Computers in Human Behavior 72 (2017) 362–370

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Full length article

Computer self-efficacy, learning performance, and the mediating role of learning engagement

I-Shuo Chen

Department of Business Administration, Wuhan University, Wuhan, Hubei Province 430072, PR China

ARTICLE INFO

Article history:
Received 21 July 2016
Received in revised form
9 December 2016
Accepted 27 February 2017

Keywords:
Computer self-efficacy
Learning engagement
Learning performance
Conservation of resources (COR) theory
Job demands–resources model (JD-R model)

ABSTRACT

This study examined the relationship between computer self-efficacy and learning performance and investigated learning engagement as a mediator of this relationship. The theoretical background is a combination of the conservation of resources (COR) theory and a theoretically extended job demands–resources model (JD-R model) proposed by Crawford, LePine, and Rich (2010). A daily diary design was carried out with 121 late-middle- and old-aged job seekers attending 10 computer cram schools. Participants completed a baseline questionnaire, seven daily diary questionnaires, and seven daily end-of-class computer skills examinations over the course of 1 week ($N = 121^{*}7 = 847$ occasions). The results of multi-level analyses showed that 1) computer self-efficacy is positively related to learning performance, 2) computer self-efficacy is positively related to learning engagement, 3) learning engagement is positively related to learning performance, and 4) learning engagement fully mediates the relationship between computer self-efficacy and learning performance. The theoretical contributions, research limitations, implications for future research, and practical implications of this study are discussed.

1. Introduction

Improving individuals' personal resources (e.g., self-efficacy) is increasingly viewed as one of the most important approaches to heightening their level of engagement at work and, consequently, their personal and work performance (e.g., Bakker & Xanthopoulou, 2013; Halbesleben, Harvey, & Bolino, 2009; Rich, LePine, & Crawford, 2010; Xanthopoulou, Bakker, & Fischbach, 2013). Personal resources refer to aspects of the self that are generally linked to resiliency and individuals' sense of their ability to successfully control and impact their environment (Hobfoll, Johnson, Ennis, & Jackson, 2003). Despite the fact that many studies examine the role of personal resources in improving individuals' work engagement (e.g., Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007), fewer studies consider late-middle- and old-aged individuals. Unemployment and job seeking among late-middle- and old-aged individuals has become one of the most severe social issues in many Asian countries because many companies have been downsizing and/or closing due to globalization and the loss of their competitive advantage worldwide. A great number of individuals who have been laid off, especially those in their late-middle and even old years, experienced a forced layoff. Therefore, these individuals attend cram schools to learn extra skills in an attempt to find a new job to support their long-term living and to broaden the types of occupations in which they could be employed.

In contrast to the past, today, companies generally rely on computers. Thus, computer-related skills are considered basic criteria in the hiring process. Crams schools that offer computer-related education and training programs have, therefore, become popular among job seekers, including those in their late-middle and old years. However, the learning performance of job seekers who are in their late-middle and old years is typically weaker than that of younger job seekers. Recent studies reveal that in technology-related environments (e.g., computer-related cram schools and workplaces that require employees to use computers), poor performance does not seem to be associated with the vocational education and training education systems; rather, it is mostly due to age (e.g., Hämäläinen, De Wever, Malin, & Cincinnato, 2015). Empirical studies find that the cognitive ability to learn decreases with age (e.g., Germine, Duchaine, & Nakayama, 2011; Willette et al., 2013). Hence, contemporary research suggests that education providers may need to specifically develop computer training and education programs for this target population (i.e., late-middle- and old-aged learners) (e.g., Yoon, Jang, & Xie, 2015). However, we argue that this solution may not be pragmatic because compared with younger learners, late-middle- and old-aged

E-mail address: stevencis@163.com.

http://dx.doi.org/10.1016/j.chb.2017.02.059
0747-5632/

learners are relatively small groups. Therefore, from education providers' (e.g., cram schools') viewpoint, the return on investment may be low; thus, they may be less likely to implement this solution.

Given the above considerations, in this study, we aim to investigate whether late-middle- and old-aged job seekers' computer self-efficacy (i.e., personal resources; Compeau & Higgins, 1995) in computer-related cram schools influences their learning engagement and subsequent learning performance. This study makes two contributions to the literature. First, this study may be viewed as a reexamination of the recently developed and important concept of work engagement. Specifically, the study examines whether personal resources (e.g., self-efficacy) contribute to individuals' level of work engagement and subsequent job performance in an increasingly important sample that has not yet been investigated in the literature. In this study, we adopt the personal resource of (computer) self-efficacy for the following reason. When individuals reach late-middle and even older ages, they often have lower levels of self-efficacy about their ability to perform and view themselves as less likely to be successful at work (Heckhausen & Schulz, 1995; Ng & Feldman, 2009). Based on Bandura's (1988, 1990) claim, individuals with weak intrapersonal influences (e.g., personal resources) have low goal orientations (Bateman & Zeithaml, 1989), tend to dwell on the things that can eventually go wrong, and visualize failure scenarios that hinder their actual abilities and undermine their performance (Bandura, 1988, 1990).

Hence, we assume that these individuals' weaker self-efficacy may contribute to their generally poor learning performance in terms of computer skills. To the best of our knowledge, this topic has not yet been discussed in the contemporary work engagement literature. Additionally, we claim that students in cram schools may be technically regarded as employees because the education providers of those schools widely use the students' learning performance (e.g., acquiring domestic and international computer licenses and certificates) to market their brand names via various commercial channels and, in turn, attract more potential students. Therefore, we argue that students' learning engagement may represent a specific type of work engagement and that their learning performance may represent a specific type of job performance. Thus, while we build our hypotheses based on research on work engagement and job performance, we use the terms learning engagement and learning performance in our hypotheses to reflect our study aim.

Second, we seek to provide education providers of computer-related cram schools with a less costly and psychological approach to effectively improving the learning performance of students who are in their late-middle and old years. To investigate the abovementioned relationship, this study adopts the conservation of resources (COR) theory (Hobfoll, 1989, 2002) and a theoretically extended job demands-resources (JD-R) model (Crawford, LePine, & Rich, 2010). Specifically, the COR is used to articulate the innate behaviors of individuals, particularly those with self-efficacy, toward resources at workplace. Then, the extended JD-R model is adopted to articulate the notion how these resources psychologically impact their engagement level at work.

2. Theoretical background and hypothesis development

2.1. Computer self-efficacy and learning performance

Self-efficacy is defined as individuals' beliefs about their ability to successfully achieve goals and manage environments that affect their lives (Bandura, 1989) and is a crucial proximal determinant of behavior (Bandura, 1986, 1989, 1997). Hence, computer self-efficacy refers to individuals' beliefs about their ability to successfully use computers to solve tasks and manage situations (Compeau & Higgins, 1995; Marakas, Yi, & Johnson, 1998).

Little research has been conducted to theoretically explain the direct influence that self-efficacy has on job performance (Judge & Bono, 2001). Existing studies maintain that self-efficacy influences the degree to which individuals pursue job performance (Bandura, 1997; Yeo & Neal, 2006). However, the literature's attempt to explain why this process occurs and how it affects individuals' behaviors in terms of pursuing job performance is insufficient. We argue that this insufficiency may result in different explanations of the process and its effect on job performance. For example, some recent studies claim that individuals with high levels of self-efficacy in a particular field (i.e., task/job-specific, such as mathematics, science, and/or computer skills) may be likely to underestimate the difficulty of the challenges of the job and/or overestimate their ability to solve the challenges of the job (e.g., Cheema & Skultety, 2016). This may lead individuals to exert less effort and hinder their pursuit of improved job performance. By contrast, other studies propose that individuals with a strong sense of self-efficacy in a particular field may persist longer on the job and may be more self-regulated to solve the challenges of the job (e.g., Tims, Bakker, & Derks, 2014), which, in turn, contributes to a better job performance (Gist & Mitchell, 1992).

Despite a lack of firm theoretical explanations for the relationship and the resulting controversial explanations in the literature, many empirical studies generally support the positive relationship between self-efficacy and job performance. In a study of business faculty members in Jordanian universities, Haddad and Taleb (2016) found that faculty members with high levels of self-efficacy exhibited better job performance than their counterparts with low levels of self-efficacy. In an examination of 1932 teachers from 92 high schools, Jacobsen and Andersen (2016) discovered that teachers' self-efficacy can be positively linked to organizational performance. Implementing a daily diary study with a heterogeneous sample of employees ($N = 47$, *days* $= 215$), Tims and her collaborators (2014) revealed that employees who felt more self-efficacious on a given day were more likely to achieve improved job performance than their disengaged colleagues. Of note, the empirical evidence provided above is mostly related to a more generalized self-efficacy, which is distinct from task/job-specific self-efficacy (e.g., computer self-efficacy) (Stajkovic & Luthans, 1998). However, existing studies suggest that compared with more generalized self-efficacy, task/job-specific self-efficacy has a relatively stronger relationship with job performance (e.g., Hysong & Quinones, 1997; Stajkovic & Luthans, 1998). Therefore, given that more generalized self-efficacy is positively related to job performance, we expect that task/job-specific (e.g., computer) self-efficacy has a positive relationship with job performance (learning performance in our case).

H1. *Computer self-efficacy is positively related to learning performance.*

2.2. Computer self-efficacy and learning engagement

Contemporary studies maintain that more investigations of the mechanisms underlying the relationship between self-efficacy and improved job performance are needed (Tims et al., 2014). In this study, we examine work (learning) engagement as a potential mediator in the relationship between (computer) self-efficacy and job (learning) performance.

Work engagement refers to "*… a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption*" (Schaufeli, Salanova, Gonzàlez-Romá & Bakker, 2002, p. 74). *Vigor* is defined as "high levels of energy and mental resilience