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Yoshitaka Yamazaki
Bunkyo University

Michiko Toyama
Bunkyo University

Roby Syaiful Ubed
Finance Education and Training Agency, Ministry of Finance (Indonesia)

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Yoshitaka Yamazaki[a], Michiko Toyama[a], and Roby Syaiful Ubed[b]

[a]Faculty of Business Administration, Bunkyo University, Chigasaki, Japan; [b]Finance Education and Training Agency, Ministry of Finance, Tangerang Selatan, Indonesia

ABSTRACT

This study examined how learning style relates to self-efficacy beliefs in a managerial context. To make a theoretical frame, the study relied on Kolb's experiential learning theory and a model of self-efficacy–performance relationship proposed by Gist and Mitchell. The study analyzed not only general efficacy but also specific efficacy focused on career management. Participants of this study consisted of 235 managers who worked for the Ministry of Finance in Indonesia. Results showed that managers' learning orientation towards abstract conceptualization over concrete experience was associated with increased self-efficacy beliefs, whereas an orientation towards active experimentation over reflective observation was associated with general self-efficacy development but had a marginal influence on career management self-efficacy. This study sheds light on a link between learning style and self-efficacy development in organizations. Based on the findings, the study offers theoretical and practical implications for leveraging learning styles and self-efficacy beliefs in organizations.

Introduction

Human resources (HR) professionals need to understand various features and perspectives of employee learning in the workplace (Poell, 2014; Slotte, Tynjala, & Hytonen, 2004). Individual outcomes of learning include knowledge creation and skill acquisition (Kolb, 1984), adaptation to work transitions (Ashford & Taylor, 1990), and, more broadly, important changes in behavior, cognition, and affect (DeSimone, Werner, & Harris, 2002). Hence, learning relates to the totality of human activities. When people learn, they have a preference for an approach to learning (Drucker, 1999), representing learning style (Price, 2004), which can be a critical factor in learning outcomes (DeSimone et al., 2002). The present study highlighted managers' learning style due to the organizational need for management and leadership development in changing and complex environments (Dragoni, Tesluk, Russell, & Oh, 2009). Particularly, this study investigated how managers' learning style relates to self-efficacy, a critical construct in human resource development (HRD) (Gibson, 2004).

The term *learning style* is defined as "an individual's preferred ways of responding (cognitively and behaviorally) to learning tasks which change depending on the environment or context" (Peterson, Rayner, & Armstrong, 2009, p. 520). Although several studies have been conducted concerning how learning style relates to certain learning outcomes (see Cassidy, 2004; Demirbas & Demirkan, 2007; Riding & Douglas, 1993), only a handful of studies have reported on learning style in connection with efficacy beliefs, and they were set in a high school context. Those studies focused on computer self-efficacy (Chou & Wang, 2000) and mathematics literacy self-efficacy (Ozgen, 2013), but they did not explain why learning style relates to efficacy beliefs. Accordingly, the understanding of an association between learning style and self-efficacy remains very constrained, especially with regard to employees in organizations.

According to Bandura's (1997) social learning theory, four important factors affect self-efficacy: enactive mastery experience, vicarious experience, verbal persuasion, and physiological conditions. Of these four factors, enactive mastery experience has the strongest influence on the formation of self-efficacy beliefs (Bandura, 1997). To form and develop self-efficacy, people must experience performance achievement and then actively learn from it. Thus, it is thought that learning from experience substantially involves developing self-efficacy (Manolis, Burns, Assudani, &

Chinta, 2013), which relies on one's accomplishments (DeSimone et al., 2002). Several empirical studies documented influential factors in employees' change or development of self-efficacy in organizational settings, including training experiences (Schwoerer, May, Hollensbe, & Mencl, 2005), supervisor feedback (Reynolds, 2006), and performance on cognitive ability tests (Maertz, Bauer, Mosley, Posthuma, & Campion, 2005). However, studies of self-efficacy have largely neglected an examination of how learning style relates to self-efficacy beliefs. Furthermore, the limited research in both the learning style and the self-efficacy literature constrains not only theory but also practice related to effective HRD and organization education. To wit, HR professionals or even line managers would have difficulty judging what style of learning should be intentionally strengthened in order to develop employee self-efficacy in the workplace.

This study was intended to contribute to the literature on organizational behavior and HRD through analysis of how learning style relates to self-efficacy beliefs in a managerial context. To analyze this relationship, the study highlighted two different self-efficacy beliefs: general self-efficacy in organizations, and specific self-efficacy of career management, because the literature recommends that both general and specific self-efficacy beliefs should be used in research (Schwoerer et al., 2005). Before further discussion of the study's methods and results, the next sections briefly review the literature on learning style and self-efficacy.

Learning style

Leaning style models

Since the 1970s, learning style has been widely studied throughout the world in order to understand people's preferences and orientations when they learn (Honigsfeld & Schiering, 2004). Multiple learning style models have been presented, with various definitions of learning style (Cassidy, 2004; Honigsfeld & Schiering, 2004). For example, Dunn and Dunn (1978) defined learning styles as individual human activity including concentration, processing, internalization, and retention regarding new and difficult information. Kolb (1984) presented experiential learning theory through which learning style corresponds with an individual's way to generate knowledge and to acquire skills by interacting with his or her environment. Later, Fleming (2001) offered the VARK learning model, which stands for visual, aural, read and write, and kinesthetic, describing learning style as individual

characteristics related to processing information by gathering, organizing, and thinking.

Demirbas and Demirkan (2007) argued that learning style theorists and researchers have offered different definitions and classifications, but their purposes and approaches seem analogous. Of the already-mentioned learning models, this study applied Kolb's (1984) experiential learning theory for three reasons. First, self-efficacy development relies on cognitive processing of information related to performance achievement (Stajkovic & Luthans, 1998); therefore, a learning model should include information processing for knowledge creation by learning. Curry (1987) proposed the onion paradigm that categorizes various cognitive and learning styles into three forms: cognitive personality, information processing, and instructional preference. In using the onion model, she discussed that learning styles in Kolb's model describe the information processing form (Cassidy, 2004), requiring high interaction between the inner self and the outer environment (Riding & Cheema, 1991). Second, Kolb's learning theory with learning styles is founded on personal experience as a source of learning. Third, his theory with its learning style instrument helps human resources (HR) practitioners and employees recognize various learning approaches (DeSimone et al., 2002). Because experiential learning itself is associated with the development of self-efficacy (Manolis et al., 2013), it seemed appropriate to apply Kolb's learning theory in order to examine how learning styles relate to self-efficacy beliefs, which strongly hinges on personal experience.

Experiential learning theory

A unique feature of Kolb's (1984) experiential learning theory is the pivotal role given to experiences in individuals' learning processes (Kolb & Kolb, 2005). In Kolb's (1984) learning model, learning entails four fundamental human activities—feeling, perceiving, thinking, and behaving—each of which corresponds with a learning mode. The first learning mode, concrete experience (CE), involves sensing and feeling a new experience, which creates apprehensive (i.e., tacit) knowledge that becomes a basis for the second learning mode, reflective observation (RO). RO requires transforming the information of apprehensive knowledge into the third learning mode, abstract conceptualization (AC) that generates comprehensive (i.e., explicit) knowledge as a form of an abstract idea or concept. The comprehensive knowledge created by AC becomes the source for the fourth learning mode, active experimentation (AE), which calls for taking action to transform it, yielding a new experience that CE (feeling) serves to grasp again.

Each learning mode relates to particular abilities, skills, or competencies. Those with the CE learning mode are good at grasping hands-on experiences, sensing immediate human situations in a subjective manner, and forming good interpersonal relationships with others. In contrast, those with the AC learning mode are adept at using logic, ideas, and concepts, making conceptual models and systematic plans, evaluating situations objectively, and applying abstract symbols and quantitative analysis. With regard to the other two learning modes, those with the RO mode are good at reflecting on their experiences from various perspectives, carefully observing, watching, and listening, collecting information and data, and being patient in unfamiliar or unstructured situations. In contrast, those with the AE learning mode have strengths in actively influencing others and changing situations. Furthermore, they are willing to make decisions, take actions and risks to get things done, and take initiative and responsibility.

Kolb's learning model posits that the CE (feeling) learning mode is dialectically opposed to the AC (thinking) mode, yielding one learning dimension that stresses grasping experience. Similarly, the RO (reflecting) mode is dialectically opposed to the AE (acting) mode, producing the other learning dimension of transforming experience. Although effective learning needs all four learning modes, people tend to specialize in two learning modes; one mode is developed more than the other in the same learning dimension (Kolb, 1984; Mainemelis, Boyatzis, & Kolb, 2002). For example, in the learning dimension of the AC versus CE modes, if individuals specialize in the AC learning mode, their CE mode tends to be undeveloped. Similarly, if people specialize in the RO learning mode, their AE mode tends to be undeveloped. As a result of this learning mode development, a combination of two learning modes leads to four typical learning styles. The first combination of CE (feeling) and RO (reflecting) generates the diverging learning style. The second combination of AC (thinking) and AE (acting) comprises the converging learning style. Thus, the diverging learning style is opposite the converging learning style in terms of the two learning dimensions: AC versus CE and AE versus RO. In the same way, the combination of the AC and RO modes leads to the assimilating learning style, whereas the emphasis on the CE and AE modes generates the accommodating learning style. The assimilating learning style thereby contrasts with the accommodating learning style in the two learning dimensions. Characteristics of each learning style correspond to traits from the two dominant learning modes. Figure 1 shows Kolb's learning model.
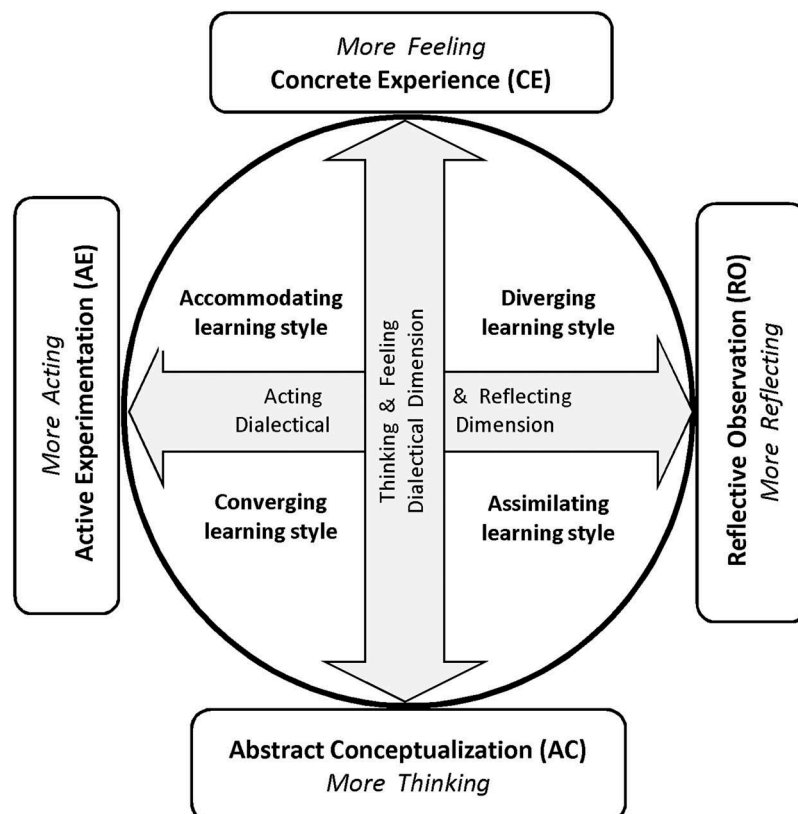

Figure 1. Kolb's learning model.

Self-efficacy

Self-efficacy as discussed in Bandura's (1977) social learning theory refers to people's beliefs that they can manage and perform the courses of action essential to complete a particular task (Bandura, 1986, 1997). Self-efficacy beliefs affect individuals' activities through cognitive, motivational, affective, and selection processes (Bandura, 1995). Much research has thereby indicated that self-efficacy has a strong effect on a wide range of various individual behaviors that include work attitudes (Judge & Bono, 2001; Luthans, Zhu, & Avolio, 2006), business performance (Luis & Torres, 2013), career attainment (Abele & Spurk, 2009), and leadership (Anderson, Krajewski, Goffin, & Jackson, 2008).

The self-efficacy concept in the aforementioned definition often represents specific self-efficacy that is applied in a particular assignment or a certain job situation. Eden and Zuk (1995) argued that unlike specific self-efficacy, general self-efficacy exists as an overall self-evaluation of one's abilities to accomplish tasks effectively in given situations. Thus, general self-efficacy describes a global and broad sense of confidence in individual capability to cope effectively with difficult (Luthans et al., 2006) and stressful situations (Schwarzer & Born, 1997). Accordingly, general self-efficacy broadly relates to human behaviors in general events or situations (Luszczynska, Gulierrez-Dona, & Schwarzer, 2005).

In addition to addressing general self-efficacy, this study also addressed specific self-efficacy beliefs of employee career management. This construct is derived from the concept of career self-management relevant to organizational work settings (Yi, Cheng, & Ribbens, 2014). Career self-management entails collecting information regularly and planning to solve career problems as well as to make career decisions (Kossek, Roberts, Fisher, & Demarr, 1998). It serves to increase perceptions of one's capabilities to foster one's career management (King, 2004), to improve it (Kossek et al., 1998), and to contribute to career satisfaction and managerial success (King, 2004). Thus, career management self-efficacy directly connects to career self-management, referring to people's beliefs that they are able to manage their career by organizing necessary information into their career plan and executing it for successful career-related performance.

Hypothesis development

As discussed earlier, enactive mastery experiences have the most influence on the development of self-efficacy (Bandura, 1997) because they provide direct performance information that individuals use for the evaluation of their self-efficacy (Stajkovic & Luthans, 1998). Moreover,

Stajkovic and Luthans (1998) argued that performance results themselves do not directly change self-efficacy. Rather, changes in self-efficacy result from a cognitive processing of performance information (Bandura, 1997; Stajkovic & Luthans, 1998). This view shows us that the focus on information processes within the self is critical so as to comprehend the process of changing self-efficacy. In fact, Gist and Mitchell (1992) analyzed antecedents of self-efficacy in light of people's cognitive process and created "a model of self-efficacy–performance relationship" that explains how self-efficacy is formed (p. 189). Although Gist and Mitchell (1992) did not mention whether their model involved general or specific self-efficacy, the model is thought to be applicable to both.

The model constitutes three components of analytical processes (Gist & Mitchell, 1992). The first analytical process describes "an analysis of task requirements" that "produces inferences about what it takes to perform at various levels" when people analyze their experiences (Gist & Mitchell, 1992, p. 189). With regard to successful task completion, individuals may consider what skills and knowledge are required, how much time is needed, or what organizational resources are critical (Gist & Mitchell, 1992). During those analyses, task requirement analysis is also thought to involve understanding various aspects of the task itself. At this initial phase, therefore, people would be required to make inferences about and analyze the task and its requirements, noting any factors that could influence performance. It is evident that this intellectual cognitive process requires use of the learning mode of abstract conceptualization (AC = thinking) in a learning process.

The second analytical process represents "an attributional analysis of experience" that generally leads to efficacy judgments (Gist & Mitchell, 1992, p. 189). When people perform a task effectively, they often seek to determine why they reached a particular level of task performance. Attribution theory explains this mechanism (Gist & Mitchell, 1992), suggesting that people tend to construe their perceived behavior with regard to its causes (Kelley & Michela, 1980). More specifically, people are motivated to analyze and understand the causes of success and failure (Chacko & McElroy, 1983). Furthermore, research on attribution theory indicates that people typically ascribe four fundamental causes: (a) ability or skill, (b) the amount of effort, (c) the quality of task, and (d) luck (Pearce & DeNisi, 1983). At this second phase, people are required to make inferences and conclusions regarding a causal relationship between their successful performance and those four attributions. Because attributional analyses of experiences call for cognitive abilities of thinking, analyzing, inferring, and judging, the learning mode of AC (thinking) is also essential.

Gist and Mitchell (1992) argued that the first and second analyses are important but insufficient to produce self-efficacy beliefs. The third analytical process is necessary, representing assessment of personal and situational resources and limits concerning future performance (Gist & Mitchell, 1992). The third cognitive process requires examining the self and the environment where people will be able to perform and attain tasks. In the third phase, the analysis of the self involves evaluating to what extent people have the ability, skill, knowledge, motivation, and available effort, whereas the analysis of the environment involves assessing situational factors that include conflicting demands, distractive matters, or supporting devices that affect future performance. Like the first and second analytical processes, the third analysis also accentuates the learning mode of abstract conceptualization (AC = thinking), which entails judging the self and the environment concerning future performance. Without the AC mode of learning, the judgment and conclusion cannot be made.

According to Gist and Mitchell (1992), progressive development through those three analytical processes may occur over and over. Then these analytical and assessment processes produce interpretive knowledge as a comprehensive belief of one's conviction, which describes self-efficacy. Although those three analytical processes have different content and areas of focus, they commonly require the learning mode of abstract conceptualization (AC = thinking). As discussed in the section on learning style, because the AC and the CE (feeling) modes are dialectically opposed to each other, people typically use one learning mode more, which leads to less use of the other in the same learning dimension. Those with a stronger learning ability in thinking and analyzing, which entails the mode of abstract conceptualization (AC) as opposed to concrete experience (CE = feeling), will produce more rigorous inferences, logical analyses, and judgments. Thus, it is thought that employing the AC mode rather than the CE mode will be related to stronger self-efficacy in terms of those three analytical processes. In contrast, if the learning mode of AC is applied insufficiently, people may have difficulty defining task requirements, analyzing attributional causes, and assessing self and the situation, which may result in a problem in enhancing self-efficacy. Accordingly, we propose the first hypothesis as follows:

Hypothesis 1 (H1). A learning style orientation favoring the abstract conceptualization (AC) mode over the concrete experience (CE) mode relates to a higher level of both general and career management self-efficacy beliefs.

Within the third phase in the model of Gist and Mitchell (1992), particularly with regard to assessment of one's skills or abilities, another learning dimension—the active experimentation (AE = acting) versus the reflective observation (RO = reflecting) modes—seems relevant to self-efficacy beliefs. Since the overall development of a set of competencies indicates self-confidence (Boyatzis, Stubbs, & Taylor, 2002), skill development is thought to concern self-efficacy development. An effective strategy of skill development is to practice and learn targeted skills in a psychologically safe place (Boyatzis, 1999), or even to employ skills in an actual situation. To improve skills, people need to use them, which requires applying the AE (acting) learning mode. Thus, if people shape and improve skills and abilities to attain a task by using the AE learning mode, they will assess themselves more positively. Furthermore, Kolb (1984) discussed that people who are inclined toward "extensional transformation" (i.e., the AE learning mode) are primarily interested in maximizing success, while those with "intentional transformation" (i.e., the RO learning mode) are willing to sacrifice opportunities to avoid failure or error (p. 56). This suggests that those with a focus on the AE mode have an increased opportunity of having successful experiences, which in turn provides more chances to develop self-efficacy. An empirical study by Chou and Wang (2000) also illustrated a strong connection between the AE mode of learning and computer self-efficacy. Since the AE mode is dialectically opposed to the RO mode in the same learning dimension, the second hypothesis is proposed as follows:

Hypothesis 2 (H2). A learning style orientation favoring the active experimentation (AE) mode over the reflective observation (RO) mode relates to a higher level of both general and career management self-efficacy beliefs.

Integration of the aforementioned discussion leading to Hypotheses 1 and 2 yields another hypothesis with regard to which learning style relates to self-efficacy beliefs. As discussed in the learning style section, a combination of two learning modes from different learning dimensions (i.e., either AC or CE and either AE or RO) leads to four learning styles. As we posited that the two learning modes of AC (thinking) and AE (acting) tend to be related to change in self-efficacy beliefs, the converging learning style is thought to have the strongest association with self-efficacy development. In contrast, the diverging learning style, which is the opposite of the converging style, is thought to have the lowest relationship with self-efficacy development. Accordingly, we generate the third hypothesis.

Hypothesis 3 (H3). A converging learning style is related to a higher level of general self-efficacy and career management self-efficacy compared with the diverging learning style.

Methods

Sample

We chose Indonesian managers for a series of research projects that included not only this learning and efficacy study but also leadership development and training analysis. This research context appears important since the Asian economic region has become more influential and critical than in the past (De Guzman, Neelankavil, & Sengupta, 2011). Particularly, Indonesia is one of Asia's emerging markets and has a growing economy. Indonesia's annual growth rate in gross domestic product was 5.4% for the last 5 years (Trading Economics, 2015). This study obtained the participation of 235 managers who worked for the Ministry of Finance in Indonesia, with an average working experience of 20.2 years ($SD = 5.4$) and an average age of 43.0 years ($SD = 4.8$). Most managers (84.3%, $N = 198$) were male. All participants held either a master's degree ($N = 135$, 57.4%) or a bachelor's degree ($N = 100$, 42.6%) as their final academic credential. The number of middle managers was 85 (36.2%), while that of junior managers was 150 (63.8%).

According to Kolb's (1984) experiential learning theory, learning style is affected by contextual factors that include current jobs, professional career, and adaptive competencies required to cope with specific tasks or problems. The participants' learning style was expected to reflect their professional and technical functions in the Ministry of Finance.

Data collection procedures

One of the authors began by obtaining official approval for this study from the head of the Center for Personnel Education and Training and the head of the Leadership Training Hall within the Ministry of Finance in Indonesia. After permission was obtained, the authors sent hard copies of the questionnaires through an internal mailing system to 360 managers who had participated in leadership training in this ministry. To facilitate the return of questionnaires, reminders were mailed to the managers. Data were collected over a 3-month period. Among the 360 questionnaires distributed, 258 questionnaires were returned. Since 23 questionnaires were incomplete or did not follow survey instructions, 235 questionnaires were usable for the analysis.

Measures

Learning style

This study employed the third version of the Learning Style Inventory (Kolb, 1999), which has better reliability than previous versions (Kayes, 2005; Veres, Sims, & Locklear, 1991). This inventory reflects the dialectical feature among four learning modes derived from Kolb's (1984) learning theory. It includes 12 questions, each of which has four option statements that request participants to rank statements in order, from 4 (*you learn best*) to 1 (*you learn least*). Each statement corresponds with one of four learning modes: CE (feeling), AC (thinking), RO (reflecting), and AE (acting). For example, the CE statement represents "I get involved"; the AC statement, "I evaluate things"; the RO statement, "I like to observe"; and the AE statement, "I like to be active." The total score for each learning mode is an indicator of how participants prefer to use the mode in a learning process.

To analyze to what extent participants learn by applying one mode over the other, one learning dimension value is subtracted from the other: the value of AC – CE or that of AE – RO. The value ranges from –36 to 36, showing a comparative orientation for participants' learning in each dialectical learning dimension. A person who obtains a score of –36 in the value of AC – CE strongly applies the CE mode (feeling) over the AC mode (thinking). In contrast, one with a score of 36 is extremely inclined to the AC mode. Similarly, a value of AE – RO that approaches 36 represents a more active and less reflective orientation, while a value closer to –36 indicates a more reflective learner.

General self-efficacy

To measure the general self-efficacy of managers, we applied the Self-Efficacy Scale created by Jones (1986), which was designed to examine self-efficacy beliefs in work settings. The original scale was intended to analyze new employees working for an organization, so we slightly modified the statements from *my new job* to *my current job*, from *technical knowledge* to *skills and knowledge*, and from *my future colleagues* to *my colleagues*. This instrument consists of eight items calculated on a 7-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). An example from this scale is "My current job is well within the scope of my abilities." In the present study, the Cronbach's alpha for this measure was 0.77.

Career management self-efficacy

We used the Career Self-efficacy Scale of Kossek et al. (1998) because this scale was designed to examine participants' beliefs that they are capable of managing their own career. This scale included 11 items on a 5-point scale, but

we changed it to a 7-point scale (1 = *strongly disagree* and 7 = *strongly agree*), as used with the general self-efficacy scale, in order to simplify the questionnaire for participants. An example of an item is "When I decide to do something about my career, I go right to work on it." This scale was previously used to investigate career management self-efficacy in the workplace (see Yi et al., 2014). The Cronbach's alpha of this measure in this study was 0.78.

Data analytical methods

To test Hypotheses 1 and 2, we initially used correlation analysis among all main variables and then applied hierarchical multiple regression analysis to determine how two learning style variables (AC vs. CE and AE vs. RO) are related to two self-efficacy beliefs (general and career management self-efficacy) by controlling sociodemographic variables. In the regression analysis, we entered the two efficacy beliefs as dependent variables and the two learning style variables as independent variables, and we controlled for five sociodemographic characteristics: age, gender, tenure, educational background, and management position. Step 1 of the regression analysis investigated the influence of only the sociodemographic variables partitioned from the variance of learning style variables. Step 2 of the analysis loaded the two learning style variables to determine their relationship with self-efficacy beliefs. To test Hypothesis 3 concerning how four learning style groups differed in relation to two self-efficacy beliefs, one-way analysis of variance (ANOVA) was used with Bonferroni tests as a post hoc analysis. For the three categorical variables, gender was coded as 0 = female, 1 = male; education as 0 = bachelor's, 1 = master's; and management position as 0 = junior manager, 1 = middle manager.

Results

Before testing the hypotheses, this study attempted to identify how Indonesian managers learn within the context of the Indonesian Ministry of Finance. In this study,

the managers as a group exhibited a learning orientation toward AC over CE, with the value of AC – CE = 10.92, which is greater than the cutoff point of 4.30 as the norm (Kolb, 1999). With regard to the other dimension, participants' learning was inclined toward RO over AE due to the value of AE – RO = −1.27, which is less than the cutoff point of 5.90 as the norm (Kolb, 1999). These two learning modes are considered an assimilating learning style. Since an assimilating learning style relates to collecting and analyzing data (Kolb, 1984), the participants' learning style was thought to reflect their job roles in the Ministry of Finance.

Table 1 shows the correlation results and descriptive statistics for variables used in this study, including the two learning style variables.

Hypothesis 1

Hypothesis 1 predicted that a learning style orientation toward the AC over CE mode relates to a higher level of both general and career management self-efficacy beliefs. As illustrated in Table 1, the variable of AC – CE was significantly correlated with general self-efficacy ($r = 0.19$, $p < 0.01$) and career management self-efficacy ($r = 0.20$, $p < 0.01$). Additionally, with regard to sociodemographic variables, results revealed a significant relationship between management position and career management self-efficacy ($r = 0.15$, $p < 0.05$). Consistently, as depicted in Table 2, hierarchical regression results in Step 1 indicated that management position was associated with career management self-efficacy ($\beta = 0.17$, $p < 0.05$). This result can be interpreted as meaning that middle managers tend to have greater general and career management self-efficacy than junior managers. Subsequently, by controlling all of the sociodemographic variables, the regression results in Step 2 showed that the variable of AC – CE significantly related to general self-efficacy ($\beta = 0.16$, $p < 0.05$) and career management self-efficacy ($\beta = 0.18$, $p < 0.01$). That is, managers who learn by using AC

Table 1. Correlation matrix and descriptive statistics for demographic, learning, and efficacy variables.

Variables	Mean	SD	1	2	3	4	5	6	7	8
1. Age	43.00	4.81								
2. Gender	0.84	0.36	−0.16*							
3. Tenure (years)	20.17	5.43	0.87**	−0.06						
4. Education	0.57	0.50	−0.28**	0.03	−0.29**					
5. Management position	0.36	0.48	0.32**	−0.04	0.11†	0.02				
6. AC − CE	10.92	9.86	−0.06	0.05	−0.14*	0.13*	0.07			
7. AE − RO	−1.27	9.73	−0.10	−0.11	−0.10	0.08	0.04	0.13†		
8. General self-efficacy	5.30	0.74	−0.09	0.11†	−0.09	0.04	0.02	0.19**	0.17*	
9. Career management self-efficacy	5.68	0.62	0.01	−0.07	−0.02	0.04	0.15*	0.20**	0.16*	0.59**

Note. Gender code (0 = female; 1 = male); education code (0 = bachelor's; 1 = master's); management position code (0 = junior manager; 1 = middle manager); AC – CE, abstract conceptualization score minus concrete experience score; AE – RO, active experimentation score minus reflective observation score. N = 235.
**p < 0.01, *p < 0.05, †p < 0.10.

Table 2. Results of hierarchical regression analysis.

	Dependent variables					
	General self-efficacy			Career management self-efficacy		
Variable entered	β	F	ΔR^2	β	F	ΔR^2
Step 1		0.97	0.02		1.52	0.03
Age	−0.06			−0.09		
Gender	0.10			−0.08		
Tenure (years)	−0.03			0.04		
Education	0.01			0.03		
Management position	0.05			0.17*		
Step 2		2.54*	0.05**		2.93**	0.05**
Age	−0.07			−0.11		
Gender	0.11			−0.07		
Tenure (years)	0.01			0.09		
Education	−0.01			0.00		
Management position	0.03			0.16*		
AC – CE (thinking vs. feeling)	0.16*			0.18**		
AE – RO (acting vs. reflecting)	0.15*			0.12†		
Total R^2			0.07			0.08

Note. AC – CE, abstract conceptualization score minus concrete experience score; AE – RO, active experimentation score minus reflective observation score. N = 235.
**$p < 0.01$, *$p < 0.05$, †$p < 0.10$.

(thinking) over CE (feeling) modes in learning processes exhibited a greater increase of general and career management self-efficacy beliefs. Accordingly, Hypothesis 1 was supported.

Hypothesis 2

Hypothesis 2 stated that a learning style orientation toward the AE over RO mode relates to a higher level of both general and career management self-efficacy beliefs. Correlation results illustrated that the variable of AE – RO was significantly correlated with both efficacy beliefs: general ($r = 0.17$, $p < 0.05$) and career management ($r = 0.16$, $p < 0.05$). Once the learning variables were added in Step 2, the variable of AE – RO had a significant association with general self-efficacy ($\beta = 0.15$, $p < 0.05$); however, the association with career management self-efficacy was marginal ($\beta = 0.12$, $p < 0.10$). This result suggests that managers who prefer to learn through action

over reflection tend to have a higher level of general self-efficacy beliefs and a somewhat higher level of career management self-efficacy. Accordingly, Hypothesis 2 was partially supported.

Hypotheses 3

Before testing Hypothesis 3, the assumption of homogeneity of variance was tested using Levene's *F*-test. The *F* values were 0.49 for general self-efficacy ($p > 0.05$) and 1.08 for career management self-efficacy ($p > 0.05$), showing no significant difference between the four learning style groups' variances. Hypothesis 3 predicted that converging learning styles relate to a higher level of general self-efficacy and career-management self-efficacy than diverging learning styles. As depicted in Table 3, ANOVA results showed a significant difference in the four learning styles in relation to general self-efficacy ($F = 6.35$, $p < 0.01$) and career management self-efficacy ($F = 2.82$, $p < 0.05$). Subsequently, Bonferroni tests applied as a post hoc analysis illustrated that those with a diverging learning style had the lowest score for self-efficacy beliefs and significantly differed from those with a converging learning style in general self-efficacy (mean difference = −0.60, $p < 0.01$) as well as career management self-efficacy (mean difference = −0.36, $p < 0.05$). Additionally, those with a diverging learning style significantly differed in general self-efficacy compared with those with an assimilating learning style (mean difference = −0.45, $p < 0.01$). In contrast, those with a converging learning style had the highest score among the learning style groups. Accordingly, Hypothesis 3 was supported.

Discussion

This study sheds light on the relationship between learning styles and self-efficacy beliefs using a managerial context of the Indonesian Ministry of Finance. We found that the learning style variable of AC – CE

Table 3. Results of the ANOVA and the Bonferroni tests regarding self-efficacy variables.

	General self-efficacy					Career management self-efficacy				
Source	SS	df	MS	F	η^2	SS	df	MS	F	η^2
Between groups	9.85	3	3.28	6.35**	0.08	3.21	3	1.07	2.82*	0.04
Within groups	119.42	231	0.52			87.84	231	0.38		
Total	129.27	234				91.06	234			

				Mean differences					Mean differences		
Group	n	Mean	SD	1	2	3	Mean	SD	1	2	3
1. Accommodating	9	5.46	0.82	0.00			5.80	0.66	0.00		
2. Diverging	46	4.90	0.81	0.55	0.00		5.47	0.72	0.33	0.00	
3. Assimilating	131	5.36	0.70	0.10	−0.45**	0.00	5.69	0.60	0.11	−0.22	0.00
4. Converging	49	5.50	0.66	−0.04	−0.60**	−0.14	5.82	0.54	−0.02	−0.36*	−0.13

**$p < 0.01$, *$p < 0.05$.

related to general and career management self-efficacy beliefs, whereas that of AE – RO had a connection with general self-efficacy and a marginal association with career management self-efficacy. Furthermore, those with the converging learning style had a higher level of the two efficacy beliefs than those with the diverging learning style, and the converging style was associated with the highest scores of the two self-efficacy beliefs among the four learning styles. These results are consistent with the findings of two studies in a high school context: Chou and Wang (2000) and Ozgen (2013). That is, AE (acting) and AC (thinking) modes increased computer self-efficacy (Chou & Wang, 2000), while converging and diverging learning styles showed a sharp contrast in terms of the average score of mathematical literacy (Ozgen, 2013). The results of this study, combined with those of previous research, lead to the conclusion:

Learning style relates to self-efficacy beliefs. Particularly, those who prefer the AC (thinking) over CE (feeling) mode and the AE (acting) over RO (reflecting) mode are more likely to have a higher level of self-efficacy beliefs.

Theoretical implications

We began by suggesting a relationship between individuals' cognitive and learning processes and self-efficacy. Mathieu, Martineau, and Tannenbaum (1993), however, indicated that not only individual variables but also situational variables are antecedents of self-efficacy beliefs. Furthermore, learning style is influenced by contextual factors, formed by the interaction between the individual and the environment (Kolb, 1984). These notions suggest that the work environment should be considered in relation to both self-efficacy and learning style.

Hypothesis 1 described a relationship between managers' learning orientation toward the AC over CE mode and a higher level of self-efficacy beliefs. As a group, participants had an assimilating learning style, which stresses AC (thinking) over CE (feeling) modes. As such, their learning style is thought to reflect their work as financial professionals. In addition to suggesting that the AC mode is better suited to the development of self-efficacy, the findings might be interpreted as indicating that managers who fit well with their work environment, which requires the AC over CE modes, have a higher level of self-efficacy beliefs than those who don't fit well with the work environment. Accordingly, with regard to the learning dimension of the AC versus CE mode, it can be stated that a learning style of AC required by the work environment is consistent with a learning style orientation toward the AC mode in relation to self-efficacy development, theorized based on the individual cognitive and learning process in the self and the results in this study.

Hypothesis 2 concerned a relationship between managers' learning orientation toward the AE (acting) over RO (reflecting) mode and self-efficacy development. The participants' overall assimilating learning style, which accentuates the RO learning mode, was opposite the focus on AE, which was hypothesized to be associated with self-efficacy development. When considering participants' work environment, it is thought that their managerial work or role would require them to manage people and tasks, taking action and initiative and making decisions to solve problems. Those activities and behaviors entail the AE learning mode. Thus, the work environment of Indonesian managers seems to require knowledge and skills for two types of job roles: those concerning professional and technical functions for financial jobs in the Ministry of Finance (i.e., related to RO learning modes—collecting information and data and observing, watching, and listening), while the other involves managerial functions (i.e., related to AE learning modes). This study specifically analyzed career management self-efficacy in an organization where government officers pursue a management career choice. Our study results that revealed a marginal significance between learning orientation toward AE modes and career management self-efficacy might be related to the complexity of the work environment, which calls for two dialectical learning modes of AE and RO. One interpretation may be that managers who stay in technical roles exclusively, such as collecting and organizing data, have a lower level of career management self-efficacy than those who perform well in managerial roles. In contrast, managers who actively solve problems and improve situations would have a higher level of career self-efficacy. Accordingly, with regard to the learning dimension of the AE versus RO mode, the work environment requirement concerning learning style might include two contrasted learning modes so that it may or may not agree with the theorized view based on the individual's cognitive and learning process.

Overall, examination of the work environment and context seems to be critical for understanding an association between learning style and self-efficacy beliefs. Thus, we propose comprehensive research that considers not only individual cognitive and learning processes but also the work environment. Figure 2 shows an overall picture of the two perspectives and their interrelationship in terms of self-efficacy development.
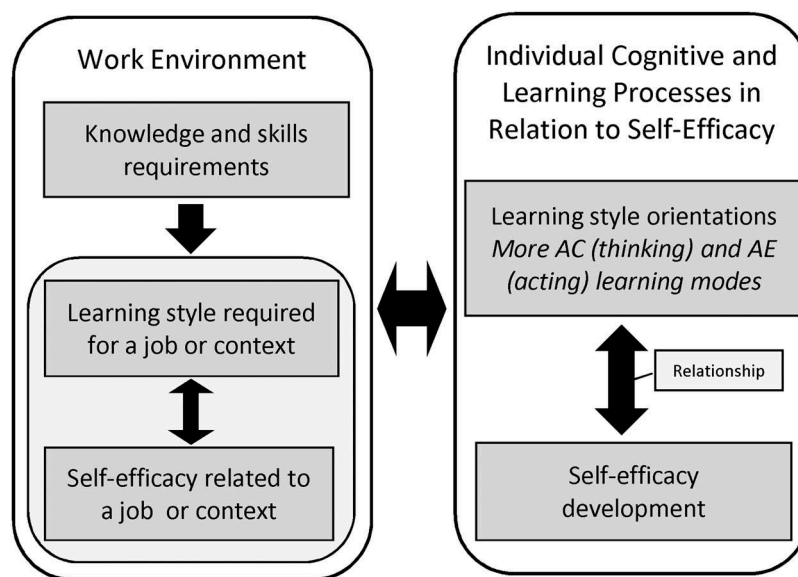
Figure 2. Revised conceptual framework accounting for how both the work environment and individual cognitive and learning processes affect self-efficacy.

Practical implications

This study offers two practical implications. Understanding of learning processes and effective learning environments is beneficial for HR professionals as they design and carry out programs (DeSimone et al., 2002). This study's results provide HR professionals with additional information from learning style tests. Understanding employees' learning style can help HR professionals recognize which learning modes need development in order to increase employees' self-efficacy beliefs. HR professionals should consider leading employees to develop the two key learning modes of abstract conceptualization (AC) and active experimentation (AE), the combination of which produces a converging learning style (Kolb, 1984). Self-efficacy beliefs develop step by step through experiencing reiterative tasks (Bandura, 1986), which particularly calls for a converging learning style. This learning style entails generating ideas to find practical solutions, making decisions, evaluating the results of solutions, and acting based on the solution (Kolb, 1999). Analytical tasks derived from those activities are thought to be congruent with a component of efficacy's antecedents in the model of Gist and Mitchell (1992).

Within HR practice, the application and development of self-efficacy have been extensively associated with training (Gibson, 2004). Consistently, the second implication concerns effective training methodologies to develop self-efficacy in relation to learning style. This study illustrated that the converging learning style is associated with the highest level of self-efficacy, followed by the accommodating, assimilating, and the diverging styles (Table 3). To develop employee efficacy, HR professionals should focus attention on employees with the two learning styles of diverging and assimilating; these styles are associated with the lowest level of efficacy beliefs, which is turn is likely to decrease success in task performance (Bandura, 1986; DeSimone et al., 2002). Each learning style reflects a preference for learning activities, so training methodologies should be selected based on their application to employees with a certain learning style. Methods to develop self-efficacy beliefs in employees include coaching (Gibson, 2004) and behavior modeling training (DeSimone et al., 2002; Gibson, 2004). Kolb's learning theory indicated that coaching relates to the CE (feeling) and AE (acting) modes (Kolb & Kolb, 2013), which might fit employees with an accommodating style. This view is congruent with the thought of matching trainees' and trainers' learning styles (Hayes & Allinson, 1996). For employees with a diverging or assimilating style, behavior modeling training is a good fit: Trainees primarily listen and observe, which matches their learning mode of RO (reflecting). HRD professionals should implement behavior modeling training for diverging and assimilating employees to offer vicarious learning as a source of self-efficacy development (Bandura, 1997).

Limitations

In this study, one limitation relates to the research context. As discussed in the preceding, learning style

is formed and developed through the interplay between the person and the environment (Kolb, 1984). Moreover, learning style is thought to be relatively stable but malleable because it involves responding to learning tasks that change by context (Peterson et al., 2009). Thus, to generalize our results, different contexts need to be studied. Accordingly, one promising area of research is to study various contexts that include not only nonmanagers in different government offices, but also employees in the private sector in various industries. Participants from those different contexts have different job characteristics, so additional studies would be important to contribute to understanding a relationship between learning style and self-efficacy.

The second limitation is related to the first but extends to a country's culture. Although this study discussed the involvement of work environment as a contextual factor with learning style and self-efficacy beliefs, it did not address the issue of how a country's culture relates to those two key variables. In fact, several studies have documented cross-cultural differences in learning styles (Yamazaki, 2005; Holtbrugge & Mohr, 2010; Joy & Kolb, 2009; Yamazaki, Toyama, & Attrapreyangkul, 2018) as well as in self-efficacy beliefs (Luszczynska et al., 2005; Scholz, Gutierrez-Dona, Sud, & Schwarzer, 2002; Schwarzer & Born, 1997). Our study showed a relationship between learning style and self-efficacy beliefs using an Indonesian context; however, it is not known if this relationship is applicable to other countries or different cultural contexts. To address this question, additional studies are recommended that emphasize cross-cultural aspects.

Finally, this study addressed one specific efficacy variable: career management. To further understand the relationship between learning style and efficacy beliefs, future research should apply different types of self-efficacy, including leadership self-efficacy (Anderson et al., 2008; Paglis & Green, 2002), training self-efficacy (Chiaburu & Lindsay, 2008; Machin & Fogarty, 2004; Schwoerer et al., 2005), and cross-cultural self-efficacy for expatriates (Dollwet & Reichard, 2014). Research on those self-efficacy beliefs will contribute to development of the HR literature.

Notes on contributors

Yoshitaka Yamazaki is a professor of management in the Faculty of Business Administration of Bunkyo University in Japan. He received his PhD in organizational behavior from Case Western University and his master's degree in international management from the American Graduate School of International Management. His research interests include expatriate management, learning and development in organizational settings as well as higher education contexts, and foreign language learning and its effective environments. He teaches human resource management, human resource development, international career development, and organizational management. He can be reached at yyama@shonan. bunkyo.ac.jp.

Michiko Toyama is a professor of English in the Faculty of Business Administration of Bunkyo University in Japan. She received her PhD in linguistics from Sophia University, Japan. Her research interests include computer-assisted learning, affective learner variables, English as a foreign language education, and intercultural communication. She is currently involved in three research projects: Internet use in higher education, classroom strategies to improve affective learner variables, and effective learning environments relevant to learning style. She is responsible for curriculum management in foreign language and cultural studies for the business students at Bunkyo. She can be reached at toyama3@shonan.bunkyo.ac.jp.

Roby Syaiful Ubed is currently taking a position of the head of Publishing Unit, PKN STAN Publishing Unit in PKN STAN (STAN State Finance Polytechnic), Finance Education and Training Agency, Ministry of Finance in Indonesia. He received his MBA from the International University of Japan. His research area is related to human resource development, human resource management, and organizational behavior. Particularly, he is interested in leadership training and development in a context of public organizations. He can be reached at robyubed@pknstan.ac.id.

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