Rana et al., 2017; Zarestky & Collins, 2017). In an era of globalization, human capital development, competitiveness and sustainability, critical questions about the evolving role of NHRD arise (Lee & Jacobs, 2021). Scholars have raised questions about the extent to which NHRD contributes to country competitiveness (Oh et al., 2013), the role that NHRD plays in the development of global sustainability (Ghosh, 2019) and the antecedents of NHRD outcomes (Oh et al., 2017). Although HRD researchers have offered partial answers to these questions, no systematic review (SR) exists that synthesizes research across the disciplines. The research on NHRD remains stuck in self-contained and self-referential silos (Barry et al., 2018), with limited or no attempts to integrate diverse perspectives.

A key aim of this paper is to highlight the benefits accruing from integrating different perspectives on NHRD. Following Locke and Golden-Biddle (1997), we provide a synthesized coherence across these perspectives by proposing a novel theoretical framework. The need to break the walls between research silos in business and management research has been widely observed (Block & Fisch, 2020). Efforts to synthesize NHRD research across a range of disciplines by means of an SR may help to tackle the range of complex problems presented under the label of NHRD (Okumus et al., 2018), as well as bring clearer understanding to a fragmented field of study. Well-conducted SRs can also lead to the development of a more robust theoretical framework, which considers multiple levels of analysis, context and time (Wen et al., 2021). For the purposes of this review, we define NHRD as 'any process or activity that, either initially or over the long term, has the potential to develop adults' work-based knowledge, expertise, productivity, and satisfaction, whether for personal or group/team gain, or for the benefit of an organization, community, nation, or ultimately, the whole of humanity' (McLean & McLean, 2001, p. 322).

Scholars across different disciplines including HRD (Alagaraja & Githens, 2016), labour studies (Barrett et al., 2013), VET (Fjellström, 2017) and economics (Fitzenberger & Volter, 2007) have studied the NHRD phenomenon, and individually these investigations provide important insights into NHRD as a concept. Beyond their interest in the NHRD phenomenon, these diverse literatures share both confidence in, and enthusiasm for, the effectiveness of NHRD. Yet the research base is both fragmented and limited in at least four ways.

First, scholars investigating NHRD have focused on a diverse set of policy interventions, including: education in response to NHRD gaps (Gedro & Hartman, 2015); the contribution of modern apprenticeships to national skill development (Greig, 2019); and the role of trade unions

in impacting the implementation of skills policies (Kamabayashi & Kato, 2020). However, we lack an understanding of the common characteristics of these policy interventions, the role of context in influencing them and their outcomes.

Second, research has not yet developed an integrated perspective on what drives NHRD, how NHRD is implemented and its outcomes (Garavan et al., 2018). Previous research primarily focuses on the policies and interventions themselves and has ignored exogenous factors that impact outcomes. This is surprising given that NHRD is embedded in a complex context consisting of micro-, meso- and macro-level influences.

Third, NHRD research has paid insufficient attention to the developing *individual*, their development journey over the lifespan and how this journey interacts with context. A lifespan development perspective (LDP) envisages that the developing individual will traverse various stages including early schooling, emerging adulthood and late adulthood for example (Murphy & Johnson, 2011), and these are associated with different contexts including family, workplace, education, community and country (Bronfenbrenner, 1994).

Fourth, NHRD research has not sufficiently engaged with *time*. As the definition of McLean and McLean (2001) suggests, NHRD and its outcomes are essentially a temporal process, and an understanding of its impacts requires the use of a temporal perspective. Therefore, to make progress in theoretically understanding NHRD requires consideration of the interplay of context and time.

We propose that ecological systems theory (EST) (Bronfenbrenner, 1977, 1979), integrated with an LDP (Baltes, 1987), provides an important framework to address the limitations outlined above. We maintain that this novel framework provides us with a means to make meaningful 'connections between works and investigative streams not typically cited together to suggest the existence of undeveloped research areas' within the field of NHRD (Locke & Golden-Biddle, 1997). We first argue that a dynamic ecological systems approach can provide a more comprehensive understanding of the antecedents, processes and outcomes of NHRD, accommodate investigation of multiple levels of analysis and incorporate time. Central to EST (Bronfenbrenner & Morris, 2006) is the notion that the development of people, which is a fundamental preoccupation of NHRD, is the product of interactions between the developing individual and the environment in which they are situated. It gives emphasis to the dynamic role of the person, the socio-economic context, individual agency and time, thus providing a robust framework to explain the interaction of the developing individual with context. However, while EST gives primacy to the individual at the centre of NHRD, it is less effective in helping us to understand the

developing individual and context across the lifespan (Rudolph, 2016). We therefore propose the integration of an LDP with ecological systems to illuminate NHRD across the lifespan as it interacts with context. The contexts of development will change as an individual develops, and each of these contexts is in turn impacted by historical change, social and cultural factors (Kerig, 2016).

The purpose of this paper is to provide an up-to-date review of NHRD research using the theoretical lenses of EST and an LDP and advance suggestions for future research. To accomplish this purpose, we followed an SR methodology approach and analysed 310 articles, book chapters, reports and books published from 1958 to 2022 (April). We make four contributions to the literature. First, our SR integrates the various streams of NHRD that have, to a significant extent, evolved separately and independently. We draw upon not only existing research within the HRD field but also interdisciplinary research from VET, economics and labour studies, and acknowledge that the literature on NHRD is far from unified. The different literatures operate as disciplinary silos, with limited evidence of cross-fertilization. Second, we incorporate an underutilized 'analytic platform' (Selsky & Parker, 2005) to evaluate existing research on NHRD. EST integrated with an LDP has the potential to first direct attention to the multiple levels of context that shape the outcomes of NHRD and second account for the developing individual across the lifespan. This is an important contribution because it brings to the fore the developing individual in a context which is lost in the current research base. Third, we provide a set of future research recommendations informed by our analyses of the current literature and driven by our two theoretical perspectives. The integration of EST and an LDP can offer management and HRD scholars alternative ways of researching NHRD by highlighting the complexity of NHRD and moving beyond the focus on policy interventions and programmes. Finally, we present a set of practice recommendations for HRD actors, which focus on evaluating context, policies, practices and individual characteristics.

INTEGRATING ECOLOGICAL SYSTEMS THEORY AND A LIFESPAN DEVELOPMENT PERSPECTIVE

In this review we first adopt EST (Bronfenbrenner, 1979; Lyons et al., 2019) because it emphasizes a holistic conception that integrates individual, psychological, socio-cultural and environmental dimensions to explain the development of individuals in the context of NHRD (Wilkinson, 2022). EST was originally proposed by Bron-

fenbrenner (1979), who conceptualized that individuals are developed within multiple levels of context. To date, EST has been used in disciplines including human resource management (HRM) and employee welfare (Cleveland et al., 2015), mentoring (Chandler et al., 2011), disability inclusion (Moore et al., 2020), inclusive organizations (Doughty & Moore, 2021) and maternal pre-natal mental health and employment (Wilkinson, 2022).

In the context of NHRD, EST can be used to understand the development of the individual 'in interaction with a multi-layered cultural context in a temporal way' (Wilkinson, 2022, p. 3). It first classifies the developing individual into force, resource and demand characteristics (Bronfenbrenner, 1979), which is conceptualized as the ontogenic system. It then conceptualizes the environment in which an individual develops into five ecological levels: microsystems or significant micro-settings of development, which are conceptualized to have the strongest impact; mesosystems that focus on how microsystems interact; the exosystem, conceptualized as indirect environments that surround the developing individual; and macrosystems consisting of society and chronosystems, which emphasize change over time (Bronfenbrenner, 1979). These five levels of the environment are highly inter-related and can be either facilitative or inhibitive when it comes to the developing individual (Bone, 2015). In later versions of the theory, Bronfenbrenner (1999) gave primacy to the nested nature of the five levels and their complex interplay (McLinden et al., 2016) and that over time change occurs in both the context and the individual (see Figure 1). Finally, the framework is not prescriptive, in that it does not suggest a particular configuration of dimensions of an ideal NHRD ecological system, but instead highlights the relevant factors and acknowledges the existence of multiple NHRD systems.

Applied to NHRD, key micro-settings will include the family, the workplace, educational and VET organizations, the community and peer supports. The mesosystem analyses how these interact with each other, for example, the interaction between the family and education institutions and interactions between education settings and the workplace. These interactions may facilitate or inhibit the effectiveness of NHRD interventions and policies. Both microsystems and mesosystems are in turn impacted by the exosystem, which in the context of NHRD includes several formal and informal institutions including NHRD legislative structures, NHRD implementation bodies and actors, and the practices that surround development. These components of the exosystem indirectly impact the developing individual and also shape the activities of each microsystem and relationships

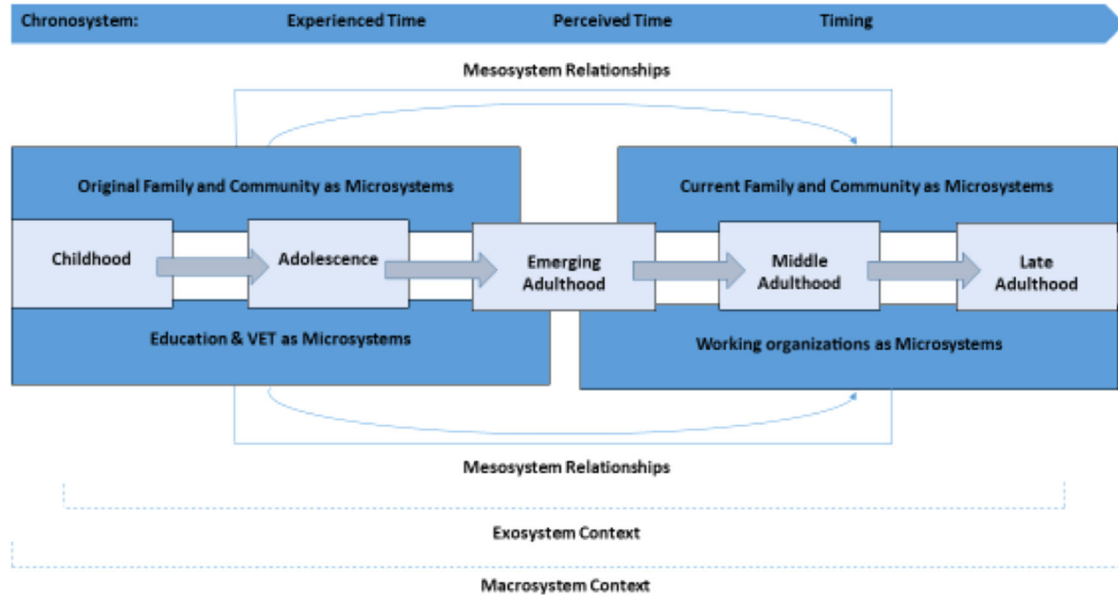


FIGURE 1 Integrating ecological systems and an LDP to conceptualize NHRD [Colour figure can be viewed at wileyonlinelibrary.com]

within the mesosystem. For example, changes in legislative structures and funding at the exosystem level will impact the functioning of microsystems, which in turn impacts the developing individual. In addition, ecosystem institutions such as trade unions can impact the types of NHRD provision and entry requirements, including the use of gender quotas and HRD opportunities for other minority groups. The macrosystem in the context of NHRD includes cultural systems such as beliefs about development, who should be developed, attitudes to development across the lifespan and approaches to development. These macrosystem changes can permeate the full set of levels down to the microsystem and mandate, for example, the types of policies that are developed by ecosystem institutions, the legislative supports for NHRD and ultimately the resource supports for different development micro-settings. The chronosystem envisages that interaction between levels of the ecological system will occur with regularity over extended periods and incorporate historical time, personal changes including skills and competency development, changing careers and working relationships. We therefore propose that EST combined with an LDP provides a fruitful framework to explore the developing individual in the context of NHRD.

The notion of the chronosystem and disruptions/changes in context and the person have strong parallels with the ideas that underpin an LDP (Rudolph, 2016). However, unlike EST, an LDP approach gives primacy to a 'lifespan process in which an individual's biological, cognitive and socioemotional changes occur in multiple contexts including families, schools, workplaces, counties and so on' (Liu et al., 2020, p. 3). The

LDP emphasizes a lifelong process of decline, growth and stability that is continuous (Davenport et al., 2022), whereas life-stage models emphasize discrete life stages in terms of that development process (Moersdorf et al., 2022). Key principles that underpin this perspective include: (1) development is conceptualized as a lifelong process where no age period is superior to another; (2) development as a process is considered multidirectional, both within and across domains; (3) development inherently involves both gains and losses; (4) the development process contains plasticity and is modifiable within persons; (5) development processes occur in a historical, social and cultural context; (6) the process of development is contingent on the interplay of both normative age- and history-graded influences, in addition to non-normative influences; and (7) development is best studied from multiple perspectives (Baltes, 1987). In this review we build on the continuity idea of the LDP but, to enhance its explanatory value in the context of NHRD, we identify discrete life stages in our framework.

The literature on HRD and development in general supports the notion of distinct development stages and that these vary across time and context (Liu et al., 2020). Development is an ongoing and lifespan process (Day, 2000), and its use in the context of NHRD brings the developing individual front and centre. It also points to the complex interaction between life stage and context, which has important implications for the microsystem within which the individual is developing—including family, the workplace, community and country (Bronfenbrenner, 1994). Therefore, integrating an LDP with EST brings to the fore a dynamic notion of NHRD that considers both

development stages and contexts, which to date is largely ignored in the literature.

The theoretical framework (Figure 1) has a dual purpose. First, it is utilized as a heuristic framework to organize the existing knowledge about NHRD as derived from the SR. However, second, it offers a novel means to depict the dynamic unfolding of the NHRD phenomenon over time (Cloutier & Langley, 2020). In this regard, it can be viewed as a 'process model' that reveals the mechanisms by which events and contexts and NHRD play out over time (Cornelissen, 2017). There have been numerous calls for scholars to move beyond traditional modes of theorizing in organization and management studies as they fail to pay particular attention to temporality and change over time (Cloutier & Langley, 2020; Delbridge & Fiss, 2013; Tsoukas, 2017). Process theoretical contributions are thus advocated as a strong viable alternative (Cornelissen, 2017) to highlight under-researched areas within NHRD and identify those with significant potential for future research.

METHOD

We used an SR as the methodology for this study and followed established SR procedures as established by Tranfield et al. (2003). We progressed through four steps: (1) formulation of the topic; (2) development of a review protocol; (3) data collection; and (4) data analysis and synthesis.

Step 1: Topic formulation

We began our SR by identifying the key objectives that would guide the review. Our first objective was to synthesize heterogeneous research perspectives on NHRD. Our second objective was to describe key trends and developments and discuss challenges and opportunities within and across diverse perspectives on NHRD. Our third objective was to propose a theoretical framework to promote a multi-level and temporal approach to the study of NHRD, paying particular attention to the developing individual. Our final objective was to offer guidelines to NHRD actors around policy development and interventions/approaches to realize the benefits from NHRD.

Step 2: Review protocol

In our introduction to the paper, we defined NHRD using the universally accepted and most frequently cited article of McLean and McLean (2001). However, this definition

presented us with challenges because of our concern with capturing the full breadth of literature on NHRD. Articles that address issues highlighted in the McLean and McLean (2001) definition appear in disciplines as diverse as HRD, VET, HRM, labour economics, psychology and management. Therefore, at the outset the authors conducted a review of contributions to develop parameters that would inform the search process.

For the purpose of our search we developed an aggregate conceptualization of NHRD consisting of four elements: (1) it is multi-level, concerned with the development of human capability, individuals, organizations, communities, regions and nations at a global level; (2) its goals are the development of work, community, society, culture and politically based skills and expertise; (3) it utilizes multiple policies, strategies and interventions including training, education, vocational development, competence-based learning experiences and empowerment learning strategies; (4) it leads to multiple individual and organizational performance outcomes, enhanced standards of living and quality of life, increased sustainability and the betterment of nations, countries and the world at large (Harbison & Myers, 1964; Lynham & Cunningham, 2006; Wang & McLean, 2007). We used this conceptualization to formulate our search terms, which included: 'NHRD' or 'VET' or 'macro talent management' or 'national human capital development' or 'national training systems' or 'continuing education and training' or 'international human resource development'. We initially used the search term NHRD however, given that it is used in different guises, we used this set of search strings to see the extent to which the concept has been applied in other disciplines. We followed an approach like that of Hillmann and Guenther (2021), who encountered a similar challenge when systematically analysing the literature on organizational resilience, because it appeared in a disparate set of literatures that used different terms.

Step 3: Data collection

To generate our sample of publications for the SR, we confined our sources to: (a) peer-reviewed articles, as these have the greatest impact in the field (Podsakoff et al., 2005); (b) book chapters in peer-reviewed books (Nolan & Garavan, 2016); and (c) reports published by the OECD (Organisation for Economic Co-operation and Development) and the ILO (International Labour Organization). The baseline year for our SR was 1958, because it marked the publication of Ginzberg's (1958) seminal work *Human Resources: The Wealth of a Nation*. Our cut-off point was end of April 2002. We performed our initial search using ABI/INFORM, Scopus, Science Direct, Business Source Premier, Business

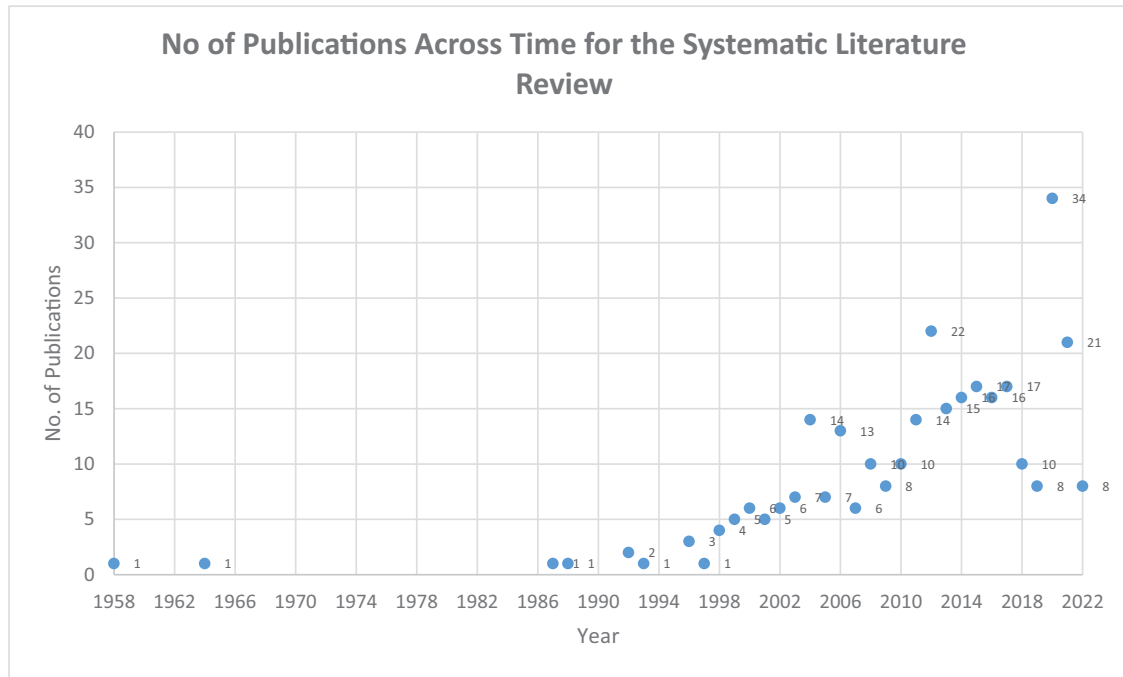


FIGURE 2 Systematic review (1958–2022) [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1111/ijmr.12308)]

Source Complete, PsycINFO, PsychARTICLES and Web of Science.

The use of these keywords generated 4255 publications for potential inclusion in the SR. Two members of the research team conducted this initial search. Two other authors then conducted the same search for relevant publications using Google Scholar. The research team compared their results to check for any publications relevant to the review that were not identified in the initial search, as well as to a check for duplication. The research team also undertook a narrative check to supplement our search strategy and to serve as a crosscheck of the quality of the SR process (Thorpe et al., 2005). This involved consultation about articles, book chapters and reports known to be relevant that did not appear in the search results, which led to the identification of 50 additional publications. This process helped to reduce any risk that material relevant to the review could accidentally be omitted. Figure 2 shows the growth in publications since 1958 and Figure 3 presents the key steps in generating our sample.

We then started the process of reducing our initial sample of publications. Consistent with Petticrew and Roberts (2006), we reviewed the list and eliminated duplications, newspaper and magazine articles (Cohen's kappa (CK) = 0.956), significantly reducing our sample to 2614 publications. We then reviewed the abstract of each article and the introduction to book chapters and publications to identify whether they focused on NHRD and related constructs. We frequently found articles, chapters and reports

where the title suggested that it was about NHRD, but it turned out to be about organizational training and development processes. This reduced our sample further to 1425 publications (CK = 0.931). We then made the decision to exclude conference papers, working papers, editorials, introductions to special issues, book reviews and dissertations. In making these exclusion decisions, we followed the approach taken by Pinto (2019), who excluded working and conference papers. We also made the decision to exclude dissertations because, as pointed out by Adams et al. (2017), these can lack bibliographic control. Moreover, when we reviewed the dissertations that could potentially be included, we found that often there was a corresponding peer-reviewed journal article that was included in our sample. This process reduced our sample further to 540 publications (CK = 0.841).

We then engaged with issues related to the inclusion or exclusion of grey literature. The field is somewhat unique in that there are several global organizations that have published reports on dimensions of NHRD. Metcalfe and Rees (2005) make the argument that these bodies both assist and influence national governments with policy development and the establishment of national NHRD frameworks. The inclusion of these reports is also useful because it addresses the relative shortage of empirical work on NHRD and contributes to the objectives of our SR (Adams et al., 2016; Rabetino et al., 2020). Following Adams et al. (2017), these sources were selected based on reputation, currency and authority. Scholars have also pointed out the prob-

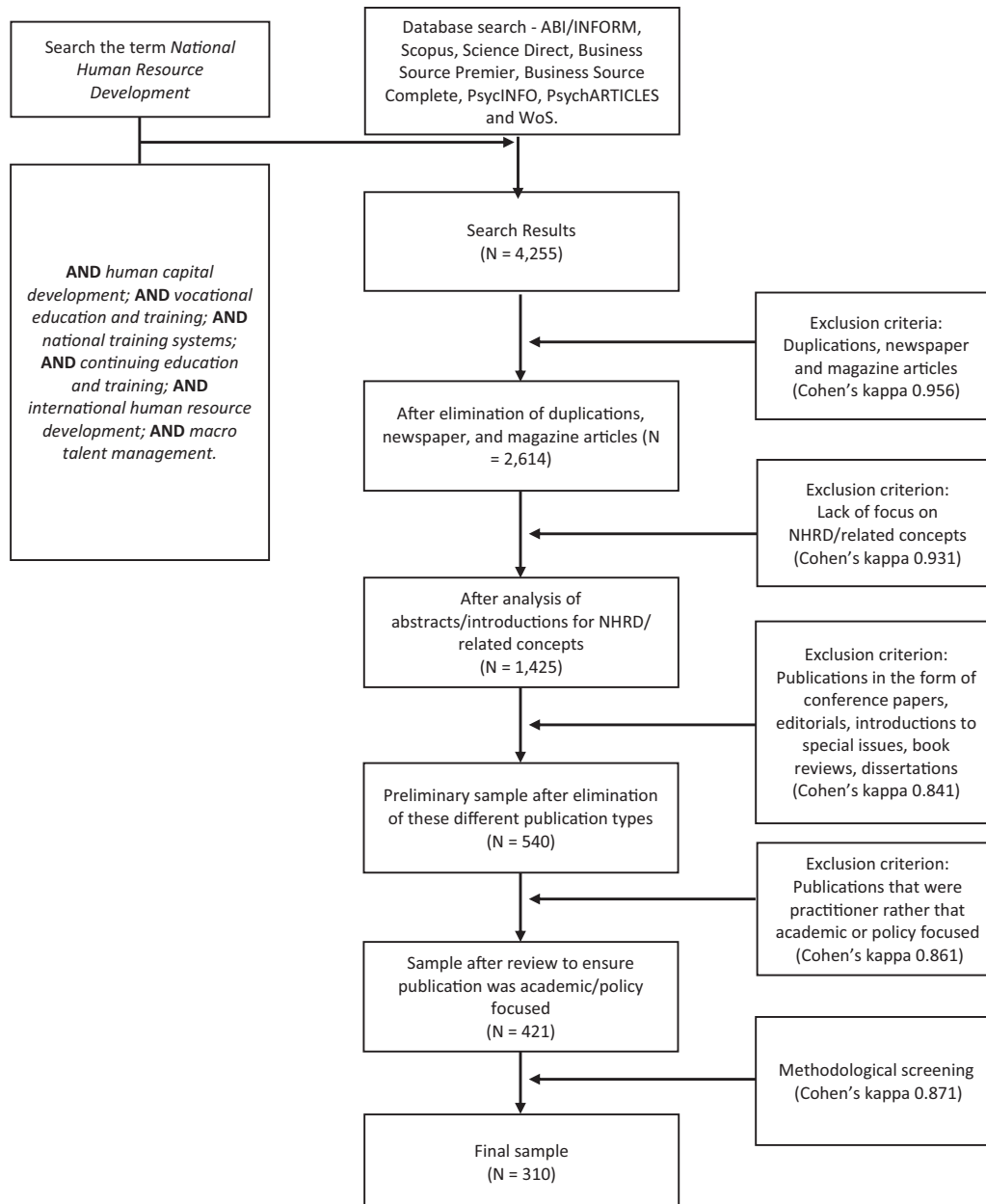


FIGURE 3 Steps in the review process

lems associated with a sole reliance on academic literature (Mingers & Willmott, 2013) and the potential rigidity and bureaucratization associated with SRs (Bell et al., 2019). Therefore, we adopted a pragmatic approach by supplementing our use of academic literature with a range of grey literature. We did, however, make the decision to exclude practitioner publications – which we defined as those that promoted advice and guidelines – and this reduced the sample of publications to 421 (CK = 0.861).

We then engaged in a process of methodological screening, which involved the review of empirical articles and reports to establish their relevance and quality (Petti-

crew & Roberts, 2006). We excluded empirical articles where the methodology was insufficiently described or where the data analysis was inadequate or insufficiently described. When conducting the methodological analysis, we only applied this to empirical articles and not to reports or book chapters. Many of the book chapters did not report empirical work but consisted of reviews or commentaries, and the reports in some cases did not include chapters on methodology. This methodological screening reduced our sample to 310 publications (CK = 0.871), and this number did not change after a final review of each article.

Step 4: Data analysis and synthesis

Publications included in the SR were subjected to the structured content analysis approach proposed by Mayring (2014). This allowed us to conduct a systematic and theory-guided synthesis of the substantial number of publications, and is particularly useful in classifying material into unifying categories against an established framework. To undertake the coding process, we followed several steps. First, we developed a category system consistent with our conceptual framework—EST. This theory specified six ecological systems described in Table 1, which was developed by drawing on prior conceptual work that utilized an ecological systems perspective (Chandler et al., 2011; Crawford et al., 2019). We started out with a broad description of each level of the framework and the types of issues that are typically included. Next, we coded articles in accordance with the predetermined categories. Based on this initial analysis we revised our previously developed classification system. We then coded the articles again according to this revised category system; finally, we interpreted and discussed the results. We added a sixth step where we reviewed the research method used in the case of empirical studies.

Upon conducting a trial run through of 15% of the publications, we made refinements to the ontogenic category by more clearly sub-dividing into demand, resource and force characteristics. After applying all our categories and sub-categories to approximately half of the publications, we decided to complete a fine-grained analysis of the macrosystem category to develop clear sub-categories: globalization, formal institutions, informal institutions, national culture and values, and traditions around development. The chronosystem dimensions proved the most difficult to code, however through the process of analysis and discussion we identified three sub-categories of change linked to individual change, economic change and societal change. Having resolved these issues, we reviewed the publications according to the final category system.

We used a highly iterative process involving re-examining publications and discussion, until we had agreement amongst all authors. Where points of disagreement arose, we resolved them through frequent discussion between the lead researcher and other members of the research team. On several occasions, these discussions resulted in the addition of new codes to the categorization grid. At the end of the data analysis process, we calculated the level of inter-rater agreement using Cohen's kappa coefficient on a sample of 60% of the analysed articles. We achieved a kappa coefficient of 0.883, which indicates a high level of inter-rater agreement.

FINDINGS

In the following sections, we synthesize the findings of our review and present the findings at each level of the ecological system. We focus on the main findings of each category and sub-category and highlight key gaps and opportunities for research. Descriptively, we noted whether each publication provided a definition of NHRD or a related term and established that slightly more than half of the articles offered definitions. Our theoretical framework lends itself to organizing the literature into the prescribed levels, but it does not capture all the nuances and detail found in each study. We acknowledge that our categorization may have forced a structure on studies not intended by the authors, however we argue that it represents a useful means of synthesizing the research across multiple levels. We identify the percentage of articles that discussed each level; however, this does not add up to 100% given that some articles addressed more than one level of the framework.

The ontogenic (individual) level

The ontogenic level of EST emphasizes individual characteristics and focuses on age, a central concern of the LDP. EST takes account of a broader range of individual characteristics than the LDP, yet the literature does not engage with the broad range of ontogenic characteristics and there is a very particular gap when it comes to age. For example, 26% of articles explicitly address ontogenic factors, with significant imbalances in what was investigated. We noted a particular focus on demand ontogenic characteristics compared to resource and force characteristics. Demand characteristics such as gender, age, race, ethnicity and emigrant status were studied in terms of their role and impact within NHRD, but not in an intersectional way (e.g. Greig, 2019; Ibararán et al., 2019). Where age is the focus of studies, the emphasis in NHRD research is on younger rather than older adults. EST has as its core idea the direct interaction of ontogenic characteristics with proximal contexts such as microsystems and mesosystems, yet this dimension of the theory is not explored in the literature. These interactions would provide us with important insights concerning how and when proximal contexts shape the development of individuals in the case of NHRD. There are some studies that potentially move in this direction and they highlight the potential for utilizing EST. Examples include the role of age and human capital variables in impacting access to state training opportunities (Anikin, 2017) and the decision to pursue self-employment, as well as the role of HRD in helping the establishment of micro-enterprises (Bharti, 2014; Khan & Ali, 2014). In the context

TABLE 1 Conceptual framework, current insights and EST/LDP informed research agenda

Level of ecological ecosystem	Focus	Indicative factors	What we currently know about each dimension of NHRD ecological system	Utilizing EST and LDP to expand research on NHRD
Individual	<ul style="list-style-type: none"> • Characteristics of individuals (ontogenic) 	<ul style="list-style-type: none"> • Force characteristics such as motivation and agency • Demand characteristics such as demographic factors • Resource characteristics such as skills and abilities • Age/life stage characteristics 	<ul style="list-style-type: none"> • Age has not featured prominently in understanding NHRD policy and practices • Research has studied a relatively narrow set of ontogenic characteristics with a primary focus on human capital characteristics and gender 	<ul style="list-style-type: none"> • Investigate how ontogenic characteristics of individuals change with age and their impact on NHRD • The interactions of age with other ontogenic characteristics using an intersectional approach • The impact of ontogenic factors in shaping and influencing microsystem, mesosystem and exosystem dimensions of the NHRD ecosystem
Microsystem	<ul style="list-style-type: none"> • Home–family • Education and training • Work micro-setting • Peer/community 	<ul style="list-style-type: none"> • Family role; family support; household finances; involvement of extended family; family education level • Training and development support; NHRD programmes apprenticeships, funding and resourcing or HRD • Work experience arrangements; company funding for NHRD; resource such as skills and competencies; HR support for NHRD • Peer support for NHRD; community level support initiatives 	<ul style="list-style-type: none"> • Family as a microsystem is under-appreciated and under-researched in the current NHRD research • The characteristics of education and training micro-settings and their link to outcomes is given significant prominence in the literature • The workplace as a microsystem has received some attention in the current literature but primarily in a descriptive way. • Impacts of peers and community experiences on NHRD outcomes as a social microsystem is under-appreciated while acknowledged as important 	<ul style="list-style-type: none"> • The role and contribution of the home–family as a microsystem in contributing to NHRD and its outcomes as a key development microsystem • Develop insights into the resource components of this microsystem and its impacts on NHRD outcomes • Understand the resource components of the workplace as a microsystem and its relative effectiveness in context of NHRD outcomes • Brings to the fore the notion of social microsystems and their impact in terms of peer support and developmental relationships
Mesosystem	<ul style="list-style-type: none"> • Interactions between microsystems 	<ul style="list-style-type: none"> • Alignment of development goals and priorities; relationships between microsystems; communications processes; synergies and shared resources 	<ul style="list-style-type: none"> • The value of communication between NHRD micro-settings for alignment of NHRD goals 	<ul style="list-style-type: none"> • Highlights the importance of alignment between microsystems and the role of multiple microsystems in the development of individuals • Emphasizes the role that the mesosystem plays in transmitting and reinforcing cultural value in respect of age

(Continues)

TABLE 1 (Continued)

Level of ecological ecosystem	Focus	Indicative factors	What we currently know about each dimension of NHRD ecological system	Utilizing EST and LDP to expand research on NHRD
Exosystem	<ul style="list-style-type: none"> Social structures 	<ul style="list-style-type: none"> Legislative regimes for NHRD; governance regimes for NHRD; NHRD policy and funding; trade unions and their power; specialist agencies and charities; NGOs 	<ul style="list-style-type: none"> The impact of mesosystem actors in influencing NHRD policy The role of national NHRD legislation and policy on outcomes Influence of third-sector institutions on access to NHRD 	<ul style="list-style-type: none"> Emphasizes the role of the exosystem in translating mesosystem cultural values and beliefs and their impact on age-sensitive NHRD Broadening our understanding of the mesosystem actors that are relevant in the context of NHRD to include the media, trade unions and voluntary organizations
Macrosystem	<ul style="list-style-type: none"> Society/culture 	<ul style="list-style-type: none"> Geography; values around development; gender issues and NHRD; values around how NHRD is implemented 	<ul style="list-style-type: none"> The importance of both formal and informal institutions in the macrosystem in impacting NHRD Descriptive analysis of the role of macro-level factors in impacting NHRD 	<ul style="list-style-type: none"> Broadening our insights concerning the content of the macrosystem to include forces of globalization, population trends and migration Highlighting that the macrosystem reinforces values related to age and opportunities for development
Chronosystem	<ul style="list-style-type: none"> Temporality (past, present and future) 	<ul style="list-style-type: none"> Historical time; changing personal circumstances, career changes, relationships over time Person related time including changes in work values, life circumstance and career goals 	<ul style="list-style-type: none"> Impact of change in individuals for NHRD Impacts of major disruptions and evidence on NHRD at a particular point in time 	<ul style="list-style-type: none"> Brings time front and centre in understanding the processes and outcomes of NHRD Highlights multiple dimensions of time including historical, perceived, and experienced time as important to studying NHRD
Multi-level Interactions	<ul style="list-style-type: none"> Top-down and bottom-up relationships between levels over time 	<ul style="list-style-type: none"> Changes in cultural values and impact on participation in NHRD; bottom-up innovations that impact national NHRD policy; ecosystem influences on microsystem functioning 	<ul style="list-style-type: none"> Top-down macrosystem impacts on ecosystem policymaking on NHRD provision in terms of policies, structures and resources Exosystem policies shape resources available at microsystems level and relationships between microsystems 	<ul style="list-style-type: none"> Top-down influences of macrosystem in influencing age-related beliefs about NHRD and shaping the actions of the exosystem Lower levels of the ecological system such as developing individuals, microsystems and mesosystems can shape actions and policy at the exosystem level

of an LDP, these studies provide very few insights because they do not capture the variability associated with aging and that people will develop 'idiosyncratic profiles of abilities, knowledge, and expertise throughout the lifespan associated with their experiences' (Davenport et al., 2022, p. 5). This is a significant gap because we lack insights into NHRD outcomes and the age relationship.

EST conceptualizes gender as a demand characteristic and proposes that it will have salience in explaining NHRD development processes, access to NHRD and its outcomes. A small number of studies point to the potential of EST in the case of gender. For example, Metcalfe (2011a, 2011b) investigated the participation of females in development programmes in the Arab Gulf States. Shim et al. (2015a) investigated how gender impacts the employment opportunities derived from post-vocational training programmes. Other studies have given prominence to gender as a demand characteristic and investigated the role of women in community development interventions in an Islamic context (Budhwani & McLean, 2012), and the learning needs of women who work within the formal economy (Razvi & Roth, 2010). Both EST and an LDP envisage that key demand characteristics will interact with other demand characteristics including race, ethnicity, social orientation, social class marginalization and emigrant status. Yet efforts to explore these research opportunities in the NHRD literature are embryonic.

There was a lack of attention given to force characteristics as a significant future research opportunity. EST also gives prominence to force characteristics which are conceptualized as motivational in nature and which have salience in explaining key issues such as learning motivation, and confidence to utilize the outcomes of NHRD. We find evidence of research that aligns with the EST notion of force characteristics. For example, researchers have investigated motivation to participate in NHRD (Cooke et al., 2011); however, there is a paucity of research on other force characteristics including learning orientation, performance orientation, career motivation, self-efficacy and career satisfaction. Our overall assessment of NHRD research at the ontogenic level of EST is that the key ideas that underpin the framework have not been explored and where they have been explored, this has occurred in isolation with insufficient attention paid to the full range of ontogenic factors. In addition, the interaction of these characteristics with dimensions of proximal context are underexplored. Very little research has operationalized the ideas that underpin an LDP, so we cannot reach conclusions concerning the role of age in explaining NHRD outcomes.

The microsystem

EST proposes the microsystem as the most proximal aspect of context that impacts the developing individual (Bronfenbrenner & Evans, 2000). As the most proximal setting it will play a central role in explaining the types of outcomes that are derived from NHRD. To date, 25% of papers explicitly investigated microsystem dimensions. EST gives prominence to dimensions of the microsystem, including the variety of context, such as family, schools, universities, VET organizations and non-governmental organizations (NGOs). Second, it highlights the primacy of social microsystems such as peer groups and the community, and third it focuses on the types of development resources that are found within microsystems (Bronfenbrenner & Morris, 2006). The literature reveals a fragmented examination of these microsystem dimensions, with primacy given to contexts and some attention to resources. For example, Khan and Ali (2014) and Mahmud et al. (2014) both investigated the role of NHRD within two microsystem contexts, both involving poor rural districts of Bangladesh. Social microsystems have also received attention, including the city (Ahn & McLean, 2006), the Ismaili Muslim Community (Budhwani & McLean, 2012) and microenterprises in India (Bharti, 2014). Overall, social microsystems are less well understood (Cassarino & Murphy, 2018), with significant gaps related to the roles of family, peers and informal developmental relationships.

NHRD researchers have given less attention to the resources dimension of microsystems, with several more recent studies bringing this dimension into focus. Examples of microsystem resource investigated include: volunteers as development resources (Budhwani & McLean, 2012); senior managers in Omani organizations (Budhwar et al., 2002); private vocational education providers (Wilkins, 2002); national apprenticeship system resources (Greig, 2019); lifelong-learning city programmes promoting community development (Byun & Ryu, 2012); and NGOs on the front line addressing HIV/AIDS issues (Johnson et al., 2010). The role of HR professionals is examined by Mamman et al. (2018) in the context of Sub-Saharan Africa. There is an absence of research focusing on the relationship between age and the importance of different microsystem context and resources. An LDP highlighted the potential value of microsystems such as education, informal peer relationships, developmental relationships and the family in contributing to understanding age-related NHRD outcomes (Toossi & Torpey, 2017). The interaction of age with multiple microsystem contexts is a prime insight suggested by EST.

The mesosystem

NHRD does not occur within one microsystem but is manifest across microsystems, thus bringing to the fore the notion of mesosystems which highlight relationships between microsystems (Snyder & Duchscher, 2022). Many NHRD processes within countries bring to the fore multiple microsystems, yet the relationship between microsystems, which is central to EST, remains under-explored, with only 4% of articles explicitly investigating or theorizing mesosystems. The limited research to date does highlight that individuals who participate in NHRD will interact with many microsystems, that these microsystems interact with each other, that these combinations are important in interacting with LDP issues focused on age norms and interventions that are designed to address age-related issues. The interactions of different microsystems are highlighted by Chai et al. (2018), where individuals participated in state training and workplace settings. Other research emphasizes interactions between training agencies and employers (Prendergast, 2016) and between multinational enterprises (MNEs) when it comes to the poaching of skilled labour (Sheldon & Li, 2013).

EST emphasizes the need to investigate relationships and interactions between the full range of microsystems that can potentially play a role in NHRD (Rosa & Tudge, 2013). Where there are constant and fruitful interactions between microsystems, positive NHRD outcomes can be secured or achieved. The NHRD literature is significantly deficient in respect of the investigation of microsystems, with insufficient attention given to the role of the family in interactions with other microsystems, the importance of peers as a social microsystem and their interaction with education and training microsystems. We can, however, glean some insights concerning communication between different microsystems. Lee (2004) highlighted the development synergies from local microsystem communication in the context of NHRD in the United Kingdom. In a similar vein, Shim et al. (2015b) investigated relationships between learners, trainers and development supports and found that ineffective communication between microsystems was counterproductive in terms of development outcomes. Smith et al. (2006) emphasized the advantages of interaction between employers and national training agencies in delivering training to enhance workforce human capital. Prendergast (2016) examined the interactions between different microsystems in the context of developing non-Irish workers. Finally, Mellahi (2000) investigated interactions between microsystems in the delivery of vocational development in Saudi Arabia.

There is a significant blind spot when it comes to the integration of an LDP into understanding the effectiveness of interactions of microsystems in impacting NHRD

outcomes. The existing gaps concern how and when cultural norms within microsystems related to younger and older individuals impact NHRD outcomes, access to development opportunities and how microsystems and their interactions reflect societal cultural norms and values around age. A combination of EST and an LDP has the potential to shed light on how and when NHRD can promote inclusive or non-inclusive age norms, the salience of microsystem interactions with each other in shaping opportunities for NHRD and in explaining the role of different actors in influencing an age-sensitive approach to NHRD policy and practice.

The exosystem

EST conceptualizes the exosystem to include multiple social structures, institutions and settings that the developing individual is not directly a part of, yet is influenced indiscreetly by what happens (Bronfenbrenner, 1979). The exosystem in the context of NHRD is where much of the policymaking occurs, in addition to the allocation of resources at the level of the country or state. Actions taken at this level carry important implications for the implementation of policies informed by an LDP. To date, NHRD researchers have engaged with aspects of the exosystem (55% of articles), yet little of it is informed by lifespan development considerations. Research on the exosystem is primarily descriptive where it does incorporate LDP issues. For instance, Lalioti (2019) investigated apprenticeship initiatives for different age groups in Greece and highlighted significant policy shortcomings and the lack of strong institutional support. Similarly, Lee (2004) explored NHRD in the United Kingdom and specifically initiatives to foster the development of national workforce competencies for different age categories and the use of less traditional types of provision. There was a strong emphasis on standardization but also on the provision of resources to address traditionally difficult-to-reach recipients of NHRD, such as older workers. Mellahi (2000) examined key factors inhibiting the effectiveness of VET in Saudi Arabia and India, despite the considerable efforts of the Saudi government to enhance and expand the VET system. Similarly, India has experienced problems due to labour market dys-functionalities. Cox et al. (2006) studied Morocco's NHRD strategy, which they identified as having played a vital role in the success of reforms intended to promote both human rights and economic development.

The literature does provide insights concerning the content of the exosystem in the context of NHRD. These include the formulation of national training policies, the allocation of funding, governance of NHRD within countries and the role of NHRD standards. For example,

Marinaccio (2018) investigated training policies in Austrian and Chinese forestry administration, focusing on institutional differences and how they impact national training policies, whereas Yang et al. (2004) examined exosystem factors in China and highlighted a number of important components—including a national top-down policy approach from central to local government, a strong emphasis on the provision of resources for both social and moral development and a balance between policy and strategy. Gedro and Hartman (2015) analysed the disparity between Haiti's educational standards and the lack of a well-articulated and executed NHRD strategy. Similarly, Ayentimi et al. (2018) evaluated the education and training system in Ghana, with a particular focus on apprenticeship. They identified several constraints that are impeding the development of high-level technical and vocational skills that support human capital development, including training mismatch, low literacy levels, lack of regulations and adequate apprenticeship programmes, poor quality of training, limited investment in education and training for older employees and outdated training programmes. Finally, Osman-Gani and Tan (1998) explored the types of HRD strategies and resource commitments in Singapore. They found that three characteristics of the exosystem were important: (1) a government commitment to NHRD for all age categories; (2) a network of agencies and a commitment to tripartism; and (3) economic stability.

We found some evidence of researchers focusing on how components of the exosystem interact with lower levels of the EST framework. For example, Arthur-Mensah and Alagaraja (2018) reviewed the national strategy for human development in Ghana and assessed the efficacy of existing long-range initiatives and policies. They focused on interactions between the exosystem and ontogenic levels, with particular attention on how high unemployment among youths and young adults could be combatted through HRD, thereby meeting the overall socio-economic goals of the country. Arubayi and Akobo (2018) gave prominence to interactions between exosystem characteristics and lower levels of the EST framework in suggesting that efforts to improve youth unemployment and equip young people with relevant skills to enter or compete in the labour market in Nigeria have been largely unsuccessful, because they did not engage with ontogenic characteristics and customize NHRD provision.

NHRD researchers have not engaged with the full range of exosystem institutions and structures envisaged by EST, nor have they explained how and when they indirectly impact mesosystem, microsystem and ontogenic levels. In terms of institutions, there are gaps in our knowledge concerning the role of national education structures and national VET organizations, the role of professional bodies and the employment conditions and status of devel-

opers. The utilization of an LDP in integration with the exosystem could prove fruitful in understanding the role of these exosystem actors in influencing and making decisions about development needs and priorities for different age groups (Veth et al., 2019), the links between NHRD exosystem actors' decision-making and behaviour, and population ageing and the role that LDP-informed policy-making has on the allocation of financial resources. The conjunction of both EST and an LDP in the context of the exosystem potentially opens many research avenues around age-informed NHRD policymaking.

The macrosystem

EST gives salience to the overarching role of the macrosystem and the prominence of society and culture in shaping NHRD and age-focused NHRD policies (Bronfenbrenner, 1979). Macrosystems will carry important overarching belief systems about the role of development and age-related development, including rules, culture, social norms, laws and ideology (Rosa & Tudge, 2013). The macrosystem has largely received attention at the descriptive level, with 23% of articles theorizing or investigating the macrosystem. Informal dimensions of the macrosystem focus on culture and stereotypes (Peng et al., 2009), and these dimensions have received some attention in the literature. For example, Alagaraja and Wang (2012) theorized the importance of the socio-cultural context in NHRD model building. Mellahi (2000) highlighted the complexity of societal values in inhibiting NHRD development and the need to change societal values towards females. Similarly, Metcalfe (2011a, 2011b) investigated the role of societal values in the United Arab Emirates, Bahrain and Saudi Arabia, and highlighted the need for social change where Arab women are supported to develop feminist agency and create their own version of Islamic feminism. Likewise, Razvi and Roth (2010) emphasized how diverse cultural values present complex issues for the participation of women in the labour market. The literature is largely silent on LDP issues, with little attention given to age-related values in national culture, negative bias towards older adults, role of social inequalities (Alagaraja & Wang, 2012) and the salience of national cultural values (Bartlett & Rodgers, 2004; Lutta-Mukhebi, 2004).

EST also gives prominence to the formal dimension of the macrosystem, but there is little in the way of links with LDP issues. For example, EST argues for the role of formal institutions in articulating codified and explicit rules and standards that provide important behavioural guidelines within society and the importance of regulatory and political processes in this context. We glean some insight for NHRD research in this context that provides a platform

for future research. For example, Asrar-ul-Haq (2015) highlighted the negative impact of these formal institutions on Pakistan, including lack of government and political support for the development of the private sector and low concern for global employability. Rao and Varghese (2009) emphasized the key role of political leadership in India and the belief that human capital development contributes to economic development. Oh et al. (2013) claimed that countries like Switzerland and Sweden have a particularly strong political commitment to NHRD, and Modisane (2015) examined the role of political will in Botswana that sought to be an educational hub for the South African Development Community Region.

EST has potential to inform our understanding of the role of macro-level phenomenon in shaping how NHRD is underattended in different countries. Central to EST is the notion that the macrosystem has a downward influence on all other levels of the ecosystem, and is therefore an important construct in informing research on phenomena such as national culture, national, transnational and global institutions, and forces for globalization. The integration of the macrosystem with an LDP points to the potential to investigate how societal values and norms interact with age, and how they differ across cultures in shaping NHRD. Their integration can also help researchers to shed light on differences in age-related norms across countries, the role of age stigma and its influence on NHRD actor decision-making, and the existence of prejudice and unfair discrimination in cultures and their impacts across the lifespan in NHRD policymaking. There is also scope to expand conceptualizations of the macrosystem in the context of NHRD, to consider the role of globalization, the global business environment and the impacts of migration and emigration flows and global labour market conditions on age-related issues. The macrosystem concept is sufficiently broad in its scope to incorporate these dimensions.

The chronosystem

The chronosystem incorporates aspects of time and history, and can be external (e.g. changes in the nature of work, global economic conditions) or internal (ageing, changing priorities and personal values). The internal dimension is aligned with the key principles of the LDP. To date, NHRD researchers have given this issue little attention, with only 14% of articles explicitly investigating the chronosystem. The integration of an LDP with the chronosystem concept of EST makes investigation of time a major research priority. We found examples of research that considered the time issue. For example, Ibarrarán et al. (2019) took a time dimension to investigate the long-term effects of youth training programmes, and several

researchers have investigated NHRD issues in the context of economic crisis and downturns (Lalioti, 2019; Pilz, 2017) but not in terms of how they impact development opportunities and participation for different age groups. Research has also sought to consider NHRD issues in the context of transitioning societies (McLean, 2006; Paprock et al., 2006) and poverty reduction (Khan & Ali, 2014).

The integration of EST and the chronosystem with an LDP provides an interesting lens to identify gaps in the current literature. It highlights issues concerning how changing societal values impact participation in NHRD by different age categories, how biases and stereotypes in respect of aging are changing and their impact on NHRD provision, the role of generational differences and how they influence NHRD policy and practice, and the impact of changing life circumstances on NHRD policy, delivery and effectiveness.

FUTURE RESEARCH AGENDA AND A METHODOLOGICAL WAY FORWARD

In Table 1 we summarized what we know about current approaches to researching NHRD and highlighted the potential impact of utilizing EST integrated with an LDP. In this section we discuss novel research questions in the context of NHRD that are linked to Table 1. Table 2 identifies the key dimensions of EST and LSP as applied to future NHRD research endeavours. It serves as an important means to emphasize how these combined theoretical approaches allow us to capture heretofore unanswered questions about NHRD and propose a future research agenda.

The individual experiencing NHRD through EST and LDP lens

We proposed in our introduction that the developing individual has in many ways got lost in NHRD research, with the focus more on describing interventions, programmes, policy initiatives and institutions with responsibility for NHRD. Utilizing EST and the ontogenic level in integration with an LDP brings the developing individual to the core of NHRD research and points to important and as yet unanswered questions. First, we need to focus on the full spectrum of developing individuals and not solely on adults (emerging and middle), who are the major focus of existing research. NHRD research has largely ignored the childhood and adolescence stages and the development issues that arise in in the context of NHRD. We see a similar gap in respect of late adulthood, which is interesting given that many individuals are now working well into their seventies. An LDP suggests scope to consider gains

TABLE 2 EST and a lifespan development perspective—implications for NHRD research

Dimensions	Ecological systems theory and NHRD	A lifespan development perspective and NHRD
Context	<p>Key Idea: Explicitly acknowledges that NHRD is contextual and that it is shaped by multiple environments</p> <p>Research Implications: Account for context in researching NHRD; specify the context with precision</p>	<p>Key Idea: Implicit recognition of the role of context shaping NHRD</p> <p>Research Implications: Explore dimensions of context that impact aging and development over time</p>
Levels of analysis	<p>Key Idea: Specifies multiple levels of the environment that shape NHRD and labels these as microsystems, mesosystems, ecosystems and macrosystems</p> <p>Research Implications: Research the multiple context that directly and indirectly shapes NHRD processes and outcomes; account for top-down and bottom-up contextual influences on NHRD</p>	<p>Key Idea: This theory is silent concerning the levels of analysis used to understand NHRD</p> <p>Research Implications: Acknowledge that development processes over time are shaped by multiple levels of the environment</p>
Time and temporality	<p>Key Idea: Gives specific emphasis to the issue of time through the chronosystem concept and advocates three notions of time including experienced time, perceived time and timing</p> <p>Research Implications: Study NHRD longitudinally and use historical approaches to capture change over time</p>	<p>Key Idea: Emphasizes experienced time and that development is continuous throughout the lifespan</p> <p>Research Implications: NHRD research must account for experienced time when explaining NHRD processes and outcomes</p>
Relevance of individual characteristics	<p>Key Idea: Highlights three sets of individual characteristics relevant to NHRD processes and outcomes: demand, force and resource characteristics. Envisages an intersectional approach</p> <p>Research Implications: Place the individual at the centre of NHRD; focus on understanding the role of multiple individual characteristics over time</p>	<p>Key Idea: Prioritizes age as the primary individual characteristic relevant to NHRD processes and outcomes</p> <p>Research Implications: Change due to age differences are a central component of NHRD research</p>
Agency of developing individual	<p>Key Idea: Places the individual at the centre of the NHRD ecological system and gives emphasis to force or motivation characteristics</p> <p>Research Implications: Conceptualize the beneficiaries of NHRD as having agency and potential to shape multiple levels of context</p>	<p>Key Idea: Emphasizes the agency of individuals and highlights that an individual will seek to maximize gains and minimize losses but that losses become more salient with age. They will select development goals to align with age</p> <p>Research Implications: Research and understand the different ways in which individuals address age in terms of development goals within NHRD interventions</p>
Direct and indirect influences on NHRD	<p>Key Idea: Distinguishes proximal from distal influences. Proximal or direct influences include the developing individual, microsystems and mesosystems. Distal or indirect influences include the exosystem and macrosystem</p> <p>Research Implications: Pay careful attention to delineating the role of different levels of context; theoretically justify why they have a direct or indirect impact on NHRD processes and outcomes</p>	<p>Key Idea: Highlights the direct influence of age on NHRD but makes no explicit reference to other direct or indirect influences</p> <p>Research Implications: Age plays a key role in NHRD throughout the lifespan, thus requiring longitudinal approaches to investigate its impact</p>

and losses in the context of development processes (Baltes et al., 1999) and what these mean for how NHRD is developed, delivered and evaluated. The notion of maximization of gains and minimization of losses central to an LDP suggests that NHRD should consider the types of development goals that are specified for NHRD, and the approaches used to develop different age categories. Additionally, an LDP suggests that we need to develop insights concerning differences in the way individuals think, feel and are motivated when it comes to development processes across the lifespan (Mascolo & Fischer, 2010).

The integration of EST and an LDP points to opportunities for NHRD research that adopt an intersectional approach (Jones et al., 2017), something that is absent from the current literature. This approach to studying NHRD emphasizes the need to simultaneously study age in conjunction with other demographic characteristics such as gender, ethnicity, social position and group membership. For example, how do gender and race matter (and their intersection) in explaining access to and the outcomes of NHRD (Spry & Marchant, 2014). This intersectional approach would also help to surface the role of racial or colonial hierarchies embedded in culture and institutions (Nkomo et al., 2019), and develop insights into how these have an upward influence on microsystem, mesosystem and exosystem functioning. Insights on this dimension can shed light on the extent to which development processes in NHRD are continuous and cumulative or discontinuous and emergent processes (Heckhausen et al., 2010).

The intersectional approach of an LDP integrated with the ontogenic level of EST opens the possibility to understand different demographic characteristics and their links with force characteristics. Life goals, for example, are age-related and likely to vary with changing circumstances, role expectations and maturation over the lifespan (Bühler et al., 2019). Overall, the use of EST integrated with an LDP can kickstart and renew research on the individual who is the focus of NHRD.

The micro-, meso- and chronosystems: NHRD microsystems and their relationships over time

The literature on NHRD primarily takes a static approach and focuses on a snapshot in time rather than longitudinal investigation. Utilizing EST and an LDP highlights that such an approach will not generate insights into the phenomenon of NHRD and/or help us to develop insights into how and when NHRD outcomes occur. EST in particular highlights that NHRD researchers need to fix their gaze on a much broader conceptualization of the settings in which NHRD occurs, the links between them and

how they change over time due to external and internal chronosystem issues. For example, NHRD research needs to shift its focus away from primarily emphasizing the role of employers, government agencies and VET organizations to consideration of the family, NGOs and charitable organizations. These microsystems largely remain invisible in the current literature, yet they are important micro-settings that have a major impact on NHRD outcomes (Bronfenbrenner, 1979).

Researchers have not yet fully appreciated that these microsystems are temporally informed and dynamic, something which both EST and an LDP place particular emphasis on. Both theoretical perspectives emphasize that we need to understand how and when microsystem and mesosystem interactions change and what impact they have on NHRD outcomes. Additional insights suggested by both perspectives focus on different types of micro-settings and how they impact NHRD outcomes, and which ones are more salient at different points in the lifespan. What types of measurement mechanisms are appropriate to evaluate the effectiveness of different microsystems? Do they change over time?

The mesosystem level refers to the interactions that take place between different micro-settings. This represents an important theoretical insight which to date is not explored in NHRD. Its application to NHRD has the potential to develop insights into how different components of an NHRD system synergize to result in important national-level outcomes (Biosca & Galaso, 2020). The mesosystem concept highlights that an individual will likely participate within multiple microsystems across the lifespan. Therefore, how do these different microsystems reinforce or upset norms in respect of age and its interaction with other force, demand and resource characteristics? Doughty and Moore (2021) highlight that the mesosystem concept brings to the fore understanding the role of goal alignment, communication and relationships. It also brings into play the need to research issues such as: How do different microsystems align their NHRD development strategies? What coordination mechanisms do they use? How frequently do they communicate? What types of boundary-spanning strategies do they use to minimize resource and activity duplication? And how do they network with each other to share best practices?

The exosystem and macrosystem: Exploring the meso and macro context of NHRD

To date, researchers have prioritized the generation of descriptive studies of both the exosystem and the macrosystem. EST prioritizes the importance of understanding context, something which has achieved significant prominence in the management and HRM literatures

in recent times (Hoff, 2021; McLaren & Durepos, 2021) yet has received insufficient attention in NHRD. EST provides two context concepts, one which can be characterized as meso and the other macro. The exosystem as a meso level of context plays a key role in making NHRD happen within countries and plays a vital role as formulator and implementer of NHRD policy and legislative frameworks (Cleveland et al., 2015; Wilkinson, 2022). Investigation of a broader spectrum of meso-level actors in the context of NHRD is warranted in the role of trade unions, government departments, specialized VET and skills development agencies, ministries for economics and labour, NGOs and the media. We have scope to generate important insights into how the exosystem as a meso level of context shapes actor power to influence and commitment to lifespan development approaches. Do they have unique implicit age norms (Kunze et al., 2015) which shape development policies and approaches? Negative age stereotypes may be used to justify discriminatory NHRD practices against older individuals (Ng & Feldman, 2012). The media as a key factor in the exosystem also merits further investigation. Application of EST and an LDP highlights the imperative to investigate how exosystem actors evolve over time and how they formulate and change NHRD policy direction and approaches to implementation.

The macrosystem can be conceptualized as a macro level of context whose influence on NHRD is more distal. EST is instructive in highlighting the types of issues that should be the focus of research for NHRD. Consistent with EST, national institutions can be viewed as higher-order creators of rules within which NHRD takes place (Wilkinson et al., 2014) and will be reflected in laws surrounding access to development, age discrimination, industry standards and practices in respect of development and the expansiveness of NHRD policies across the lifespan (Marcus, 2017). Institutions are not necessarily created for functional but for political reasons (Savage & Williams, 2008), and operate under social influences and pressures to implement practices that fit with their environment (Haak-Saheem et al., 2017).

Investigation of informal mechanisms is nascent in the literature, with significant scope for scholars to utilize dominant cultural frameworks including those of Hofstede (1980), GLOBE (House, 2004), Schwartz (1994), Trompenaars (1996) and Stackhouse et al. (2018) to investigate how cultural values impact NHRD in the context of lifespan development. The primacy of investigating macro context is also highlighted by an LDP. For example, Baltes (1987) emphasizes the socially and culturally embedded nature of development and suggests that individuals are embedded in an informal institutional context including norms and values. Age has a particularly important soci-

etal dimension, and the concept of social age (Schwall, 2012) highlights that individuals may be categorized as young or old depending on the context. We have scope to develop insights into the ways in which cultural values permeate all levels of the ecological system, in addition to understanding the types of cultural values favourable to age and NHRD policymaking and practice. EST combined with an LDP brings context front and centre in understanding NHRD as a phenomenon, and the role of the individual within that ecological system. It also helps us to understand NHRD as multi-level and a temporal phenomenon, something which has to date not gained traction in the literature.

The imperatives of research on top-down and bottom-up influences within the ecological system

EST gives primacy to both top-down and bottom-up influences within the wider ecological system (Cassarino & Murphy, 2018). This dimension of EST provides multiple opportunities concerning how the macrosystem impacts lower levels of the ecological system in the context of NHRD. Higher-level factors are critical in explaining processes and outcomes at lower levels in the ecological system (Clemens & Cook, 1999), thus pointing to the role of cultural beliefs and values in shaping NHRD policies and implementation approaches of exosystem actors. We can use this approach to gain insights into how globalization and de-globalization impact what happens at lower levels of the ecological system, and how macrosystem values and norms concerning age impact lower levels of the ecological system and their persistence over time in the context of NHRD. EST also points to the roles that ecosystem actors play in translating societal values related to development, discrimination and prejudice to microsystems and mesosystems (Kapucu et al., 2017). These mesosystem actors include trade unions (Kambayashi & Kato, 2020), consultants, local policy implementation organizations, voluntary and not-for-profit organizations and NGOs. EST also envisages bottom-up influences from microsystems and the mesosystem on the exosystem. This dimension of EST opens up new avenues of investigation around the role that developing individuals, microsystems and mesosystems play in shaping the exosystem in particular. We can develop insights into the role they play in shaping approaches to policy formulation, the time it takes for bottom-up influences to translate into change in NHRD and the relative impact of microsystem settings in bringing about bottom-up change. Therefore, EST opens a new vista when it comes to understanding emergent processes and how they shape NHRD.

Bringing time into NHRD research and investigating chronosystem influences

Both EST and an LDP give primacy to time and its relevance in understanding NHRD development processes and outcomes. They emphasize different conceptualizations of time which can enrich NHRD research and add new dimensions to theorizing. For example, they bring to the fore experienced time, or what might be considered the process of aging (Henkens et al., 2018). In addition, associated with age, a variety of ontogenic factors—such as motivation to learn, career commitment, development proactivity and developmental intentions—are influenced by the experience of time and are temporally bound (Baltes, 1987). These characteristics will be influenced by meso and macro dimensions of context. Therefore, there is scope for NHRD researchers to investigate issues related to how individual characteristics change over a learner's lifetime and how they experience NHRD, what role changes in career values have and how career goals and motivations for development differ across the lifespan. These issues represent something of a black box in the context of NHRD, however they have the potential to provide temporal understanding of how and why NHRD evolves across the lifespan.

The notion of perceived time is also suggested by EST, with Shipp et al. (2009) defining a psychologically construed notion of what time is about. Ancona et al. (2001) proposed a temporal framework emphasizing three inter-related dimensions of perceived time: ideas of time (which are based mostly on culture), planning activities for time and individuals relating to time. These time dimensions can help us to understand different dimensions of NHRD, including (a) participation in NHRD, (b) the role of ontogenic factors in shaping perceptions of time and (c) how perceived time operates at different levels of the ecological system. The notion of timing is also highlighted within EST, and gives emphasis to historical embeddedness of NHR. It suggests that contemporary influences will shape the development trajectories of individuals and NHRD policymaking and implementation. EST highlights economic factors as one dimension of timing (Bianchi, 2013, 2014) and their role in shaping development, in addition to temporally bound factors such as discrete events and temporal fluctuations in these events (e.g. COVID-19). Discrete events may include changes in government policy, the withdrawal or provision of resources and changes in practice around NHRD. Temporal events include changes in government, political changes, changes in the economy, pandemics, unemployment rates and changes in technology. Our review highlights the scope to develop insights concerning three under-researched temporal events. The first concerns poverty (Roca-Puig et al., 2019) and this

event can be studied in conjunction with macro-level societal factors to understand its impact on investment in NHRD and the role of NHRD in the context of age in alleviating poverty over time. The second temporal event suggested by EST concerns investigation of changing global economic conditions and migration patterns and their influence on lifespan development issues (Guo & Ariss, 2015). Individuals may be in culturally different development settings across the lifespan, thus highlighting the need to investigate how these institutional contexts impact access to NHRD (Fernando & Patriotta, 2020; Tung, 2016). So, for example, how do formal institutions promote or constrain migrants' ability to access NHRD? What is the impact of anti-immigration sentiment, stereotypes and power imbalances when they interact with age to impact NHRD and how do agencies and actors in the exosystem filter, augment or impede these socio-cultural stereotypes? Arguably, researchers should address the role that NHRD agencies, policymakers and professional bodies play in the development of migrants' talent and skills. Third, EST highlights the need to understand changes in technology as a temporal event in terms of older adults and those who do not have Internet connectivity, who are likely to be in lower socio-economic groups or in developing parts of the world. Changes in technology and its use in the context of NHRD will interact with force and resource characteristics at the ontogenic level. These issues merit further research. Overall, one of the most significant contributions that EST integrated with an LDP makes to research on NHRD is the realization that to study dimensions of NHRD is a static way does the field a disservice, and points to the need to utilize a new methodological toolbox which we discuss in the next section.

Expanding our methodological toolkit

We propose three methodological innovations that are necessary to operationalize many of the questions that we discussed in the previous sections. The first innovation concerns the use of national archival databases rather than reliance on self-report measures. They have been highlighted particularly as a way of bridging the divide between the micro and macro which is central to EST (Aguinis et al., 2011). Macro-level databases may help NHRD researchers to capture industrial, societal and economic systems, as well as national cultural dimensions, and they also facilitate comparative investigations (Hill et al., 2022). There are numerous national-level databases that can be used in NHRD research, including the Human Capital Index reported by the World Bank, the Database of Political Institutions, Global Leadership and Organizational Effectiveness (GLOBE), Thomson Reuters Environmental,

Social and Governance, Gallup Analytics and Economist Intelligence Unit. Central to our arguments in this paper is that NHRD often focuses on questions that, while located at an operational level, extend to the macro level. Therefore, we see the use of these archival databases as an important extension to the methodological toolkit used in NHRD research.

A second approach that can be used by NHRD researchers includes a focus on the use of historical methods. Bell and Taylor (2013), for example, highlight that a pervasive problem in management and organization research concerns the focus on ‘presentism’, and propose the use of historically informed methodological approaches. The historical approach has begun to take hold in fields such as strategy (Argyres et al., 2020; Vaara & Lamberg, 2016), institutional change (Decker et al., 2018) and family business research (Suddaby et al., 2021). These historical methods in the context of researching NHRD could include the critical analysis of primary and secondary historical sources to provide rich descriptions of context and interpretation in respect of NHRD policy formulation and implementation, significant changes in policy directions and the way in which NHRD actors leverage power to achieve important outcomes. Indeed, history can be used not only as data, as a methodological approach, but also as a component of theorizing in NHRD.

Our third methodological suggestion concerns the use of quantitative methods. There is significant growth in the use of longitudinal data analysis and their role in establishing causal connections (Reitan & Stenberg, 2019). These advanced statistical analysis techniques include growth modelling and latent class modelling (Bliese & Lang, 2016; Bliese & Ployhart, 2002) and could be used to uncover the impact of, for example, early NHRD development experiences on later development outcomes. In addition, scholars have highlighted the use of field experiments to establish the causal effects in the context of a lifespan approach to NHRD (Chatterji et al., 2016; Eden, 2017).

PRACTICE IMPLICATIONS

Our review of the literature utilizing both EST and an LDP suggests significant practice implications for exosystem actors such as legislators, government agencies, NGOs and other bodies involved in the formulation of NHRD, in addition to microsystem actors that implement NHRD. We acknowledge that actors—particularly those in micro-settings and the exosystem—do not have control over the macro- and exosystem influences, but they potentially have scope to influence the type of legislative arrangements and NHRD practices that are implemented. It therefore makes sense that actors at the exosystem level,

when they come to formulating NHRD policy and institutional arrangements, consider what these mean for both micro- and mesosystem levels. Where they engage in these scanning behaviours then they can potentially develop better-fit NHRD policies and practices.

When it comes to the actions that exosystem institutions can take to incorporate an LDP into NHRD policymaking, they should consider their equality and diversity legislative frameworks and policies, the use of quotas in terms of participation in NHRD and the affirmative action of policies to spread the benefits of NHRD. At the mesosystem and microsystem levels, a clear practice implication concerns how various microsystems interact, network and communicate with each other. These policies will help to ensure that microsystems make the most efficient and effective use of resources, in addition to eliminating duplication of programmes and efforts.

The final practice implication concerns the importance of linking the various levels of the ecological system and ensuring an understanding of top-down and bottom-up effects. EST in particular gives primacy to interactions between and within levels, thus there is a need amongst NHRD actors to be aware of the potential for unintended outcome effects that were not anticipated.

STRENGTHS AND LIMITATIONS OF OUR SYSTEMATIC REVIEW

While we conducted this SR integrating both academic and grey literatures systematically and in a disciplined way, we acknowledge both strengths and limitations. We made the decision to include diverse types of publications, ensuring that we captured the full extent of intellectual endeavour to date on NHRD. Our approach to both the search for publications and their analysis was rigorous. The research team independently searched for and coded a final selection of articles, chapters and reports. This process helped ensure that we did not overlook important contributions and the evaluations that we made of each publication were thorough.

Our review does, however, have several limitations. First, there is an imbalance in the literature between theoretical and empirical contributions. While the number of empirical studies has grown, further empirical work is required to understand the research questions posed. Second, our review does not escape the limitations associated with publication bias. We focused only on published studies and therefore ignored unpublished work, including conference papers. We also only focused on articles published in the English language. Therefore, we may have omitted important non-English contributions. Despite these limitations, this review is an up-to-date and systematic review of the literature.

CONCLUSIONS

NHRD is one of the most complex phenomena in the field of HRD and management generally, thus warranting considerable research effort. As past research on NHRD has noted, there is a need to engage more effectively with multi-level and temporal perspectives. This systematic review utilizing EST and an LDP sheds light on current progress on both dimensions, in addition to catalysing future research avenues. It is our hope that this review will motivate researchers to research fresh avenues on NHRD, and that practitioners will utilize both perspectives when formulating NHRD policies and interventions.

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