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## **Mapping graduate employability and career development in higher education research: A citation network analysis**

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## **Mapping graduate employability and career development in higher education research: A citation network analysis**

Greater attention than ever is being placed on how universities enable their graduates to achieve their career goals as a key return on significant private and public investment. Scholars in two distinct fields of research have explored the characteristics and conditions that promote or constrain graduates' career success: graduate employability and career development. In this article, we present visualisations of direct citation networks among 4068 journal articles focused on graduate employability and career development and consider the disciplinary landscapes that they reveal. Our findings show that despite a clear alignment of research concerns and educational goals, there has been limited theoretical or practical exchange between the two fields. We argue that purposeful exchange between the two fields will enrich both and, when applied to practice, could inform an evidence-based, integrative pedagogy of careers and employability learning in higher education.

Keywords: graduates; employability; career development; higher education research; citation analysis

### **Introduction**

Increasing costs of higher education and uncertain graduate labour markets have led to increased scrutiny on how well universities enable graduates to achieve their employment and career goals. These outcomes are central to debates among policy-makers, industry bodies, and educators about personal and social returns on private and public investment in higher education (Sin, Tavares and Amaral 2019). As a result, graduate employment rates are now a prominent feature in university rankings, government funding, sector quality frameworks, and university marketing campaigns. However, graduate employment rates, divined from surveys of graduates at a sample point in time, are by themselves an inadequate measure of how well university graduates are equipped to thrive in their working lives (Bridgstock and Jackson 2019; Donald, Baruch and Ashleigh 2019a). Instead, it is important to distinguish *employment* as an outcome and

*employability* as an antecedent, the later referring to a range of personal qualities and situational factors that promote or constrain graduates' ability to achieve their employment and career goals (Clarke 2018; Donald, Baruch and Ashleigh 2019b; Monteiro, et al. 2020).

Scholars in two distinct fields of research have explored how university graduates develop employability and achieve career success: graduate employability (GE) and career development (CD). GE is a subfield of higher education research, focused on the individual, institutional, and socio-economic factors that influence graduates' immediate employment and long-term career outcomes (Clarke 2018; Holmes 2013). CD draws on the applied psychology subdisciplines of *vocational psychology*, focused on understanding how individuals make career decisions and pursue career goals, and *industrial and organisational (I/O) psychology*, focused on management and workplace practices that enhance employee recruitment, engagement, and productivity (Akkermans and Kubasch 2017; Fouad and Kozlowski 2019).

A lack of dialogue between GE and CD research has been noted before (Artess, Hooley, and Mellors-Bourne 2017; Clarke 2018; Smith et al. 2018). The gap between GE and CD research represents missed opportunities for scholars and practitioners in each field to incorporate insights and evidence from the other into their work, disseminate their research to wider audiences with shared interests in students' career success, and influence the policy and practice of careers and employability learning in higher education. The present research is the first focused analysis of the boundaries between the GE and CD research fields.

In this article, we demonstrate the lack of interdisciplinary exchange between GE and CD by illustrating the citation networks between their respective bodies of literature and considering where they lie in the disciplinary landscapes of higher education research. We also describe clusters of research interests in the GE and CD citation networks, highlight congruent areas of

interest, and discuss how the two fields may benefit from greater integration. Our objective is to advocate for greater exchange between GE and CD researchers by highlighting their common interests and respective strengths and, in doing so, argue for the value of an integrative pedagogy of careers and employability learning for higher education.

### *Academic literatures as landscapes*

Researchers have adopted several socio-spatial metaphors—fields, regions, territories, borders, domains, and communities—to help make sense of how academic disciplines are constituted and organised (Clegg 2012). The most explicitly geographic of these metaphors is Becher and Trowler's (2001) *academic tribes and territories*, which was used to argue that distinct epistemologies within academic disciplines (territories) create equally distinct disciplinary cultures among the researchers who inhabit them (tribes). Trowler (2014) later described this as a *strong essentialist* approach to academic disciplines, characterised by strong coherence and permanence among tribes and clear distinctions between them. He argued that a *moderate essentialist* approach, which recognises nuance, variability and change in disciplinary characteristics, is a more suitable approach to understanding disciplines in contemporary academia.

Researchers considering higher education research as a discipline tend to favour moderate essentialist descriptions, characterising the field as theoretically and methodologically diverse (Tight 2012), weakly bounded (Clegg 2012), open to scholars from many disciplines (Harland 2012), or scattered and disintegrated (Daenekindt and Huisman 2020). MacFarlane (2012) depicted higher education as an archipelago of diverse and distinct research themes in a cartographic metaphor that has subsequently been empirically reproduced (Calma and Davies 2015; Tight 2008). GE as a research field does not appear in its own right in discussions of the

disciplinary characteristics of higher education research. MacFarlane (2012) alludes to GE on his map through a graduate attributes and an employment and careers region, though it is not clear if the latter refers to students and graduates or those working in higher education.

Compared to higher education research, CD scholars have been less introspective about their fields' disciplinary status. Nonetheless, CD scholars have characterised the field as insular and provincial (Fouad and Kozlowski 2019; Savickas 2001). In fact, Savickas (Savickas 2001) prefigured MacFarlane's (2012) cartographic imagery when he described CD as two islands, vocational psychology and I/O psychology, whose inhabitants rarely visit each other or the "mainland" of applied psychology, their parent discipline. CD scholars have also noted a gap between vocational psychology research and CD practice, expressing concern that communication between theorists, researchers, and practitioners is limited (Fouad and Kozlowski 2019).

### ***Graduate employability research***

GE is a sub-field of higher education research, conducted by researchers from various disciplinary backgrounds. GE researchers tend to focus their attention at three levels of analysis: social and educational systems and policies, institutional strategies, and individual GE (Donald, Baruch and Ashleigh 2019a; Holmes 2013). The disciplinary diversity of GE researchers has led to a proliferation of definitions, conceptualisations and frameworks (Römgens, Scoupe, and Beausaert 2019; Small, Shacklock and Marchant 2017), but there remains no commonly agreed understanding of or approach to GE. Often, GE research has focused on enumerating lists of crucial employability skills in particular fields (Clarke 2018), but increasingly GE is considered as a psycho-social learning process (Fugate, Kinicki, and Ashforth 2004; Holmes 2013; Okay-Somerville and Scholarios 2017) rather than simply employability skills and work readiness.

Researchers at the systems and policy level tend to come from sociology-informed disciplines such as labour studies, higher education policy, or social economics. These researchers focus on the role that social structures, social and educational policies, and labour market conditions play in GE. Researchers at this level tend to be the most vigorous critics of the GE agenda, arguing that it is a symptom of the neo-liberalisation of higher education (Sin, Tavares and Amaral 2019).

Researchers at the institutional and individual levels tend to be academics in professionally oriented disciplines or learning and teaching specialists. Institutionally focused researchers investigate pedagogical and curricular strategies to support GE (Bridgstock and Jackson 2019; Minocha, Hristov and Reynolds 2017; Rees 2019), with a strong focus on experiential approaches such as work-integrated learning. However, empirical research evaluating specific GE interventions is rare. At the individual level of GE, a significant stream of research has explored the role of various kinds of human capitals – particularly generic skills and social, cultural, and psychological capital – in GE (Clarke 2018; Donald, Baruch, and Ashleigh 2019). Recent empirical research at the individual level has explored how students and graduates perceive their employability (Donald, Baruch and Ashleigh 2019b; Montiero et al. 2020), develop professional identities (Tomlinson and Jackson 2019), and enact proactive and adaptive attitudes and behaviours (Jackson and Tomlinson 2020; Okay-Somerville and Scholarios 2017).

While researchers in academic disciplines or teaching and learning roles conduct most GE research, GE also provides the warrant and purpose for various academic and professional roles, typically in areas such as work-integrated learning, student engagement, volunteering and extracurricular activities, student leadership, and alumni relations. These academic and

professional roles share a common goal of supporting student GE, but do not represent a cohesive profession with common theoretical foundations or principles of practice.

### ***Career development research***

CD research is focused on how people make career decisions, navigate career paths, and approach career problems (Byington, Felps, and Baruch 2018; Fouad and Kozlowski 2019).

Contemporary CD theories are principally founded in lifespan development, person-environment fit, and social cognitive paradigms (Byington, Felps, and Baruch 2018). The focus of most CD is on the psychological, cognitive, and behavioural characteristics of individuals in the context of their working lives. Researchers have also investigated the effect of social, cultural, and organisational contexts on individuals' careers. Because of this primary focus on the individual, CD has been subject to criticism as a vehicle of neoliberalism, through the "responsibilisation" of the individual for their career achievements or failures (Hooley, Sultana, and Thomsen 2017).

Career education and guidance, informed by CD theory and evidence and provided by qualified practitioners, has been found to have positive effects on clients' career decision-making, self-efficacy, adaptability, and vocational identity (Whiston et al. 2017), with flow-on positive effects on academic retention and success (Clayton et al. 2018), and job search self-efficacy, networking behaviour, and employment outcomes (Liu, Huang, and Wang 2014).

Certain *critical ingredients* have been shown to have positive impacts on students' learning when employed in career education: written exercises, individualised interpretations and feedback, labour market information, modelling from experts, support from social networks, counsellor support, values clarification, and psychoeducation (Whiston et al. 2017).

University careers services, staffed by qualified CD practitioners, support students in making career decisions and goals, responding to challenges, and seeking and securing



employment and work experience opportunities (Brown et al. 2019; Donald, Baruch, and Ashleigh 2019b). In an effort to reach more students, many CD services endeavour to work with academics to embed careers and employability learning in the curriculum (Bridgstock, Grant-Iramu, and McAlpine 2019; Brown et al. 2019). However, most careers service staff are designated as professional rather than academic staff, often struggle to have their expertise recognised, and can be insular regarding their professional domain (Brown et al. 2019).

### *Career development in graduate employability*

GE scholars have frequently noted the importance of career management skills or career development learning to GE (Donald, Baruch, and Ashleigh 2019b; Römogens, Scoupe, and Beausaert 2019; Small, Shacklock, and Marchant 2017). In institutional GE research in particular, career development learning is often recognised as an important element of GE employabilities, yet not often considered in depth. On the other hand, several researchers who investigate individual GE as a psycho-social learning process have engaged to a greater extent with contemporary CD research (Donald, Baruch, and Ashleigh 2019a; 2019b; Jackson and Tomlinson 2020; Monteiro et al. 2020; Okay-Somerville and Scholarios 2017; Tomlinson and Jackson 2019). Nonetheless, substantive exchange between GE and CD research remains limited. To demonstrate and interrogate this lack of exchange we examine the following questions: what are the boundaries of GE and CD research as represented by citation networks within and between each field, and where are the current and potential points of exchange?

### **Methods**

We conducted a direct citation network analysis of GE and CD journal articles. For analysis, we used CitNet Explorer (<https://www.citnetexplorer.nl/>), an application that visualises direct

citation networks and identifies topic clusters within them (van Eck and Waltman 2014; 2017). Direct citation analysis has been proposed to provide more accurate and coherent topic clusters than other citation network analysis methods, such as co-citation or bibliographic coupling (van Eck and Waltman 2017). Although citation analysis for evaluative purposes has been vigorously challenged (MacRoberts and MacRoberts 2018), citation network analysis has been used to good effect to explore landscapes, and boundaries of research in many disciplines, including higher education and CD. Scholars have applied geographic metaphors to citation networks, to map research themes, intellectual traditions, scholarly networks, and transnational differences in both higher education (Calma and Davies 2015, 2017; Pan and An 2020; Tight 2008, 2014) and vocational psychology (Byington, Felps, and Baruch 2018).

### ***Data collection***

We searched the Web of Science (WoS) database for terms related to higher education careers and employability. We limited our search to WoS because other comparable databases, such as Scopus and Google Scholar, do not allow for the export of full bibliographic records, including cited works, of all search results. Furthermore, CitNetExplorer is optimised to accept WoS bibliographic export files directly, whereas Scopus export files are not structured with sufficient precision to work in CitNetExplorer without further processing (van Eck and Waltman 2014). Although there are differences in the coverage of scholarly publications between WoS and other databases, we are satisfied that for the purposes of this citation network analysis, WoS provided an accurate representation of the GE and CD literatures.

We derived our search terms from our knowledge of common terms used in the GE and CD literatures, informed by literature reviews and surveys (Akkermans and Kubasch; Artess, Hooley, and Mellors-Bourne 2017; Byington, Phelps and Baruch 2018). We sought to conduct a

broad and inclusive search: ““career development” OR “career decision” OR “career self-efficacy” OR “career exploration” OR “career adaptability” OR “career maturity” OR “career planning” OR “career management” OR employability OR “professional identity” OR “vocational identity” OR “graduate identity” OR “graduate attributes” OR “graduate outcomes””. We limited the search with the terms “university OR “higher education” OR college”, to prevent the inclusion of articles from the broader CD literature, and to peer-reviewed journal articles published in English. We excluded pre-prints and early access articles. We removed one false-positive result and added two articles (Fugate, Kinicki, and Ashforth 2004; Fugate and Kinicki 2008) which did not appear in the search results, but are highly cited and influential in the GE literature.

### *Data analysis*

We imported the WoS bibliographic data into CitNetExplorer and applied the clustering algorithm—for which a full technical explanation can be found in van Eck and Waltman (2017)—to the citation network. CitNet Explorer’s clustering algorithm assigns articles to clusters according to how closely they are related to others in the network. The sensitivity of the clustering algorithm can be adjusted by defining a resolution parameter and a minimum cluster size. The resolution parameter governs the number of clusters that the algorithm will yield. The minimum cluster size takes articles that are assigned to smaller clusters and either reassigns them to an appropriately related larger cluster or excludes them from clustering altogether. There are no optimal values for the resolution parameter or minimum cluster size, rather they are best used in an exploratory fashion (van Eck and Waltman 2017). We set the clustering algorithm’s resolution parameter to 0.7 and the minimum cluster size to 60, which we found resulted in the most distinct and coherent clusters.

We applied CitNetExplorer's clustering algorithm in two iterations. The first was applied to the full network and resulted in four clusters: two large GE and CD networks, and the two smaller professional identity and biomedical CD clusters. In order to observe clusters in the GE and CD citation networks more precisely, we drilled down into each and applied the clustering algorithm again to just the publications in those networks, in turn. Finally, we drilled down into individual clusters in order to observe and characterise specific themes in the research and explore the citation links at the boundaries between clusters.

## **Results**

Our search of WoS resulted in 4068 articles that share 7,368 citation links between them. CitNetExplorer assigned 1,850 articles to a cluster, with the remaining 2,218 articles not sufficiently connected to any cluster larger than the minimum cluster size and therefore effectively excluded from further analysis. A visualisation of the full citation network is presented in Figure 1. For legibility, only the 100 articles with the most internal citation links are displayed, but it is important to note that this visualisation, and all other results described in this article, are derived from the entire citation network. A full list of the publications in the GE and CD networks and in each cluster is available for download: [link to supplementary file "Full GE and CD network and cluster data.xlsx"]. When we refer to internal citation links, we mean articles within the network that cite or are cited by that article. Our analysis does not refer in any way to the number of citations that the article has in WoS or any other database. In Figure 1, each circle represents one article and is labelled with the surname of the first author. The position of articles on the vertical axis are determined by the year of publication and on the horizontal axis by the proximity of that article to others in the citation network. Although the visualisation only displays the 100 articles with the most internal citation links, the positions of the articles are

governed by their position in the full citation network map.

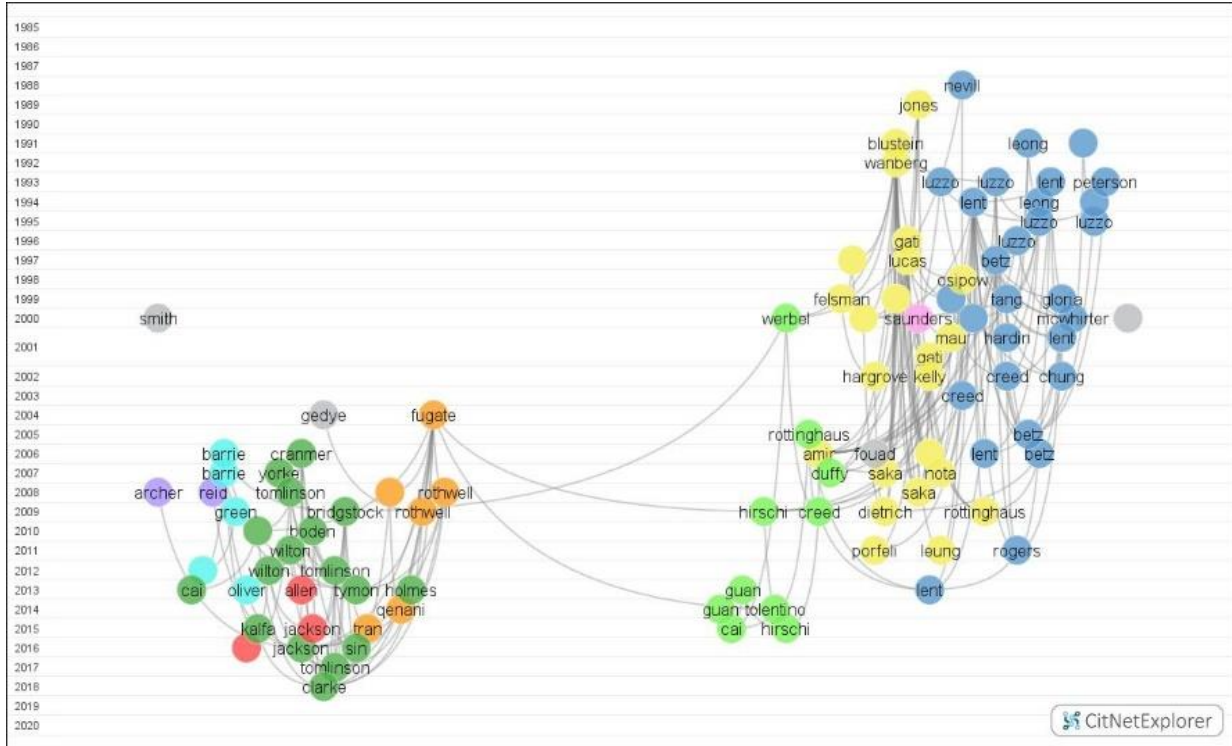


Figure 1. Full citation network

Figure 1 illustrates two distinct research networks of five clusters each. The GE network consists of a general GE cluster alongside clusters focused on professional identities, graduate attributes, perceived employability, and workplace learning. The CD network consists of clusters focused on career exploration, decision-making, and self-management; career decision-making difficulties; career orientations; CD barriers; and biomedical CD. It is beyond the scope of this article to attempt a full account of the epistemological or methodological foundations of GE, CD, or specific clusters of research within them. However, we can make some broad observations about the nature of the research in each network and cluster.

***Graduate employability network***

The GE network consists of 868 publications with 2,235 internal citation links between them.

Figure 2 illustrates the GE network and Table 1 contains descriptions of each cluster within it. The most represented journals in this network are *Studies in Higher Education*, *Higher Education Research & Development*, *Education + Training*, and *Higher Education*. American higher education journals are almost entirely absent from this network. In general, the articles in the GE network reflect the tendency toward qualitative methods in non-American higher education research (Tight 2014).

The perceived employability cluster is included in the GE network by CitNet Explorer's clustering algorithm, but this research is in fact mostly published in CD and management rather than higher education journals. The professional identity cluster is loosely connected to the GE network, in part because it is frequently focused on specific professions and published in discipline specific education journals.

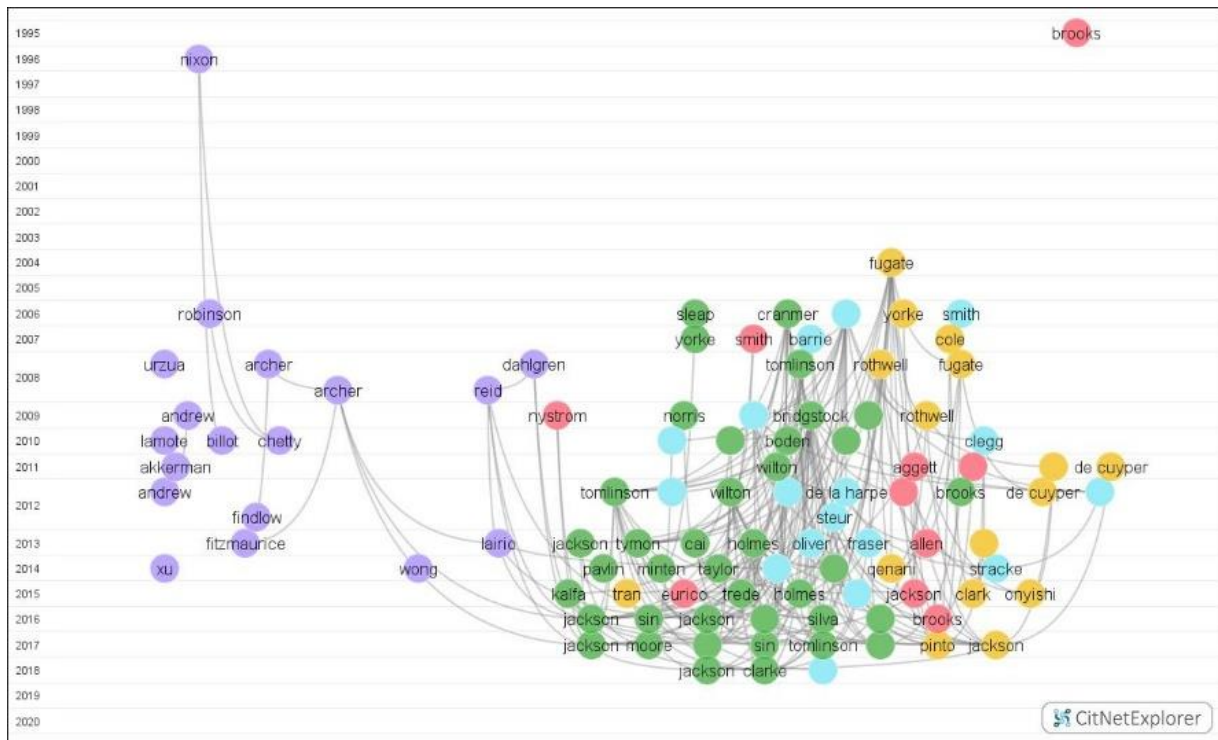


Figure 2. Graduate employability citation network

Table 1. Research clusters in the graduate employability network. A full list of publications in each cluster is available for download from [link to supplementary file “Full GE and CD network and cluster data.xlsx”].

Cluster	Number of articles	Description
Graduate employability	336	Factors that promote or constrain GE, including human, social, and cultural capital; perceived employability; and pre-professional identities.  Pedagogical or strategic efforts to promote students’ GE.
Professional identities	157	Development and expression of professional identities, frequently focused on teachers, nurses or academics.
Graduate attributes	148	Disciplinary skills and knowledge, generic skills, critical literacies, and social awareness afforded by higher education.
Perceived employability	139	How individuals and particular groups subjectively perceive their own employability.
Workplace learning	88	GE or academic benefits of placements, internships, and volunteering.  Equity and accessibility of internships.

***Career development network***

The CD network consists of 982 publications with 3,975 internal citation links between them.

Figure 3 illustrates the CD network and Table 2 contains descriptions of each cluster within it.

The most represented journals in this network are *the Journal of Vocational Behavior*, *the Journal of Career Assessment*, *Career Development Quarterly*, *the Journal of Career*

*Development*, and *the Journal of Counseling Psychology*. Most research in this network uses quantitative methods, consistent with the methodological conventions of the broader CD field (Fouad and Kozlowski 2019), though a trend of increasing use of qualitative methods is reflected in the career orientations and career barriers clusters.

The career orientations cluster is on the periphery of the CD network because it is a relatively recent trend in CD research, pursued by scholars in the adjacent field of I/O psychology and some vocational psychologists who have previously published articles in the career exploration, decision-making, and self-management and career decision-making difficulties clusters. The biomedical CD cluster is largely independent from the rest of the CD network, connected by just one citation link, and is mostly published in medical education rather than CD journals.

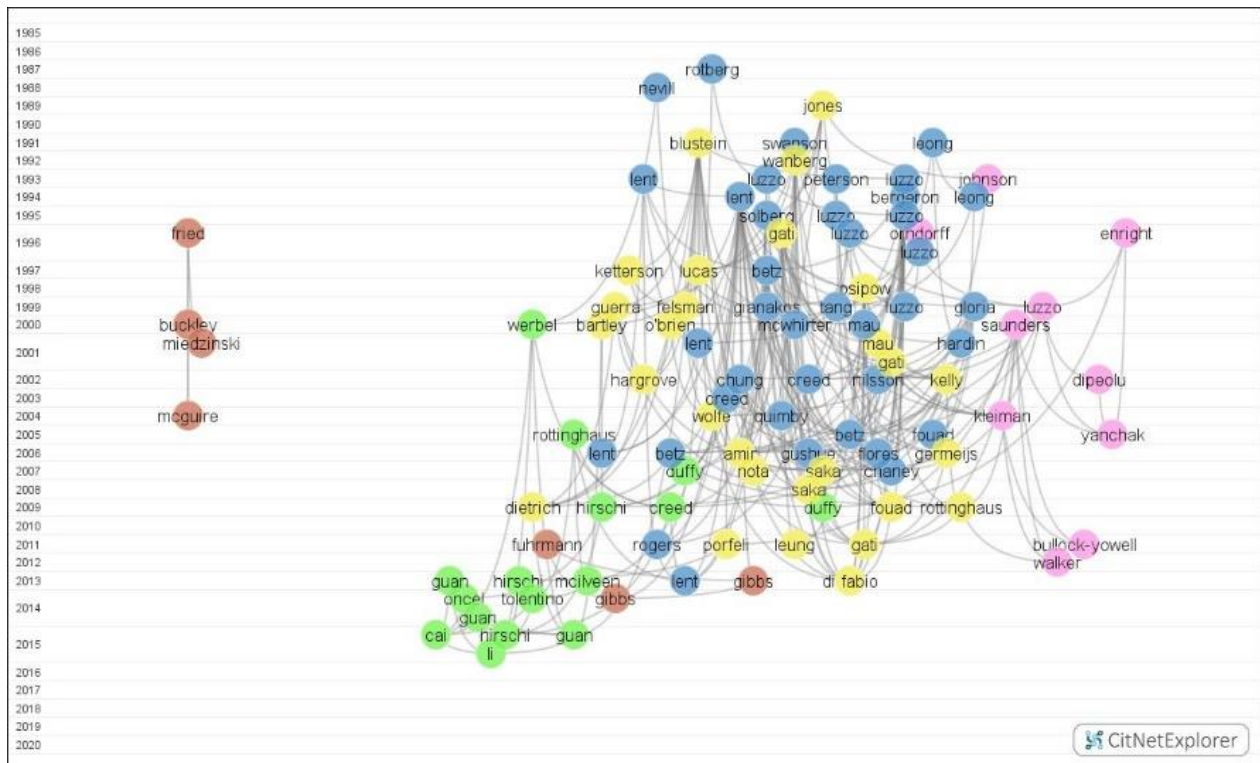


Figure 3. Career development citation network.



Table 2. Research clusters in the career development network. A full list of publications in each cluster is available for download from [link to supplementary file “Full GE and CD network and cluster data.xlsx”].

Cluster	Number of publications	Description
Career exploration, decision-making, and self-management	386	Factors related to career exploration, decision-making, and self-management, particularly Lent and Brown’s social-cognitive career theory (SCCT; 2013), including career decision-making self-efficacy, adaptive career behaviours, career maturity, career self-management, career learning experiences, and career exploration.
Career decision-making difficulties	275	Taxonomies of impediments to career decision-making and research into specific challenges, such as family influences or negative emotional states.
Career orientations	155	How people envision their future selves, including career adaptability, proactive attitudes and behaviours, protean and boundaryless careers, career optimism and hope, and work as calling.
Career development barriers	98	Personal and social barriers to career success, particularly disability, mental illness, and marginalisation.
Biomedical career development	68	CD needs and influences of biomedical students and professionals, including evaluations of professional development and gender equity interventions.

### ***Citation links between graduate employability and career development***

Figure 1 demonstrates the clear distinction between the GE and CD research literature, with only three citation links between them visible in this view of the 100 articles with the most internal citation links. When we drilled down further to view the underlying citation networks, we found that research on individual GE represents a small pocket of convergence between the two networks. As noted, perceived employability research is connected to the GE network by CitNetExplorer, but in fact many perceived employability articles are published in CD and I/O psychology journals. Almost all citation links between the networks are GE articles citing CD articles. If we do not consider the CD articles that are assigned by CitNet Explorer to the GE network, only two CD articles cite any research from the GE network.

Fugate and colleagues, assigned to the perceived employability cluster, are the most recognised authors across boundaries, with 79 internal citation links to the GE network and 10 to CD. Several authors in the GE cluster—Baruch, Donald, Jackson, Monteiro, Okay-Somerville, and Tomlinson and their colleagues—share internal citation links with articles in the CD network or the perceived employability cluster. These authors have also published articles in both higher education and CD journals, although CitNetExplorer assigned most of their articles to the GE cluster. A number of articles from CD journals such as *Career Development International* and *the Australian Journal of Career Development* were assigned to the GE cluster, but only one article from a higher education journal was assigned to the CD cluster.

### **Discussion**

Our analysis of direct citation networks empirically supports our claim of the separateness of GE and CD literature. It also affirms the descriptive potential of certain geographical metaphors used in prior higher education and CD research, with our analysis highlighting GE and CD network

“mainlands”, dotted with smaller clusters as “regions”, “peninsulas” and “islands”. However, our analysis also recognises the analytical limits of geographical metaphors, particularly when adopting a moderate essentialist view of academic disciplines (Clegg 2012; Trowler 2014).

The GE network illustrated by our analysis is difficult to recognise as a distinct discipline according to Becher and Trowler’s (2001) original strong essentialist approach of territories and tribes. However, GE may be recognised as having some qualities of Trowler’s (2014) later, less categorical, moderate essentialist approach. The GE network consists of several loosely bounded and weakly connected research clusters, drawing on various disciplinary and professional fields and displaying a limited degree of conceptual cohesion. Our analysis shows that GE is a field of study open to researchers from many disciplinary backgrounds and requires no particular theoretical, methodological, or professional warrant for entry into it, like higher education research in general (Harland 2012). For this reason, it is difficult to locate GE as a single distinct region on MacFarlane’s (2012) map. GE research occurs in various locations on both main islands of the higher education archipelago – policy and teaching and learning – and on smaller isles such as those related to identity or institutional research.

In comparison, the CD network is more bounded and cohesive. Most clusters sharing common theoretical foundations and methodological approaches. The CD network does resemble the two islands of vocational psychology and I/O psychology noted by Savickas (2001), though their separation seems to have diminished to the point that I/O psychology is now more peninsula than island and the authors do now cite each other. In fact, we can discern the migration of some vocational psychology researchers from the career decision-making cluster to the frontier of the career orientations cluster. On MacFarlane’s (2012) map, Savickas’s (2001) CD islands are beyond the horizon of the higher education research archipelago. Our analysis

suggests that CD's wealth of theory and evidence goes largely unnoticed outside its borders, with the exception of a small community of perceived employability and career orientation envoys.

In addition to mapping the geography of the GE and CD networks, we can also discern certain differences in the “dialects” of inhabits of each. Even the central term *employability* varies in meaning and connotation between GE and CD: I/O psychology researchers exploring employability as a psychological construct may not recognise certain labour market or curricular-oriented GE research as being of the same field. In another example, *adaptability* is often referred to in GE simply as a desirable attribute, whereas in CD it refers to a specific theory, elaborated and empirically tested over more than 30 years (Byington, Felps, and Baruch 2018; Fouad and Kozlowski 2019).

Aside from our metaphorical description of the landscapes of GE and CD research, we can observe actual geographic differences between networks and certain sub-clusters. Much of the GE network is published in British or Australian based higher education journals, with American journals notably absent. In contrast, the CD network is primarily published in American journals, with relatively few publications from British, European or Australian journals. Consistent with I/O psychology's bridging position between the GE and CD networks, the I/O psychology informed sub-clusters of perceived employability and career orientations are more diverse and made up of European, Asian, and Australian researchers.

### ***Implications for research and practice***

What concerns us about the lack of exchange between GE and CD researchers is the missed potential for theory and evidence from one field to enrich the other, which ultimately means that their collective efforts to understand and support students' careers and employability learning is less cohesive than it could be. We also note the risk for the “jingle-jangle” fallacy to take hold,

where-in scholars in their disciplinary silos apply the same label to different concepts or different labels to the same concept (Block 1995). Jingle jangle errors confound clarity on one hand and create redundancy on the other, and together impede the recognition of aligned research that could contribute to shared theoretical and practical insights.

A lack of dialogue between GE and CD scholars is not surprising, given that they operate in the systems and cultures of different disciplines, nor is our noting it a criticism of scholars in either field. Our intention in drawing attention to this gap is to argue for the value to be gained from closing it by pursuing an integrative approach to careers and employability learning in higher education.

GE researchers have much to gain from CD theory and evidence in their efforts to understand and assist their students' employability and career success. First and foremost is SCCT, on which the bulk of the research in the CD network research is founded. SCCT provides a richly theorised and extensively tested account of how people make career decisions, learn from career-related experiences, develop confidence, and adopt proactive career behaviours (Lent and Brown 2013). In addition, the body of research into CD barriers, particularly marginalisation due to race, gender, social class, sexuality, and disability (Byington, Felps, and Baruch 2018; Fouad and Kozlowski 2019), could inform the work of scholars and practitioners concerned with equity of access to and success in higher education for students from marginalised groups. Finally, research from the career orientation cluster offers several theories that can inform how students adapt to change, adopt proactive and optimistic mindsets and behaviours, and find meaning in their work. It is in this cluster that we already see some integration of CD theory and evidence into GE research focused on students' and graduates'

identities, perceptions, and dispositions (Donald, Baruch, and Ashleigh 2019b; Jackson and Tomlinson 2020, 2019; Monteiro et al. 2020).

CD researchers also stand to gain from greater exchange and integration with GE research, primarily by opening up their disciplinary and professional boundaries and contextualising their findings with broader research into university graduates' employment and career success. In particular, CD researchers could draw on critical social GE research as they respond to calls for more intersectional and phenomenographic research into how social identities affect people's lived experience of work and careers (Fouad and Kozlowski 2019). In addition, the insularity of the CD field has limited its ability to influence public policy, university strategies, and the professional practice of careers and employability education (Fouad and Kozlowski 2019). CD researchers and practitioners are concerned that those outside the field, particularly senior managers who make resourcing decisions, do not value the foundations of theory and evidence that underpin their profession, (Brown 2019). CD scholars stand to learn from their GE peers about how to contextualise their research in higher education policy and pedagogy, particularly with regard to implications for practice and policy.

### ***Limitations and future research***

A direct citation analysis such as we have conducted here has some inherent limitations. Firstly, citations are not neutral or objective data. Citation practices are complex cultural behaviours that differ between disciplines, serve diverse rhetorical, strategic, and ideological purposes, and by no means represent the entire intellectual constitution of a scholarly discourse (MacRoberts and MacRoberts 2018). Most importantly, citation metrics should not be used uncritically as proxies for scholarly influence or merit. Secondly, our data for this study was limited to journal articles indexed by WoS and therefore excluded other forms of academic and professional publishing,

such as books, chapters, conference proceedings, and reports. Nor can our study account for informal or unpublished communications among research networks. Finally, citation analyses have an inherent time lag, because publications accumulate citations over many years, and more accurately capture historical rather than current research trends.

The present research is the first time that the disciplinary boundaries between GE and CD research have been analysed. Further research may explore GE and CD as higher education communities of practice (Tight 2008) using other forms of bibliometric analysis such as co-citation or co-authorship. Further research could also employ large scale content analysis (Daenekindt and Huisman 2020), or critical and qualitative analytical lenses recommended for higher education research more broadly (Clegg 2012; Trowler 2014). In addition, this analysis of the scholarly literatures of GE and CD could be complemented by a similar study comparing how GE and CD practice is approached in terms of institutional strategy and professional practice. Finally, although we have briefly described some current and potential intersections of GE and CD research, there is a need for a more comprehensive account of the affordances of CD theory and evidence in GE research and practice.

## **Conclusion**

Our visualisations and analysis of the direct citation networks between GE and CD journal articles show that researchers in the two fields have indeed been working in parallel to answer similar questions about the characteristics and conditions that promote or constrain university graduates' career success. We have contributed a new bibliometric survey of GE literature, complimenting previous narrative and systematic reviews, which accommodates GE research's full thematic and disciplinary diversity. Similarly, we have provided a survey of key themes in CD research as it relates to university students.

In addition, we have provided a map of the main themes in GE and CD research and highlights existing and potential areas of alignment between them. For GE scholars and practitioners, we point the way to research into the psycho-social processes that drive people's careers and employability success. For CD scholars and practitioners, we point to research into the socio-economic contexts, institutional systems, and curricular strategies within which university students' careers and employability development happens. Further purposeful exchange between GE and CD researchers will enrich both fields of scholarship and, when applied to practice, could inform an evidence-based, integrative pedagogy of careers and employability learning in higher education.

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