



Should I stay or should I go? Skilled immigrants' perceived brain-waste and social embeddedness

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Should I stay or should I go? Skilled immigrants' perceived brain-waste and social embeddedness

Purpose- Drawing on embeddedness theory, we examine how skilled immigrants' perceived brain-waste affects their social embeddedness. Social embeddedness facilitates the acquisition of host country-specific human capital, which, in return, can accelerate the transfer of immigrants' human capital in the workplace.

Design/methodology/approach- In total, 397 skilled immigrants in Australia participated in this study. We applied a set-theoretic approach to decode the complexity and interplay among the key concepts used in this study.

Findings - We found the impacts of psychological workplace wellbeing and workplace discrimination on social embeddedness differ between skilled immigrants who experience perceived brain-waste and skilled immigrants whose skills were recognized by employers. The results suggest that job satisfaction is the most critical factor contributing to social embeddedness among skilled immigrants who did not report brain-waste. Furthermore, we found that married skilled male immigrants who reported brain-waste still could embed socially if they did not directly experience workplace discrimination.

Originality/value- The majority of previous studies have compared skilled immigrants with their local-born colleagues, but we compared two groups of skilled migrants in the current study. We adopted fuzzy-set qualitative comparative analysis to test how unique configurations of several variables can ease their social embeddedness into the host society.

Keywords

Social embeddedness, skilled immigrants, brain-waste, job satisfaction, workplace discrimination

Introduction

Over the past decade, developed countries are experiencing two entwined demographic issues: the retirement of an aging workforce and a shortage of young domestic labor force. As a result, skilled immigrants have increasingly become one of the primary sources of human capital, particularly in Europe and North America (Cameron et al., 2019). The skilled immigrant term refers to immigrants who possess a university degree or extensive work experience in a field and integrate faster into the host society (Shirmohammadi et al., 2019). Skilled immigrants are ideal immigrants because they are educated and ready to incorporate into new labor markets. Thus, developed countries actively design policies to attract highly skilled immigrants (Cameron et al., 2019). The World Bank 2018 report on global migration shows that the US, the UK, Australia, and Canada are home to almost 75% of all high-skilled immigrants (World Bank, 2018). Skilled immigrants account for 68.3% (n= 95,843) of the total immigrants who entered Australia (n=140,366) in 2019-2020 (Department of Home Affairs, 2020). Statistics show a similar pattern in North America. In 2019, 58% of total immigrants to Canada were skilled workers (Government of Canada, 2020). In 2017, immigrants accounted for 17.1% of all the labor force in the US, and skilled immigrants represented 30.2% of the total US foreign-born immigrants (Department of Labor, 2017). In the UK, 48% of total immigrants were highly skilled or upper-level skilled immigrants in 2016 (Office for National Statistics, 2017).

Regardless of the critical role of skilled immigrants' in the economy of host countries, research shows immigrants undergo higher levels of unemployment and brain-waste when compared with local-born workers with similar qualifications and skills (Tian et al., 2018). Brain-waste refers to skilled or highly skilled immigrants' skill underutilization (Lo, Li, & Yu, 2019). In other words, the skill underutilization concept applies to all types of employees

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3 (i.e., blue-collar and white-collar). However, brain-waste applies to skilled and highly skilled
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5 employees, highlighting the impact of skilled immigrants on the economy. Ongoing brain-
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7 waste of skilled immigrants and immigrants' embeddedness have become a significant
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9 concern in contemporary migration studies and with policymakers alike (Almeida &
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11 Fernando, 2017; Parsons et al., 2018). Social embeddedness refers to the recurrence and
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13 frequency of interaction and ties with people in a social network (Koelet et al., 2017).
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15 Previous studies contend that skilled immigrants are responsible for boosting innovation,
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17 creating businesses, and improving economic performance in host countries if their post-
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19 migration employment matches their skills and work experience (Shirmohammadi et al.,
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21 2019). This means skill utilization plays a vital role in reconstructing skilled immigrants'
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23 identities and embeddedness in a new community (La Barbera, 2015). Yet, the direct impact
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25 of perceived brain-waste on social embeddedness is under-researched.
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33 Moreover, previous studies mainly focused on organizational embeddedness and the
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35 relationship between life experience outside the workplace and skilled immigrants'
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37 performance and embeddedness (Halvorsen, Treuren, & Kulik, 2015; Rajendran,
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39 Farquharson, & Hewege, 2017). These studies suggest that attachments to the new
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41 community decreases the immigrants' turnover intention (Hussain & Deery, 2018). However,
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43 through the lens of embeddedness theory, we argue that this is not a one-way relationship,
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45 and workplace experiences like perceived brain-waste can also influence skilled immigrants'
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47 social embeddedness and, in return, deteriorate their contribution to the host society.
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51 Considering the importance of skilled immigrants in the economies of host countries this
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53 study is timely and valuable.
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3 We aim to investigate whether an employer's role go beyond the organizational boundaries
4 and can influence immigrants' social embeddedness, which is vital to the labor market of a
5 host country. Otherwise, immigrants will move again to another host country (Dheer &
6 Lenartowicz, 2018). We also explain how perceived brain-waste might change the influence
7 of workplace discrimination and highlight four positive psychological factors of workplace
8 wellbeing on social embeddedness among a sample of skilled immigrants. In the following
9 section, we present a review of literature related to embeddedness theory and related
10 concepts, including the four psychological factors of workplace wellbeing, workplace
11 discrimination and brain-waste, resulting in the posing of three hypotheses. This is followed
12 by explaining the methodology employed (fuzzy-set qualitative comparative analysis), the
13 discussion and conclusions, limitations and recommended future research.
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31 **Literature Review**

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33 The present study uses embeddedness theory (Granovetter, 1985) to explain the link between
34 social embeddedness and perceived brain-waste among skilled immigrants. We applied
35 embeddedness theory to place emphasis on social embeddedness rather than organizational
36 embeddedness. Drawing upon the Job Demands-Resources (JD-R) model (Demerouti et al.,
37 2011) and Self-Determination Theory (SDT: Deci, Connell, & Ryan, 1989), some researchers
38 (e.g., Chen & Shaffer, 2017; Reiche, Kraimer, & Harzing, 2011; Ren et al., 2014) have
39 investigated the embeddedness among highly skilled professionals who work overseas. These
40 researchers suggest that organizational embeddedness is an essential predictor of retention of
41 skilled workers at their workplaces and their adjustment in the new country. This indicates
42 that organizational embeddedness facilitates social embeddedness. **However, Nygaard and**
43 **Villadsen (2019) indicate that organizational embeddedness increases the likelihood of**
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3 staying in the host country, while a lack of social embeddedness mainly relates to the high
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5 probability of leaving the host country.
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10 Employment and embeddedness in the workplace encourage immigrants to stay in a host
11 society but are not strong enough to assure they will not leave. In other words, conditions that
12 influence staying in a host country differ from factors that result in leaving a host country. A
13 similar pattern is reported by Farivar, Camron, and Coffey (2019) when they find an
14 asymmetric relationship¹ between conditions that change the initial intention of international
15 students who graduate in leaving or staying after graduation. Farivar et al. (2019) also
16 propose conditions that push international graduates to leave host countries, while their initial
17 plan was to stay, differ from conditions that pull them to remain even if their initial plan was
18 to leave the host country.
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33 By adopting the embeddedness theory rather than the JD-R model and SDT, we highlight a
34 human capital perspective and go beyond organizational boundaries. Embeddedness theory
35 suggests all economic actions are embedded in social networks. This theory emphasizes three
36 components: links, fit, and sacrifice (Ng & Feldman, 2013). Links are formal and informal
37 connections between immigrants, the workplace, and the new community. Fit refers to a
38 person's perceived rapport and comfort with an organization or a community (Koumbis,
39 2007). Community fit is the degree to which individuals' needs, concerns, and interests are
40 compatible with their surroundings (Ng & Feldman, 2013). Lastly, sacrifice refers to the
41 perceived psychological, emotional, and physical costs that result from leaving home
42 countries (Koumbis, 2007). Sacrifice is the degree of ease with attachments that can be
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59 ¹ An asymmetric relation is a binary relation between X and Y, if X relates to Y but Y is not related to
60 X.

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3 broken (Halvorsen et al., 2015). Work-related sacrifice includes perceived and real tangible
4 and intangible benefits that may be forfeited by leaving an employer. Social sacrifice captures
5 the perceived and real tangible and intangible benefits that may be lost by leaving a
6 community (Halvorsen et al., 2015).
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14 We suggest that immigrants pay attention to links, fit, and sacrifice factors when deciding to
15 immigrate to a host country and again, when they choose to stay in the host country or move
16 again to another host country. Immigrants consider what they may lose when they decide to
17 stay or leave a specific host country. Thus, the lack of fit and social ties pushes immigrants to
18 leave a host country, especially if they feel what they sacrifice to stay is more than what they
19 obtain. We expand our previous study by drawing attention to skilled immigrants' social links
20 and fit in the new community and their sacrifices to stay or leave the host country. We
21 suggest that perceived brain-waste is a massive sacrifice beyond organizational boundaries
22 and can negatively impact work-related factors and jeopardize skilled immigrants' social
23 embeddedness. Previous studies document that higher levels of community involvement and
24 social ties help immigrants build networks, secure jobs and employment. Our results also
25 indicate that the relationship between social embeddedness and the workplace is a loop, as
26 work-related variables such as workplace discrimination and positive factors of workplace
27 wellbeing can directly influence immigrants' embeddedness into the host society.
28 Furthermore, we hypothesize perceived brain-waste is a critical factor that can influence the
29 impact of work-related factors (psychological factors of workplace wellbeing and workplace
30 discrimination) on social embeddedness.
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56 ***Psychological factors of workplace wellbeing***
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3 Parker and Hyett (2011) suggest that workplace wellbeing depends on employees' perception
4 of four psychological factors: 'job satisfaction,' 'organizational respect for the employee,'
5 'employer care' and 'intrusion of work into private life.' The first three factors are extracted
6 from positive psychology studies and are named positive psychological factors of workplace
7 wellbeing, while the fourth factor is a negative factor. Job satisfaction represents the extent to
8 which employees feel their work is fulfilling and fuels their sense of self-worth (Parker &
9 Hyett, 2011). Mahmud, Alam, and Härtel (2014) suggest that the mindset and perception of
10 employers towards immigrants' overall qualities and skills play an essential role in
11 immigrants' workplace integration and embeddedness. Cameron et al. (2019) also found that
12 the non-recognition of overseas qualifications and experience leads to skill wastage, in the
13 case of this study, brain-waste.
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31 The concept of organizational respect for employees encapsulates the overall employee
32 perception of the organization as trustworthy and ethical and one that value employees' skills
33 and efforts. Simultaneously, the employer care factor captures employees' judgments about
34 whether their direct managers and supervisors are caring and understanding (Parker & Hyett,
35 2011). Although there is no research on the exact theme of 'employer care' and
36 'organizational respect for employees' in immigration studies, these two concepts can be
37 considered examples of workplace support. Studies highlight that caring and understanding
38 supervisors and managers support employees, which results in high levels of ties as
39 organizational integration policies moderate the skilled immigrants' motivation to integrate
40 into the host country (Cerdin et al., 2014).
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56 Immigrants experience lower levels of job satisfaction than their native-born colleagues (Tian
57 et al., 2018). Some studies suggest that job satisfaction is an incentive that improves
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3 embeddedness at work (Jiang et al., 2012; Mitchell et al., 2001). Besides, the lack of job
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5 satisfaction probably results in counterproductive work behaviors, which reduces
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7 commitment and sociability (Ng & Chow, 2005). High levels of job satisfaction also point
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9 toward a high level of person-environment fit (Gander, Hofmann, & Ruch, 2020). Thus, in
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11 terms of embeddedness theory, the present study assumes that job satisfaction relates to fit
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13 that might have a significant and positive impact on social embeddedness. As a result of the
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15 preceding discussion, we hypothesize the following:
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21 **H1** Positive psychological factors of workplace wellbeing (job satisfaction, employer care,
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23 and organizational respect for employees) positively contribute to social embeddedness
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25 among skilled immigrants.
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31 Another predictor that previous studies suggest influences embeddedness is workplace
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33 discrimination (Dietz et al., 2015; Jasinskaja-Lahti, Liebkind, & Perhoniemi, 2007).
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37 *Workplace discrimination*

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40 Dietz et al. (2015) suggest that workplace discrimination occurs when i) skilled immigrants'
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42 skills and experiences are unfairly undervalued and ii) skilled immigrants' skills and
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44 expertise are deemed lower than domestic applicants. According to the Australian Fair Work
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46 Act, workplace discrimination includes an employer's adverse action against a current or a
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48 prospective employee based on race, age, color, religion, marital status, physical or mental
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50 disabilities, pregnancy, political orientation, gender, and sexual orientation (The Fair Work
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52 Ombudsman, 2020). Thus, we see workplace discrimination as a combination of perceived
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54 discrimination in the workplace and the recruitment process. Perceived workplace
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56 discrimination implies a lack of interactional justice. Interactional justice refers to
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3 *'employees' perceptions about the fairness of the interpersonal treatment received in the*
4 *workplace'* (Cross & Turner, 2013, 579).
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10 Workplace discrimination has substantial negative consequences on physical and mental
11 health, such as negative psychological symptoms, high blood pressure, cardiovascular
12 conditions, respiratory illnesses, and breast cancer (Nakhaie & Wijesingha, 2015). Perceived
13 workplace discrimination is a direct, instant and robust predictor of different mental health
14 issues such as depression, distress and anxiety, acculturative stress symptoms, and low levels
15 of self-esteem that negatively influence social ties at the workplace. Workplace
16 Discrimination affects victims and witnesses who perceived they are working in a
17 discriminatory work environment and feel that the work context is hostile (Di Marco et al.,
18 2018). Simultaneously, its negative impact is more indirect and slower on overall physical
19 health status (Jasinskaja-Lahti, Liebkind, & Perhoniemi, 2007). The adverse effects of
20 workplace discrimination on health are more significant among immigrants than locals
21 (Nakhaie & Wijesingha, 2015). Sacrifices that immigrants make to relocate may explain why
22 the negative impacts of discrimination are more substantial among immigrants than local-
23 born employees. Another reason that may explain this point is that immigration can
24 effectively change immigrants' relative position as many immigrants in a new country have
25 become not only "immigrant" but also "ethnic minorities" (Wilkes & Wu, 2019). Thus,
26 workplace discrimination can be perceived as racial discrimination, which damages trust in
27 the new society (Wilkes & Wu, 2019). Thereby, perceived discrimination negatively
28 influences immigrants' cultural cohesion and social integration (Cross & Turner, 2013).
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56 Workplace discrimination also hurts the labor market as it increases the number of
57 discouraged workers. Discouraged workers do not have a job, have previously wanted a job,
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3 but recently stopped looking for a job due to labor market-related concerns such as
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5 discrimination (Heslin, Bell, & Fletcher, 2012). Ethnic and racial minorities, older workers,
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7 immigrants, and stigmatized minorities consistently present a portion of discouraged workers
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9 (Heslin, Bell & Fletcher, 2012). Therefore, workplace discrimination not only reduces
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11 immigrants' health and social interaction but may also push them to drop out of the labor
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13 market altogether, which in turn escalates their social issues. Therefore, we propose the
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15 following hypothesis:
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21 **H2** The absence of workplace discrimination positively contributes to social embeddedness
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23 among skilled immigrants.
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28 *Brain-waste*

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30 Brain-waste has been studied for the past four decades in organizational studies, which has
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32 focused on the concept of underemployment. In Australia, 64% of the labor force reported
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34 that their skills are underutilized, and almost one out of 10 organizations estimated that more
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36 than 50% of their workforce has significant skill underutilization (Chandler Macleod, 2016).
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38 A recent report estimates skill underutilization costs \$1.25 billion in foregone wages between
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40 2013 and 2018 (CEDA, 2021). In the US, statistics show that nearly 2 million skilled
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42 immigrants were working in low-skilled jobs in 2013, resulting in a \$10.2 billion in forgone
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44 tax payment: \$7.2 billion at the federal level and \$3 billion at the state level (Batalova et al.,
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46 2016).
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53 In general, brain-waste has been studied as two different types of mismatch: skill-job
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55 mismatch and education-job mismatch. The Labor Utilization Framework (Sullivan, 1978)
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57 suggests the underemployment concept encompasses the adequacy of exchange between the
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3 labor market and employees along three dimensions: hours of work, income from work, and
4 skill usage in the workplace. Concerning skill usage, underemployment is equal to skill
5 underutilization or performance gap (De Witte & Steijn, 2000; Heyes, Tomlinson, &
6 Whitworth, 2017). Thus, based on this perspective, brain-waste is defined as an individuals'
7 opportunity to utilize work-related skills in the workplace (Häusser et al., 2010). In contrast,
8 education studies focus on brain-waste under the 'skill mismatch' concept. Based on this
9 perspective, skill mismatch refers to either a mismatch between the educational level and job
10 level (vertical mismatch or over-education) or a mismatch between an individual's field of
11 study and the area in which one is employed (horizontal mismatch) (Banerjee et al., 2018).
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26 Employees who manage to apply their skills reported higher wellbeing, work commitment,
27 and job satisfaction (Van Ruysseveldt & van Dijke, 2011). In contrast, the missing
28 correspondence between the skills of a jobholder and the skill requirements of the job has
29 negative consequences for the worker. Perceived skill mismatch is related to lower levels of
30 workplace wellbeing and general wellbeing through its negative impact on job satisfaction
31 (Morrison et al., 2005). Ouweneel et al. 's (2012) indicate skill utilization accelerates intrinsic
32 motivation and consequently improves job satisfaction and work engagement. In contrast, a
33 few studies did not confirm the positive relationship between perceived skill utilization and
34 job satisfaction (Kahn & Morrow, 1991; Akerboom & Maes, 2006). Inspired by
35 embeddedness theory, we suggest that skilled immigrants compare the costs (emotionally,
36 socially, financially, etc.) and benefits of their immigration process and the outcomes of their
37 decision to move to the host country and perceived brain-waste can reinforce the weight of
38 sacrifices (costs). Thus, the following hypotheses were developed to test the relations
39 between perceived brain-waste and social embeddedness among skilled immigrants.
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3 **H3** The absence of perceived brain-waste positively contributes to skilled immigrants' social
4 embeddedness.
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10 A particular aspect this study sought to investigate how perceived brain-waste may change
11 the influence of workplace discrimination and positive psychological factors of workplace
12 wellbeing on skilled immigrants' social embeddedness. We expected immigrants who do not
13 suffer from perceived brain-waste to report social embeddedness. In contrast, we assumed
14 immigrants who perceived brain-waste could not socially embed in the host country. We
15 elaborate on this expectation through the lens of embeddedness theory. We suggest skilled
16 immigrants compare their current jobs with what they used to have before immigration
17 (Cameron et al., 2019). How well their current positions fit with their level of skills, work
18 experience, and the amount of sacrifice they made in immigrating from their countries is a
19 crucial factor that can deteriorate the impact of positive psychological factors on skilled
20 immigrants' workplace wellbeing and social embeddedness. We suggest that perceived brain-
21 waste can reinforce the negative effects of workplace discrimination on social embeddedness.
22 Thus, we developed the following configurational hypothesis that tests both intersections at
23 the same time.
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45 **H4 (a)** as a member in the set, perceived brain-waste reinforces workplace discrimination and
46 **(b)** deflates the affirmative effect of positive psychological factors on skilled immigrants'
47 social embeddedness.
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53 **Method**

54 We used a web-based survey to collect data from skilled immigrants in Western Australia.

55 We used snowball sampling and list-based sampling to send the survey link to various
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3 immigrant communities and associations operating in Western Australia (e.g., Korean
4 Associations of Western Australia, Indian society of Western Australia, Indonesian
5 Associations of Western Australia, etc.). These communities then distributed the survey link
6 among members through email lists or communities' Facebook pages. The survey composed
7 of two sections. The first section of the survey included seven constructs, and the second
8 section collected participants' demographic features. We also added a check-question to the
9 survey and asked participants to report their visa status and visa sub-class. Thus, we could
10 eliminate other immigrants and the skilled immigrants who had obtained Australian
11 citizenship from the analysis.
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26 Using fsQCA 3.0, we applied fuzzy-set qualitative comparative analysis (fsQCA) to test the
27 hypotheses. The fsQCA technique is a set-theoretic causal technique that allows researchers
28 to examine which combinations of conditions (independent variables) contributes to the
29 outcome (dependent variable). The fsQCA relies on equifinality and asymmetric
30 assumptions, close to the reality of human behaviors (Farivar & Richardson, 2020).
31 Equifinality suggests there is more than one combination of conditions that contributes to the
32 same outcome. Simultaneously, the asymmetric assumption implies that the absence and
33 presence of the same condition (e.g., workplace discrimination) are two different conditions
34 that may lead to different outcomes (Ragin, 2008a). Based on the asymmetric feature of
35 fsQCA, we investigated whether the presence or the absence of a condition was associated
36 with the desired outcome (in this case, social embeddedness). Furthermore, fsQCA lets
37 researchers investigate the impacts of configurations composed of several predictors, or the
38 intersections among several variables, on an outcome.
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58 *Sample – demographic profile*

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3 In total, we received 510 surveys. We used descriptive analysis to exclude unemployed
4 participants from the study, resulting in 397 individuals, and 66% of those were male
5 (n=262), and 34% were female (n=117). Almost 47% (n=186) reported their work experience
6 and skills were equal to their current job level, while 53% (n=211) reported perceived brain-
7 waste. More than 78% (n=310) identified as being in full-time employment, and 22% (n=87)
8 identified working part-time or as casual employees. In terms of education, 89% of the
9 participants (n=353) had a university degree, and the remainder had a diploma or a certificate.
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11 Almost 77% of the sample were young and aged under 40 years (n=305), 22.5% were
12 between 40 and 59 years of age (n=96), and less than 1% were 60 years of age or over (n=3).
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14 In total, 82% were married or lived with a partner (n=325), 15.6% were single (n=62), and
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Measures

We used 5-point Likert scales as 1= strongly disagree, and 5= strongly agree.

Positive workplace wellbeing factors- Parker and Hyett (2011) suggest workplace wellbeing is composed of four elements. Three positive factors, including ‘*job satisfaction*’, ‘*employer care*’, and ‘*organizational respect for employees*’ and one negative factor named ‘*intrusion of work into private life.*’ In the current study, we hypothesized positive factors of workplace wellbeing relate to social embeddedness among skilled workers. Four items measured job satisfaction. An example of job satisfaction measure is “I feel capable and effective in my work on a day-to-day basis.”. Four items measured employer care. An example of this construct is “I believe that my employer cares about their staff’s wellbeing”. Similarly, four items examined the level of organizational respect for employees. An example item is “I feel that my employer respects staff.”

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3 *Workplace discrimination-* The workplace discrimination construct comprises 4 items
4 focusing on discrimination based on skilled immigrants background. The focus was on
5 discrimination regarding a job application, promotion opportunities, and dismissal/warning
6 and racial, offensive behavior. We used the same items to measure perceived ethnic
7 discrimination at work as used by Jasinskaja-Lahti, Liebkind, and Perhoniemi (2007). An
8 example item is “You feel that you have been disregarded when applying for a job because of
9 your immigrant background”.

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21 *Social embeddedness-* Social embeddedness was measured by three items borrowed from the
22 Fit-Community subscale developed by Reitz and Anderson (2010). The focus of the construct
23 was on how attached the skilled immigrants felt towards the new community. An example of
24 this construct is “I feel attached to this new community I am now living in.”

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33 *Brain-waste -* We adopted three methods to examine the perceived brain-waste phenomenon.
34 First, following the previous studies about brain-waste (e.g., Mattoo et al., 2008; Banerjee et
35 al., 2018), we asked the participants to state their education level, occupation before
36 immigration, and their current job in three open-ended questions. We then compared these
37 three sets of data together to identify participants who had experienced brain-waste.

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47 Second, we used a single-item scale approach with the following statement “I think that the
48 level of my current job is at a level equal to my qualifications and experience.” The response
49 options were “No, it is lower”, “Yes, it is equal”, and “Undecided”. Why did we use a single-
50 item measure? Sackett and Larson Jr (1990) suggest that using a single-item measure is the
51 best measurement approach if a construct is narrow in scope, unidimensional, and explicit.
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3 Rossiter (2011) also argues multi-item measures are dense if the point is solid and tangible to
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5 participants.
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10 Similarly, Diamantopoulos et al. (2012) argue that using single-item measures in most
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12 empirical settings although risky is more practical as often, only one item in a multi-item
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14 scale has comparable predictive validity with the full scale. The common issue is mixing
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16 “weak” items with “good” items (Diamantopoulos et al., 2012). Finally, we compared the
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18 participants’ responses to the single-item measure and the three open-ended questions. Thus,
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20 we could classify participants into two groups: participants who perceived brain-waste and
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22 participants who did not experience brain-waste. Before testing the hypotheses, we
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24 investigated the validity and reliability of the measures, as reported in Table 1.
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31 **[Insert Table 1 here]**
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34 **Findings**

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36 Table 2 presents the descriptive analyses from the study. To obtain a better understanding of
37
38 the sample, we compared the descriptive analyses between the two groups 1) participants
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40 who perceived brain-waste and 2) participants who believed their current jobs were equal to
41
42 their previous home country work experience and education. As Table 1 shows, 31% of the
43
44 participants who perceived brain-waste were females, while 69% were males. Besides, 71%
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46 of employees who perceived brain-waste were full-time employees, 98% had a tertiary
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48 qualification, 78% were married, and 92% were younger than 45 years of age. In total, over
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50 53% of the participants reported perceived brain-waste.
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57 **[Insert Table 2 here]**
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3 Frequentist analysis with the robust estimator (WLSMV) was used to conduct Confirmatory
4 Factor Analysis (CFA). We found acceptable fit indices for the measurement model as the fit
5 indices for the measurement model were
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10 $WRMR = 0.838$, $CFI = 0.980$, $TLI = 0.976$, $RMSEA = 0.055$. Hu and Bentler (1999)
11 suggested well-fit measurement models have a Comparative Fit Index (CFI) and a Tucker
12 Lewis Fit Index (TLI) above 0.95, and a Root Mean Square Error of Approximation
13 (RMSEA) below 0.06. The acceptable threshold for WRMR is below 1 (Muthen & Muthen,
14 2016).

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23 Before testing the hypothesis, we examined the common method bias. Thus, we compared a
24 unidimensional model with a bifactor model, as suggested by Muthen and Muthen (2016). As
25 Table 3 shows, the bifactor model fitted better than the unidimensional model did, so we
26 claimed the data did not suffer from common method bias. Furthermore, we applied
27 Harman's single factor test, which suggested the first factor explained 38% of the variance.
28 Podsakoff et al. (2003) indicate that common method bias occurs if a single factor extracted
29 from an unrotated factor solution explains over 50% of the variance, . thus, again, the
30 common method bias is not an issue in this study.

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45 **[Insert Table 3 here]**
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49 Finally, we used fsQCA 3.0 to test the hypotheses. We applied the direct calibration method
50 to calibrate the Likert-based scale to fuzzy-sets as 0 indicates the full non-membership while
51 1 signifies full membership in the set (Ragin, 2008a). To apply the direct calibration method,
52 we computed composite variables and then selected the three primary thresholds for each
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3 composite variable, as suggested by Ragin (2008a) and Fiss et al. (2011). Table 4 indicates
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5 the full membership, cross-over, and full non-membership points for each composite variable.
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10 **[Insert Table 4 here]**
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15 Following this, we used the calibrated dataset to generate a truth table. The truth table reports
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17 all possible combinations of conditions (independent variables) that cause the outcome
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19 (dependent variable). To apply fsQCA, we revised the truth table based on the acceptable
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21 threshold of raw consistency (>0.8) and a reasonable threshold of proportional reduction in
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23 consistency (PRI) (Cooper & Glaesser, 2016). Raw consistency indicates to which degree the
24
25 conditions are reliable and sufficient to cause the outcome, while the PRI consistency value
26
27 demonstrates how much data are skewed (Cooper & Glaesser, 2016). After the revision, the
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29 model suggested that the frequency cut-off was equal to 2, and the consistency cut-off was
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31 0.94.
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38 Finally, we used truth tables to calculate intermediate solution terms to social embeddedness,
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40 as shown in Table 5. The intermediate solution terms represent the possible recipes that
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42 explain the outcome (Rigan, 2008a). The fsQCA method reports two parameters: coverage
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44 and consistency (Rigan, 2008a). The consistency value represents “the degree to which
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46 membership in each solution term is a subset of the outcome” (Ragin, 2008a, 44). In contrast,
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48 the coverage value indicates how a proportion of the outcome is explained by each solution
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50 term (Ragin, 2008a). The consistency value is similar to the significance value, while the
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52 coverage value resembles the coefficient of determination (R^2) in the regression-based
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54 analyses (Fiss et al., 2013).
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58 **[Insert Table 5 here]**
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6 As table 5 demonstrates, that the fsQCA suggested four different intermediate solution terms
7 that can lead to positive social embeddedness among skilled immigrants. The first solution
8 term indicates that a combination of high job satisfaction, the absence of perceived brain-
9 waste and being a skilled male immigrant explains 43% of social embeddedness in our
10 research sample. The second solution term shows that job satisfaction and organizational
11 respect alongside the absence of workplace discrimination and perceived brain-waste could
12 explain 41% of positive social embeddedness in our sample with 93% of consistency. The
13 third solution term implies that married participants believed the absence of perceived brain-
14 waste caused 24% of social embeddedness among them and organizational while
15 experiencing workplace discrimination. Finally, the fourth solution term shows 25% of
16 positive social embeddedness is reported by married males who perceived brain-waste but did
17 not experience workplace discrimination.
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35 As the results suggest, solutions 1 and 2 support the positive contribution of job satisfaction
36 and employer care to social embeddedness. However, we could not say the same in terms of
37 organizational respect. Although solution 2 shows that organizational respect and employer
38 care positively contribute to social embeddedness among skilled immigrants, solution 3
39 suggests the absence of organizational respect contributes to social embeddedness if the
40 participants did not suffer from perceived brain-waste. Thus, Hypothesis 1 is supported
41 partially. In terms of hypothesis 2, we predicted that the absence of workplace discrimination
42 contributes to social embeddedness, which is supported by solution 2 and solution 4.
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44 However, solution 3 implies that 24% of social embeddedness was explained by married
45 participants who suffered from workplace discrimination but did not perceive brain-waste.
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47 Thus, solution 3 does not support hypothesis 2. By adding marital status into the equation
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3 and looking at the configurational complexity among these conditions, the result did not
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5 support hypothesis 2.
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10 In hypothesis 3, we suggested that the absence of perceived brain-waste contributes to social
11 embeddedness supported by solutions 1, 2, and 3. However, solution 4 indicates that brain-
12 waste could still contribute to social embeddedness among married males if they did not
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14 experience workplace discrimination. Finally, a comparison between solutions 3 and 4
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16 clarifies how gender difference plays a vital role in the relationship between workplace
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18 discrimination and perceived brain-waste. We explain this critical point in the discussion
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20 section.
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28 **Discussion**

29 Skilled immigrants are an important source of human capital in many developed countries to
30 fill the “skills gap” in the host country’s labor market (Tian et al., 2018). However, the
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32 number of studies on skilled migrants’ brain-waste and social embeddedness is limited. Most
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34 previous studies have focused on organizational embeddedness rather than social
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36 embeddedness, with organizational embeddedness being considered a subset of social
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38 embeddedness. Ng and Feldman (2014) called for studies that acknowledge the difference
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40 between organizational embeddedness and social embeddedness.
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48 We adopted a set-theoretic approach to investigate how skilled immigrants’ perceived brain-
49 waste affects their social embeddedness. Using this approach allowed us to simultaneously
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51 test the impacts of several factors and extract different recipes that contribute to skilled
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53 immigrants’ social embeddedness. Two out of four solution terms (S1 and S2) clarified job
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55 satisfaction positively contributes to social embeddedness among skilled migrants only if
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3 they do not suffer from perceived brain-waste. In contrast, the positive impact of
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5 organizational respect and employer care on social embeddedness is not as strong as job
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7 satisfaction. Comparing three solution terms (S1, S2, and S3) shows both employees who
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9 experienced organizational respect and employers care and employees, who did not perceive
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11 high levels of organizational respect and employers care, still reported social embeddedness.
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13 More precisely, S1 suggests employer care and organizational respect do not play a part in
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15 establishing social embeddedness among skilled immigrants if they feel high levels of job
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17 satisfaction.
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24 Furthermore, we found a complicated relationship between workplace discrimination and
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26 perceived brain-waste. The analyses revealed this complex relationship could be elucidated
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28 by marital status and gender. Our result (S4) showed married male participants could still
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30 build strong social ties in the host country even if they perceived brain-waste. However, they
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32 did not perceive workplace discrimination concurrently. Furthermore, another path to social
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34 embeddedness (S3) indicates married participants (either male or female) who suffered from
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36 workplace discrimination also socially embedded if only they did not perceive brain-waste.
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38 This is consistent with our expectation (H4-b) as perceived brain-waste reinforces the
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40 negative impact of workplace discrimination on social embeddedness. Thus, participants who
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42 experienced workplace discrimination and brain-waste could not build strong ties with the
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44 new society.
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51 A comparison among all four solution terms suggests that the negative impact of brain-waste
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53 is stronger than the harmful effects of workplace discrimination on social embeddedness, as
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55 three out of four solutions indicated that perceived brain-waste must not exist to attain social
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57 embeddedness. However, solution term 4 implied that married males were an exception. We
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3 suggest the traditional male breadwinner model may explain this result as this model
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5 proposes males are responsible for economic provision through employment (Nadim, 2015).
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7 Breadwinning highlights the responsibility and daily obligation to support a family
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9 financially (Nadim, 2015). Thus, we suggest a sense of responsibility that married males feel
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11 could encourage them to build stronger social ties. Besides, embeddedness theory argues
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13 links such as having a working spouse or children in schools expands social embeddedness
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15 (Mitchell et al., 2001).
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21 ***Limitations and recommendations for future studies***

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23 This study has several limitations, which also suggest directions for future research. First, the
24
25 present study did not consider the cultural background of skilled immigrants, as this study
26
27 focused on work-related factors. However, skilled immigrants with different cultural
28
29 backgrounds may apply different strategies regarding adapting and merging with the new
30
31 social environment and may have difference work-place experiences. Besides, the cultural
32
33 background of highly skilled immigrants also influences their perception of brain-waste (Lo
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35 et al., 2019). More recently, Kingshott et al. (2019) suggest that people with high ethnic
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37 distance and intense ethnocentrism believe that their nation is superior to others; thus, they
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39 will not engage in activities that may change their culture. Therefore, further study is needed
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41 to test how cultural background (e.g., Western versus non-western countries) influences
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43 social embeddedness. Second, the research sample in this study is limited to Australia; thus,
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45 our results would also hold limited generalisability in other host countries. Future
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47 comparative studies among different host countries will diminish the specific sample bias.
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49 Third, a small cohort of our research sample was from English speaking countries. Thus, we
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51 could not examine language as a condition in the present study. Finally, our results suggested
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53 that employer care and organizational respect are not strong enough to facilitate social
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3 embeddedness directly. We recommend in-depth qualitative research is needed to explain this
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5 unexpected finding, especially considering organizational respect and employer care are two
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7 under-researched areas.
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10 11 12 ***Contributions and implications*** 13

14 This study makes several contributions and proposes implementation to theory and practice.
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16 First, from a theoretical perspective, we adopted embeddedness theory to make a direct link
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18 between workplace factors (psychological factors of workplace wellbeing and workplace
19
20 discrimination) and social embeddedness, while some studies have defined workplace factors
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22 as the antecedents of organizational embeddedness (e.g., Mitchell et al., 2001; Peltokorpi et
23
24 al., 2015). Previous studies suggest workplace experience influence employees' retention in
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26 an organization. However, we recommend that perceived brain-waste at work influences
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28 skilled immigrants' embeddedness into the new society and impacts their decision on staying
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30 or leaving a particular host country.
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38 The human capital perspective of immigration suggests discriminatory behaviors do not
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40 trigger the gaps between the local-born workforce and immigrants. Immigrants experience
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42 disadvantages due to their lower performance levels as the transition of knowledge from their
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44 home country to the host country may occur with loss of applicable knowledge (Drange &
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46 Helland, 2018). Allen (2006) explains that new employees in an organization feel some
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48 degree of disorientation and transition shock and need time to adjust to the new environment.
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50 Thus, they require structured supports which applies to organizational embeddedness, but our
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52 results suggest work-related supports are not enough to socially embed skilled immigrants in
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54 the host country.
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3 Furthermore, as critiqued in our literature review, embeddedness theory suggests three
4 components that facilitate embeddedness: fit, link, and sacrifice. Our sample found married
5 males who experienced perceived brain-waste (the lack of fit between their jobs and their
6 knowledge/skills) still reported social embeddedness in the host country. We suggest the
7 presence of links and sacrifices that they made may compensate for the lack of fit. Finally,
8 most studies compared local employees and skilled immigrants, while some studies suggest
9 that immigrants face many immigration-related stressors at work (Noor & Shaker, 2017). We
10 expanded this argument as we found the level of their respective perceived brain-waste,
11 gender difference, and marital status can also change the dynamics between social
12 embeddedness and some work-related factors.
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29 Second, the results of the current study have implications for migration policies.

30 Policymakers need to consider brain-waste as a critical labor market issue if host countries
31 wish to remain competitive internationally. Guo and Al Ariss (2015) suggest employers'
32 recognition of skilled immigrants' skills differ from the official recognition processes that
33 immigrants go through to obtain permanent residency. In other words, there is a gap between
34 policy rhetoric and what occurs in the labor market for skilled immigrants once they arrive in
35 Australia. Brain-waste and underutilization of skills devalue the policy impetus that drive a
36 host country's skilled migration policies. This appears to occur at the recruitment interface
37 between the skilled immigrants and employers' perceptions of the qualifications and
38 experience these immigrants have obtained overseas (Cameron et al., 2019).
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54 Third, from a practical perspective, the findings imply that when employers are recruiting
55 skilled immigrants, they need to be aware that perceived brain-waste potentially reinforces
56 the impact of work-related factors on social embeddedness among skilled immigrants. Hoppe
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3 and Fujishiro (2015) suggest that the anticipated job benefits and career aspirations play an
4 essential role in migration decision-making. This means perceived brain-waste may
5 encourage skilled immigrants to leave host countries. Entering a new workplace is
6 accompanied by some degree of disorientation, reality shock, and a need to make sense of the
7 new environment (Allen, 2006). This can result in an extreme response of leaving the
8 organization when newcomers experience initial failures (Allen, 2006). Skilled immigrants
9 not only enter a new workplace, but they also enter a new society. Thus, less structured
10 situations may make them prone to leaving both the workplace and the host society.
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24 As skilled immigrants are a necessary part of the host countries' labor markets, managers
25 who are interested in attracting and retaining skilled immigrants need to minimize perceived
26 brain-waste within the workplace. Managers can reduce employees' perceived brain-waste
27 and improve embeddedness by providing them with job autonomy and challenging tasks
28 (Rahimnia et al., 2019). The role of HR managers seems critical in improving social
29 embeddedness among skilled immigrants as some human resource practices such as job
30 design, job analysis, retention practices, and human resource planning can be applied to
31 improve autonomy and add challenging tasks to existing positions. HR managers need to
32 ensure they are fully leveraging skilled immigrants' experience and knowledge. Our results
33 suggest that, among our participants, only married males had a high tolerance for perceived
34 brain-waste. Thus, we recommend that HR managers pay specific attention to the
35 demographic features of skilled immigrants working in their companies and prioritize single
36 and/or female skilled immigrants in their action plans.
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56 Conclusion
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3 Finally, we adopted a set-theoretic approach that provides us with four different alternatives
4 that contribute to social embeddedness from a methodological perspective. Set-theoretic
5 techniques rely on complexity theory which is close to human behavior, while regression-
6 based analyses claim there is only one answer to each hypothesis, which is over-reliance on
7 simplifying complicated social behaviors (Farivar et al., 2019). The fsQCA technique
8 allowed us to investigate the presence and/or the absence of which predictors could positively
9 influence social embeddedness in immigrants. At the same time, regression-based methods
10 test if a predictor is related to the outcome (Woodside, 2013). Furthermore, applying fsQCA
11 provided us with extra insight as we found that perceived brain-waste can reinforce the
12 negative effects of workplace discrimination on social embeddedness among married
13 participants and that the absence of workplace discrimination can deteriorate the negative
14 impact of perceived brain-waste on social embeddedness, also among married males. Without
15 using fsQCA, it was impossible to discover these complex relationships between gender,
16 marital status, workplace discrimination, and perceived brain-waste. Our findings suggest
17 that perceived brain-waste can deteriorate the impact of positive workplace factors such as
18 job satisfaction and organizational satisfaction on retaining skilled immigrants in host
19 countries.
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Tables

Table 1. Validity and reliability of constructs

| Constructs | Cronbach's Alpha | Construct reliability (Joreskog rho) | AVE |
|--------------------------|------------------|---|------|
| Job satisfaction | 0.85 | 0.87 | 0.63 |
| Organizational respect | 0.87 | 0.90 | 0.70 |
| Workplace discrimination | 0.80 | 0.85 | 0.59 |
| Employer care | 0.85 | 0.86 | 0.62 |
| Social embeddedness | 0.77 | 0.80 | 0.58 |

Table 2. Descriptive statistics

| Variables | Skill-utilized (n=186, 47%) | | Perceived Brain-waste (n=211, 53%) | |
|--|--------------------------------|------------|---------------------------------------|------------|
| | Frequency | Percentage | Frequency | Percentage |
| Gender (female) | 70 | 38 | 65 | 31 |
| Employment status (Full time) | 160 | 86 | 150 | 71 |
| Marital status (Married) | 134 | 72 | 164 | 78 |
| Education status (Tertiary education) | 180 | 97 | 206 | 98 |
| Age (<45) | 169 | 91 | 195 | 92 |
| | <i>Mean</i> | <i>SD</i> | <i>Mean</i> | <i>SD</i> |
| Job satisfaction | 4.12 | 0.58 | 3.43 | 0.85 |
| Organizational respect | 3.93 | 0.64 | 3.62 | 0.81 |
| Workplace discrimination | 2.18 | 0.72 | 2.82 | 0.83 |
| Employer care | 3.85 | 0.59 | 3.47 | 0.78 |
| Social embeddedness | 3.89 | 0.71 | 3.30 | 0.76 |

Table 3: CFA Bifactor fit indices

| Model | RMSEA | CFI | TLI | WRMR |
|-------------------|-------|------|------|------|
| Measurement model | 0.05 | 0.98 | 0.97 | 0.83 |
| Unidimensional | 0.16 | 0.81 | 0.79 | 2.59 |
| Bifactor | 0.06 | 0.97 | 0.96 | 0.98 |

Table 4. Calibration of Sets

| Variables/ Sets | Calibration anchors | Notes and references |
|--------------------------|---|---|
| Job satisfaction | 20,15,4 (composite values) | Distribution-adjusted calibration anchor points following Fiss (2011) |
| Workplace discrimination | 20,9,4 (composite values) | As above |
| Organizational respect | 40,30,8 (composite values) | As above |
| Employer care | 40,30,8 (composite values) | As above |
| Social embeddedness | 15,10, 3 (composite values) | As above |
| Gender | Male=0 Female=1 | Qualitative judgment. See Ragin (2008b) |
| Marital status | Single & divorced= 0 Married or living with a partner/de facto=1 | As above |

Table 5. Intermediate solution terms to social embeddedness

| Conditions | Solution 1 | Solution 2 | Solution 3 | Solution 4 |
|--|------------|------------|------------|------------|
| Job satisfaction | ● | ● | | |
| Organizational respect | | ● | ⊗ | |
| Employer care | | ● | | |
| Workplace discrimination | | ⊗ | ● | ⊗ |
| Perceived brain-waste | ⊗ | ⊗ | ⊗ | ● |
| Marital status | ● | | ● | ● |
| Gender | | | | ● |
| Solution term raw coverage | 0.43 | 0.41 | 0.24 | 0.25 |
| Solution term consistency | 0.84 | 0.93 | 0.94 | 0.91 |
| Overall coverage | 0.77 | | | |
| Overall consistency | 0.85 | | | |
| Symbol explanation | | | | |
| <ul style="list-style-type: none"> ● Black circle indicates the condition 'must exist' to have social embeddedness. ⊗ Circle with X indicates the condition 'must not exist' to have social embeddedness. The blank space is equal to 'Doesn't matter'. Gender ● = Male Marital status ● = Married or living with a partner | | | | |