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Paving the way for research in recruitment and selection

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Paving the way for research in recruitment and selection: Recent developments, challenges and future opportunities

Very few would disagree that the discipline of work and organizational psychology started with the study of recruitment and selection (Ployhart, Schmitt, & Tippins, 2017). For over 100 years, scholars and practitioners have aimed to determine how to generate recruitment pools of highly qualified applicants and how to select the most suitable ones for available jobs (Nikolaou & Oostrom, 2015; Ployhart et al., 2017). As the societies prospered and employment opportunities rose, there has been an increasing need to understand how to assess the applicant knowledge, skills, abilities and other factors (KSAOs), how to determine which methods are most suitable for applicants, how to attract the most qualified applicants to apply and how to select those with both, the highest potential to perform and a good fit with the recruiting organization. These are just but a few overarching questions that the recruitment and selection scholars have been advancing and debating over the years.

Indeed, the research in this field has accumulated a large body of knowledge, which includes a number of meta-analyses, and literature review papers that summarize the key findings in the field. In turn, these can inform the best practice approach to evidence-based management in recruitment and selection. For instance, there is vast amount of knowledge on which selection methods have the best validity when selecting for job performance, which methods are most preferred by job applicants, what impression management tactics are used in different selection settings, and differences in test validities for different sub-groups of applicants (Anderson, Salgado, & Hülsheger, 2010; McCarthy et al., 2017; Ployhart et al.,

2017; Ryan & Ployhart, 2014). Despite this large volume of selection and recruitment literature, however, more research is needed to address the most recent and ongoing developments in the future of work and employment (Ployhart et al., 2017; Ryan & Ployhart, 2014). For instance, the environment in which we work has become increasingly more volatile, uncertain, complex, and ambiguous (i.e., VUCA) and we need a much greater understanding around how the assessment, recruitment and ultimately selection can best be done in such VUCA contexts (Baran & Woznyj, in press). The COVID-19 pandemic is just one example of how quickly organizations had to adapt to a fundamentally different mode of working, including changing their recruitment and selection practices. Other examples of how greater complexity has affected the organizations can be seen in the tendency of relying on increased use of technology, including artificial intelligence in the workplace. The implications of this for recruitment and selection are various, for instance revising the job-relevant KSAOs by identifying which are still relevant, which should be added, and which can be replaced by technology and automation. Also, changing labour regulations and a growth in gig economy and precarious work have significantly shaped the selection and recruitment practices, such as selection through applications (i.e., apps), managed by digital platforms that set the minimum cut-off criteria to select and manage the individuals who do the work (Duggan, Sherman, Carbery, & McDonnell, 2019).

Although the research on recruitment and selection is vast (Ployhart et al., 2017), the most recent political, economic, societal and technological developments have opened up new avenues in recruitment and selection research. In this paper, we aim to first integrate the most recent major findings in selection and recruitment literature, and second identify future avenues for research that would address the recent developments in this vibrant field of study.

Summary of key research findings in recruitment and selection

A systematic, fully comprehensive literature review of extent selection and recruitment literature is beyond the scope of this paper – rather, we focus our effort on recent meta-analyses as well as conceptual and literature review papers to identify the meta-trends in the recruitment and selection research. Focusing on the last 10 years, we identified around 40 such papers and summarized their key research findings and proposed future research directions in Table 1. We focused on the last 10 years because: a) this window allowed us to capture the most recent advances in the field and b) the type of papers that we reviewed – i.e., meta-analyses and review papers – have built upon the research that was published before 2010. Therefore, we are confident that Table 1 shows a comprehensive and inclusive overview of major findings in this area that in fact extends beyond the last decade.

Insert Table 1 about here

Overview of selection and recruitment research

Our analysis showed a number of review pieces that covered selection and recruitment more broadly. For instance, Ryan and Ployhart (2014) have addressed recent developments in designing, implementing, and evaluating selection systems and focused particularly on how technology has changed the recruitment and selection practices. Ployhart et al. (2017) have provided a comprehensive and ambitious overview of historic development in recruitment and selection, identifying major macro factors and challenges that have shaped the research and practice in this field at different points in time. Breugh (2013) has integrated key research findings around different aspects of the recruitment process and how these shape the pre-hire and post-hire outcomes, including the applicant perspective, recruitment targeting, recruitment methods, the recruitment message, recruiters, recruitment

media, the site visit, the job offer, and the timing of recruitment activities, and recruiting members of underrepresented groups, respectively.

Some of the overarching conclusions across these comprehensive broader reviews are as follows: a) there is increasingly more conclusive evidence around the validities of different selection methods (e.g., Levashina, Hartwell, Morgeson, & Campion, 2014; Shaffer & Postlethwaite, 2012); b) the selection research has moved beyond predicting job performance to addressing other constructs in the criterion space, such as counterproductive work behaviours (e.g., Chiaburu, Oh, Berry, Li, & Gardner, 2011; Gonzalez-Mulé, Mount, & Oh, 2014); c) there is a well-consolidated body of evidence on applicant reactions to different selection methods; d) the recruitment research has accumulated evidence on different recruitment methods, and applicant attraction; and e) there has been an increasing interest in studying the role of technology and internet in recruitment and selection (e.g., Tippins, 2015; Woods, Ahmed, Nikolaou, Costa, & Anderson, 2019; Weekley, Hawkes, Guenole, & Ployhart, 2015). As can be seen in Table 1, these broader areas map onto our thematic analysis of trends identified across meta-analyses and other review papers. We discuss each of these “meta-trends” in more detail next.

Recent developments in selection

Consolidating the evidence on validities of selection methods. Unsurprisingly, a number of meta-analyses have addressed the validities of different selection methods in relation to job performance. Oh, Wang, and Mount (2011) conducted a study in which the validities of observer ratings of personality traits were meta-analytically analysed in relation to overall job performance. They found that the observer ratings of the five-factor model (FFM)-based traits exhibited better validities than the FFM traits based on self-reported ratings. In their meta-analysis, Shaffer and Postlethwaite (2012) distinguished between work-

specific or contextualized and non-contextualized measures of personality, respectively, and found higher validities for contextualized measures of personality. They also explored the validity of conscientiousness in particular and found that this trait strongly predicted performance in highly routinized jobs, whereas its correlations were weaker in jobs that required high levels of cognitive ability (Shaffer & Postlethwaite, 2013).

Lang, Kersting, Hülshager, and Lang (2010) have studied the relationships between cognitive abilities and job performance based on the nested framework – i.e., a model suggesting that the general mental ability (GMA) exists alongside narrower cognitive abilities. Using relative importance analysis, their meta-analysis found that although GMA was an important predictor of performance, so were the narrower cognitive abilities. Berry, Clark, and McClure (2011) observed lower validities of cognitive ability tests for racial/ethnic minorities across and within high-stakes selection contexts, such as educational admissions, civilian employment and military. Whereas the results showed higher validities for White participants over Black and Hispanic, the differences in validities between White and Asian test takers were small. Bobko and Roth (2013) have systematically reviewed and analyzed evidence on Black-White sub-group differences in selection. They highlighted that any such sub-group differences should be interpreted with caution as they might be confounded by the type of sample used (e.g., incumbent vs applicant) and by different constructs assessed with the same selection method. Although various meta-analyses have consistently observed sub-group differences, much less is known about the underlying mechanisms for such differences and how the adverse impact of selection methods can be minimized. We return to this point later when discussing the implications for future research.

In terms of selection methods that measure different constructs, a meta-analysis by Christian, Edwards, and Bradley (2010) explored the validities of different construct domains measured by situational judgment tests (SJTs). They observed that SJTs that assessed

teamwork and leadership skills showed high validities for predicting overall job performance. Kleinmann and Ingold (2019) provided a comprehensive review of the evidence that explains the criterion-related validity of the assessment centre (AC) by focusing on different factors related with the assessee, the assessor and the AC design. Sackett, Shewach, and Keiser (2017) meta-analytically analysed the data from 17 samples on which the AC and cognitive ability scores were collected from the same participants and were used to predict the same criterion, i.e., job performance. Unlike previous research, they found higher validity for ACs compared to cognitive ability tests, but they postulate that their findings can be explained by narrower range of cognitive ability in AC candidates and by the fact that AC validation research uses less cognitively loaded criteria. Huffcutt (2011) summarized the empirical evidence on the relationships between employment interview ratings and different constructs. He observed that the average correlation between interview ratings and interview performance was substantially larger than the correlation between interview ratings and job-related interview content criteria.

Regarding the methods used to combine the assessment and selection data, Kuncel, Klieger, Connelly, and Ones (2013) observed that the mechanical combination of assessment data, such as the use of algorithms and formulae, showed a stronger validity when predicting different work and academic-related criteria compared to the holistic or clinical method of combining data, such as using expert judgement and intuition. Morris, Daisley, Wheeler, and Boyer (2015) conducted a meta-analysis on studies that used multiple assessment methods and found that the validity of assessors' recommendations was high when predicting job performance, but the effect sizes were higher for managerial compared to non-managerial jobs and for the assessments that included a cognitive ability test.

Expanding the criterion space. Our review identified a few meta-analyses that explored the validities of selection methods in relation to criteria other than job performance.

For instance, Gonzalez-Mulé et al. (2014) have shown that the correlation between GMA and counterproductive work behaviours (CWBs) was basically 0, but its correlation with organizational citizenship behaviours (OCBs) was positive although small. They also observed that the FFM personality traits were jointly a stronger predictor of CWBs compared to the GMA, but FFM traits and GMA were equally important predictors of OCBs. They also included task and overall job performance in their analyses and found that GMA was a much better predictor of these two criteria compared to the FFM traits. Similarly, Chiaburu et al. (2011) meta-analytically analysed the relationships between the FFM traits and OCBs and reported that emotional stability, extraversion and openness had an incremental validity when predicting OCBs over and above conscientiousness and agreeableness. They also observed that conscientiousness, emotional stability, and extraversion had similar validities for OCBs and task performance, whereas openness and agreeableness had stronger validities for OCBs than task performance.

Van Iddekinge, Arnold, Frieder, and Roth (2019) studied the validity of pre-hire experience and observed low effect sizes in relation to task and training performance as well as turnover. The validities were higher when individuals first entered a new organization and when task-level experience was considered for predicting training performance. Van Iddekinge, Roth, Raymark, and Odle-Dusseau (2012) have also meta-analytically analysed the validity of integrity tests in relation a number of criteria, such as job and training performance, CWBs, and turnover. They found low validities across these criteria, although the effect size was slightly better for self-reported CWBs and for integrity testes that were authored by test publishers. In their meta-analysis of vocational interests, Van Iddekinge, Roth, Putka, and Lanivich (2011) observed moderate validities for training performance, turnover intentions, actual turnover and job performance.

Finally, we have also noticed a trend of paying increasingly more attention to dark traits and their predictive validities in relation to different criteria over the last ten years. Although the meta-analysis by O'Boyle, Forsyth, Banks, and McDaniel (2012) did not take on the personnel selection lens, their findings showed that all three dark traits were negatively associated with CWBs. They also observed negative relationships between Machiavellianism and psychopathy and job performance, respectively. Future research could explore the criterion-related validities of dark triad in predicting a range of criteria. To this end, studies that would establish the incremental validity of dark triad over bright for different criteria would be particularly fruitful future research avenue.

Applicant reactions and impression management. The next meta-trend in selection research refers to the role of trust, justice, and fairness in selection process. These have been widely studied in the area of applicant reactions focusing on growth and diversification of theoretical models used to study applicant reactions, cross-country differences, favourability perceptions to digital selection methods, and boundary conditions (McCarthy et al., 2017). Although most of the research on applicant reactions has been driven by the fairness model of Gilliland (1993), this area has witnessed an expansion in the use of theoretical frameworks, such as expectations theory and attribution theory (McCarthy et al., 2017). In terms of cross-cultural differences, Anderson et al. (2010) supported the reaction generalizability hypothesis in applicant reactions across 17 countries, including most Western countries as well as Morocco, Turkey and South Africa. They showed that work samples and interviews were amongst the most favourably perceived selection methods, followed by resumes, cognitive tests, references, biodata and personality tests. The least preferred methods were honesty tests, personal contacts and graphology. Interestingly, however, Levashina et al. (2014) observed that applicant reactions to structured interviews were more negative than reactions to unstructured interviews, although there seemed to be moderator variables in this

relationship, such as the age of the applicants. In terms of digital selection methods, applicants tend to show favourable reactions to online test-based procedures (McCarthy et al., 2017), although the reaction to online interviews via videoconferences showed less positive applicant reactions (McCarthy et al., 2017; Woods et al., 2019). A recent and unique meta-analysis in that they looked at studies of applicant reactions with at least two measurement points found that the perceptions of fairness declined nonlinearly across the selection process (Konradt, Oldeweme, Krys, & Otte, 2020). Those with higher levels of initial fairness expectations experienced a steeper decline in fairness perceptions, which was less strong when the interval between post-test and post-decision was longer.

Finally, there is also a vast amount of research on impression management in selection and recruitment. Peck and Levashina (2017) observed that applicants more frequently used impression management in the interview compared to performance settings. They noted that self-focused tactics were more effective in interview than job performance settings, but that other-focused tactics were more effective in job performance than interview settings. Levashina et al. (2014) noted that applicants widely use impression management in structured interviews and that the use of structure can reduce the effects of applicant impression management on interview ratings.

Recent developments in recruitment

Recent developments in recruitment cover diverse topics, including the use of different recruitment methods and applicant and recruiter behaviours and perceptions across different stages of the recruitment process, which can help explain applicant attraction to the organization.

Recruitment methods. Breugh (2013) in his review noted that the use of employee referral - the use of social networks of current employees to recommend new hires – yields

better pre-hire outcomes than the use of job adverts for applicant recruitment. Employees who were employed via referral also tended to exhibit better retention than those recruited by other methods. More recently, based on their review of 101 studies, Schlachter and Pieper (2019) have developed a comprehensive three-stage model of employee referral. In the first stage, they focus on pre-hire motivation and action, during which referrers are keen to seek and refer applicants. In the second stage, they address application and hiring phase, during which the referred applicants apply and progress through the recruitment process. In the third stage, they pay attention to post-hire outcomes, which refer to the period after the referred applicants' entry or non-entry. Their conceptual model addresses concepts such as referrers' external and internal motivation, how the strength of social ties as well as referrers' and referred employee characteristics might affect the pre-screening and fit assessment during the referral process.

Another recruitment method that has showed good pre and post-hire outcomes is realistic job preview (Breugh, 2013). Although sometimes considered as part of the recruitment message and not as a method itself, realistic job previews are essentially a self-selection method, based on the accurate, realistic and balanced information about the job opportunity. Earnest, Allen, and Landis (2011) have conducted a meta-analysis on the validities of realistic job previews in relation to voluntary turnover. They found that the oral or written realistic job previews done post-hire and designed to signal organizational honesty were the most effective for reducing turnover.

Applicant attraction. In addition to these recruitment methods, the recruitment research has paid attention to applicant attraction. A recent systematic literature review by Evertz and Süß (2017) has focused on individual differences in applicant attraction and organised the key findings in terms of biographical characteristics, personality traits, emotions and moods, values and attitudes, ability, and perceptions and motivation. They

observed that most of the research has explored these individual differences in early recruitment stages. They call for more research on specific individual differences and their interplay in relation to how they shape different recruitment stages. In one of the most comprehensive studies on applicant attraction, Uggerslev, Fassina, and Kraichy (2012) explored predictors of applicant attraction in terms of three recruitment stages, such as generating applications, maintaining the applicant status (i.e., the applicants have applied for the job and have gone through the selection process, but have not yet received an offer), and job choice decisions (i.e., the applicants are deciding whether to accept or reject the offer). Their meta-analytic results showed that the perceived fit with the organization was the strongest predictor of applicant attraction to the organization. Whereas the organizational characteristics, such as image and reputation, were the strongest predictors of “maintaining the applicant status” stage, the job characteristics, such as compensation, autonomy, and commute, were the strongest predictors of “job choice decision” stage. The recruitment process characteristics, such as message credibility and employee endorsements, became more relevant as the applicants progressed through different stages of the recruitment process. Finally, the recruiter behaviours, such as trustworthiness, informativeness and competence, were important in the first two recruitment stages of generating applications and maintaining the applicant status. The role of trustworthiness in different stages of recruitment process was further unpacked in the narrative review by Klotz, Da Motta, Buckley, and Gavin (2013). Defining trustworthiness as the perceptions of benevolence, integrity and ability of each party to the other, their findings suggest that establishing perceptions of trustworthiness between applicants and recruiting organizations is key for achieving positive recruitment outcomes.

The role of technology in recruitment and selection

It is not surprising that the increasing digitalization and technological development has significantly shaped the recruitment and selection practices. We integrate the findings around the role of technology jointly for selection and recruitment, because the literature to date has not clearly postulated how technology may uniquely affect each area.

In their recent review, Woods et al. (2019) synthesized the literature around the construct and criterion-related validities and applicant reactions to different digital selection and recruitment procedures, such as online applications, online psychometric testing, digital interviews, gamified assessment and social media. Interestingly, despite an increasing use of this type of procedures in practice, they noted a lack of rigorous research on digital selection procedures. For instance, they noted the lack of validity of using different social media platforms for the purposes of recruitment. They also found how the algorithms used in online adverts in STEM industries are designed in a way that these are more likely shown to men than women, perpetuating gender discrimination in certain job opportunities (Woods et al., 2019).

Tippins (2015) has discussed the literature on the use of technology in selection and assessment tests. Specifically, this review has focused on computers, mobile devices, video and audio equipment and assessment portals and highlighted the need to analyse aspects related with distractions and how these might shape test performance as well as implications for the applicant pool, adverse impact, and cheating. Weekley et al. (2015) synthesized the literature on low-fidelity simulations, mainly focusing on the evidence around the text-based SJTs as these have received the most empirical attention to date. However, they note that the practice has moved on to using technology-supported types of simulations, such as multimedia-based SJTs, online in-basket exercises and game-like assessments. In relation to SJTs in particular, Christian et al. (2010) have showed that video-based SJTs showed better criterion-related validity compared to paper-pencil based SJTs.

Roth, Bobko, Van Iddekinge, and Thatcher (2016) have focused specifically on the use of social media in recruitment and selection process. They delineated the social media assessment as a review of online information from websites and platforms that connect individuals for the use in employment decisions. They advanced a theoretically-grounded research agenda with specific propositions to study issues, such as how to deal with incomplete and negative information obtained via social media assessment, how to achieve criterion-related validities and how to minimize the potentially adverse impact of this type of assessment against applicants based on their age and ethnicity. Overall, given its increased use in practice, more scholarly attention should be paid to digital selection procedures and the role of technology in selection and recruitment more broadly. Recent studies exploring psychometric properties and criterion-related validity of LinkedIn and Facebook-based assessments (Van Iddekinge, Lanivich, Roth, & Junco, 2016) seem particularly promising for advancing knowledge in this area.

Future research directions

The constantly changing world of work and unpredictable, external societal and economic pressures and constraints make the future of selection and recruitment research an exciting field to study. In the last decade, the meta-analyses and conceptual and review papers identified a number of caveats and challenges that should be addressed in the future (see Table 1 for detailed summary of these). We classified these in terms of two overarching meta-directions for future research: a) substantive issues, including the need for more sophisticated and novel theoretical developments and b) methodological challenges.

Substantive issues and the need for sophisticated theoretical developments

Our review shows that there is a desperate need for a more theory-driven recruitment and selection research. We identified only few conceptual papers that can fruitfully advance the research in this field (e.g., Phillips & Gully, 2015; Roth et al., 2016; Schlachter & Pieper, 2019; Lievens & Sackett, 2017). In order to study the role of external pressures that seem to be significantly shaping current selection and recruitment practices, such as technology, demographic changes, remote working, and novel employment arrangements, we need to develop more sophisticated conceptual insights that can explain: a) how and in what ways technology impacts selection and recruitment practices, b) what the underlying mechanism and boundary conditions of applicant reactions and validities of different recruitment and selection methods are, c) how the business strategy informs recruitment and selection practices and how these affect recruiters' and prospective applicants' pre- and post- hire outcomes, and d) how to design recruitment and selection practices that would work for different demographic groups in terms of age, ethnicity/ race, and gender and parenthood.

Technology. Roth et al. (2016) have developed a number of theory-driven propositions to study the role of social media in recruitment and selection. We need more conceptual work such as this to address the role of technology and digitalization to explain the underlying mechanisms of how technology affects recruitment and selection outcomes. We see potential for bringing social psychology and communication theories, such as social presence theory (Short, Williams, & Christie, 1976), and information and media richness theory (Daft & Lengel, 1984) into the selection and recruitment arena to drive this development and explain, for instance, why applicants prefer some digital selection procedures over traditional ones and vice versa. These theories could also explain why some digital methods gauge applicant potential more accurately – i.e., have better predictive validities. As noted in Table 1, we need more research on both of these areas.

Another issue related with the use of technology that deserves more research attention has to do with remote test proctoring (Steger, Schroeders, & Gnams, 2020). It not only is important to understand this phenomenon better due to the increased use of online testing as such, but because organizations might have to resort to using it by force due to external constraints, such as lockdowns and the need for social distancing. On one hand, research has found that online test proctoring could reduce cheating, but on the other hand, it was related with negative applicant reactions (Karim, Kaminsky, & Behrend, 2014). Future research could explore what type of unproctored assessments may be associated with lower risk of cheating and what remote assessments should be proctored because of the high risk of cheating. Future research could also explore the predictive validities of proctored and unproctored remote tests on job performance to ascertain the potential adverse impact of each type of tests.

Finally, the research in this field should revisit the concept of so-called e-loadedness or a digital divide between different groups in the society (Anderson, 2011; Sylva & Mol, 2009). For instance, some demographic groups might have more negative attitudes towards the use of technology and some might in fact have limited access to modern technologies, or fast internet connection. Some of these societal tensions and inequalities have surfaced during the COVID-19 pandemic with remote working and schooling heavily depending on the access to good computers and broadband. Future research could explore the extent of adverse impact of online assessment, recruitment and selection on different demographic groups. We elaborate on demographic challenges more specifically later on in this section.

Mediators and moderators. Our review has also showed that the vast majority of research has focused around exploring construct and criterion-related validities of different selection methods, but what remains largely unexplored are the underlying mechanisms of why some methods have better predictive validities than others. Indeed, there has been an

ongoing quest for more research on boundary conditions to explain why some methods have stronger relationships with the post-hiring outcomes in some contexts and/ or in certain groups compared to others (Campion, Ployhart, & MacKenzie, 2014; Earnest et al., 2011; Gonzalez-Mulé et al., 2014; Sackett, Shewach, et al., 2017). A comprehensive model by Schlachter and Pieper (2019) has a very strong potential to drive this type of research specifically when it comes to employee referral as a recruitment method. Further theoretical work is needed to study boundary conditions of other recruitment and selection methods. For instance, the relationships between personality and cognitive ability test scores, respectively, and future job performance and other relevant post-hire outcomes might be moderated by how favourably the applicants view these type of tests. Also, some applicants might suffer from test anxiety and as a result, might be adversely impacted by the use of such methods (Proost, Derous, Schreurs, Hagtvet, & De Witte, 2008). A recent study by Campion, Campion, and Campion (2019) that showed how applicants who took a practice test scored higher on the actual test provides support for this idea, yet test anxiety is still to be directly explored as a moderator of how testing affects applicants' pre- and post-hire outcomes. Future research could address this suggestion.

The current need for mandatory remote working has also opened up novel research avenues in this quest for mediators and moderators in selection and recruitment research. For instance, future research could explore whether the predictive validities of commonly used selection methods differ for remote working vis-à-vis office-based working and if so, what underlying mechanism can explain such differences. For instance, are there other KSAOs that should be assessed for successful remote working, such as virtual team-working skills or tolerance for social isolation? We believe these are important questions to be addressed given that the remote working might be here to stay, or at least to a much larger extent than before the pandemic.

Strategic recruitment and selection. We found only one paper that has advanced the strategic recruitment paying attention to different levels of analyses that are necessary to fully capture this process (Phillips & Gully, 2015). Differentiating it from traditional recruitment, Phillips and Gully (2015) define strategic recruitment as a set of recruitment practices that are aligned with organizational characteristics, goals, firm strategy and context, which are connected across multiple levels of analysis. Their conceptual model proposes a number of factors at the individual, team and organizational levels of analyses in terms of the a) inputs, b) systems, policies and practices, and c) outcomes of recruitment process. For instance, the model explains how organizational level policies, such as employer branding, informs recruitment practices at the team level which in turn inform applicant behaviour, such as site visits. Considering that one way of building a business case for selection and recruitment is highlighting the need for attracting top performers to leverage firm competitive advantage, the lack of research on strategic recruitment seems to be an important omission in the literature. Future research could combine the insights from the strategic human resource management literature, such as the characteristics of human capital in terms of skill uniqueness and strategic value (Lepak & Snell, 2002) with research on different selection methods used in practice to explain pre- and post-hire outcomes for the organizations (e.g., resource allocation, business growth and turnover), teams and departments (e.g., team performance and diversity) and individual employees (e.g., job performance and turnover intentions). Although we see a lot of promise in such multilevel research, a strong multidisciplinary expertise would be required to ensure this type of research is robust and rigorous.

Demographic challenges. Future selection and recruitment research has to address various demographic challenges related with aging, diversity and gender (Ployhart et al., 2017). Given the trend of ageing societies, we need theoretically driven research to explain

which selection and recruitment practices might be particularly well-suited for hiring older employees across all levels in the organization. Traditionally, more senior staff was headhunted or recruited via referrals, because they were recruited for more senior leadership or similarly high calibre roles. However, with older population increasingly taking up part-time work and bridge employment (Dingemans, Henkens, & Van Solinge, 2016), we need more research around age differences in applicant reactions to different selection methods, including digital ones. This research could be informed by life-span theories, such selective optimization with compensation theory (Baltes & Dickson, 2001) and socio-emotional selectivity theory (Carstensen, 1995) to understand the underlying mechanisms of any such age-related differences.

The increased globalization has also led to ever more diverse societies in terms of ethnicity/ race. We noted earlier that the sub-group differences in terms of ethnic origin have been confirmed consistently. However, we still lack research on the underlying explanatory factors of these differences (Berry et al., 2011; Bobko & Roth, 2013). Selection and recruitment research to date has mainly focused on identifying methodological moderators, but given that certain selection methods, such as cognitive ability tests, might have a severe adverse impact on specific groups, more research is needed on uncovering the reasons for these differences. Future research could draw from literature on stereotype threat (Steele, 1997) and implicit bias (Jacoby-Senhor, Sinclair, Smith, & Skorinko, 2019) to explain why and how different selection methods differentially impact diverse groups of applicants.¹

One final demographic trend that should be considered in the recruitment and selection research refers to diversity in terms of gender and family structures. For instance, the research on applicant attraction could explore what organizational, job, and recruitment process-related characteristics would attract single parents or dual-earner couples to work for

¹ We are grateful to the reviewer for this suggestion.

them. This seems to be a particularly promising future research avenue as many are navigating through increased workloads working remotely, with women still taking on majority of childcare responsibilities. Therefore, what makes an organization an attractive employer in such contexts seems to be an important theoretical and practical question.

Methodological challenges

The above substantive recommendations for future research should be pursued considering a number of methodological challenges. Many meta-analyses that we reviewed would primarily call upon future research to use more sophisticated research design, samples, and analyses. Many would also urge scholars to publish enough information to allow for more robust statistical analyses, such as adjusting the results for range restriction.

One of the recurring issues related with selection and recruitment research is that the data is most frequently collected on incumbents rather than applicant samples. Given that the key research questions are mainly concerned about how well the individuals will perform in the future and how different stages of the recruitment and selection process determine pre- and post-hire outcomes, the lack of research on actual applicants is concerning. Related to this, a vast majority of research employs cross-sectional research designs. This is another inherent flaw, because at the conceptual level, recruitment and selection are investigated from a processual perspective, which demands a longitudinal approach to data collection and analyses. For instance, research into applicant reactions has called for studies that would employ longitudinal designs to study applicant reactions and behaviours throughout the entire recruitment and selection process (McCarthy et al., 2017). Attraction and job choice research has similarly called for studies with multiple measurement points that would shed more light on how the persuasion mechanisms might evolve during the recruitment stages and to

identify the optimal timing of different recruitment and selection activities (Uggerslev et al., 2012). As it might be very difficult to secure samples of applicants who could be asked to participate in comprehensive programme of research over time, the use of experimental research designs might be useful to tease out some of these causal factors.

Another concern that we identified is related with the lack of behavioural data for measuring both predictors (e.g., personality) and criteria (e.g., turnover and job performance). In order to validate some of the findings on predictive validities of selection and recruitment methods and to avoid the common-method bias in recruitment and selection research more broadly, future research should consider using observer scores or other type of measurements other than self-reports (Sackett, Lievens, Van Iddekinge, & Kuncel, 2017). This might be particularly relevant for addressing the last challenge, which has to do with the need for predicting criteria at multiple levels. It might be that certain organizational level data can only be operationalized by means of observational or archival data, which, in combination with individual-level applicant data calls for multi-level analyses.

Overview of the special issue

For this special issue, we received a large number of papers, of which the 13 published in this special issue represent a diverse set of advances and developments in employee recruitment and selection. The scope and contributions of our papers are broadly summarised around some of the trends that we identified in our literature review. In term of methodology, the accepted papers have employed different methods, ranging from experimental studies using applicants and incumbents to systematic literature review and coding of observational data for statistical analyses.

Construct and criteria-related validation studies and expanding the criterion space

In their paper in this special issue, Galić et al. develop a novel test using conditional reasoning to assess the motive for power (i.e., CRT-P). Through 6 studies, they examine: a) the test validity and largely confirm its convergent and discriminant validities; b) its fakeability and find less faking on CRT-P compared to self-report personality measures; and c) criterion-related validity of the test and observe significant correlations between the CRT-P scores and leadership occupancy and effectiveness, respectively. This study addresses the call for more research on using alternative measures of personality, such as conditional reasoning (Sackett, Lievens, et al., 2017).

Moldzio, Peiffer, Wedemeyer, and Gentil develop a contextualized measure of conscientiousness and emotional stability and assess each trait with two facets: “industriousness” and “orderliness” and “social-interactive” and “continuous”, respectively. Using four independent samples across two studies, they find support for the incremental validity of four facets, over and above the comparable traits measured by NEO-PI and cognitive ability, in predicting vocational and occupational success. This study addresses the call for more research on validities of contextualized personality measures at the facet level (Shaffer & Postlethwaite, 2012). It also responds to the call for using more objective data, such as exam grades and supervisory and panel ratings to assess the performance.

Bouland-van Dam, Oostrom, De Kock, Schlechter, and Jansen conduct a systematic literature review of the last 35 years of leadership potential research. Using an employee selection lens, they consider leadership potential as a referential construct and organize their findings around predictor constructs and criterion constructs, covering job-related leader behaviours as well as organizational outcomes. They identify intelligence, personality traits and learning agility as key predictors of leadership potential. In the criteria domain, leadership potential was operationalized in terms of a number of indicators, such as job content and skills’ learning, peer and subordinate rated performance, ability to deal with

change, assessment centre-based ratings of leadership potential, amongst others. Their review identifies a number of challenges that should be addressed in the future leadership potential research, such as inappropriate conceptualization and construct contamination, and measure deficiency and contamination, amongst others. This paper addresses the need for more research on expanding the criteria domain, specifically focusing on identifying leadership potential.

Derous, Nguyen, and Ryan investigate the effectiveness of two cognitive training interventions - intercultural effectiveness training and structured free recall intervention- for overcoming hiring discrimination against ethnic minority applicants in the resume screening selection stage. Using a pre-test, repeated post-test experimental design, their findings show lower job suitability ratings for minority applicants compared to the applicants of the majority group, but this initial discrimination is reduced after both training interventions. Nevertheless, the hiring discrimination is observed again for both type of interventions 3 months later. The intercultural effectiveness training leads to improved ability to suppress stereotypes, both immediately after the intervention and after three months.

The role of technology in recruitment and selection

Gkorezis, Georgiou, Nikolaou, and Kyriazati compare the effects of gamified and traditional situational judgement tests on recommendation intentions, mediated by the organizational attractiveness and moderated by participants' video gaming experience. Using an incumbent sample and experimental research design, their findings show that compared to the traditional method, the gamified method has a positive effect on organizational attractiveness, which in turn positively predicts recommendation intentions, but only for those, who have a high level of video gaming experience. This study addresses earlier calls in

major reviews for more research into the favourability of digital selection procedures (McCarthy et al., 2017; Woods et al., 2019).

Also focusing on situational judgement tests, Bardach, Rushby, Kim, and Klassen compare the effects of three types of situational judgement tests: a video-based test that included text, a video-based test without text and a traditional, text-based test. Using a sample of applicants and a quasi-experimental design, they find that the scores across the three tests did not differ, but both video-based tests are perceived as more engaging than the text-based test. They also find that female applicants perform significantly better on the text-based test, but there are no gender differences in any of the video-based tests. In terms of ethnicity, their findings show that applicants from the majority group show higher scores on all three type of tests compared to the applicants from the minority group. Performance on the video-without-text and text-based tests is positively related with role play and group task scores from the assessment centre. This study addresses the call for more research on using applicant samples in studying applicant reactions and validity of digital (and traditional) selection methods, respectively.

Proost, Germeys, and Vanderstukken study applicant reactions to video interviews and explore the extent to which expectations of showing potential and using non-verbal cues during video interviews can explain applicant reactions to this particular digital selection method. In the first study, their participants prefer in-person compared to the video interview and they expect to have fewer opportunities to demonstrate their potential and use nonverbal cues in video compared to in-person interviews. In the second study, participants in the video interviews show significantly lower perceptions of organizational attraction compared to the participants in the traditional in-person interview condition, because they expect significantly fewer opportunities to demonstrate their potential. This study addresses the call for more

research on underlying mechanisms that can explain applicant reactions to digital selection procedures.

Organizational attractiveness, applicant behaviours, and impression management

Carpentier and Van Hoye explore the effects of how organisations respond to negative reviews published on Glassdoor about themselves as employers on organizational attractiveness using two experimental studies. The first study shows that organizations using a denial strategy are perceived as more attractive than those organizations that do not respond to negative reviews at all or those that use accommodative response strategy. This effect is mediated by lower review credibility and enhanced organizational trustworthiness. The second study shows that none of the response strategies is related with organizational attractiveness once the agreement between a large number of reviews in relation to whether the organizations were good or bad employers has been factored in. Overall, the findings of this study suggest that it might be helpful for organizations to use a denial strategy to deal with negative reviews about themselves as employers, but when they receive a large number of reviews with high consensus between them, organizations might not be able to do much to improve their organizational attractiveness. This study addresses the call for more research on how third party employer branding (e.g., Glassdoor, social media platforms) might shape organizational attractiveness and specifically, how the organizations can deal with negative reviews posted online to improve their image (Dineen & Allen, 2016).

In another interesting study into organizational attractiveness, Ghielen, De Cooman, and Sels investigate the relationships between person-organization fit and employer attractiveness and the moderating role of employer brand clarity in this relationship. Unlike other studies in this special issue, they use a large secondary dataset and find significant positive relationship between person-organization fit and employer attractiveness, even after

controlling for common predictors of attractiveness, such as good working conditions. Counterintuitively, the person-organization fit is more positively related with attractiveness when employer brand clarity is low rather than high. This study shows that organizational attractiveness should be studied by focusing on both, employer brand content and process (or how clearly the content is conveyed). By appropriately conceptualizing the employer brand clarity at the organizational level of analysis, this study addresses the call for more multi-level research that can tease out the effects of different individual and organizational variables on recruitment and selection outcomes.

Wille, Derous, and Weijters explore whether the organizations should offer unique or the same but better attributes as their competitors to be perceived as more attractive employers. Using two experimental studies, they find that offering the same but better job attributes is more positively related with job seekers' preference than offering unique attributes in less complex judgement and decision-making situations. This is also the case in more complex type of situations if job seekers have more work experience. This study addresses the call for more research on how to attract specific type of job seekers (Ployhart et al., 2017).

Finally, the special issue includes three papers that provide novel insights into impression management. Melchers, Bill, Buehl, Rybczynski, and Kühnel explore relationships between the ability to identify criteria in interview questions and the use of self-promotion-related impression management tactics, respectively, and interview performance. Unlike most of the previous research, they model between-person and within-person effects to also explore the extent to which within-person variation in identifying specific criteria in interview questions and the use of self-promotion tactics is related to within-person performance fluctuations across different interview questions. Using a simulated selection interview study, they find that ability to identify criteria and self-promotion tactics are

positively related to interview performance at the level of the whole interview. Looking at the interview question level, they find that participants perform better in those questions for which they are able to identify the criteria better and worse in those questions, in which they use higher levels of self-promotion.

Buijsrogge, Duyck, and Deros report findings into biasing effects of initial impression formation, its origin and development when evaluating stigmatized applicants in the rapport building and interview stages. Using experimental research design, their first study shows that both, cognitive and motivational processes in rapport-building stage lead to anchoring in later stages of decision-making, which results in lower hiring intentions of facially stigmatized candidates compared to equally qualified but non-stigmatized applicants. In the second study, they confirm a facial stigmatized bias in traditional interviews, but there is no such stigmatized effect when the partially blind interview technique is used (i.e., when the interviewers and the applicants do not see each other during the rapport building, but this visibility is present during the interview stage). Their findings show that in traditional interviews, the stigma, formed during the rapport building stage, influences the interviewers' decision-making process, hence leading to biased applicant ratings. The use of partially blind interview technique prevents biased initial impression of the stigmatized applicants, which leads to less stigmatized impressions of applicants in the interview stage, ultimately resulting in less biased interview ratings for stigmatized applicants. This paper addresses some of the methodological challenges of the recruitment research, such as using data other than self-reports (e.g., the use of eye-tracking movement technology) and samples of experienced recruiters.

Brosy, Bangerter, and Ribeiro study the role of laughter in selection interviews and its association with applicant impression management and interview performance. Using a novel methodology of coding a substantial number of real or actual selection interviews, they find

that applicants laugh more often than recruiters and are more likely to laugh close to transitions between different interview stages. There is a positive relationship between applicants' participation in shared laughter and recruiters' perception of applicant honesty and hiring recommendations, respectively. However, applicant unilateral laughter is negatively associated with recruiters' perceptions of applicants' impression management, honesty and hiring recommendations, respectively. This is a rare study using data from actual recruitment and selection context that is at the same time underpinned by observational rather than self-report data.

Final thoughts

In this paper, we contextualized our special issue within the last decade of recruitment and selection research. Our review has identified a number of future research directions, some of which the 13 novel papers in this collection are addressing. Having immersed ourselves into this vast literature, we are more convinced than ever that we need more sophisticated, theory-driven selection and recruitment research, which will provide real, hands-on support to practitioners. Also, we believe it is time for the recruitment and selection research to truly embrace the multi-level research paradigm to shed more light on how individual, team, and organizational-level predictors explain the pre and post-hire outcomes across the whole organization. Both of these “meta-meta” future directions are key to address and explain how grand societal challenges affect and might affect the recruitment and selection practice in the future.

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Table 1

Summary of key findings and future research directions in review papers and meta-analysis across various selection and recruitment topics

Study	Trend/ focus	Key findings	Future research directions
Ryan & Ployhart (2014)	Overview of selection literature	This review addresses recent developments in designing, implementing, and evaluating selection systems. They discuss key trends in selection research, such as expanding the criterion space, improving situational judgment tests, and dealing with social desirability in selection tests.	The need for theoretically driven research on technologically enhanced assessments, psychometric analysis of gamified selection systems, predicting criteria at multiple-levels, studying culture-fit selection, amongst others. They also note what future research should focus less on, such as providing evidence of applicant faking, amongst others,
Ployhart et al. (2017)	Overview of selection and recruitment literature	This review integrates 100 years of research on recruitment and selection published in the <i>Journal of Applied Psychology</i> . They address various challenges that have influenced the field and discuss how the field has evolved.	A detailed agenda for future research with a number of research questions mapped against different trends in practice, such as technology-driven assessment, war for talent, and addressing demographic changes, is put forward.
Phillips & Gully (2015)	Overview of strategic recruitment	This review addressed the importance of strategic recruitment, differentiating it from traditional recruitment. They introduced a model that depicts how business strategy influences recruitment outcomes at multiple levels.	A number of propositions and research questions are suggested for future research using a multilevel approach to emphasise the importance of alignment between recruitment inputs, processes, and outcomes within and across levels for gaining competitive advantage.
Breaugh (2013)	Overview of recruitment literature	This review integrates research evidence on job applicant's perspective, recruitment targeting, recruitment methods, the recruitment message, recruiters, recruitment media, the site visit, the job offer, and the timing of recruitment activities, and recruiting members of underrepresented groups.	The review outlines recommendations for future research in terms of recruitment methods (e.g., more research on actual applicants; more evidence on mediating mechanisms to explain why recruitment methods work; expand the range of recruitment methods) and recruitment message (e.g., how to convey evaluative information to job applicants).
Lievens & Sackett (2017)	Overview of selection literature	This paper uses a modular approach to first identify key measurement components of different selection methods, such as stimulus format and contextualization, and then integrate and synthesize the evidence about each of these components in relation to validity, subgroup differences and applicant reactions.	Their review aims to drive more theory-driven research around different measurement components of selection methods. They provide a number of specific research questions in relation to each measurement component.
Sackett, Lievens, Van Iddekinge, & Kuncel (2017)	Overview of selection literature	This review integrates 100 years of research, published mainly in the <i>Journal of Applied Psychology</i> , on individual differences and their measurement. They address 3 major domains, such as KSA (i.e., knowledge, skills and abilities), personality, and vocational interests and analyse the developments in each of these domains.	They call for future research to explore the extent to which individual differences scores are differentially saturated with constructs by different methods. They also call for novel ways of measuring the existing constructs, such as personality measurement using scores other than self-reports, conditional reasoning, or simulations and games.

Table 1. *Cont.*

Study	Focus	Key findings	Future research directions
Shaffer & Postlethwaite (2013)	Validities of selection methods	This meta-analysis showed that the conscientiousness strongly predicted performance in highly routinized jobs and weakly predicted performance in jobs that require high levels of cognitive ability.	Future research could explore: a) the moderating role of job characteristics in relationships between other personality traits and performance and b) the moderating role of other job characteristics, such as the requirement of specific skills in relationships between personality traits and performance, amongst others.
Bobko & Roth (2013)	Validities of selection methods	This paper systematically reviews, categorizes, and analyses previous reviews and meta-analyses on Black-White subgroup mean differences in selection test scores. They pay attention to confounds due to a) the use of incumbent versus applicant samples and b) different constructs that are assessed with the same test methods and how these constructs impact score differences.	They call for more research to account for a number of issues, such as: a) conducting research on biodata and structured interviews as well as training and experience evaluations using applicant data; b) exploring the reasons for differences between subgroups in leadership assessments; c) conducting more research on differences between other ethnic groups; and d) use clearer labels when referring to selection tests, amongst others.
Shaffer & Postlethwaite (2012)	Validities of selection methods	This meta-analysis found that work-specific or contextualized measures of personality were more valid predictors of performance than the non-contextualized personality measures.	Future research could explore: a) the validities of contextualized and non-contextualized measures of personality in applicant samples and b) different performance criteria for which contextualized personality measures are more valid, amongst others.
Oh et al. (2011)	Validities of selection methods	This meta-analysis found that the operational (true) validities of observer ratings-based FFM traits were higher compared to those based on self-reported ratings. All observer ratings-based FFM traits significantly predicted overall performance. The observer ratings-based FFM traits had meaningful incremental validities over self-reports-based FFM traits in predicting overall performance.	Future research should address a number of issues, such as: a) explore the extent to which the observer ratings used for selection purposes are biased; b) explore the relationships between observer ratings of personality and work-related outcomes and test more moderators in these relationships; and c) explore whether other sources, such as subordinates, customers, or friends show similar or even better validities and explore the contextual moderators in these relationships.
Lang et al. (2010)	Validities of selection methods	This study developed a conceptual and methodological model to study the relationships between cognitive abilities and job performance from the nested-factors framework perspective. Their meta-analytic findings showed that although GMA was an important predictor, narrower cognitive abilities were also important for predicting job performance.	Future research should: a) use modern relative importance measures to explore the validities of cognitive abilities for job performance; b) expand the criterion space to include other dimensions of performance, such as organizational citizenship behaviours and counterproductive work behaviours and explore the role of cognitive abilities for these criteria; c) consider altering or additional GMA measures to ensure that they can capture narrow abilities as well as GMA.

Table 1. *Cont.*

Study	Focus	Key findings	Future research directions
Berry et al. (2011)	Validities of selection methods	Using a meta-analysis of 166 studies, they found lower criterion-related validity of cognitive ability tests for racial/ethnic minorities both across and within the domains of educational admissions, civilian employment, and military. They also reported differential validity between specific groups with evidence of higher validity in white subgroups.	Future research should explore: a) the underlying causal factors of differential validity across different sub-groups; b) the trends of how validities within each domain might change over time; and c) the role of range restriction in evidence on differential validity.
Christian et al. (2010)	Validities of selection methods	They developed a classification of construct domains assessed by situational judgement tests (SJTs) and conducted a meta-analysis to explore the criterion-related validities of identified construct domains. SJTs that assess teamwork and leadership skills showed high validities for predicting overall job performance. Video-based SJTs showed better criterion-related validity compared to paper-pencil based SJTs.	Future research could address the call for further refinement and validation of construct-oriented paradigm in SJT studies, including: a) presenting detailed construct-level information, b) exploring different aspects of SJT methodology that may influence the outcomes, c) examining whether there is a method-level or a higher order construct that SJTs measure, and d) conduct more predictive validation studies that demand longitudinal research designs.
Campion, Ployhart, & MacKenzie (2014)	Validities of selection methods	This paper first presents a comprehensive structure of SJT attributes, such as scoring methods and constructs assessed, and then uses content analysis to integrate the existing evidence around this structure. They organize their review around three major themes, such as SJT development, scoring and uses, types of reliability estimates, and attributes that improve or lower the internal consistency.	They summarize a number of future research directions, organized around development (e.g., a study of relationships between SJT development methods and constructs), sample or research design (e.g., the use of experimental designs), reliability (e.g., a study of how theory-based development might improve reliability), theory (e.g., a need for more theory-driven SJY design), and new purposes (e.g., applicant reactions to SJTs).
Huffcutt (2011)	Validities of selection methods	This review summarizes evidence on the relationships between the employment interview ratings and different constructs. Their findings suggest that the mean correlation between interview ratings and interview performance is twice the size of correlation between interview ratings and criteria related with job-related interview content.	Future research should: a) assess job-specific interview constructs, including “general interview factor”; b) explore the role of culture in interview-based selection; c) further examine and broaden the analysis of the influence of interviewer’s characteristics; and d) examine the role of general motivation as a state variable, including developing its measure, amongst other directions.
Kuncel et al. (2013)	Validities of selection methods	Using a meta-analysis of 17 studies, they found that mechanical combination of assessment data (i.e., the use of algorithms and formulae) showed stronger correlations with various work and academic-related criteria, including job performance, compared to clinical method of combining data (i.e., the use of expert judgment and intuition).	Specific and controllable aspects of assessment situation, assesse and decision process that erode predictive power should be studied further. Future research should study a) why clinical or expert judgments lead to lower validity, b) why decision makers either use or ignore information when making selection decisions, and c) what alternative methods might improve validity at the same time as retaining acceptability.

Table 1. *Cont.*

Study	Focus	Key findings	Future research directions
Morris et al. (2015)	Validities of selection methods	Using a random-effects meta-analysis of 39 studies that applied multiple assessment methods, they found that assessors' recommendations were valid predictors of job performance, but the validity was higher for managerial than non-managerial jobs, and for assessments that included a cognitive ability test.	Future research should conduct more validation studies of individual assessment and explore a) the effectiveness of individual assessment practices, b) the effects of assessor training on consistency of interpretation and integration of assessment information, and c) the specific constructs measured in individual assessment and explore the construct and predictive validity of specific assessor judgements.
Kleinmann & Ingold (2019)	Validities of selection methods	This comprehensive review of AC literature integrates the conceptual perspectives on AC and integrates the empirical findings around the roles of the assessee, the assessor, and the AC design and their interplay, respectively, in how they shape the interpersonal situation of the AC. It advances our understanding of the interpersonal nature of ACs.	They identified a number of areas for future research with examples of specific research questions. In addition to more research on the role of assessee, assessor, and the AC design, they call for more research around the role of technology and cross-cultural issues in ACs.
Sackett, Shewach, & Keiser (2017)	Validities of selection methods	Using 17 samples on which the AC and cognitive ability scores were collected from the same participants, this meta-analysis found higher validity for ACs compared to cognitive ability tests.	Future meta-analytical research to consider how comparisons of predictors require samples, settings, and criterion measures to be comparable or alternatively, show strong evidence that differences in samples, settings, and criterion measures do not affect validity estimates.
Van Iddekinge et al. (2012)	Expanding the criterion space	Considering job performance, training performance, CWBs, and turnover, this meta-analysis showed that the criterion-related validities of integrity tests were relatively small, with the exception of self-reported CWBs, which showed slightly better results. The validities for job performance were better if the integrity tests were authored by test publishers.	Future research could: a) present correlations among all measures, which would help future researchers conducting meta-analyses compute composite validities; b) study what integrity tests and its underlying facets capture and how they relate to relevant criteria; and c) use research designs that would allow a more comprehensive reliability assessment of CWB measures.
Gonzalez-Mulé et al. (2014)	Expanding the criterion space	The meta-analytic results of 78 studies showed that the correlation between GMA and CWBs was virtually 0. The correlation between GMA and OCBs was small but positive. They also found that: a) the five-factor model (FFM) of personality traits were jointly a substantially better predictor of CWBs than GMA; b) FFM traits and GMA were almost equally important predictors for OCBs, and c) the GMA was a substantially better predictor of task and overall job performance compared to the FFM traits.	Future research could explore: a) the moderating role of GMA in the relationship between the OCBs and job performance to test whether individuals with higher GMA are able to engage better with those OCBs that benefit the organization; b) the role of mediators, such as knowledge, in the relationship between the GMA and OCBs and CWBs; c) the relative role of emotional intelligence compared to FFM traits and GMA in predicting non-task performance; d) different motives behind non-task behaviours in individuals with low vs high GMA; and e) the construct of change-oriented CWBs, among others.

Table 1. *Cont.*

Study	Focus	Key findings	Future research directions
Chiaburu et al. (2011)	Expanding the criterion space	In this meta-analysis, emotional stability, extraversion and openness had an incremental validity when predicting OCBs over and above conscientiousness and agreeableness. The FFM personality traits predicted OCBs over and above job satisfaction. The comparative analyses of the effect sizes from previous meta-analyses revealed that conscientiousness, emotional stability, and extraversion had similar validities for OCBs and task performance, whereas openness and agreeableness had stronger validities for OCBs.	Future research could explore: a) the relationships between the FFM traits at the facet level and OCBs, respectively; b) relative predictive validities of FFM traits on other attitudinal outcomes, in addition to job satisfaction; c) the validities of cognitive as well as non-cognitive predictors of OCBs, d) the validities of personality for OCBs using alternative sources of data and acknowledging the possibility of non-linear relationships between personality traits and OCBs; and e) the validities of personality traits other than those from the FFM, such as HEXACO.
Van Iddekinge et al. (2019)	Expanding the criterion space	Using a meta-analysis of 75 studies to study relationships between pre-hire experience and performance or turnover, the pre-hire experience showed weak correlations with job and training performance and turnover, respectively. The pre-hire experience was more strongly related with job performance when participants first entered a new organization and task-level experience was a better predictor of training performance compared to job and occupation-level experience.	Future research could explore: a) the constructs that the pre-hire experience measures actually assess; b) alternative measures of pre-hire experience, such as evaluating applicants' experience based on their applications and resumes; c) more specific types of experience; d) the effects of pre- versus post-hire experience on employee outcomes (e.g., using time-series); e) whether experienced obtained in their current job predicts their performance in a different job in the same company; and f) the extent to which making decision based on pre-hire experience might contribute to the issues related with adverse impact and diversity.
Van Iddekinge et al. (2011)	Expanding the criterion space	This meta-analysis of 74 studies on vocational interests and performance and turnover showed moderate validities for training performance, turnover intentions, actual turnover and job performance, however these were higher when: a) interests were theoretically relevant for the work to be performed, b) interests were measured with scales that assessed job-relevant interests, and c) studies explored multiple interests.	Future research should: a) explore the conceptual relevance of different interests considering the nature of the job; b) measure multiple interests which might involve developing new scales; c) provide information about how they assessed and analysed interests as well as present significant and non-significant validities and report statistics, necessary to estimate range restriction; d) explore predictive validity of interest measures on applicants; e) explicitly define the extent to which each measured interest is relevant to studied criteria, among others.
Anderson et al. (2010)	Applicant reactions	This meta-analysis found support for the reaction generalizability hypothesis in applicant reactions across 17 countries. The results showed that the work samples and interviews were the most preferred, whereas honesty tests, personal contacts and graphology were the least preferred.	Future research should explore: a) the underlying mechanisms or causes that can explain applicant reactions, and b) various moderators of applicant reactions in different countries, selection scenarios and levels of job entry, respectively.

Table 1. *Cont.*

Study	Focus	Key findings	Future research directions
McCarthy et al. (2017)	Applicant reactions	This comprehensive and critical review integrated the findings of 145 studies focusing on the expansion of the theoretical frameworks used, incorporation of new technology in selection, internationalization of applicant reactions research, and emerging boundary conditions.	The authors further discuss the four key challenges for applicant reactions research and propose 8 research questions for future research. They suggest that stronger research designs are needed, whereby the empirical studies would use greater controls, broader constructs, and multiple measurement points.
Konradt et al. (2020)	Applicant reactions	Using a random-effects meta-analysis of 14 studies with at least two measurement points, this study found that the perceptions of fairness declined nonlinearly across the selection process. Those with higher levels of initial fairness expectations experienced a steeper decrease.	Applicant reactions should be studied by a) using more than just 2 measurement points to study the entire selection process and address within-individual change in fairness perceptions and their effects on long-term outcomes, b) using behavioural data and sources other than the applicants; and c) addressing hidden dynamics in applicant reactions.
Levashina et al. (2014)	Validities of selection methods, applicant reactions and impression management	This comprehensive study integrates the literature on structured employment interviews focusing on the following aspects: a) definition of structure and its components, b) reducing group differences in interview ratings through structure; (c) impression management in structured interviews, d) measuring personality via structured interviews, e) comparing situational versus past-behaviour questions, f) probing, follow-up, prompting, and elaboration on questions, g) developing anchored rating scales; and h) applicant and interviewer reactions to structure.	The authors propose a total of 12 propositions and 19 research questions across each area they reviewed. For instance, the authors call for more research on reliability and incremental validity of different components of structure as well as how much structure is needed to decrease group differences, who the raters of impression management should be, the need to develop personality-based structured interviews, and study applicant and interview reactions to specific components of structure, among other research areas.
Peck & Levashina (2017)	Impression management	Using a meta-analysis of 18 studies, they found that impression management was more frequently utilized in the interview compared to job performance settings. Whereas self-focused tactics were more effective in the interview settings, other-focused tactics were more effective in job performance settings.	Future research should explore a) if impression management is viewed as a contamination or job-related variables in order to better design the selection practices to improve the accuracy of the ratings, and b) moderators in the relationships between self and other-focused tactics and interview and performance ratings, respectively.
Schilling, Becker, Grabenhorst, and König (in press)	Impression management	This meta-analysis of 66 studies explored the relationships between cognitive ability and faking in personality tests using selection and non-selection samples. They found that applicants with higher cognitive abilities scored higher on personality tests, but only in selection situations, providing evidence that applicants with higher cognitive ability are more likely to fake in personality assessment.	Future research should focus on: a) field studies, b) more robust construct validation of the personality tests used in the selection context, c) applicants' mental processes, strategies and objectives in selection; and d) adequate reporting of their results that would enable future meta-analyses.

Table 1. *Cont.*

Study	Focus	Key findings	Future research directions
Schlachter & Pieper (2019)	Validities of recruitment methods	Based on a review of 101 studies, the authors develop a 3-phased model of employee referral hiring, distinguishing between pre-hire motivation and action, application and hiring, and post-hire outcomes. They also focus on contextual variables that may impact referring process, such as referrer's individual characteristics and reputation.	A total of 27 specific research questions are proposed concerning each stage of the model, such as the role of social tie strength in a) referrer's ability to provide realistic information about the candidate; b) candidate's likelihood of receiving an offer and c) amount of socialization between a referrer and referred employee. They also recommend a study of job, firm and country effects on different phases in referral hiring.
Earnest et al. (2011)	Validities of recruitment methods	Using a meta-analytic path analysis, this study found that the enhanced perceptions of organizational honesty were the main mediator through which realistic job previews (RJPs) impacted voluntary turnover. The moderator analysis showed that the oral or written RJPs done post-hire and designed to signal organizational honesty were the most effective for reducing turnover.	They propose a number of directions for future research, including studying: a) the signalling-based theory of RJPs that would extend beyond the traditional view on fulfilled expectations and self-selection; b) the role of different types of social exchanges in understanding RJPs; c) exploring how the signal fit influences individual responses to an RJP; d) different boundary conditions of RJPs effectiveness, and e) multiple mediators in a causal chain, amongst other directions.
Uggerslev et al. (2012)	Applicant attraction	Using a meta-analysis of 232 studies, they found that the perceived fit was the strongest predictor of applicant attraction, but it did not predict job choice. Job characteristics were the strongest predictors of job choice decisions and organizational characteristics were the strongest predictors of maintaining the applicant status. Recruiter behaviours were important in the first two recruitment stages.	Future research should a) conduct more longitudinal studies to shed light on how the persuasion mechanisms might change during the recruitment stages and to better understand how the attitudes are formed through careful scrutiny of available information versus the use of heuristics, b) study supplementary and complimentary fit simultaneously to better understand the role of fit in applicant attraction, and c) explore the consequences of recruitment and selection activities, such as their optimal timing.
Evertz & Süß (2017)	Applicant attraction	Based on a systematic literature review, this study integrates key findings on individual differences in applicant attraction in terms of biographical characteristics, personality traits, emotions and moods, values and attitude, ability, perceptions and motivation.	They propose 6 questions for future research to address the following gaps they identified in the literature: a) theoretical and methodological gaps, b) recruitment-process related gaps, c) individual differences classification-related gaps, and d) practice-oriented gaps.
Klotz et al. (2013)	Applicant attraction	This piece reviews previous research on the role of trustworthiness in the recruitment and selection processes. The authors synthesise the research on the initial perceptions of job applicants' and hiring organizations' perceptions of one another's trustworthiness at the pre-entry stage, followed by the review of evidence on these dynamics in different stages of recruitment and selection processes.	A number of research ideas are proposed concerning the a) initial perceptions of trustworthiness (e.g., what boundary conditions can explain the speed and accuracy of trustworthiness' perceptions), b) trustworthiness in selection tests (e.g., applicant reactions to different tests in terms of their perceptions of trustworthiness), and c) change in trustworthiness perceptions regarding different organizational agents as the selection and recruitment process evolves, amongst others.

Table 1. *Cont.*

Study	Focus	Key findings	Future research directions
Tippins (2015)	Technology in recruitment and selection	This review discusses the use of technology in selection tests and assessments and the advantages and disadvantages of relying on technology in selection. Technology such as computers, mobile devices, video and audio equipment, and assessment portals are analysed.	More research is needed to explore the impact of technology on the validity and reliability of tests, selection practices, and applicant reactions. A total of 34 specific research questions are proposed concerning unproctored internet testing and 26 concerning other technology-enhanced assessments.
Roth et al. (2016)	Technology in recruitment and selection	This study reports a theoretically-grounded research agenda for the use of social media in selection-related process. Social media assessment is defined as review of online information from websites that connect individuals for use in employment decisions.	They develop 18 propositions concerning a) three aspects of information acquisition process of social media assessments, b) links between social media assessments and other constructs in selection-related behaviours, c) connection between demographic variables and social media assessments, and d) applicant reactions to social media assessments.
Woods et al. (2019)	Technology in recruitment and selection	This review integrates the recent developments in digital selection methods, focusing particularly on advances in internet-based techniques. They analyse the construct and criterion validities and applicant reactions to five main groups of procedures, such as online applications, online psychometric testing, digital interviews, gamified assessment and social media.	They propose an agenda for future research focusing on 10 specific research questions. They suggest that distinct and specific body of literature on digital selection methods has to be developed, recognizing the speed of technological advancement. They call for a multidisciplinary research to achieve this aim.
Weekley et al. (2015)	Technology in recruitment and selection	In this review, the authors synthesize the literature on low-fidelity simulations such as text and multimedia-based SJTs and analyse the recent developments in this field, such as online in-basket exercises and game-like assessments.	They identified 7 areas for future research, including the need for design of valid measures of homogenous constructs using SJTs, the application of cognitive diagnosis models in SJTs for personnel selection, and the study of measurement equivalence of text and multimedia simulations.
Steger et al. (2020)	Technology in recruitment and selection	This meta-analysis found that unproctored ability assessments were more prone to cheating. Unproctored assessments may work for those tasks/ questions that are difficult to research online.	Future research could address: a) cheating directly by exploring ways of identifying cheating and dishonest behaviour in ability assessments, b) individual differences in unproctored and proctored test scores, and c) address these questions by meta-analysing raw data.