# Understanding the determinants and consequences of perceived employability in graduate labor market in China

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## Abstract

This paper investigates the impact of human capital, social capital, career planning behavior, protean career orientation and core self-evaluations on students' academic and life satisfaction in China, with the mediation effect of perceived employability and moderation effect of perceived labor market conditions. Data were collected by distributing online questionnaires to 1155 students in three types of universities. All the hypothesized direct paths and the mediation effects were supported. The moderation effect was partially supported. Perceived employability contributes to positive evaluations about life and academic work, and the perception of labor market condition could be enhanced to improve students' academic evaluations.

**Keywords** Perceived employability · Perceived labor market condition · Graduates in China

## Résumé

**Comprendre les déterminants et les conséquences de l'employabilité perçue sur le marché du travail des diplômé-e-s universitaires en Chine** Cet article étudie l'impact du capital humain, du capital social, du comportement de planification de carrière, de l'orientation de la carrière protéiforme et de l'évaluation de soi sur la satisfaction universitaire et de vie des étudiant-e-s en Chine, avec l'effet de médiation de l'employabilité perçue et l'effet de modération des conditions perçues du marché du travail. Les données ont été recueillies en distribuant des questionnaires en ligne à 1 155 étudiant-e-s dans trois types d'universités. Tous les effets directs et les effets de médiation formulés dans les hypothèses ont été confirmés. L'effet de modération a été partiellement soutenu. L'employabilité perçue contribue à des évaluations posi-

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tives de la vie et du travail universitaire, et la perception des conditions du marché du travail pourrait être renforcée pour améliorer les évaluations universitaires des étudiant-e-s.

## Zusammenfassung

**Verständnis der Determinanten und Konsequenzen der wahrgenommenen Beschäftigungsfähigkeit auf dem Arbeitsmarkt für Hochschulabsolventen in China** Die vorliegende Arbeit untersucht die Auswirkungen von Humankapital, Sozialkapital, Karriereplanungsverhalten, wechselhafter Karriereorientierung und Selbsteinschätzung auf die akademische und Lebenszufriedenheit von Studierenden in China, mit einem Mediationseffekt der wahrgenommenen Beschäftigungsfähigkeit und einem Moderationseffekt der wahrgenommenen Arbeitsmarktbedingungen. Die Datenerhebung erfolgte durch die Verteilung von Online-Fragebögen an 1.155 Studierende in drei Hochschularten. Alle hypothetischen direkten Pfade und Mediationseffekte wurden unterstützt. Der Moderationseffekt wurde teilweise unterstützt. Die wahrgenommene Beschäftigungsfähigkeit trägt zu positiven Bewertungen des Lebens und der akademischen Arbeit bei. Die Wahrnehmung der Arbeitsmarktbedingungen könnte verbessert werden, um die akademischen Bewertungen der Studierenden zu verbessern.

## Resumen

**Comprensión de los determinantes y las consecuencias de la percepción de la empleabilidad en el mercado laboral de los graduados en China** Este trabajo investiga el impacto del capital humano, el capital social, el comportamiento de planificación de la carrera, la orientación proteica de la carrera y las autoevaluaciones básicas en la satisfacción académica y vital de los estudiantes en China, con el efecto de mediación de la empleabilidad percibida y el efecto de moderación de las condiciones percibidas del mercado laboral. Los datos se recogieron mediante la distribución de cuestionarios en línea a 1.155 estudiantes de tres tipos de universidades. Todas las vías directas y los efectos de mediación previstos fueron confirmados. El efecto de moderación se apoyó parcialmente. La empleabilidad percibida contribuye a las evaluaciones positivas sobre la vida y el trabajo académico, y la percepción de las condiciones del mercado laboral podría mejorar las evaluaciones académicas de los estudiantes.

## Introduction

Education and work are closely connected. In higher education literature, most studies have focused on how university education affects employment after graduation (Bahr, 2019; Bills, 2003; Hsu et al., 2021). But some studies consider the opposite direction, namely how students' employability affects their academic and life on campus (Celik & Storme, 2018; Lenton, 2015; Silva et al., 2020). For example, those with more career-related psychological resources tend to have a higher level of academic satisfaction (Celik & Storme, 2018). Similarly, students tend to positively

evaluate their academic courses if they think they could get a good job (Lenton, 2015). In addition, those who feel drawn to work in a particular career tend to display more academic and life satisfaction (Duffy et al., 2011; Silva et al., 2020).

Due to the changes in business organizations, labor markets and Industry 4.0 (Briscoe & Hall, 2006; Hirschi, 2018), employability is increasingly becoming the core mission of universities (McCowan, 2015). Studies have found that students who have developed higher level of employability in college tend to have a better employment outcome (Mason et al., 2009; Souto-Otero, 2016). Since education and work are closely connected, we consider whether perceived employability is closely associated with students' academic and life satisfaction on campus. Based on the social exchange theory, we assume that employability leads to positive development (Forrier et al., 2018). In other words, we assume that those who are have high levels of perceived employability also had a better development on campus.

## Conceptualizing perceived employability

The concept of employability has appeared in the literature for many decades, though it is difficult to define (Williams et al., 2016). It could be conceptualized at the macro-, meso- and micro-level. The macro-level would be when large numbers of workers are needed due to an extraneous demand, for example in a post-war period. Policy makers formulated employability intervention strategies aimed at encouraging less employed groups, such as the disabled, to participate in the labor market (Feintuch, 1955). The meso-level was prominent in the 1980s due to the impact of globalization on organizations (Chun & Jyung, 2021). Globalization requires companies to be flexible and adapt to changing environments quickly; for profitability, companies proposed various programs, such as job rotation (Huang, 1999), to enhance workers employability (Kalleberg, 2001).

Defining employability at the micro-level is more recent (Vanhercke et al., 2014). An increasing number of studies on employability concur that employability is a psychosocial structure that can be measured by objective or subjective indicators (Clarke, 2008). Objective indicators include the qualities and skills that new graduates need to increase their chances to be employed (Jackson & Chapman, 2012). Therefore, the number of job offers, starting salary, time taken to obtain a job and employment quality are generally used as indicators to objectively measure employability (Coates & Edwards, 2011; Okay-Somerville & Scholarios, 2017).

The psychological approach of employability, 'perceived employability', describes an individual's subjective assessment of the possibility of obtaining and maintaining a job (Vanhercke et al., 2014). It gained increasing popularity in career research (Álvarez-González et al., 2017; Jackson & Wilton, 2017), especially for university students about to enter the labor market, who need to estimate their employability before graduation (Clarke, 2018; Donald et al., 2019; Jackson & Tomlinson, 2020). Thus, in this article, we focus on micro-level perceived employability.

## Antecedents of perceived employability

Reviewing studies from the fields of higher education, management and vocational psychology, Clarke (2018) proposed an integrated model to identify the antecedents and outcomes of perceived employability. This study utilized those antecedents of perceived employability, and links them to students' academic and life evaluations. The aim of the current work is to explore the relationship between graduate employability and its impact on academic and life satisfaction. Specifically, the study investigates four research objectives: firstly, to examine the impact of human capital, social capital, individual behaviors and individual attributes, on graduate employability; secondly, to explore the relationship between perceived employability and students' academic and life satisfaction; thirdly, to examine whether perceived employability mediates the relationship between antecedents and academic and life satisfaction; and finally, to examine whether perceived labor market conditions moderate the relationship between perceived employability and academic and life satisfaction.

Human capital refers to the skills, knowledge and other intangible assets that could be directed to create economic values for employees and their employers (Becker, 1962). Universities have been regarded as a place for training skills, and the abilities developed by university, such as problem solving, critical thinking and teamwork skills, are considered to be advanced thinking skills and are expected to improve students' employability (Clarke, 2018). Moreover, career-related courses and workshops delivered by the school, and activities on and out of the campus, such as internships (Pinto & Pereira, 2019) and overseas experience (Crossman & Clarke, 2010) are means to improve employability. Additionally, in China, economic benefits can be gained by a high level of English skills (Guo & Sun, 2014), leadership experience (Sun & Guo, 2015) and Communist Party membership (Guo & Sun, 2019). Following these studies, our first hypothesis (H1) is that human capital positively influences perceived employability.

Social capital refers to social networks owned by individuals and the strength and size of them (McArdle et al., 2007). By facilitating access to information and resources, perceived employability could be enhanced, so it represents the interpersonal dimension of employability (Batistic & Tymon, 2017). According to data from over 1,000 young people from more than 40 European countries, youth participation in professional organizations could improve their employability, especially for those from lower socio-economic backgrounds (Souto-Otero, 2016), and other studies concur (Peng, 2019; Smith, 2010). In light of above studies, the second hypothesis of our study is that social capital positively influences on perceived employability (H2).

Apart from educational and social backgrounds, career-related behaviors also affect employability (Clarke, 2018). We here conceptualize these behaviors with career planning behavior (Fugate et al., 2004; Gould, 1979), referring to assessing an individual's attitude towards career-related goal setting, plan formation and strategy development (Gould, 1979). Students who devote much time and energy to career planning are more likely to find a satisfactory job or secure a

job when they graduate (Boswell et al., 2012). The positive relationship between career planning behavior and employability has been established in many studies (Baker & Henson, 2010; Chughtai, 2019; Clements & Kamau, 2018; Zinser, 2003). A quasi-experimental pre-post intervention study found that subjective career success would increase by developing one's career planning (Spurk et al., 2015). Based on these findings, we hypothesize that career planning behavior positively influences perceived employability (H3).

We conceptualize individual attributes as protean career orientation and core self-evaluations. Protean career orientation describes a relatively stable career preference based on self-orientation and it defines career success by the individuals' own values (Briscoe & Hall, 2006). Instead of depending on external guidance, people with this attribute strive for personal growth, and they strongly desire autonomy and self-realization (Direnzo & Greenhaus, 2011). They tend to play a proactive role in managing their career development (Seibert et al., 1999), such as formulating specific career goals (Rahim & Siti-Rohaida, 2015), or acquirement transferable professional competence to maintain a high degree of employability (Gunawan et al., 2021; Wittekind et al., 2010). Protean individuals pay more attention to their own employability (Zafar & Mat, 2012), and thus the positive relationship between the two has been found in several works (Cortellazzo et al., 2019; Lin, 2015). In light of the presented literature, we hypothesize that Protean career orientation positively influences perceived employability (H4).

In order to develop and maintain a protean career orientation, adequate psychological resources are needed, and this is particularly the case now, with the need to navigate through the uncertainty, instability and ambiguity of labor markets (Baruch & Vardi, 2016). Core self-evaluations (CSEs) are seen as basic, bottom-line and subconscious estimations of one's worthiness, efficacy and capability (Judge et al., 2003). They are considered as vital individual differences that impact job search behaviors (Lo Presti et al., 2021; Onyishi et al., 2015). CSEs are second order dimensions that have four components: self-esteem (self-perception of one's own value), generalized self-efficacy (confidence in one's ability to produce expected outcomes), locus of control (the extent to which one can control life events and situations), and emotional stability (tendency to be confident and calm in the face of crises) (Judge et al., 1997). We here follow the previous work that used CSEs as a global factor (Lian et al., 2014; Onyishi et al., 2015).

The positive relationship between CSEs and perceived employability has been found (Judge et al., 2000; Onyishi et al., 2015). Those with high CSEs tend to choose more challenging jobs than individuals with low CSEs, since they have confidence in their perceived employability and think that they have the psychological resources required to address the difficulties encountered in such a job (Judge et al., 2000). University student samples confirm the relationship between these two factors (Onyishi et al., 2015). In light of above research, we posit the fifth hypothesis (H5): Core self-evaluations positively influences on perceived employability.

## Linking perceived employability to academic satisfaction

Academic satisfaction refers to the degree to which students are satisfied with their academic life (Lent et al., 2007). Much empirical career-related research replaces the term job satisfaction with academic satisfaction when university students are the samples (Celik & Storme, 2018; Duffy et al., 2015; Ghosh et al., 2019), because academic environments, similar to work environments, provided different opportunities to realize self-concept, use skills and interests, and strengthen patterns (Allen, 1996). University student samples, confirm that those with high levels of perceived employability tend to have a high level of career satisfaction (Dacre Pool & Qualter, 2013; Gunawan et al., 2021). Using panel data from 121 universities in the UK from 2007 to 2010 show that students are worried about their future employability when preparing for the labor market, and if they think they tend to achieve positive outcomes in the labor market, they are more likely to express high satisfaction with their degrees (Lenton, 2015). Therefore, we propose our sixth hypothesis (H6): Perceived employability positively influences academic satisfaction.

Life satisfaction describes a judgmental process in which individuals evaluate their quality of life according to their own unique criteria (Pavot & Diener, 2009). Perceived employability provides individuals with a sense of control over their employment situation, which enhances well-being (Vanhercke et al., 2016). Empirical works have supported the positive relationship between perceived employability and well-being (De Cuyper et al., 2011; Magnano et al., 2019). The positive relationship between well-being and life satisfaction has also been established (Diener et al., 2002). In light of this, we posit the next hypothesis (H7): Perceived employability positively influences life satisfaction.

Labor market factors need to be considered when analyzing attitudes related to perceived employability (Álvarez-González et al., 2017; Clarke, 2018). Perceived labor market condition describes students' evaluations of the needs of their majors in the market, especially in their geographical regions (Rothwell et al., 2008). Studies found that a positive perception of the labor market has a positive impact on perceived employability (Álvarez-González et al., 2017). Those who assumed that they may acquire a decent job in the future tend to positively evaluate their university academic work (Lenton, 2015). Similarly, the positive relationship between employability and life satisfaction has been established (Silla et al., 2009). The moderation effect of labor market conditions has been theoretically proposed (Clarke, 2018) but has been rarely empirically tested in quantitative studies. Consequently, we posit the following hypotheses (H8 and H9): Perceived labor market condition moderates the relationships from perceived employability to academic satisfaction (H8) and life satisfaction (H9).

According to above hypotheses development, we expect to observe the positive impacts of human capital, social capital, career planning behavior, protean career orientation and core self-evaluations on perceived employability (H1 to H5), and the influence of perceived employability on academic and life satisfaction (H6 and H7) with the moderating effect of labor market condition (H8 and H9).

## Method

### Participants

Participants were 1155 college students, made up of 660 (57.1%) men and 495 (42.9%) women. 73.9% of the students majored in science and engineering and the rest majored in humanities and social sciences. 65.9% came from the rural regions of China and 34.1% were from urban areas. 13.0% were freshman, 15.0% were sophomore, 24.9% were junior and the rest were senior. The mean age of the students was 21.01, with a standard deviation 2.20.

### Procedure

Stratified sampling was employed to collect data due to stratification of the Chinese higher education system (Min, 2004). Data were collected from three different levels of universities in Gansu province, in northwest China. One is a national university in the top tier of the educational system, and other two are provincial universities, one focusing on science and engineering oriented and the other on humanities and social sciences. Online questionnaires with consent form were randomly distributed to students by counselors in each university, and students were told that the participation would be entirely voluntary and their personal information would be treated as confidential, only for research purposes. We excluded those who reported age carelessly (e.g., 2, 99, 121), yielding 1155 valid respondents.

In this study, partial least squares structural equation modeling (PLS-SEM) analysis was chosen to validate the model proposed in this research framework. PLS-SEM is an SEM (Structural Equation Modeling) technique based on Path Analysis and Regression Analysis, which can analyze more complex structured models, a different approach to CB-SEM (covariance-based structural equation modeling) (Hair et al., 2011). Past scholars have pointed out that PLS can handle both formative and reflective indicators, obtain stable parameters from a small number of samples, and overcome the problem of multicollinearity (Chin, 1998; Hair et al., 2017; Urbach & Ahlemann, 2010). In recent years, PLS-SEM has received lots of attention from scholars in different fields and has been widely applied in different studies. This study used SmartPLS (version 3.3.2) developed by Ringle et al. (2015). PLS-SEM was employed to evaluate the proposed model for the following reasons (Hair et al., 2017): (1) This study is an exploratory research in nature; few papers except (Ma & Bennett, 2021) have tested Clarke's (2018) proposed research framework for antecedents of perceived employability; (2) The current study is prediction-oriented and focused on antecedents and outcomes of perceived employability among Chinese university students.

## Measures

### Human capital

Seven established human capital items suitable to Chinese context were used to measure human capital (Guo & Sun, 2014, 2019; Huang, 2015; Sun & Guo, 2015) and it was measured with seven-item categorical items (no = 0, yes = 1) When a group of homogeneous items were parceled, it could be treated as a continuous variable (Bandalos & Finney, 2001). The sample item is: "the College English Test (Band Four)" and parceling the categorial questions enabled the data to be treated like a Likert scale from 0 to 7. The mean human capital score was 3.45 and the *S.D.* was 1.11.

### Social capital

Scale developed by Williams (2006) was used to measure social capital and the sample item is: "Interacting with people makes me want to try new things." (Likert-like response format was from 1 (*strongly disagree*) to 7 (*strongly agree*) with 10 items. The original reliability was fairly good, with Alpha 0.86, and the current study was 0.93.

### Career planning behavior

Gould's (1979) scale was used to measure career planning behavior with 5 items and the sample item is: "I have a strategy for achieving my career goals". (Likert-like response format was from 1 (*strongly disagree*) to 7 (*strongly agree*)). Gould (1979) reported good internal scale reliability ($\alpha = 0.80$) and Alpha for the current sample was 0.88.

### Protean career orientation

Briscoe et al. (2006)'s scale was used to measure protean career orientation with 5 items and the sample item is: "I am in charge of my own career". (Likert-like response format was from 1 (*strongly disagree*) to 7 (*strongly agree*)). The internal scale reliability in Briscoe et al. (2006)'s work was 0.81 and the current work was 0.92.

### Core self-evaluations

Judge et al. (2003)'s scale was utilized to measure core self-evaluations with 5 items and the sample item is: "I am confident I get the success I deserve in life." (Likert-like response format was from 1 (*strongly disagree*) to 7 (*strongly agree*).

The authors report reliabilities between α = 0.81 and α = 0.87. In our study the reliability was α = 0.91.

### Perceived employability

The scale developed by Wittekind et al. (2010) was used to measure perceived employability with 5 items and the sample item is: "I am sure I shall find work easily if I start looking." (Likert-like response format was from 1 (*strongly disagree*) to 7 (*strongly agree*). The reported Cronbach's α were among 0.80 and 0.88, and the reliability in our work was 0.93.

### Academic satisfaction

Academic satisfaction was measured using Lent et al. (2007)'s scale with 3 items and the sample item is: "I enjoy the level of intellectual stimulation in my courses". (Likert-like response format was from 1 (*strongly disagree*) to 7 (*strongly agree*). The original reliability was 0.94 and in our work, α = 0.93.

### Life satisfaction

Diener's (1985) scale was used to measure life satisfaction and the scale consists of 4 items (e.g., "In most ways, my life is close to my ideal.") answered on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The scale has produced adequate internal consistency in past work (Compton et al., 1996; Diener et al., 1985) and current work has a 0.91 internal reliability.

### Perceived labor market condition

Rothwell et al., (2008)'s scale was utilized to measure students' perceived labor market condition with 4 items and sample item is: "Students from my course are much in demand in the labor market." (Likert-like response format was from 1 (*strongly disagree*) to 7 (*strongly agree*). The original reliability in Rothwell et al., (2008)'s work was between 0.76 and 0.77, and our work was 0.90.

## Results

### Measurement model

The measurement model refers to the relationships between items and constructs. When a group of homogeneous items were parceled, human capital could be treated as a continuous variable (Bandalos & Finney, 2001). According to criterion suggested of Fornell and Larcker (1981), factor loadings below 0.70 should be abandoned to ensure the CR and AVE above the cut-off point of 0.70 and 0.50, respectively. If CR and AVE, however, are already above the threshold, factor loadings below 0.70 could be retained (Hair et al., 2011). As shown in Table 1, since CR

**Table 1** Measurement model assessment

| Construct | Loadings | Cronbach's Alpha | AVE | CR |
|---|---|---|---|---|
| SC (10 items) | .64–.83 | .93 | .60 | .94 |
| CPB (5 items) | .73–.86 | .88 | .68 | .91 |
| PCO (5 items) | .83–.89 | .92 | .75 | .94 |
| CSE (5 items) | .83–.88 | .91 | .73 | .93 |
| PE (5 items) | .87–.90 | .93 | .78 | .95 |
| AS (3 items) | .93–.95 | .93 | .88 | .96 |
| LS (4 items) | .86–.92 | .91 | .79 | .94 |
| PLMC (4 items) | .85–.91 | .90 | .78 | .93 |

*SC* social capital, *CPB* career planning behavior, *PCO* protean career orientation, *CSE* core self-evaluations, *PE* perceived employability, *AS* academic satisfaction, *LS* life satisfaction, *PLMC* perceived labor market condition

and AVE in this work are all above the cut-off point, we retained factor loadings below 0.70 (i.e. the tenth item of social capital the factor loading of which is 0.64). Cronbach's Alpha values of the constructs are all above the threshold of 0.70 (Nunnally & Bernstein, 1994), which indicates that the reliability of constructs has been satisfied.

Discriminant validity refers to the extent in which the latent variables actually differ from one another empirically. It also assesses the degree of differences between the overlapping latent variables. This study applies two methods to evaluate the discriminant validity. First, according the suggestion of Fornell and Larcker (1981), our empirical data presented the square root of each construct's AVE had a greater value than the correlations with other constructs (Fornell & Larcker, 1981) (Table 2). Second, Henseler et al. (2015) illustrated in detail that the assessment heterotrait-montotrait (HTMT) ratio of correlations criteria are a preferred approach for PLS-SEM because HTMT ratios are more sensitive than the Fornell-Larcker criterion. Therefore, the discriminant validity was also evaluated by HTMT ratio, and

**Table 2** Correlation matrix

| Construct | SC | CPB | PCO | CSE | AS | LS | PE | PLMC |
|---|---|---|---|---|---|---|---|---|
| SC | **.78** | | | | | | | |
| CPB | .64 | **.83** | | | | | | |
| PCO | .64 | .73 | **.86** | | | | | |
| CSE | .64 | .75 | .73 | **.85** | | | | |
| AS | .58 | .65 | .57 | .68 | **.94** | | | |
| LS | .57 | .68 | .57 | .73 | .72 | **.89** | | |
| PE | .57 | .63 | .61 | .71 | .65 | .67 | **.88** | |
| PLMC | .60 | .65 | .67 | .74 | .71 | .64 | .77 | **.88** |

The diagonal elements (bold) are the square roots of average variance extracted and off-diagonal elements are correlations

**Table 3** Discriminant validity assessment (HTMT)

| Construct | HC | SC | CPB | PCO | CSE | PE | AS | LS | PLMC |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|------|
| HC | | | | | | | | | |
| SC | .10 | | | | | | | | |
| CPB | .06 | .70 | | | | | | | |
| PCO | .07 | .69 | .81 | | | | | | |
| CSE | .06 | .70 | .84 | .80 | | | | | |
| PE | .16 | .61 | .69 | .66 | .77 | | | | |
| AS | .03 | .62 | .71 | .61 | .74 | .70 | | | |
| LS | .05 | .61 | .75 | .63 | .80 | .72 | .78 | | |
| PLMC | .10 | .65 | .72 | .73 | .82 | .84 | .77 | .70 | |

**Table 4** Structural model assessment

| Hypotheses | Path Coefficients | $t$ | Supported |
|-----------|-------------------|-----|-----------|
| H1 | .10*** | 5.05 | Yes |
| H2 | .13*** | 3.91 | Yes |
| H3 | .13** | 3.16 | Yes |
| H4 | .10** | 2.76 | Yes |
| H5 | .44*** | 11.40 | Yes |
| H6 | .63*** | 29.05 | Yes |
| H7 | .67*** | 29.50 | Yes |
| H8 | .03* | 2.16 | Yes |
| H9 | .04 | 1.54 | No |

$*p < .05$; $**p < .01$; $***p < .001$; Number of bootstrap samples $= 5000$

the requirement could be satisfied if the HTMT value was below 0.85 (Kline, 2015). Since all the HTMT values shown in Table 3 are below the threshold, the discriminant validity was established.

## Inner model

A bootstrap with 5000 resampling approach was employed in the SmartPLS to assess the significance of the path coefficients in the proposed model (Hair et al., 2011). Table 4 shows the results. All the proposed hypotheses are supported. The results reveal that core self-evaluations are strongly related to perceived employability ($\beta = 0.44$), followed by career planning behavior ($\beta = 0.13$), social capital ($\beta = 0.13$), protean career orientation ($\beta = 0.10$) and human capital ($\beta = 0.10$). The explanatory power of the model was evaluated by the $R$ square values. Based on the results obtained, these five factors suggested in the literature explained 54.4% of the variance in perceived employability, and perceived employability alone explained 42.5% of the variance in academic satisfaction, and 44.3% of the variance in life satisfaction.

## Mediation analysis

Bootstrapping with bias-corrected confidence interval estimated was performed to analyze the mediation effect (Hayes & Preacher, 2014). With a 5000 bootstrap re-sampling approach, the 95% confidence interval of the specific mediating effects was attained. According to Hayes and Preacher (2014), if the interval did not include zero value, the significance of the mediation effects could be confirmed. Table 5 shows that none of the intervals contain a zero value, indicating that perceived employability plays a mediation role in the model.

## Moderation analysis

The PLS product-indicator approach was applied to detect the moderation effect of perceived labor market condition on the relationship between perceived employability and academic satisfaction and life satisfaction. To test this effect, perceived employability (predictor) and perceived labor market condition (moderator) were multiplied to obtain an interaction factor (perceived employability*perceived labor market condition) to predict academic and life satisfaction. Moderator path 1 (interaction → academic satisfaction) is statistically significant ($\beta = 0.03$, $t = 2.18$, $p < 0.05$), with the positive effect, but moderator path 2 (interaction → life satisfaction) is not statistically significant.

## Discussion

This study considers the relationship between predictors of perceived employability, and academic and life satisfaction among different types of universities in China. In addition, the mediation effect of perceived employability was investigated. As an exploratory extension, the moderation effect of perceived labor

**Table 5** Mediation effects testing

| Relationship | Path coefficient | Bias-corrected percentile bootstrap confidence intervals (95%) |
|---|---|---|
| CSE→PE→AS | .29*** | (.23, .35) |
| HC→PE→AS | .07*** | (.04, .09) |
| CPB→PE→AS | .09** | (.03, .14) |
| PCO→PE→AS | .07** | (.02, .11) |
| SC→PE→AS | .08*** | (.04, .12) |
| CSE→PE→LS | .30*** | (.24, .35) |
| HC→PE→LS | .07*** | (.04, .09) |
| CPB→PE→LS | .09** | (.03, .14) |
| PCO→PE→LS | .07** | (.02, .12) |
| SC→PE→LS | .08*** | (.04, .13) |

**$p < .01$; ***$p < .001$; Number of bootstrap samples = 5000

market condition on the proposed relationship between perceived employability and academic and life satisfaction was examined. The moderating effect was only observed between perceived employability and academic satisfaction.

Universities now seek to integrate general skills into programs and curriculum learning objectives, since they assume these skills could be transferred from university to workplace and help students get a job (Steur et al., 2012). Although there are some debates on the feasibility and effectiveness of these practices (Kalfa & Taksa, 2015), H1 confirmed the positive link between human capital and perceived employability. This indicates that students with more skills and knowledge tend to think they will be better prepared to seek work.

Although it is consistent with previous findings (Berntson et al., 2006; Donald et al., 2019), there is slight difference in the measurement of human capital. For example, Donald et al. (2019) identified seven skills as human capital. These skills are teamwork, oral communication, problem solving, time management, literacy skills, numeracy and IT skills. These are indeed "*soft skills*" that are highly valued by the employers (Robles, 2012). Our work, however, measured human capital with "soft skills" such as English language ability, and "*hard skills*", such as the certification of National Computer Rank Examination, both of which are cherished by the labor market (Andrews & Higson, 2008).

H2 shows that individuals' social capital was positively related to their perceived employability, which indicates that with larger the networks and greater the social network intensity, students have higher perceived employability. This is consistent with previous findings (Batistic & Tymon, 2017; Peng, 2019). By providing students with information and resources, their perceived employability could be enhanced (Batistic & Tymon, 2017) H3 reveals that those who showed career planning behavior during college, such as a plan to look for a job, report a higher level of perceived employability, consistent with previous research of Zinser (2003) and Chughtai (2019).

H4 and H5 examine the impact of individual attributes on perceived employability. H4 illustrates that those who are inclined to rely on their own personal guidance and take proactive attitudes towards personal growth are much more likely to speak highly of their perceived employability, empirically supporting previous studies, such as Lin (2015) and Cortellazzo et al. (2019). These students tend to take the initiative to enhance their employability (Zafar & Mat, 2012). H5 demonstrates that students who have much more psychological resources in terms of positive evaluation of one's worthiness, efficacy and capability tend to think their chances of being employed are higher. This is in line with the findings of Judge et al. (2000) and Onyishi et al. (2015).

H6 illustrates that students who assume they are much more likely to get a job after graduation tend to be satisfied with their academic life when in college, consistent with previous research (Lenton, 2015). Similarly, H7 demonstrates that a high level of perceived employability is positively associated with life satisfaction, probably because people with high perceived employability tend to have a better sense of well-being, which in turn lead to a higher level of life satisfaction (Diener et al., 2002).

This study performed mediation analysis of perceived employability on the relationship between predictors of perceived employability and both academic and life satisfaction in Chinese students. The findings suggested that perceived employability positively and significantly mediated the effects of all the antecedents of perceived employability on academic and life satisfaction. These findings extend our understanding of relationship between higher education and work since most previous research has discussed the impact of higher education on graduates' employment (Bahr, 2019; Mok, 2016; Zamani & Mohammadi, 2018). Those findings seem to indicate the relationship between higher education and employment is *unidirectional*. In contrast, the findings of our research indicate that one's career development while a student in the university, such as the formation and development of perceived employability, also influenced the academic field on campus. In other words, the findings empirically show the relationship between these two fields is *bidirectional*.

This study also evaluates whether the perceived labor market condition moderated the relationship between perceived employability and academic (H8) and life satisfaction (H9). The findings demonstrate a significant and positive relationship between perceived employability and academic satisfaction. This means that students who evaluate job market conditions positively tend to have a higher level of academic satisfaction than those without. Labor market factors should be incorporated in any conceptualized framework that is related to employability (Clarke, 2018). The findings of this study illustrate this point, supporting that students should be given more confidence about the labor market, which would increase their academic satisfaction on campus.

### Theoretical and practical implications

The theoretical contributions of this research could be summarized as follows. First, we empirically integrated a comprehensive research model to understand the predictors of perceived employability. Although many proposed relations, such as protean career orientations and perceived employability, core self-evaluations and perceived employability, have been explored (Judge et al., 2000; Lin, 2015), but most of those respondents already had a job. There has been less investigation of the university context, and this study fills that gap by extended the established relations into the academic setting.

Second, our study gives strong evidence to the relationships between perceived employability and students' academic and life satisfaction. Many studies have considered the relationships between perceived employability and employment outcomes (Coates & Edwards, 2011; Okay-Somerville & Scholarios, 2017; Tomlinson, 2008). Our study goes beyond that argument and empirically illustrates the relationships between perceived employability and students' satisfaction. Our results confirm that the positive relationship between perceived employability and life satisfaction, which has been found in working adults (De Cuyper et al., 2011; Magnano et al., 2019), also holds true for university students. In addition, we contribute to the established literature by empirically identifying the positive relationships between

perceived employability and academic satisfaction, which have been rarely been considered (Lenton, 2015).

Finally, our study contributes to the literature by demonstrating the importance of contextual factors in an individual's general satisfactory evaluation, and academic satisfaction in particular. Although environmental factors, such as supports, have been regarded as the important dimensions in students' academic satisfaction (Lent et al., 2007), these findings show that now, when it is increasingly difficult for graduates to find a job (Mok, 2016), students' perceived labor market opportunities play an important role in their assessment of academic satisfaction. In other words, more confidence about the labor market should be given to students to enhance their academic experience.

Managerial implications for the stakeholders, including students and career counselors, are as follows. Students should invest more time and energy to participate in activities to improve their soft skills, such as communication skills. They also need to acquire more professional certifications to illustrate their ability in foreign language and computer skills. In addition, they should design their future career path and have a positive view of themselves. Students need to *proactively* instead of *reactively* implement these activities.

For career counselors, more connections should be established to help students improve their employability. Alumni are valuable resources, and by regularly inviting them to campus and sharing their job-seeking stories with students, students' perceived employability could be enhanced. In addition, students could be given more opportunities to have internships outside campus to improve their employability by establishing ties with employers (Souto-Otero, 2016). Moreover, career counselors could foster career planning to enhance students' career success (Spurk et al., 2015). More career-oriented activities and workshops could be implemented to strategically guide students to design their future career and train their psychological resources, such as core self-evaluations.

## Research limitations and future research directions

There are some limitations in this study that and future work could address. First, the relationships identified in this work could not be seen as causal, since cross-sectional research design has been employed. Future studies could employ experimental or longitudinal research designs to test for causal relationships. Second, the university samples in this work are located in a less developed province of China, limiting their generalizability to universities in more developed areas. More universities in other parts of China should be included in the future work. Finally, the study only explores the direct relationship between perceived employability and satisfaction, so future work could explore the mechanisms between them. Future work could also introduce mediation variables, such as academic engagement, to explore the proposed relationships.

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