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Career Decision Self-Efficacy and Life Satisfaction in China: An Empirical Analysis

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Abstract Focusing on the Chinese context, the present study took a pioneering step to examine the relationship between career decision self-efficacy (CDSE) and life satisfaction. Employing a three-dimensional CDSE model, which includes goal planning self-efficacy (GPSE), information gathering self-efficacy (IGSE) and problem solving self-efficacy (PSSE), we also explored the mediation mechanism underlying this relationship from the internal functioning process of CDSE (i.e., the GPSE–PSSE–life satisfaction and IGSE–PSSE–life satisfaction relationships). We then investigated the moderating role of person–environment (P–E) fit in the mediated CDSE–life satisfaction relationship. Data were collected from 786 university students. Results showed that all three dimensions of CDSE were positively related to life satisfaction. The internal process view was supported, for PSSE was found to mediate the relationships of life satisfaction with GPSE and IGSE, respectively. Additionally, P–E fit moderated the relationship between PSSE and life

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satisfaction. Further examinations also found a significant moderating role of P–E fit in the indirect relationships of life satisfaction with GPSE and IGSE via PSSE.

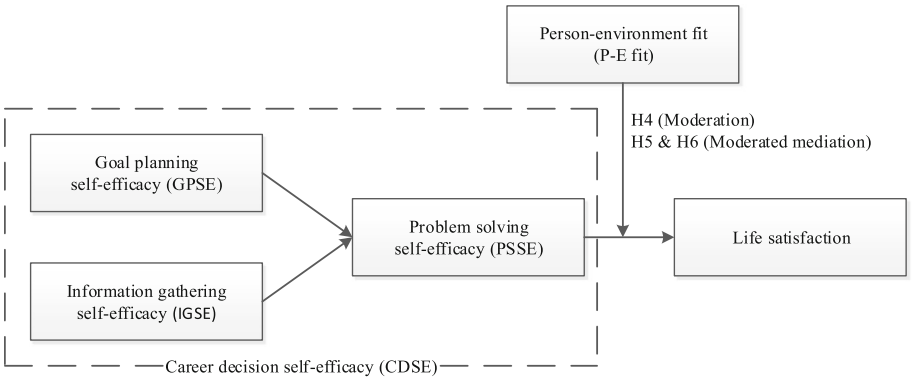
Keywords Career decision self-efficacy · Information gathering self-efficacy · Goal planning self-efficacy · Problem solving self-efficacy · Person–environment fit · Life satisfaction

1 Introduction

Individuals' cognitive judgments regarding life satisfaction are rather complex (Suh et al. 1998). This complexity, along with the conceptual broadness of life satisfaction, makes its determinants widespread (Erdogan et al. 2012). Although in most societies, work-related issues constitute an essential part of a person's overall life, a recent review reveals that the influence of the work domain on life satisfaction is underexplored (Erdogan et al. 2012). An obvious limitation in this area is that most studies focus on the mature stage of people's careers, ignoring the exploration, planning, and decision stages of the career development journey.

The present study steps forward to examine the relationship between career decision self-efficacy (CDSE) and life satisfaction among China's prospective workforces (i.e., university students). CDSE, a key variable in the career decision stage, refers to individuals' confidence in successfully completing tasks regarding career decision-making (Jiang 2015). Reflecting one's career-related capabilities, CDSE incorporates trait components specific to the vocational domain (Judge and Bono 2001) and can help individuals cope with the unstructured and unpredictable career environments of modern society (Brown et al. 2003). We argue that CDSE is particularly important and relevant for the current generation of Chinese university students, who are facing numerous job opportunities and tremendous career challenges at the same time due to the rapid economic and societal changes of the past few decades. In this paper we first examine CDSE, which consists of three dimensions—information gathering self-efficacy (IGSE), goal planning self-efficacy (GPSE), and problem solving self-efficacy (PSSE)—as the antecedent of life satisfaction. Second, from an internal process view, we argue that IGSE and GPSE are linked to life satisfaction through PSSE, such that IGSE and GPSE affect life satisfaction because they first facilitate the development of PSSE, which in turn leads to improved life satisfaction. Third, according to Huebner et al. (2006), whether and how a factor contributes to one's life satisfaction is to some extent affected by the complex interplay of personal and environmental characteristics. Research shows that person–environment (P–E) fit, as a variable reflecting the relationship between the individual and the environment, facilitates humans' cognitive processes driving the appraisal of life satisfaction (Jiang and Jiang 2015). Drawing on trait activation theory (Tett and Burnett 2003), we propose that different levels of P–E fit alter the relationship between the proximal self-efficacy (i.e., PSSE), which ultimately transmits the effects of the more distal self-efficacy (i.e., IGSE and GPSE), and life satisfaction, such that people with higher P–E fit tend to perceive higher life satisfaction when they also hold higher PSSE. Figure 1 displays the proposed study model.

The contributions of the present study are as follows. First, the examination of the effect of CDSE on life satisfaction extends previous research of the work-life link by shifting the



H1: CDSE → Life satisfaction; H2: GPSE → PSSE → Life satisfaction; H3: IGSE → PSSE → Life satisfaction

Fig. 1 Proposed research framework

focus to career decision processes, which are suggested to prevalently exist in the exploration and planning stage of one's career life. Since this subarea of the work-life relation is underexplored, this shift opens another door to enrich our understanding of the contribution of work and careers to life satisfaction. Second, this study is a pioneering effort to explore the internal process underlying CDSE and analyze how this internal process can function to improve life satisfaction. The original CDSE construct was developed largely based on career maturation theory, which suggests that different domains are affiliated with career-related confidence (Crites 1978). However, as we demonstrate in our study, self-efficacious beliefs related to career problem solving are more closely related to life satisfaction and can mediate the effect of other CDSE domains. Third, we explore the intervening role of P–E fit in the CDSE–life satisfaction relationship. By integrating the person–environment linkage into the individuals' psychological mechanisms connecting career to one's life as a whole, this exploration assists in identifying the conditions for the influence of CDSE, and its internal processes, on life satisfaction. Fourth, this study contributes to our understanding of the career-life relationship and the associated mechanisms in a Chinese context. Due to the unpredictable nature of the rapidly changing Chinese society, our investigation potentially offers a career-life framework that can stand in transforming societies like China and perhaps in other societies facing similar situations. Fifth, the present study, from a practitioner perspective, offers useful information that guides career counselors, higher education providers, and even policy makers to help strengthen positive life experiences of prospective workforces in China, through developing positive career-related feelings and fitting into societal environments.

2 Hypothesis Development

2.1 Career Decision Self-Efficacy and Life Satisfaction

Rooted in the social cognitive theory (Bandura 1977, 1986), career decision self-efficacy (CDSE) was first conceptualized as "an individual's degree of belief that he or she can

successfully complete tasks necessary to making career decisions" (Betz et al. 1996, p. 48). According to Taylor and Betz (1983), CDSE is important in influencing individual's career decision-making behaviors. Research shows that CDSE is related to various career-related cognitive and behavioral outcomes, including career decidedness (Robbins 1985; Taylor and Popma 1990); career choice making (Tang et al. 1999); career optimism (Garcia et al. 2015), career commitment (Chung 2002), and many others. However, how CDSE might influence other life outcomes has rarely been studied. As mentioned previously, such an omission is critical given that for most people, a job is an essential part of everyday life. The present study extends this line of research by linking CDSE to a wellbeing related outcome, life satisfaction. Life satisfaction refers to a cognitive and judgmental process, which involves a global assessment of the quality of a person's life based on the set of criteria chosen by this person (Diener et al. 1985). The unifying model of wellbeing suggests that individuals' general satisfaction is determined by social, cognitive, behavioral, personality and other psychological variables (Santilli et al. 2014; Lent et al. 2009). Although it has been recognized that work domain plays an important role in influencing one's life satisfaction (Erdogan et al. 2012), as an important career-related psychological construct, the impact of CDSE on life satisfaction has not been examined.

We propose that CDSE is positively related to life satisfaction. Bandura's (1977, 1986) social cognitive theory suggests that the self-efficacious belief serves as a strong motivating factor of individual performance, and that individuals of high self-efficacy tend to perform better than individuals of low self-efficacy. Drawing on this basis, researchers contend that self-efficacy is positively related to life satisfaction because of the positive emotion and satisfaction individuals experience when performing well in a particular domain (Lent et al. 2005). For example, studies show that academic self-efficacy is positively related to students' life satisfaction (Diseth et al. 2012; O'Sullivan 2011). Following this line of reasoning, we argue that CDSE will influence life satisfaction such that individuals with higher CDSE are likely to experience a higher level of life satisfaction due to the positive emotions and satisfaction derived from aspect of their careers. In other words, individuals of high CDSE are more confident in their ability to make career-related decisions, and in dealing with career-related problems. As a result, compared to those of low CDSE, high CDSE individuals tend to feel more comfortable when making career related decisions and less stressed when encountering career-related problems. This is particularly important for Chinese university students, who face tremendous uncertainties in envisioning and planning their career paths (Jiang 2014; Jin et al. 2009). Therefore, we argue that CDSE is particularly important in influencing the overall life satisfaction among university students. Specifically, we will examine the relationships of life satisfaction with all three dimensions (GPSE, IGSE, and PSSE) of CDSE.

Hypothesis 1 CDSE is positively related to life satisfaction.

2.2 The Internal Mediation Process of CDSE and Life Satisfaction

In light of career maturity theory (Crites 1978), Taylor and Betz (1983) propose that CDSE includes five content domains: (a) accurate self-appraisal, (b) gathering occupation information, (c) goal selection, (d) making plans, and (e) problem solving. A 50-item scale (i.e., the original CDSE scale) and later a short version of 25 items (Betz et al. 1996) were developed with 10 items and 5 items measuring each component, respectively. Although numerous studies have attempted to validate these scales (see Nilsson et al. 2002 for details), the five-factor structure could not always be achieved empirically. For example,

using a sample of 418 undergraduate students enrolled in a developmental education program, Peterson and delMas (1998) found a two-factor structure that contained information gathering and decision-making. Using two high school student samples from Australia and South Africa, Creed et al. (2002) found a three-factor structure including information gathering, decision making, and problem solving. What is interesting in Creed et al.'s (2002) study is that the dominant factor for the Australian sample differed that for the South African sample, implying the role of culture in shaping the CDSE content structure. To further validate the CDSE structure, Hampton (2005) conducted a study to examine the utility of the CDSES-SF in the Chinese context. She reported a thirteen-item, three-component model for CDSE, the factors of which were named decision making self-efficacy, information gathering self-efficacy (IGSE), and problem solving self-efficacy (PSSE). However, the first component is represented by aspects that are related to goal selection and planning (Hampton 2005; Creed et al. 2002). In this study, we use goal planning self-efficacy (GPSE) to refer to this component in order to better reflect its connotations. This thirteen-item form was developed using a sample of Chinese university students and cross validated in other equivalent samples (e.g., Jiang 2016), suggesting the importance of these three components in constituting Chinese students' confidence in making vocational decisions. Building on Hampton's (2005) work, we further contribute to the CDSE literature by looking into the internal process of career decision-making in the study of life satisfaction among Chinese students.

Drawing on the self-regulation framework (Lord et al. 2010), we argue that career decision-making can be conceptualized as a career-goal driven, self-regulatory process. Self-regulation refers to the psychological process that aims at "attaining and maintaining (i.e., keeping regular) goals, where goals are internally represented desired states" (Vancouver and Day 2005, p. 158). Self-regulatory processes involve individuals setting goals, monitoring their progress toward goal attainment, and making behavioral changes if a discrepancy between the current state and the goal is perceived (Karoly 1993). The three stages described in the self-regulation framework are well aligned with three dimensions in career decision-making as identified by Hampton (2005). Specifically, during career decision-making, individuals set career-related goals and make plans to achieve these goals, actively gather information related to attainment of their desired career goals, and make necessary changes when they perceive a problem (i.e., a discrepancy between the current career state and a desired state). The three self-efficacious beliefs correspond to individuals' judgments of their abilities in accomplishing all these activities.

Following a self-regulatory framework of career decision-making, we propose that PSSE mediates the relationships between life satisfaction and the other two types of CDSE (i.e., GPSE and IGSE). Based on the self-regulatory framework (Lord et al. 2010), career problem solving should be more proximal to the outcome of career decision-making processes than career goal planning and career information gathering. One reason is that career problem solving, which involves making changes to achieve desired career goals, directly contributes to goal attainment. Following this rationale, we argue that compared to GPSE and IGSE, PSSE should be the CDSE component at the tag end to predict life satisfaction, as only through solving career-related problems can one obtain satisfaction and reduce career-related stress (Ayres and Malouff 2007). That is, PSSE is built upon GPSE and IGSE, considering that planning career goals and gathering career information allow individuals to establish a clear mental model that clarifies their current career circumstances, a discrepancy between current and desired career states (a problem), and the means to resolve the discrepancy. When individuals are more confident in setting career-related goals and gathering information regarding career goal attainment, they are more

likely to be confident in dealing with career-related problems (i.e., discrepancies between the current and desired state). Taken together, we propose that the effects of GPSE and IGSE are transmitted via PSSE to influence life satisfaction. We thus propose:

Hypothesis 2 PSSE mediates the relationship between GPSE and life satisfaction.

Hypothesis 3 PSSE mediates the relationship between IGSE and life satisfaction.

2.3 The Moderating Role of Person–Environment Fit

We further explore how PSSE can interact with P–E fit to affect life satisfaction. Drawing on the trait activation theory (Tett and Burnett 2003), we argue that the relationship between PSSE and life satisfaction varies with the level of P–E fit. This theory proposes three basic notions: (a) personal traits are latent propensities that behave in various ways; (b) traits are expressed in correspondence to specific situational cues; and (c) intrinsic satisfaction (e.g., life satisfaction) forms through the expression of traits (e.g., the effects of traits) (Tett and Burnett 2003; Tett et al. 2013). The core principle underlying trait activation theory is that psychological traits function only when they are logically relevant to specific situations (Botero and Van Dyne 2009). In line with this theory, research has indicated that the expression of personality traits tends to be more salient in certain situations and less in others (Tett and Burnett 2003). That means situation-related factors can activate individuals' traits (e.g., self-efficacy) or trait-relevant aspects and make these traits salient—with dramatic effects on people's behaviors, attitudes, and cognitive perceptions and judgments (Parker et al. 2010; Tett et al. 2013).

Based on trait activation theory, previous researchers consider P–E fit or related factors as situational variables which can activate individuals' traits and strengthen the influences of these traits on humans' behaviors, perceptions, and other psychological states (e.g., Dimotakis et al. 2012). This line of research implies that the experience of congruence between personal predispositions and situational demands can eliminate or reduce the discomfort caused by P–E misfit in career environments, thereby strengthening the effects of traits on psychological outcomes. As noted earlier, in our model, PSSE can be regarded as a career-related trait that is positively linked to individuals' life satisfaction. Applying the above theoretical basis into the career development setting, we argue that higher P–E fit is more likely to activate PSSE and make it salient—with greater impacts on the cognitive appraisal of one's life events. Stated differently, the effects of PSSE on life satisfaction tend to be stronger with the activation from high P–E fit, but they may not be strong under the condition (e.g., low P–E fit) wherein activation is less likely to occur. The literature suggests that high P–E fit alleviates individuals' concerns regarding the threats and challenges existing in the career environment (Gore and Leuwerke 2000). When P–E fit is higher, individuals with higher PSSE will be particularly optimistic about career futures and be particularly positive in evaluating their own life experiences. In contrast, although those with lower PSSE might also experience increased optimism about career issues, the notion of trait activation theory regarding trait-situation matching suggests that the extent of this increase might not be as salient as that for individuals higher in PSSE. Accordingly, we propose the following hypothesis:

Hypothesis 4 P–E fit moderates the relationship between PSSE and life satisfaction, such that this relationship is stronger when P–E fit is high rather than low.

According to prior researchers (Preacher et al. 2007; Hayes 2013), the moderation existing in any stage of the mediated relationship may result in varying indirect effects across low and high levels of the moderator. Given that a moderating role of P–E fit potentially exists in the relationship between PSSE and life satisfaction, the second-stage moderated mediation may occur in the indirect relationships of life satisfaction with IGSE and GPSE via PSSE (Edwards and Lambert 2007). Therefore, although the changes of PSSE resulting from IGSE and GPSE tend to be similar regardless of the level of P–E fit, the influences of such changes on life satisfaction might vary across people with low and high levels of P–E fit. As previously stated, high P–E fit will be more likely to activate traits associated with career problem solving and foster the roles of such traits in shaping life satisfaction. Following this track, we predict that individuals with higher P–E fit, relative those with lower P–E fit, are more likely to experience life satisfaction as a consequence of the improved PSSE that results from IGSE or GPSE. Thus, we propose that:

Hypothesis 5 The indirect relationship between GPSE and life satisfaction via PSSE is moderated by P–E fit, such that this indirect relationship is stronger when P–E fit is high rather than low.

Hypothesis 6 The indirect relationship between IGSE and life satisfaction via PSSE is moderated by P–E fit, such that this indirect relationship is stronger when P–E fit is high rather than low.

3 Methods

3.1 Procedure and Participants

Paper-and-pencil questionnaires were distributed to undergraduate students of a state-owned university in Northeastern China. This university is a typical key university supported by China's "211 Project", and recruits students from across the country. Given these attributes, our sample was relatively representative for Chinese university students. Faculty members invited students to complete the questionnaires in the classroom. Those who elected to participate were provided an informed consent sheet and assured that participation in the study was completely voluntary, anonymous, and confidential. They were told that the data collected would be used for research only and could not be accessed by anyone outside the research team. The final sample included 786 participants, with a valid response rate of 92.47 %. Their mean age was 20.42 (SD = 1.40). Among these participants, 60.43 % ($n = 475$) were female and 39.57 % ($n = 311$) were male.

3.2 Measures

The questionnaire was initially designed in English. It was translated into Chinese using a back-translation strategy (Brislin 1980), which has been widely adopted in the survey translation process. Specifically, a bilingual researcher translated the English questionnaire into Chinese, and then it was translated from Chinese back into English by another bilingual researcher. The two translators then compared their versions and resolved any disagreements jointly.

3.2.1 Career Decision Self-Efficacy (CDSE)

As recommended by Hampton (2005), CDSE was measured using thirteen items from Betz et al.'s (1996) Career Decision Self-Efficacy Scale-Short Form (CDSE-SF). These thirteen items have been used in previous studies and verified to be applicable in the Chinese context (Jiang 2016; Hampton 2005). Every item describes a task specifically related to career decision processes. Participants responded to each item by rating their confidence in successfully performing the relevant task. The response format was a 5-point Likert-type scale ranging from 1 (*no confidence at all*) to 5 (*complete confidence*). Among these items, six assessed goal planning self-efficacy (GPSE) (e.g., "persistently work at your major or career goal even when you get frustrated"); four assessed information gathering self-efficacy (IGSE) (e.g., "find information in the library about occupations you are interested in"); and three assessed problem solving self-efficacy (PSSE) (e.g., "change occupations if you are not satisfied with the one you enter"). Results of confirmatory factor analysis (CFA) showed that these three dimensions of CDSE were clearly distinctive from one another ($\chi^2(62) = 282.72$, $\chi/df = 4.56$, SRMR = 0.05, CFI = 0.90, RMSEA = 0.07). Following predecessors (Hayes 2013), we used the item-mean scores for the three dimensions of CDSE in further analysis. The Cronbach's alphas for GPSE, IGSE, and PSSE were 0.74, 0.55, and 0.58, respectively. The reliabilities for IGSE and PSSE were low but roughly consistent with, and slightly better than, that shown in previous studies, which reported alphas of approximately 0.55 (e.g., Hampton 2005). According to prior researchers (e.g., Loo 2002), the reliability levels for IGSE and PSSE in the current study were marginally acceptable.

3.2.2 Person–Environment (P–E) Fit

Jiang and Jiang's (2015) eleven-item scale was used to measure overall P–E fit. This scale was developed by adapting Lauver and Kristof-Brown's (2001) measures to fit the higher education context. It reflects a relatively comprehensive picture of psychological processes that underlie university students' fit into their close surroundings, including major, university, and a broader society (Jiang and Jiang 2015). Example items include: "I am the right type of person for this type of major"; "I am able to maintain my values at my current university"; and "My values match or fit the values of my affiliated society". The Cronbach's alpha for P–E fit was 0.88.

3.2.3 Life Satisfaction

The Satisfaction with Life Scale (SWLS) (Diener et al. 1985) was employed to measure overall life satisfaction. This five-item scale consists of short statements for evaluating the current life status of the respondent. A sample item is "In most ways my life is close to my ideal". The Cronbach's alpha for life satisfaction was 0.79 in the current study.

3.2.4 Control Variables

Participants' gender, age, and school year were controlled in data analysis. We coded gender as female = 0 and male = 1, age in years, and school year in terms of year of enrollment (i.e., freshman = 1, sophomore = 2, junior = 3, and senior = 4).

3.3 Data Analysis

Before testing the proposed hypotheses, we first conducted confirmatory factor analysis (CFA) in AMOS 20 to assess the discriminant validity of the five constructs (i.e., GPSE, IGSE, PSSE, P–E fit, and life satisfaction) used in the current study. To reduce inflated measurement errors, which are usually caused by too many items loading on one single latent variable (e.g., eleven items for P–E fit), item parceling was adopted to reduce the number of P–E fit indicators in CFA as per the advice from Nasser-Abu Alhija and Wisenbaker (2006) and Little et al. (2002). Following Nasser et al. (1997), three item-parceled indicators were constructed based on content similarity, i.e., averaging items that reflect a fit with a similar surrounding (e.g., major, university, or a broader society).

Following DeWitz and Walsh (2002) and Brown et al. (2003), we explored the relationships of life satisfaction with the three dimensions of CDSE (Hypothesis 1) using correlational analysis for examining relationship strength and direction. The mediating effects of PSSE (Hypotheses 2 and 3) were tested in SPSS 20 employing Baron and Kenney's (1986) procedure, and further confirmed by Hayes' (2013) PROCESS analysis, a bootstrap-based regression approach that can generate more accurate results for mediation testing than normal theory tests such as the Sobel test (Jiang and Jiang 2015; Shrout and Bolger 2002). The simple moderation of P–E fit (Hypothesis 4) was tested with hierarchical regression analysis, which is regarded as an effective, and the most popularly applied, method for examining moderating effects (Jiang 2014). Lastly, Hayes' approach was also employed to test the moderating effects of P–E fit in the PSSE-mediated relationships of life satisfaction with GPSE and IGSE (Hypotheses 5 and 6). This method has been used in numerous studies that have a focus on moderated mediation (e.g., Jiang 2016; Jiang et al. 2015; Hirschi and Jaensch 2015; Jiang and Hu 2015), and has been suggested to be a mature and reliable way of testing conditional indirect effects (Hayes 2013).

4 Results

We first tested the measurement model. Since the item parceling strategy that is driven by content similarity was used to create indicators for P–E fit, we tested the internal structure of P–E fit to assess whether the items parceled were truly consistent with the three distinctive fit components, respectively. CFA results showed that the three-component P–E fit model demonstrated very good model fit ($\chi^2(40) = 176.84$, $\chi/df = 4.42$, SRMR = 0.03, CFI = 0.97, RMSEA = 0.07), supporting the legitimacy of the use of parcelled indicators in the following analyses.

The five-factor measurement model that contains the five study variables (GPSE, IGSE, PSSE, P–E fit, and life satisfaction) fit the data well, showing acceptable discriminant validity ($\chi^2(179) = 621.96$, $\chi/df = 3.48$, SRMR = 0.05, CFI = 0.90, RMSEA = 0.06). These results suggested that the five variables were distinguishable from one another. The five-factor model demonstrated much better fit than the single-factor model ($\chi^2(189) = 1410.27$, $\chi/df = 7.46$, SRMR = 0.08, CFI = 0.73, RMSEA = 0.09), indicating that common method bias tended not to affect our results significantly.

Table 1 shows the means, standard deviations, and correlation coefficients for demographic and measured variables. PSSE was positively correlated to GPSE ($r = 0.51$, $p < 0.001$) and IGSE ($r = 0.46$, $p < 0.001$) as well as life satisfaction (r = 0.34,

Table 1 Means, standard deviations, and correlation coefficients

	Mean	SD	1	2	3	4	5	6	7
1. Gender	0.40	0.49							
2. Age	20.42	1.40	0.06						
3. Grade	1.66	0.89	0.02	0.75***					
4. GPSE	3.63	0.63	0.11**	−0.03	−0.02				
5. IGSE	3.63	0.66	0.10**	−0.05	−0.07	0.66***			
6. PSSE	3.35	0.78	0.10**	0.02	0.04	0.51***	0.46***		
7. P–E fit	3.50	0.68	0.11**	–0.02	0.01	0.52***	0.46***	0.35***	
8. Life satisfaction	3.28	0.82	0.04	0.01	0.05	0.40***	0.30***	0.34***	0.58***

N = 786. *GPSE* career planning self-efficacy; *IGSE* information gathering self-efficacy; *PSSE* problem solving self-efficacy; *P–E fit* person–environment fit

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$, two-tailed

$p < 0.001$). Life satisfaction was positively correlated to GPSE ($r = 0.40$, $p < 0.001$) and IGSE ($r = 0.30$, $p < 0.001$). These significant correlations showed initial support for our proposed relationships. Multiple regression results further demonstrated that GPSE ($\beta = 0.40$, $p < 0.001$), IGSE ($\beta = 0.30$, $p < 0.001$), and PSSE ($\beta = 0.34$, $p < 0.001$) were positively related to life satisfaction, suggesting that Hypothesis 1 was supported.

We tested Baron and Kenny's (1986) four conditions for mediation: (1) the independent variable is significantly related to the mediating variable; (2) the independent variable is significantly related to the dependent variable; (3) the mediating variable is significantly related to the dependent variable; and (4) the relationship between the independent variable and dependent variable becomes apparently weaker (partial mediation) or non-significant (full mediation) with the addition of the mediating variable in the regression. Results for Hypothesis 2, which predicts that GPSE affects life satisfaction via its influence on PSSE, are presented in Table 2. Condition 1 was met, as GPSE was significantly related to PSSE (Model 1 of Table 2: $\beta = 0.50$, $p < 0.001$). GPSE was significantly related to life satisfaction (Model 2 of Table 2: $\beta = 0.40$, $p < 0.001$), meeting Condition 2. PSSE was also significantly related to life satisfaction (Model 3 of Table 2: $\beta = 0.18$, $p < 0.001$), supporting Condition 3. Condition 4 was met in that when PSSE, the mediator, was added, the relationship between GPSE and life satisfaction apparently weakened (Model 3 of Table 2: $\beta = 0.31$, $p < 0.001$). These results suggested that a partial mediation role of PSSE existed in the GPSE–life satisfaction relationship. We further confirmed the results using Hayes' (2013) PROCESS analysis (5000 bootstrap samples), which showed that the indirect effect of GPSE on life satisfaction via PSSE was significant (B = 0.12, SE = 0.03, 95 % bias-corrected CI = [0.07, 0.17]). Therefore, Hypothesis 2 was supported.

Results for Hypothesis 3, which predicts that IGSE affects life satisfaction via influencing PSSE, are shown in Table 3. All four conditions for mediation were satisfied. IGSE was significantly related to PSSE (Model 1 of Table 3: $\beta = 0.46$, $p < 0.001$), satisfying Condition 1. IGSE was significantly related to life satisfaction (Model 2 of Table 3: $\beta = 0.30$, $p < 0.001$), supporting Condition 2. PSSE significantly predicted life satisfaction (Model 3 of Table 3: $\beta = 0.18$, $p < 0.001$), meeting Condition 3. Since the IGSE–life satisfaction relationship became apparently weaker when PSSE was added to the regression (Model 3 of Table 3: $\beta = 0.19$, $p < 0.001$), Condition 4 was also supported.

Table 2 Results for the mediating effect of problem solving self-efficacy on the relationship between goal planning self-efficacy and life satisfaction

	PSSE		Life satisfaction			
	Model 1		Model 2		Model 3	
	β	t	β	t	β	t
Gender	0.04	1.41	−0.00	−0.07	−0.01	−0.308
Age	−0.01	−0.25	−0.05	−1.11	−0.05	−1.083
Grade	0.06	1.21	0.10*	2.08	0.09†	1.90
GPSE	0.50***	16.32	0.40***	12.06	0.31***	8.14
PSSE					0.18***	4.79
Overall R^2	0.52		0.40		0.43	
df1, df2	4, 781		4, 781		5, 780	
Overall F	69.66***		37.94***		36.15***	

N = 786. *GPSE* career planning self-efficacy; *PSSE* problem solving self-efficacy; *P–E fit* person–environment fit. Standardized regression coefficients (β) are reported. These results are confirmed by PROCESS analysis (Hayes 2013) based on 5000 bootstrap samples: B = 0.12, SE = 0.03, 95 % CI = [0.07, 0.17]

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.10$; two-tailed

Table 3 Results for the mediating effect of problem solving self-efficacy on the relationship between information gathering self-efficacy and life satisfaction

	PSSE		Life satisfaction			
	Model 1		Model 2		Model 3	
	β	t	β	t	β	t
Gender	0.05†	1.68	0.01	0.34	−0.00	−0.05
Age	−0.03	−0.68	–0.07	−1.10	−0.06	−1.27
Grade	0.09†	1.94	0.13*	2.49	0.10*	2.09
IGSE	0.46***	14.45	0.30***	8.79	0.19***	4.97
PSSE					0.25***	6.64
Overall R^2	0.47		0.31		0.38	
df1, df2	4, 781		4, 781		5, 780	
Overall F	55.09***		20.76***		26.35***	

N = 786. *IGSE* information gathering self-efficacy; *PSSE* problem solving self-efficacy; *P–E fit* person–environment fit. Standardized regression coefficients (β) are reported. These results are confirmed by PROCESS analysis (Hayes 2013) based on 5000 bootstrap samples: B = 0.14, SE = 0.02, 95 % CI = [0.10, 0.19]

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † p < 0.10; two-tailed

Satisfaction of these conditions suggested a partial mediation of PSSE in the IGSE–life satisfaction relationship. Hayes' PROCESS analysis also supported the mediating role of PSSE by demonstrating a significant indirect effect of IGSE on life satisfaction via PSSE (B = 0.14, SE = 0.02, 95 % CI = [0.10, 0.19]). These results supported Hypothesis 3.

To test Hypothesis 4, which predicts a moderating effect of P–E fit on the PSSE–life satisfaction relationship, we adopted a three-step moderated hierarchical multiple regression. Gender, age, grade, GPSE, and IGSE were controlled in Step 1; PSSE and P–E fit

Table 4 Hierarchical regression results for the moderating effect of person–environment fit on the relationship between problem solving self-efficacy and life satisfaction

	Life satisfaction					
	β	*t*	Overall R^2	ΔR^2	*df1, df2*	Overall *F*
Step 1: controls			0.41		5, 780	30.93***
Gender	−0.00	−0.13				
Age	−0.06	−1.15				
Grade	0.11*	2.19				
GPSE	0.35***	8.05				
IGSE	0.07†	1.71				
Step 2: main effects			0.60	0.20***	7, 778	63.69***
PSSE	0.13***	3.93				
P–E fit	0.50***	14.72				
Step 3: interactions			0.61	0.01**	8, 777	57.14***
PSSE × P–E fit	0.08**	2.74				

N = 786. *GPSE* career planning self-efficacy; *IGSE* information gathering self-efficacy; *PSSE* problem solving self-efficacy; *P–E fit* person–environment fit. Standardized regression coefficients (β) are reported
*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.10$; two-tailed

were entered in Step 2; and the interaction term of PSSE and P–E fit was entered in Step 3. A moderating effect exists when the regression coefficient for the interaction term is significant (Pedhazur 1982; Jiang et al. 2015). As shown in Table 4, the interaction term "PSSE × P–E fit" was significant when predicting life satisfaction (Step 3: $\beta = 0.18$, $p < 0.01$), suggesting that P–E fit could moderate the PSSE–life satisfaction relationship. We then utilized Aiken and West's (1991) approach to plot the moderating effect to decide the direction of the moderation. As displayed in Fig. 2, the relationship between PSSE and life satisfaction was stronger among individuals with high (simple slope = 0.21, t = 4.80, $p < 0.001$) rather than low (simple slope = 0.06, t = 0.06, *n.s.*) levels of P–E fit. Hence, Hypothesis 4 was supported.

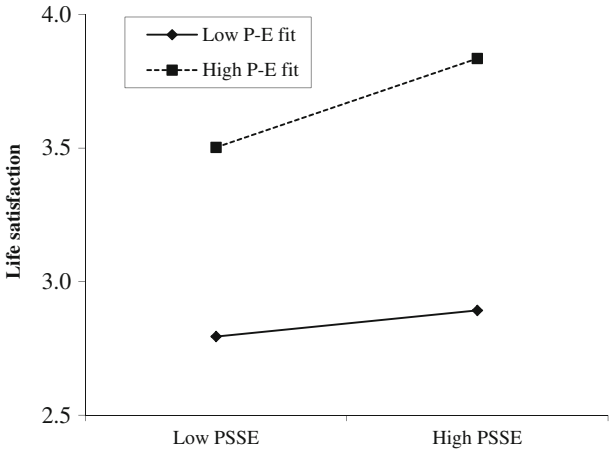


Fig. 2 The moderating role of person–environment (P–E) fit in the relationship between problem solving self-efficacy (PSSE) and life satisfaction

Table 5 Conditional indirect effects of career planning self-efficacy and information gathering self-efficacy on life satisfaction via problem solving self-efficacy

Independent var.	Moderating var.	Dependent var.: life satisfaction			
		B	SE	95 % LL	95 % UL
GPSE	Low P–E fit	0.03	0.03	−0.02	0.09
	High P–E fit	0.13	0.03	0.07	0.19
		$\Delta B = 0.10$, z = 2.27, $p < 0.05$			
IGSE	Low P–E fit	0.05	0.03	−0.003	0.10
	High P–E fit	0.13	0.03	0.08	0.18
		$\Delta B = 0.08$, z = 2.16, $p < 0.05$			

N = 786. *GPSE* career planning self-efficacy; *IGSE* information gathering self-efficacy; *PSSE* problem solving self-efficacy; *P–E fit* person–environment fit. *LL* confidence interval lower-bound; *UL* confidence interval upper-bound. The results are generated from Hayes' (2013) PROCESS analysis (5000 bootstrap samples) in SPSS 20, and the on-tailed *z* test recommended by Paternoster et al.'s (1998)

To examine whether P–E fit moderated the indirect relationships of life satisfaction with GPSE (Hypothesis 5) and IGSE (Hypothesis 6) via its function as a moderator in the effect of PSSE on life satisfaction, we continued with Hayes' PROCESS analysis (5000 bootstrap samples) to test conditional indirect effects. As shown in Table 5, the indirect effect of GPSE on life satisfaction via PSSE was significant for individuals with high P–E fit but not significant for those with low P–E fit; the difference in this indirect effect between the two groups respectively with high and low P–E fit was significant as per the results from Paternoster et al.'s (1998) *z* test. Likewise, the indirect effect of IGSE on life satisfaction via PSSE was significant when P–E fit was high rather than low; this indirect effect for the two groups respectively with high and low P–E fit also differed significantly (see Table 5). These results supported Hypotheses 5 and 6.

5 Discussion

Employing a Chinese sample, the current study examined the relationship between CDSE and life satisfaction, with a focus on its mechanism driven by the internal process of CDSE as well as the function of P–E fit in this relationship and its mechanism. As expected, all three dimensions of CDSE were related positively to life satisfaction. The impacts of IGSE and GPSE on life satisfaction were partially mediated by PSSE. Results also showed that the second stage (i.e., the PSSE–life satisfaction link) of the mediation relationships was moderated by P–E fit. These findings extend the literature in the following ways.

First, we found that CDSE was positively related to life satisfaction. This is consistent with previous findings that self-efficacious beliefs are positively related to life satisfaction (Diseth et al. 2012; O'Sullivan 2011; Vecchio et al. 2007; Azizli et al. 2015). As one of the most intensively investigated of the career-related self-efficacies, CDSE has been found to be related to many vocational outcomes (see Betz and Luzzo 1996 for details). However, as stated previously, the effects of CDSE on the individuals' cognitive appraisals, judgments, and feelings about their life statuses has not been examined. Our study takes a pioneering step to establish an initial connection between CDSE and people's general life experiences. Our findings indicate that confidence in making career-related decisions is important in influencing the feelings and perceptions of Chinese university students toward their own

life experiences (i.e., sense of life satisfaction). The reason could be that career decision-making is an important task in life for university students, who are about to enter the job market and often need to explore a variety of career options. During this time, they may experience increasing pressures in the face of uncertainties existing in their surroundings, which may serve as obstacles that prevent them from identifying a desired job (Jiang 2014; Jin et al. 2009). As our results indicated, one way to increase the life satisfaction of university students is to boost their CDSE, which maintains their confidence in making career-related decisions. The present research successfully integrates the psychological elements of individuals' career states and thoughts into their reflections of general life events, both theoretically and empirically.

Second, drawing on the self-regulation framework (Lord et al. 2010), we proposed and tested an internal mediation process of how different types of CDSE can influence life satisfaction sequentially. We pointed out earlier that the content structure of CDSE was originally developed based on career maturity theory and suggested five different dimensions (Taylor and Betz 1983). However, the content structure of CDSE is not always consistent across samples (Peterson and delMas 1998), for it can be influenced by contextual factors such as culture (Creed et al. 2002). Hampton (2005) examined the content structure of CDSE in Chinese university students and proposed a three-component structure of CDSE to include GPSE, IGSE and PSSE. Building on and extending that work, we argue that career decision-making is a career-goal driven, self-regulatory process, and that we can situate the three dimensions of CDSE into a self-regulation framework and understand how they are related to each other. Specifically, we propose that among the three CDSE components, PSSE is a proximal self-efficacious belief that is related to life satisfaction, while GPSE and IGSE are relatively distal in explaining life satisfaction. Our data partially support this idea, for PSSE partially mediates the relationships of life satisfaction with GPSE and IGSE. The investigation of the internal mediation process of CDSE has generated new insights that should facilitate theoretical exploration of more sophisticated mechanisms linking career and general life experiences. The results of this study reveal that the career decision-making process is highly reflective of self-regulation mechanisms. Our exploration, to a large extent, suggests that it is feasible and applicable to employ the self-regulation framework to study the career-life linkage. However, further validations need to be conducted in future research, given that only initial evidence is observed in our findings.

Third, we have, to some extent, confirmed that the person–environment interplay matters in individuals' reliance on career-related reflection and thinking when cognitively judging their life satisfaction. Our findings indicated that when people perceive to fit well into their associate environments, their judgments about life satisfaction are positively related to their self-efficacy in solving career problems. This result supports trait activation theory (Tett and Burnett 2003; Tett et al. 2013) from the perspective of the career-life association. Similar to previous studies (e.g., Liu et al. 2015), we operationalized P–E fit as a situational/contextual cue, with high P–E fit and low P–E fit representing two different contexts. As predicted, PSSE was only related to life satisfaction (a subjective evaluation of wellbeing) when individuals perceived a high fit between themselves and the career environment. Under the context of low P–E fit, PSSE did not significantly impact life satisfaction. This result suggests that P–E fit serves as a boundary condition under which career-related self-efficacious belief can influence one's evaluation of life satisfaction, such that in high PE fit, the effect of PSSE is more salient on the cognitive evaluation of one's life experiences. This finding also implies the potential theoretical implication that trait activation theory may have more relevance under the context of high P–E fit, in which

individuals may have more confidence in dealing with career-related problems. Our ad-hoc additional analysis suggested that the first stage (i.e., the IGSE–PSSE and GPSE–PSSE linkages) of the mediation was not moderated by P–E fit. That is, P–E fit appeared not to influence the internal process of CDSE, but it did play a significant role in influencing the CDSE effects (i.e., the PSSE effects in the present study). Even so, the role of P–E fit was sufficiently strong to impact the whole mediation process from IGSE and GPSE to PSSE and finally to life satisfaction, as evidenced by our results that the conditional indirect effects of IGSE and GPSE were significantly greater for people with high rather than low levels of P–E fit. This finding further supports the applicability of trait activation theory in the context of high P–E fit.

The present study also carries several practical implications. For example, career counselors and psychologists should be aware that individuals' career decision process is a self-regulatory process that does matter in influencing people's life satisfaction. This awareness is important in guiding them to develop interventions that can enhance people's experiences in relation to both career and life. Further, counselors and educators need to understand that the complexity in the career decision process leads individuals to differentiate various aspects involved in this process. With this understanding, they may be better able to design and adopt progressive steps to build clients' career-related confidence. Our findings indicate that although these practitioners can consider interventions for different types of CDSE simultaneously, they may firstly consider interventions that strengthen individuals' confidence in planning career goals and collecting career information, which may further facilitate the development of confidence in solving career problems. Importantly, in designing and implementing career-related interventions in a way that contributes to positive life experiences, measures can be taken to assist people in fitting into their associated environments so as to maximize the usefulness of such interventions.

This study has several limitations that deserve future attention. First, the nature of cross-sectional data has to some extent prevented further inferences about casual relations among the study variables. Despite the theoretical support from the literature, the explanation we provided to clarify these relations should be treated with caution. Future research may strive to unfold the causal links among different types of CDSE and life satisfaction using longitudinal data. Second, the use of single-source self-report data may result in common method bias, which could potentially account for some effects observed in the dataset (Zhao et al. 2015). In our study, this concern was alleviated by the CFA results (Podsakoff et al. 2003), which demonstrated that common method bias appeared not to be a significant issue that could confound our findings. Nonetheless, future research is expected to collect multi-source data so as to produce more accurate and reliable findings. Third, as stated previously, the scale reliabilities for IGSE and PSSE were as low as those reported by Hampton (2005), albeit acceptable for exploratory studies. Although the construct validity of the three-factor CDSE was well demonstrated in prior, and in the present, research, the marginal levels of reliabilities for the CDSE sub-aspects drive the need for future research to refine the existing scales or develop new measures. This is a promising area for future research to extend and improve the current CDSE literature. Fourth, data were collected in a single university. Although this Chinese sample might be representative considering the nature of students enrolled in that university, concerns may still rise regarding the generalizability of the findings, due to the fact that the uneven development of regional economy and perhaps education in China may lead people to view life satisfaction in different ways. Therefore, as one reviewer of this article suggested, while the findings may not be generalizable to students from all universities or to other populations such as the

unemployed group in China, it might be appropriate to generalize these findings to students from national universities based in cities of Northeastern China. Future research is expected to focus on multiple organizations and multiple population groups to investigate the influences of CDSE and other variables associated with career decision processes on life satisfaction.

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