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Taking the temperature of employability research: a systematic review of interrelationships across and within conceptual strands

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ABSTRACT

Employability concerns an individual's potential in the labour market. This potential has been interpreted along three strands: (I) in terms of personal strengths that increase employment potential; (II) in terms of self-perceived employment opportunities; and (III) in terms of job transitions as a realization of employment potential. The risk of using different approaches is fragmentation of the research field. In response, we aim to study the extent to which fragmentation is an issue and the potential for integration both across and within strands. We achieve this aim through a systematic review of 71 empirical studies on employees' employability that reports on the interrelationships across and within strands and instruments used within strands. Our review shows that the different strands are connected, yet evidence mostly comes from cross-sectional studies. In addition, relationships within strands are typically stronger than across strands. However, there are many different instruments used, and this is a key barrier for integration.

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Systematic literature review; employees; movement capital; perceived employment opportunities; perceived employability; job transition

Introduction

Employability has attracted much attention among policy-makers as a key tool to achieve sustainable employment and sustainable careers, particularly in times of change (OECD, 2016). Such changes have been multiple and different across time. Not surprisingly then, employability has been studied since the mid-1950s (Feintuch, 1955) and in multiple disciplines, such as work and organizational psychology, human resource management, and career studies (Fugate et al., 2021). At the most general level, employability concerns an individual's potential in the labour market. This potential is interpreted along three strands: in terms of *personal strengths* that increase the individual's potential, in terms of *self-perceived employment opportunities* as an individual appraisal of this potential, and in terms of *job transitions* as a realization of this potential (*Forrier et al., 2015; Vanhercke et al., 2014).

Each of these strands has merit and has addressed related yet distinct research questions. For example, studies in the first strand seek to identify a set of personal strengths that are input to employability: these strengths make individuals employable. Those studies are helpful in designing employability-enhancing activities (*Akkermans & Tims, 2017). Studies in the second strand assess employability as self-perceived employment opportunities. They typically advance perceived employability as a personal resource that helps individuals to cope with demands at work and in increasingly insecure and volatile labour markets (e.g., De Cuyper et al., 2012). Feeling employable is then an indicator of potential and seeing this potential helps individuals to survive in the labour market. Studies in the

third strand connect employability to job transitions, often with the implicit assumption that the proof of the pudding is in the eating: actual employment transitions are perhaps the ultimate outcome of an individual's employment potential (e.g., Mancinella et al., 2010; Van Harten et al., 2020). However, the risk of research that develops along different strands is that knowledge becomes increasingly fragmented. This risk has been acknowledged in various recent calls for a more integrative employability approach (Guilbert et al., 2016; Williams et al., 2016).

In response, the aim of this systematic literature review is twofold. First, we study the extent to which relationships across employability strands have empirically been addressed in view of probing potential for integration. The assumption is that strands are causally related: personal strengths make individuals employable so that they see employment opportunities, which then facilitate job transitions (Forrier et al., 2009). This assumption is often implicit and based on intuition rather than evidence, but is nevertheless quite strong among both researchers as well as policy makers. To illustrate, Fugate and Kinicki (*De Vos & Soens, 2008, p. 504) see employability as "a disposition that captures individual characteristics" and argue that "employability facilitates the identification and realization of job and career opportunities both within and between organizations". As another example, the policy discourse around lifelong learning is built on the idea of fostering personal strengths to broaden the range of employment opportunities and ultimately to make employees more mobile (OECD, 2016). Yet, whether and the extent to which this assumption is

validated remains unclear. This is an important issue though: when relationships between the strands are significant and meaningful, this may open up ways for integrating research findings and for new research avenues across strands.

Second, we also study the extent to which relationships within employability strands have empirically been addressed. This is relevant too: integration across strands is conditional upon consistency within strands. To put it bluntly, relationships between strands are only meaningful to the extent that meaningful strands exist. This is less obvious as it may seem: Each of the strands has been criticized for offering a scattered view on their interpretation of employability (e.g., Williams et al., 2016) both at the conceptual (e.g., in terms of relevant employability dimensions) and the measurement level (e.g., in terms of scales and items used). Different dimensions and measures are not necessarily problematic, when they tap into different yet related aspects of the same overall concept. They become problematic when it induces a jingle-jangly fallacy; namely that one label is used for very different dimensions or measures, or conversely that different labels are used for very similar dimensions and measures. However, again, this “fuzziness” within strands has not systematically been documented. This too is important to move the field forward and would help to determine if the three strands are conceptually distinctive yet causally related.

Our main contribution is that we “take the temperature” of the employability field, and a systematic literature review is particularly well suited for achieving this. So far, there has been repeated criticism regarding fragmentation and fuzziness of the field. This suggests that “the patient is ill”, yet we do not know the exact diagnosis. An extensive examination is needed to identify routes for cure, both scientifically and for practice. From a researchers point of view, having the diagnosis could help to identify the next steps to integration. From a practitioners point of view, it could help to see which personal strengths are most important and effective, and this could feed evidence-based decision-making regarding employability enhancement.

Two further notes are important. First, we perform a *systematic* review of *empirical* research. The few existing reviews on employability are narrative and/or conceptual in nature (e.g., Guilbert et al., 2016). An exception is the review by Williams et al. (2016), yet this review was much narrower in scope, as illustrated by the number of included studies (16 versus 71 in this review).

Second, our focus is upon workers and not students or the unemployed, though we acknowledge that employability has resonance also for those groups. The first reason for this choice is that employability studies among students and the unemployed traditionally have a focus upon transitions into the labour market, each with very specific dynamics. For example, Rothwell et al. (2008) developed an instrument to measure graduate employability that has become well cited. Items probe into students’ grades, based on the idea that these signal potential worth to employers. Once employed, other signals may become more relevant. Not surprisingly then, this has resulted in separate research streams (see for example, Akkermans and Kubash (2017) for a discussion). Besides, those transitions are well documented elsewhere (Osmani et al., 2015;

Tomlinson, 2012). The second reason is that the focus upon workers aligns with the idea that employability is increasingly important throughout the career and not exclusively in times of abrupt changes and transitions (De Cuyper et al., 2012). Recent employability literature has increasingly been focusing on workers (Fugate et al., 2021). The third reason is that integration across different strands and meanings of employability is likely easier and thus a good starting point when there are boundaries in terms of target group.

In the following, we first provide an overview of the three strands. This leads to the research questions that guided our systematic review.

Employability: three strands

Employability is commonly understood as the individual’s potential in the internal and/or external labour market (Forrier & Sels, 2003). Yet, views on what constitutes employment potential vary. *Forrier et al. (2015) have brought these views together in three strands: *personal strengths* that increase employment potential, *self-perceived employment opportunities* as an individual appraisal of this potential, and *job transitions* as a realization of potential. The three strands are an overall categorization. This should be conceived as a tree structure, with the strands representing the most abstract level of hierarchy. Each strand may have multiple dimensions, and each dimension may have different components. For example, human capital is one dimension within the personal strengths strand. It has two components: job-related and generic skills.

In the first strand, employability is seen in terms of personal strengths that promote the individual’s employment potential. Personal strengths typically concern competencies (e.g., Van Der Heijde & Van Der Heijden, 2006), attitudes (Van Dam, 2004), and dispositions (*Fugate & Kinicki, 2008). Different classifications exist (e.g., Williams et al., 2016). We use the classification into four dimensions advanced by Forrier et al. (2009): human capital, social capital, self-awareness, and adaptability. These four dimensions seem to encompass other classifications (e.g., Fugate et al., 2004; Van Der Heijde & Van Der Heijden, 2006), and are inspired by the knowing-competencies (e.g., DeFillippi & Arthur, 1994; Hall, 2004) that have had much appeal in the career literature. *Human capital* refers to the “knowing-how” competencies from DeFillippi and Arthur (1994). This has been studied through different components, for example, job-related and generic skills (*Wittekind et al., 2010), formal education (*Forrier et al., 2015), and occupational expertise (Van Der Heijde & Van Der Heijden, 2006). *Social capital* refers to the “knowing-whom” competencies. It contains formal and informal networks supporting the career. The focus is often on breadth of networks (e.g., *Forrier et al., 2015), but it is also studied in terms of communication skills (e.g., Akkermans et al., 2013). *Self-awareness* is related to the “knowing why” competencies. It comprises individuals’ personal values, motivations, and career interests that together form the “internal career compass” (McArdle et al., 2007). Self-awareness is for instance, studied as reflective competencies (Kuijpers & Scheerens, 2006), career motivation and identity (*Fugate & Kinicki, 2008), and self-directedness (Kyndt et al., 2014). Finally,

adaptability is “the willingness and ability to change behaviours, feelings and thoughts in response to environmental demands” (McArdle et al., 2007, p. 248). Some scholars stay close to the component of willingness to change (Van Harten et al., 2016) or development (*Veld et al., 2015), while others look at more distal and general components such as optimism or proactive personality (*Fugate & Kinicki, 2008; McArdle et al., 2007). Self-awareness and adaptability are considered “meta-competencies” (Hall, 2004) since they are needed to learn from experiences and develop new competencies.

In the second strand, employability is seen in terms of the individuals’ self-assessment of employment potential, namely the perceived range of available employment opportunities or “self-perceived employability” (*De Cuyper & De Witte, 2011; Berntson et al., 2008; Rothwell et al., 2008). Scholars use different dimensions, either referring to all perceived employment opportunities (e.g., Mäkikangas et al., 2013), or distinguishing between opportunities in the internal (with the current employer) versus the external labour market (with other employers). Some measure both (e.g., Philippaers et al., 2017; Rothwell et al., 2008), and others focus on one (e.g., Philippaers et al., 2017).

The third strand looks at realized employment potential in the form of actual job transitions. Those transitions are interpreted broadly along different dimensions such as lateral or vertical job changes, and transitions within the same organization or to another employer (e.g., *Raemdonck et al., 2012; *Nelissen et al., 2017).

Research gaps and questions

While the three strands and underlying dimensions are certainly helpful in understanding the different views on employability, an obvious question is whether and how the three strands are related. If a relationship exists, this signals potential for further integration and ultimately a more coherent research field. Conditional for this integration is also consistency within strands at the level of both dimensions and measures. This has inspired the following research questions related to relationships between and within strands.

Relationships Across Strands

Personal strengths have also been referred to as the input-based employability approach, and perceived employment opportunities and job transitions as outcome-based employability approaches (Vanhercke et al., 2014). The input-based employability approach looks at factors that influence employment potential, while outcome-based approaches assess potential itself. The distinction between input- and outcome-based employability approaches clearly shows different and seemingly opposing viewpoints. Scholars following the input-based approach conceptualize self-perceived employment opportunities and job transitions as *consequences* of employability, rather than employability as such (Forrier et al., 2018; McArdle et al., 2007). And conversely, researchers advocating the outcome-based approach argue that the input-based approach mixes up employability and its *antecedents* (Rothwell et al., 2008). They argue that personal strengths

promote self-perceived employability and ultimately job transitions when workers act upon those perceptions. These critiques, regardless whether they come from the input- or outcome-based approach, share the idea that the different strands are connected in a causal fashion.

Evidence related to the causal relationships between the different strands has not yet been brought together in a systematic way. The result is that the potential for integration is currently uncharted territory. Identifying this potential is important from a theoretical point of view. If integration is supported by empirical evidence, this would validate existing employability models and their underlying theoretical assumptions about a gain spiral (personal strengths open a range of employment opportunities, both perceived and realized, which then feeds back to personal strengths) (*Forrier et al., 2015; Forrier et al., 2009). Accordingly, our first research question is:

RQ1: What is the evidence regarding the relationships across employability strands?

Relationships within strands

The distinction between the three strands has much conceptual appeal, yet so far, the strands have developed rather independently. The implication is that the strands can be distinguished quite easily. Yet, such an helicopter view may mask the large complexity within each of the strands. One signal is that different dimensions exist within strands. For example, different classifications of personal strengths have been advanced (e.g., *Fugate & Kinicki, 2008; Akkermans et al., 2013; Van Der Heijde & Van Der Heijden, 2006). Those classifications share common ground yet use unique labels and add unique dimensions. In a similar vein, quite diverse job transitions have been studied as dimensions of employability. Another signal is that there is the implicit assumption that dimensions within strands are related, yet this has not been probed in much detail and could be debatable. For example, it is plausible that workers may see employment opportunities within the organization, but not necessarily in the external labour market or vice versa. Yet, interrelationships between dimensions of the same strand have not been summarized, while this is important from a conceptual point of view to accurately define each of the strands and evaluate the coherence and complementarity between employability dimensions within each strand. Integration across strands is possible to the extent that the different strands are relatively homogenous and well-defined. Accordingly, our second research question is:

RQ2: What is the evidence regarding the relationships within each employability strand?

In addition, conceptual consistency goes hand in hand with consistent use of measurement instruments within strands. The risk of an increasing level of detail in dimensions and components per strand is that new instruments are constantly being developed. For example, many of the proposed classifications for personal strengths have come with new instruments. This is not necessarily problematic when those measures are clearly different, yet discriminant validity is not often proven. This construct proliferation could hinder conceptual consistency within strands and, therefore, integration across strands. However, the use of measurement instruments has not been

systematically mapped while such an analysis could expose inconsistencies and overlap between employability dimensions and instruments that are possibly at the root of the lack of integration in the field so far. Accordingly, our third research question is:

RQ3: Within each employability strand, which instruments are used and what do they measure?

Together, the three research questions from a funnel, from more to less abstract. RQ1 concerns the highest level of abstraction with a focus upon the three strands, RQ2 concerns medium level of abstraction with a focus upon dimensions and components within strands, and RQ3 concerns the lowest level of abstraction with a focus upon instruments. To achieve integration at the highest level, the other levels need to be well-aligned and tuned.

Method

A systematic literature review was conducted to answer our research questions. Given the assumed fragmentation and fuzziness of the field (e.g., Guilbert et al., 2016; Williams et al., 2016),

a systematic literature review is more appropriate than a meta-analysis at this stage.

Inclusion criteria and selection process

Our search and selection process included four stages. First, search engines, protocol, and criteria for selection were defined in mutual discussion with all four authors, and the search was then executed by the first author. We searched general databases Scopus and Web of Science for broad coverage, and PsycINFO and EconLit for employability publications in behavioural and social sciences, and economics. In the protocol, we defined criteria for selection per phase, which will be described below. Figure 1 displays a flowchart to illustrate the selection process based on the PRISMA diagram (Moher, 2009). We searched for articles using the keywords “employability” AND “worker” in title, abstract, and/or key words. For the term “worker”, we used “employee”, “labo(u)r force”, “working population”, “workforce”, and “personnel” as equivalents. Also, we added the search command AND NOT “students”, “pupils” or

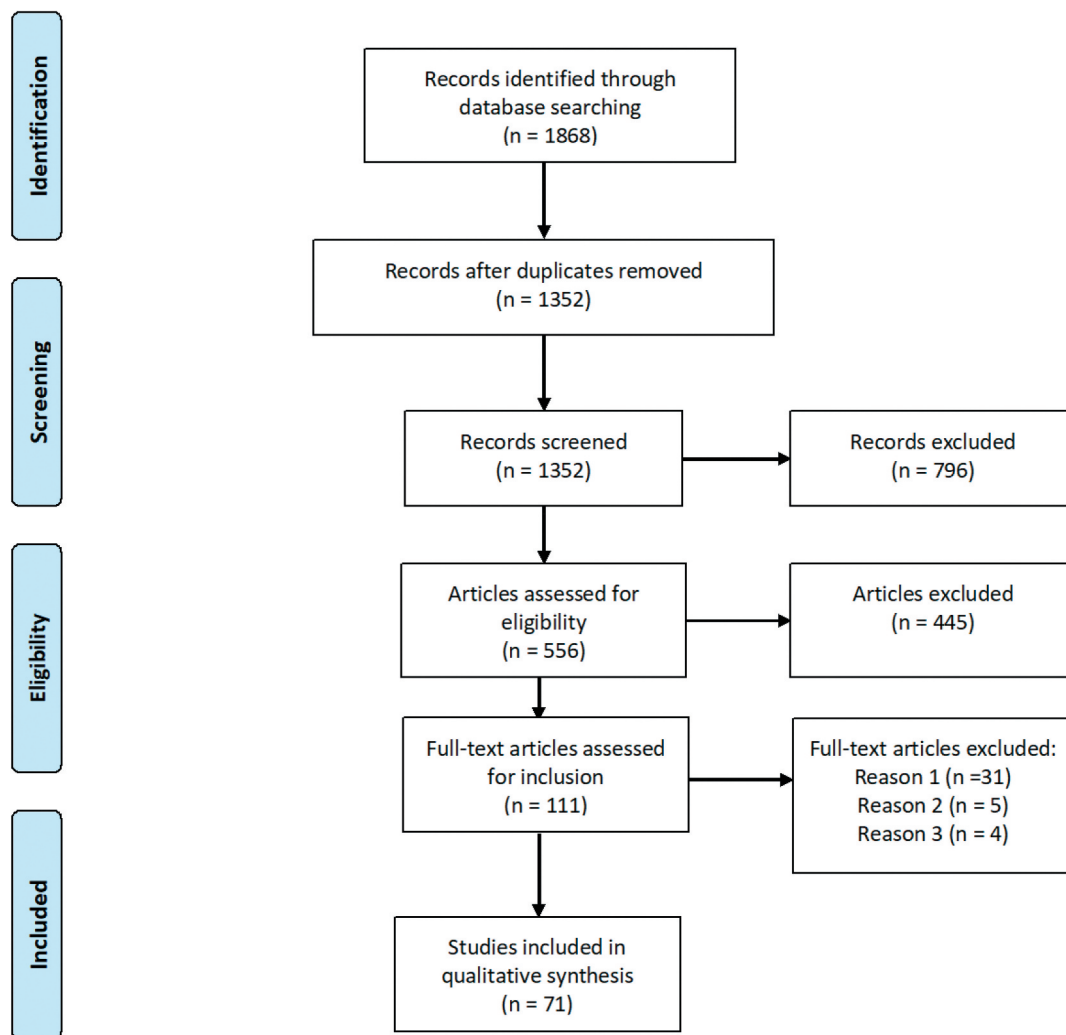


Figure 1. Systematic review flow chart

"graduates" to out-select studies using non-worker samples. We deliberately chose to keep the search for employability open and as broad as possible, without too much interpretation from our side on different conceptualizations of employability. To ensure a manageable and high-quality set of articles, we searched for peer-reviewed articles in English. The implication is that we did not include so-called "grey" literature. Restricting our search to peer-reviewed studies shows that any fragmentation or fuzziness is not a matter of grey literature. We did not place any restrictions on the date of publication, but we decided to include only publications per complete calendar year (up to and including December 2019), so that we were able to compare publication records across years. Based on these criteria, we identified 1,868 articles. After the removal of duplicates, this resulted in a set of 1,352 articles.

Second, the 1,352 articles were screened on title and abstract, resulting in 796 articles that were excluded from further analysis. The main reasons for exclusion were: lack of empirical data, samples including other categories than workers (e.g., students, patients, unemployed, prisoners), and non-English papers. The first twenty references were discussed systematically with all four authors to check whether criteria were clear and shared. The first author then continued the screening (independently).

Third, the remaining 556 articles were assessed for eligibility. The criterion for eligibility in this stage was the availability of two or more employability components in one study, in view of our research questions. The sample of 556 articles was divided in four equal groups over the four authors, and in changing pairs, a first and second screener assessed the full texts of the articles independent from each other (cf., Daniels, 2019). In this stage we also conducted additional coding on research design, research model, and sample. Once coding was completed, inconsistencies in screening and selection were discussed within the author team until full interrater agreement was reached. Those cases of inconsistency were few. There was 90% agreement between two screeners, which is similar to what has been reported elsewhere (e.g., Reader et al., 2020). The main reason for exclusion in this stage was that articles did not include two or more employability

components that can be classified in one of the three employability strands. Additionally, we deleted all articles that did not use a quantitative research methodology ($N = 85$), as these articles did not statistically test relationships between employability components and therefore did not fit our research aims. In all, this stage resulted in the selection of 111 articles.

Fourth, the first author reviewed the full texts of the 111 remaining articles. In this stage, we first of all assessed whether articles reported results on relationships between at least two employability components and whether the measurements used for the employability components were reported. This resulted in the exclusion of 31 articles (exclusion reason 1). Additionally, we deleted 4 articles because full-text analysis revealed that they did not sample workers (exclusion reason 2). A final criterion was that each article needed to reflect a unique sample as including multiple articles using the same sample would bias our review findings. We checked the samples of articles written by the same author. In case of multiple articles per sample, we selected the first published article and deleted the others (5 articles were deleted because of this exclusion reason 3). In all, we excluded 40 articles in this stage. The results of the fourth round were distributed in the author team for a final check and consensus. Therefore, our final selection consisted of 71 articles.

Analysis of selected studies

To provide background information on the studies on employability and to answer our research questions, the 71 studies were analysed using the following evaluation criteria:

- research characteristics: year of publication, journal, research context (country and industry), research design, and respondents' characteristics (age, tenure, and education);
- employability dimensions, components, and instruments (categorized in three strands) and the psychometric quality of the most-used instruments; and
- results on significance and strength of the relationships across and within strands.

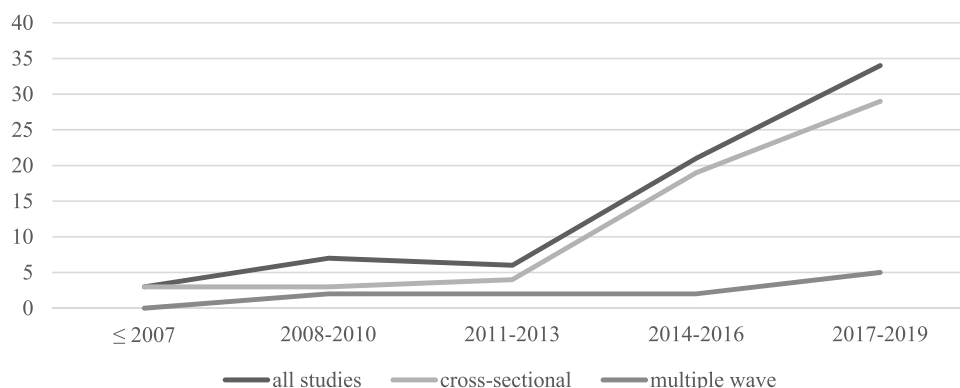


Figure 2. Publication date and research design

Results

This section is organized in two parts. First, we present a descriptive analysis of the research characteristics of the included studies. Second, results in connection to RQ1-3 are presented.

Research characteristics

Concerning *year of publication*, [Figure 2](#) shows a steep increase of employability publications in recent years: almost half of the studies ($N = 34$) were published between 2017 and 2019.

Concerning *journal*, we found that the papers were published in 37 different journals. Most journals ($N = 32$) published one or two papers on the topic of employability. Five journals published more than five articles on the topic: *Career Development International* ($N = 9$), *Frontiers in Psychology* ($N = 7$), *Personnel Review* ($N = 6$), *Journal of Vocational Behaviour* ($N = 6$), and *Journal of Career Development* ($N = 6$).

Concerning *context*, samples come from 21 countries in various continents: Europe ($N = 54$), with many from The Netherlands ($N = 20$) and Belgium ($N = 17$), Africa ($N = 3$), Asia ($N = 9$), North America ($N = 3$), and South America ($N = 2$). Data were collected across a variety of industries. Most frequently studied were education ($N = 12$), IT ($N = 4$), and banking ($N = 3$). A significant number of studies ($N = 37$) used data collected in multiple industries.

Concerning *design*, more than 80% of the studies was cross-sectional ($N = 58$). Only a minority was multi-wave ($N = 13$), with eight two-wave and five three-wave designs. We did not observe a trend towards more multi-wave studies in recent years (see [Figure 2](#)). The multi-wave studies were mostly published in different journals ($N = 9$). Only two journals published more than one multi-wave study (*Journal of Organizational Behaviour*, $N = 2$; *Journal of Career Development*, $N = 2$). Sample sizes were relatively small in most studies: in 28 studies, samples consisted of 300 or less respondents, and only ten studies used samples of 1,000 respondents or more. Most studies ($N = 67$) used worker self-ratings, except for three studies that included both supervisor and worker employability ratings (*Van der Heijde et al., 2018; *Van der Heijden, 2002;

*Van der Heijden et al., 2009), and one study that used supervisor ratings (Sharit et al., 2010).

Concerning *respondents' characteristics*, most studies ($N = 54$) reported a mean respondents' age, typically between 40 and 46 years (SD ranging between 8.1 and 12.7). Slightly more than half of the studies ($N = 43$) reported tenure. Tenure varied, but the most frequently observed average organizational tenure was between eight and ten years. About 40% of the studies ($N = 30$) used a higher-educated sample (i.e., higher professional or university education) and only one study specifically sampled lower-qualified workers (*Raemdonck et al., 2012). The remainder of the studies did not report on the educational level of respondents in their sample.

Relationships across and within strands and variety of instruments

As visualized in [Figure 3](#), relationships between employability components *across* strands were tested 33 times, while relationships *within* the same strand were examined more often, namely 63 times. Nineteen studies examined relationships both across and within strands. Below, we analyse the relationships across (RQ1) and within strands (RQ2). In addition, we analyse the variety of instruments used within strands (RQ3).

RQ1: Relationships across Strands

Relationships between employability components from strands I and II were probed 28 times. Relationships between components from strands I or II on the one hand and strand III on the other were probed four times. Of these, two studies tested relationships between strands I and III, two studies focused on relationships between strands II and III, and one study included relationships across all three strands ([Figure 3](#)).

Relationships between Strand I and II

Personal strengths (strand I) consist of four dimensions: human capital, social capital, adaptability, and self-awareness. All four dimensions have been related to perceived employment opportunities (strand II). Each dimension consists of several components. The following three components were most frequently related to strand II: job-related skills or occupational expertise (human capital dimension) in nine studies,

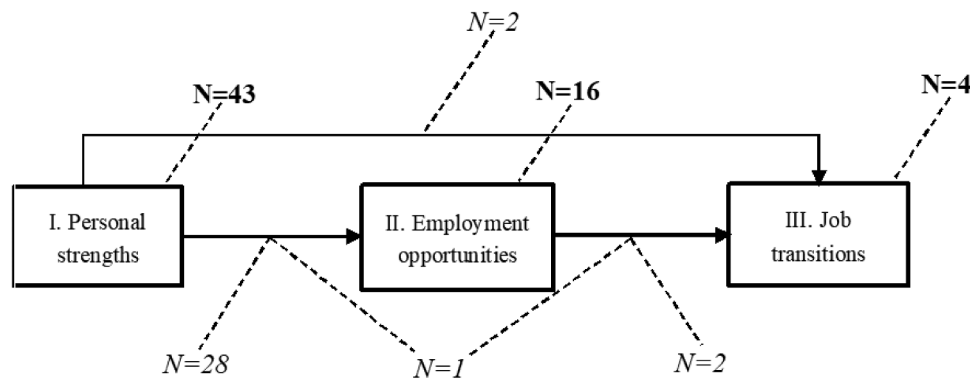


Figure 3. Studied relationships between components within and across strands **Notes:** bold font numbers represent the amount of studies examining relationships between employability components within strands, numbers in italics represent the amount of studies examining relationships across strands. One study can examine multiple relationships.

willingness to change or develop (adaptability) in eight studies, and protean career attitude (self-awareness) in six studies. Most of the studies that examined relationships between strands I and II found positive relationships (a few reported non-significant relationships), but correlation coefficients varied considerably (between .08 and .70). Negative relationships were never reported. Our assumption is that this wide range of the strength of the relationship is caused by the many different instruments that are used to measure personal strengths (see RQ3 below). We assume that the range decreases drastically when studies that use the same instrument are compared. For instance, *De Cuyper et al. (2012) and *Wittekind et al. (2010) used the same instruments to measure job-related skills and self-perceived employment opportunities and found similar results (r around .25). Four studies used multiple wave data and they all reported positive relationships between personal strengths and perceived employment opportunities. The multi-wave studies usually reported regression coefficients of .10-.20 from single personal strengths measured at T1 to self-perceived opportunities measured at T2. They reported somewhat higher correlations (e.g., r around .35) when a latent construct including multiple personal strengths was included (e.g., *Forrier et al., 2015).

Further, we found four studies examining relationships across strands I and II that distinguished between self-perceived internal and external employment opportunities. The overall picture suggests that personal strengths are more strongly related to self-perceived external than internal employment opportunities. This was the case for protean career attitude (*Lin & Lin, 2015) and occupational expertise (*De Vos et al., 2017). Yet, *Forrier et al. (2015) found that movement capital (aggregate of four dimensions of personal strengths) had similar relationships with self-perceived internal and external employment opportunities.

Three observations about the positive relationships between strands I and II stand out. First, most studies found positive relationships between (occupational) expertise (human capital dimension of personal strengths) and self-perceived employment opportunities (e.g., *De Vos et al., 2017; *Van Harten et al., 2016), yet also non-significant relationships were reported. Professional expertise was non-significantly related to self-perceived employment opportunities (*Van der Heijden & *Van der Heijden, B.I., 2002), and two other studies found no relationship between human capital and self-perceived employment opportunities (*Direnzo et al., 2015; *Forrier et al., 2015). Important to note is that these studies all used different instruments.

Second, studies that conceptualized willingness to change (adaptability dimension) broadly with reference to both job change and development all found positive relationships with self-perceived employment opportunities. However, mixed results appeared when willingness to develop was examined separately. *Wittekind et al. (2010) and *De Cuyper et al. (2012) found non-significant relationships, while *Veld et al. (2015) and *Lin and Lin (2015) found positive relationships. Again, different instruments were used.

Third, although a protean career attitude (self-awareness dimension) was mostly positively correlated with self-perceived employment opportunities, three studies found

that this relationship was in fact mediated by other personal strengths: social and psychological capital (*Direnzo et al., 2015), learning goal orientation (similar to development *Lin & Lin, 2015; Williams et al., 2016), and career self-management behaviours (De Vos & Soens, 2008).

Relationships between Strands I and II to III

Regarding the relationships between strands I and II on the one hand and strand III on the other, varying results appeared depending on the job transitions (strand III) included. This could be attributed to different research designs (multi-wave vs. cross-sectional) or to different dimensions of job transitions (internal/external transitions vs. lateral/vertical transitions). The evidence, although very preliminary, seems to suggest that the specific type of transition matters. Here, we point out two findings. First, *Raemdonck et al. (2012)'s findings suggest that personal strengths (self-directedness in learning and in career) relate more strongly to vertical compared to horizontal transitions. Second, personal strengths and perceived employment opportunities seem to be related to both internal and external transitions. *Forrier et al. (2015) found a positive effect of movement capital (aggregate of four personal strengths dimensions) on internal and external job transitions measured one year later and this effect was (partly) mediated by self-perceived internal and external employment opportunities. Yet, *Nelissen et al. (2017) only found a positive relationship between self-perceived external (but not internal) opportunities and turnover intention and actual turnover.

In sum, components *across* strands, notably strands I and II, were consistently positively related. The most frequently studied personal strengths (occupational expertise, protean career attitude, willingness to change) had moderate positive relationships with self-perceived employment opportunities, and typically somewhat stronger with external than internal employment opportunities. The few studies that linked strands I and II with strand III point towards positive relationships. However, the evidence is predominantly based on cross-sectional studies meaning that firm conclusions on causality cannot be drawn.

RQ2: Relationships within Strands

In response to RQ2 we found that relationships between employability components from the first strand were probed 43 times, between components from the second strand sixteen times, and between components from the third strand four times (see Figure 3). The large majority of the relationships within strands are not theory-based and hypothesized, but are merely empirical results.

Within Strand I

Within the first strand, the correlation between components of the human capital and adaptability dimensions was studied most frequently (17 times), not surprisingly so given that they are both included in the often-used instrument from Van Der Heijde and Van Der Heijden (2006). This is followed by the correlation between components of the self-awareness and adaptability dimensions (8 times). The correlations between other personal strengths were also studied, but far less frequently. Most studies reported positive correlations, though with huge variation in the strengths of the relationships: correlations ranged from .05 to .95. Also, we found a few instances of non-significant

correlations. For instance, *Van Harten et al. (2016) did not find a significant correlation between up-to-date expertise (human capital) and willingness to change (adaptability), and *De Cuyper et al. (2012) did not find a significant correlation between job-related and transferable skills (human capital) and willingness to change (adaptability).

To further analyse the large variation of positive correlations within strand I, we reviewed the relationships between components of the four most frequently used multifactorial instruments (Briscoe et al., 2006; *Fugate & Kinicki, 2008; Savickas & Porfeli, 2012; Van Der Heijde & Van Der Heijden, 2006, see the follow-up analysis in the third part of the results section for more details on these instruments). Most studies reported positive inter-factor correlations, yet again correlations varied considerably in strength. For example, the reported correlations between the five components of the Van Der Heijde and Van Der Heijden (2006) “employability competence-based” instrument varied between .13 and .67 across 18 studies. In 8 studies, low correlations were found between the component “balance” and the other four components. The correlations between the components occupational expertise, anticipation/optimization, and personal flexibility were far more consistent. Also, correlations between components that tap into the same dimension (e.g., anticipation/optimization and personal flexibility both tap into adaptability, see Table 1) were usually around .50 across studies, with correlations between components belonging to different dimensions being somewhat lower (around .30). The same pattern of more consistent correlations between components tapping into the same dimension appeared for the three other instruments.

We observed that various studies merged personal strengths into a second-order factor for further regression analyses, although reported correlations between the separate personal strengths were sometimes rather low. For example, *Torrent-Sellens et al. (2016) treated “dispositional employability” (*Fugate & Kinicki, 2008) as one factor in their regression analyses while correlations between the underlying components in their study were only around .30. Likewise, *Forrier et al. (2015) reported a correlation of .18 between adaptability and self-awareness, while merging them into the factor of “movement capital” for further analyses.

Within Strand II

Within the second strand, ten studies examined relationships between self-perceived internal and external labour

market opportunities, usually by using the instruments developed by *De Cuyper and De Witte (2010) or Rothwell et al. (2008) (see RQ3 below for more details on these instruments). Again, correlations varied greatly (r between .20 and .87). However, an in-depth analysis revealed that correlations between internal and external opportunities were rather consistent across studies using the same instrument. For example, correlations were in the range of .20 to .30 in studies that used the *De Cuyper and De Witte (2010) instrument, and varied between .40 and .60 for the Rothwell et al. (2008) instrument. Self-perceived internal and external employment opportunities were usually treated as separate factors in further regression analyses.

Within Strand III

Within the third strand, four studies included correlations between job transitions. Nelissen et al. (2017) found a positive correlation of .18 between lateral and upward job transitions, while *Raemdonck et al. (2012) found a negative correlation of $-.31$ between horizontal and vertical job mobility. However, although addressing similar job transitions, these studies used different instruments and time lags to measure them and, therefore, their results cannot be compared. The study by *Forrier et al. (2015) was the only one that examined relationships between job transitions using multi-wave data. They found non-significant relationships between internal and external job transitions.

In short, both *within* strands I and II components were consistently positively related, yet the strength of the relationships varied greatly: from weak to strong within the strand of personal strengths and from weak to moderate within the strand of self-perceived employment opportunities. As could be expected, components tapping into the same dimension were more strongly correlated than components from different dimensions. The limited number of studies examining relationships within strand III showed mixed results.

RQ3: Employability Instruments used in Studies

Here we provide per strand an overview of the dimensions and components of the different instruments and what dimensions and components they measure. We also discuss the psychometric quality for the most frequently used measurement instruments.

Personal strengths

We found 59 studies that included one or more personal strengths. Adaptability as described by Forrier et al. (2009) was studied most frequently ($N = 36$), followed by human capital ($N = 33$), self-awareness ($N = 24$), and social capital ($N = 10$).

Across the 59 studies, 51 different instruments were used. Thirteen instruments were used in more than one study, four of which were used more than twice. The employability competence-based instrument developed by Van Der Heijde and Van Der Heijden (2006) was, by far, the most often used ($N = 18$), followed by the instruments measuring protean career attitude (Briscoe et al., 2006, $N = 5$), dispositional employability (*Fugate & Kinicki, 2008, $N = 4$), and career adaptability (Savickas & Porfeli, 2012, $N = 3$). Finally, 38 of the personal strengths’

Table 1. Categorization of personal strengths dimensions for the four most frequently used instruments

Instrument	Human capital	Social capital	Self-awareness	Adaptability
Competence-based employability (Van der Heijde & Van der Heijden, 2006)	x			x
Protean career attitude (Briscoe et al., 2006)			x	
Dispositional employability (Fugate & Kinicki, 2008)			x	x
Career adaptability (Savickas & Porfeli, 2012)			x	x

Notes: The four dimensions are derived from Forrier et al. (2009). Categorization was based on the definitions of instruments and underlying components.

instruments were used in only one study, of which more than half were newly developed.

Most instruments in the personal strengths strand included components related to one or two of the four personal strengths dimensions identified by Forrier et al. (2009) (Table 1). The four most frequently used instruments (used >2 times) typically measured a combination of self-awareness and adaptability dimensions. Relevant to note is that none of these four instruments included more than two dimensions (Table 1) nor did they include the social capital dimension. Likewise, we observed that the majority of the other instruments (used ≤2 times) also measured two dimensions. We did not find any instruments that included all four dimensions. Some studies combined different instruments so that, in total, they examined three or four personal strengths dimensions (e.g., *Direnzo et al., 2015; *Forrier et al., 2015). Finally, some instruments concerned a single personal strength dimension. Examples are job-related skills (*Wittekind et al., 2010) that reflects the human capital dimension, and willingness for mobility (*Veld et al., 2015) reflecting adaptability.

Two additional observations regarding the instruments and the items used to measure personal strengths stand out. First, some instruments using different labels in fact measure the same component. For example, different labels exist for willingness to change jobs (*Van Harten et al., 2016) or willingness for mobility (*Veld et al., 2015), while the items were identical or overlapping to a large extent (often referring to Van Dam's (2004) employability orientation measure as the original source). Likewise, De Cuyper et al. (2012) and *Van der Heijden, B.I. (2002) both focused on expertise that is relevant for the current job but respectively used the labels job-related skills and professional expertise. Second, some instruments included items referring to other concepts than the employability component they aimed to measure. For example, the occupational expertise and corporate sense components of the competence-based employability instrument included items referring to self-ratings of job performance, and the balance dimension includes items measuring worker well-being (Van Der Heijde & Van Der Heijden, 2006).

Finally, we probed the psychometric quality based on available information on Cronbach's Alpha (CA) and factor analyses (EFA and/or CFA) of the four most frequently used instruments. In doing so, we only looked at those studies which used the full scales as originally developed by the authors. Various studies modified the instruments by including a few items of the original scale and/or measuring only a few factors instead of the whole set. This was especially the case in studies that used the competence-based instrument by Van Der Heijde and Van Der Heijden (2006) (e.g., *Froehlich et al., 2014; Lysova et al., 2018). The reported values for CAs were predominantly acceptable to good (>.70) for the four instruments, with the most consistently reported CAs for Savickas and Porfeli (2012) career adaptability instrument (CA ranges between .73 and .90 in three studies). Furthermore, although the four instruments are all multidimensional, more than half of the studies using them did not

report results on factor structures. Those studies instead referred to the original article in which the instrument was developed and where factor analyses were performed. In case studies did examine the factor structure of the measurement instrument, the original factor structure and underlying items were not always validated. Various studies made empirical modifications, and, in this way, arrived at acceptable model fits. For instance, *Guilbert et al. (2018) observed poorer model fit and low factor loadings (<.20) when using the original second-order factor structure as established by Van Der Heijde and Van Der Heijden (2006). They then proceeded by deleting several items and randomly assigning items to other dimensions to achieve an acceptable model fit.

II. Self-Perceived employment opportunities

Self-perceived employment opportunities were examined in 39 studies. At the conceptual level, the distinction between internal and external opportunities seemed to be quite common, though the use of the distinction varied. Some authors made this distinction explicit and then used both internal and external opportunities (N = 17), or, for various reasons, only internal or external opportunities (N = 3; e.g., Kyndt et al., 2014). Other authors did not explicitly make the distinction (e.g., Maslić Seršić et al., 2014).

There were quite some instruments that were used to measure employment opportunities. We found 18 different instruments, three of which were used more frequently: Rothwell et al. (2008, N = 9), *De Cuyper and De Witte (2010, N = 8), and Eby et al. (2003, N = 5). Again, most of the other instruments were used only once or twice. Yet, in line with the general agreement about the underlying dimensions, the items were quite similar across instruments within this strand.

Nevertheless, when analysing the individual items in all instruments, we observed some exceptions. Various instruments included elements of the personal strengths strand and mixed these with the appraisal of employment opportunities. For example, Kyndt et al. (2014) asked for an evaluation of workers' abilities, reflected in the following item: "I am capable of performing another job within the department or firm" (original measurement by Nurita et al., 2010), and Rothwell et al. (2008) included social capital in their instrument: "My personal networks in this organisation help me in my career".

Finally, we evaluated the psychometric quality of the most frequently used instruments in the second strand. First, most studies used the original scales with the original number of items. Second, reported CAs for *De Cuyper and De Witte (2010) instrument were consistently good (>.90) and acceptable to good for the other two instruments (>.72). Third, most studies using the instruments developed by *De Cuyper and De Witte (2010) and Eby et al. (2003) performed factor analyses: they usually reported a measurement model including all the study's variables in which a distinction was made between internal and external opportunities (in line with the original instruments). Reported factor loadings and model fits were good. If analysed at all, the factor structure of the instrument by Rothwell et al. (2008) was less consistent.

Job transitions

Only four studies from our selection concerned job transitions. These studies distinguished between different kind of job transitions such as vertical and lateral job mobility, and internal and external transitions. All these studies developed their own instrument measuring job transitions. *Forrier et al. (2015) measured internal and external transitions, *Raemdonck et al. (2012) and *Nelissen et al. (2017) measured vertical and lateral job mobility, and Van der Heijden et al. (2009) focused on vertical job mobility. Instruments usually consisted of single items asking for job transitions during the last year. We therefore did not evaluate the psychometric quality of the instruments in this strand.

Concerning RQ3, perhaps the most striking finding is that we found an overwhelming range of instruments. There were 51 different instruments for personal strengths of which no less than 38 instruments were used only once and more than half of these were newly developed. Most instruments typically tapped into two dimensions (mostly self-awareness and adaptability) and never covered the full range of the dimensions as described by Forrier et al. (2009). Especially social capital seems to be disregarded (see also Table 1). The variety in instruments for self-perceived employment opportunities was also quite large with 18 different instruments in 39 studies. It is surprising to find so many instruments as they usually tap into the same two dimensions (internal and external opportunities). The variety in instruments for job transitions needs to be interpreted with considerable care, given the small number ($N = 4$) of studies included in this review.

Second, the findings suggest that the psychometric quality of many measurement instruments is unclear or unknown. Far from all studies using the most frequently studied instruments reported adequate psychometric information, but instead refer to the original article. Only studies using the strand II instruments by *De Cuyper and De Witte (2010) and Eby et al. (2003) consistently replicated factor structures. In addition, our in-depth analysis of the underlying items shows that there are also other reliability and validity issues, such as including aspects from other employability components from the same or another strand, or from distinct concepts such as well-being.

Discussion and conclusion

This review comes at a time of exponential growth of research on workers' employability (Akkermans & Kubash, 2017; see also Figure 2 of this study): This attention probably relates to the societal debate on how to craft a sustainable career in uncertain and dynamic times. This growth has led to a plethora of conceptualizations. These conceptualizations are grouped along three separate strands that exist alongside each other: personal strengths, self-perceived employment opportunities, and job transitions. In view of integration, potential relationships across strands have been modelled conceptually (e.g., Forrier et al., 2009). Yet, empirical evidence for these relationships has not been documented systematically and hence potential for integration needs to be demonstrated. Accordingly, this review set out to "take the temperature" of the field that

has been characterized as fuzzy, or – framed more positively – to evaluate this potential for integration. In doing so, we took a funnel approach from higher to lower levels of abstraction. We first showed the empirical evidence on the assumed relationships across strands (RQ1) and then within strands (RQ2) and ultimately mapped the instruments used within strands (RQ3). The underlying idea was that integration is possible to the extent that there is connection between the strands, yet this connection is conditional upon coherence within the strands at the conceptual (dimensions and components) and instrument level. To achieve this, we conducted a systematic literature review based on a sample of 71 empirical articles.

First, the results corroborate assumptions on relationships across strands (RQ1): personal strengths consistently relate positively to self-perceived employment opportunities, and both relate positively to job transitions. That is, the strands tap into distinct yet related aspects of employability. It is premature to conceive this in terms of a causal chain as hypothesized by Forrier et al. (2009). The main reason is that the number of longitudinal studies is small, implying that conclusions on causality cannot be drawn. Besides, although the evidence for relationships across strands I and II is relatively advanced and consistent, the number of studies that replicate significant relationships between specific components across strands I and II is limited (which means that evidence is initial to promising, cf. Snape et al., 2016).

Second, we established that components within the same strand (RQ2), and specifically within the same dimension, correlate more strongly than components across strands, meaning that the three strands tap into different aspects of employability. This implies that it is meaningful to distinguish between strands.

Third, the analysis of instruments (RQ3) demonstrates that the findings from RQ1 and 2 cannot fully refute the criticism of conceptual fuzziness. There are several inconsistencies and considerable overlap between components and instruments of the same strand. This may relate to the overwhelming number of instruments that were used. To illustrate, we found no less than 51 different instruments for personal strengths, with little information about reliability and validity. This is perhaps even an underestimation of the problem, given that grey literature was not included in our review. This huge variety of instruments illustrates that many scholars seek to identify a set of personal strengths that lead to sustainable employment in a dynamic labour market. Yet, it is both paradoxical and problematic. It is paradoxical given that scholars seem to seek a generic set of personal strengths: the variety does not come from a contextual account. It is problematic as integration across strands is conditional upon conceptual clarity within strands, and this is conditional upon measures. This also underlines the importance of conducting a systematic literature review instead of a meta-analysis at this stage. Averaging results based on very different instruments makes effect sizes meaningless, which is also called the "apples and oranges argument" that goes against a meta-analytical approach (Rosenthal & DiMatteo, 2001).

In all, we believe that a further integration of the field calls for, first, more research on the *causal* chain between personal

strengths, perceived employment opportunities, and job transitions. Second, we believe that a much-needed step towards an integrative approach is more clarity within strands and first and foremost within strand I. We believe that in itself an abundance of personal strengths in the employability literature does not have to be problematic. In current labour markets and across contexts, multiple personal strengths may matter and luckily so. We therefore do not believe that one all-encompassing measure is possible, needed, or desirable. What is problematic in employability research, in our opinion, is the current randomness with which personal strengths seem to be identified. We provide concrete suggestions for further research below.

Guidance for further research

Overall, our systematic review suggests that the three employability strands can be logically connected, yet, more research is needed to strengthen this claim particularly in view of integration. But still, the assumed connection holds potential to bridge disciplines that approach employability from different strands, for example, career studies with a focus upon personal strengths (input-based approach), and occupational health psychology with a focus upon perceived employment opportunities (outcome-based approach). This bridging would open new research routes, especially since our review findings highlight that currently, the focus of research tends to have lent more towards the input-based approach. We provide the following guidance and suggestions along the three research questions that enables a better integration and advancement of the research field, beyond its current fragmentation and fuzziness.

Employability across Strands (RQ1)

The idea that the different strands are connected is based on the taken-for-granted assumption that personal strengths “lead to” perceived employment opportunities, and that those perceptions “trigger” transitions. Causality is inherently part of the potential for integration, and this obviously requires a longitudinal design. Yet, such designs are not common practice, at least not in our selection of employability studies: more than 80% of the studies was cross-sectional ($N = 58$). Only a minority was multi-wave ($N = 13$), with eight two-wave and five three-wave designs. Only the latter can be classified as a good match with the assumed causal chain.

Longitudinal studies are important also beyond causality reasons. First, longitudinal studies may challenge the assumed chain. A plausible assumption is that feedback loops exist (for a discussion, see Fugate et al., 2021). For example, individuals who perceive many opportunities may also become more aware of which options they want to pursue, or they may use those opportunities to broaden their network. Likewise, job transitions likely feed movement capital. This idea is appealing and aligns with the assumption of growth and gain spirals that is underlying much of the employability discourse (Forrier et al., 2018). For example, employability studies have used conservation of resources theory to hint at such feedback loops (Hobfoll, 2001 in: De Cuyper et al., 2012) yet so far without strong empirical evidence. Feedback loops can have different time

spans and shapes. Longitudinal within-person designs may have particular resonance here.

Second, longitudinal studies may inform which personal strengths matter most. The contribution and meaning of particular personal strengths for careers only become clear when there is an effect on indicators related to strands II and III. In this respect, conceptual “focus” could be a critical consideration. For instance, some personal strengths focus upon the current job (e.g., job-specific skills or social network within the organization). These likely have a stronger relationship with perceived internal vs external employment opportunities (and consequent internal vs external job transitions). And conversely, other strengths focus on future career development or mobility (e.g., self-directedness). These likely have a stronger relationship with perceived external vs internal employment opportunities. We did not detect studies that explicitly examined this aspect of focus and used it to develop their hypotheses, while this could well be used to reduce the lack of coherence within strands.

A further point in relation to the chain across strands is that studies with a focus upon job transitions are few in our review, even to the extent that one might rightfully question whether job transitions can be seen as a third strand. We see three possible reasons for this relative lack of job transitions in our review. First, it may be related to our focus upon workers: job transitions are relatively rare in employability studies on workers, but quite common in employability studies among graduates (see e.g., Tomlinson, 2012) and the unemployed (e.g., Koen et al., 2013). This is perhaps not surprising: both graduates and unemployed “have to” make a transition, and for students this transition is even bound to a developmental deadline. Second, it may be related to our focus on relationships between and within strands. We only included studies focusing on two or more employability components in our review. Apparently; job transitions are not studied in relationship with personal strengths or self-perceived employment opportunities. This shows the strong research divide between strands and more particularly between strands I and II on the one hand, and strand III on the other. Although both personal strengths and self-perceived employment opportunities are often implicitly assumed to make workers more mobile (Fugate & Kinicki, 2008; Forrier et al., 2009; OECD, 2016), this assumption has hardly been tested empirically. A third explanation could be the research context: half of the included studies were conducted in The Netherlands and Belgium, countries that are characterized by relatively stable labour markets. This observation may lead to new research avenues. It could be interesting to study groups of workers who have to make a transition or contexts in which such transitions are more common (e.g., comparing stable and volatile labour markets). This requires a strong conceptual *and* contextual story outlining which contrasting contexts are relevant to study.

Employability within strands (RQ2)

Our systematic review supported the idea of relationships between dimensions and components from the same strand, though admittedly with fairly large variation. This finding leads to two suggestions.

The first suggestion is to carefully consider how to use multidimensional instruments. A common practice is to merge employability components or dimensions into one hierarchical factor. This is not only a matter of methods and analyses, but is basically a conceptual decision with implications for interpretations of results. This is particularly so given our observation that components or dimensions from the same strand may tap into something different. For example, the low to moderate correlations between components in the personal strengths strand indicate that they are distinct. When analysed separately, this may lead to a richer interpretation as to which strengths matter for self-perceived employment opportunities and job transitions. Similarly, self-perceived internal and external employment opportunities seem to share some variance but are clearly different facets with different outcomes and different types of transitions. For example, *Forrier et al. (2015) showed that feeling employable within the organization triggered internal job transitions but reduced the likelihood of external job transitions. Feeling employable in the external labour market triggered external job transitions but was unrelated to internal job transitions. This too would favour an approach that distinguishes between the components rather than merging them.

The second suggestion is a potential route for future research, namely to probe employability profiles based on dimensions and components within one strand. For example, this may lead to profiles of workers who feel employable on both the internal and external labour market, on one of those labour markets, or not at all. As another example, profiles based on personal strengths may reveal compensating mechanisms, or may help to understand which personal strengths can be meaningfully grouped.

Employability Measures (RQ3)

Our review showed that employability components are measured in many different ways within each of the strands. It seems common practice to develop new measures, surprisingly so given that multiple validated instruments are available (e.g., *De Cuyper & De Witte, 2010; Van Der Heijde & Van Der Heijden, 2006). This hodgepodge of instruments hinders an integrative approach across strands and conceptual clarity within strands.

A way forward could be to start from often-used and validated instruments to establish – based on available information and new studies – when, for whom, and why those instruments seem to “work”, both conceptually and empirically (psychometric information). And conversely, when these instruments do not work, and why. That is, some instruments might work well in some contexts (countries, sectors, age groups, etc.) but less so in others. One illustration is that items used to tap into self-perceived employment opportunities may be framed differently depending on context. For example, items developed for Swedish workers often refer to employment opportunities that are available without moving (e.g., the study from Berntson et al., 2008 based on LFS and WES data), while this is rare in other countries. It is important to map these differences in a systematic way, so that it facilitates researchers in making choices when studying employability in a particular context. This could also serve to identify gaps in existing measures, and lead to attempts to address those gaps in adapted measures.

The advantage of this approach is more cumulative, instead of fragmented knowledge.

Limitations

While this research contributes to the employability literature, it is not without limitations. We carefully designed our search strategy and used the search term “employability”, which means that a study was included in our initial pool of articles when the authors themselves categorize a concept, dimension, component or measure as employability. On the positive side, this means that we did not impose our pre-existing ideas on what constitutes employability and that our review is quite broad. Indeed, our review includes significantly more studies than other employability reviews (e.g., Williams et al., 2016). On the negative side, it also means that we may have both over- and undersampled. Oversampling could occur when we included concepts that were used under the heading of employability, but that could be debated. One illustration is the notion of protean career attitudes. Undersampling could occur when we did not include relevant studies because they did not use the label employability, for example, job transitions that were not framed as employability. The implication could be that our systematic literature review does not cover the full range of studies tapping into employability-related concepts. Several of these concepts are covered elsewhere, see for example, the review by Sullivan and Al Ariss (2021) on career transitions. Perhaps the safest conclusion is that our observation that the field is fuzzy and lacks coherence is an understatement.

Furthermore, our focus was on workers, while employability is also relevant for other groups in the labour market, most notably the unemployed and students. The variety in components and instruments proved to be large already and would probably have increased further when other populations would have been included. Also here, our conclusion that the field is fuzzy would only be strengthened by adding other populations.

The variety we found also substantiates our decision to conduct a systematic review instead of a meta-analysis. At this time, the employability field seems insufficiently mature to conduct a meta-analysis. When the field progresses towards further integration of components and instruments and when more sophisticated research designs are employed, conducting a meta-analysis would be a next step in the maturation of the field. Finally, our review findings predominantly show positive relationships within and across strands. This may be affected by study publication bias: published research is more likely to be positive and/or statistically significant than unpublished research and this may lead to an overestimation of the effects. At the same time, it may have underestimated the hodgepodge of employability instruments, as additional unpublished studies would have likely added to the diversity.

Conclusion

In all, this study provides the necessary first steps for employability scholars to address the fragmentation and fuzziness in the field. We measured the temperature of the employability field by means of a systematic literature review, and arrived at a threefold diagnosis regarding relationships across strands,

relationship within strands, and measures used. We conclude that the patient is ill, but that there are several routes to cure. It is now the time to stand on the shoulders of colleagues to move the field forward in an integrated instead of fragmented way.

Disclosure of interest

No potential conflict of interest was reported by the author(s).

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