Title	Mindset and individual learning in the workplace : A systematic review and future agenda
Author(s)	Yin, Jun
Citation	, 71(1), 7-26
Issue Date	2021-06-03
Doc URL	http://hdl.handle.net/2115/81930
Type	bulletin (article)
File Information	20_ES_71(1)_007.pdf

Mindset and individual learning in the workplace:
A systematic review and future agenda

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Introduction

Individual learning was generally conceptualized as increasing one's capacity to take effective action in the context of working（Kim, 1993, p.38）. As an important dimension of organizational learning theory, individual learning research mostly focused on its relationship with organizational learning. Particularly, scholars commonly agreed that individual's learning is the key ingredient for organizational learning（Argyris and Schön, 1997; Fiol and Lyles, 1985）. For example, learning provides opportunities for employees to solve complex problems in innovative ways, which promotes organizational development（Boverie *et al*., 2013）. Moreover, individual learning fosters employees' the self-development, such as improving skills and abilities, enhancing job satisfaction, and increasing commitment（Wang *et al*., 2010）.

Given the importance of individual learning in fostering organizations and employees' positive outcomes（Leslie *et al*., 1998）and to answer the call for improving the learning capacity of individuals（Kim, 1993; Smith, 2012）, numerous studies have investigated various predictors of individual learning from different perspectives. For example, experiential learning theory proposes that individuals learn from experiences（Kolb, 1984）; classical conditioning theory argues that learning results from certain stimuli and relationships between signals and certain events or outcomes（Bouton, 2000）; social learning theory suggests that people learn from observation（Bandura, 1977）.

Notably, previous studies have proved that mindsets played a critical role in influencing individuals' deep-seated attitudes and behaviours, moreover, facilitate them to develop and fulfil their potentials（Dweck, 2012）. As an important psychological concept, mindset has been applied into various areas from education to business literature（Derr and Morrow, 2020）. Dweck（2006）developed the implicit theories of mindsets including growth mindset（the belief about their intelligence and abilities can be developed）and fixed mindset（the belief that personal traits and abilities are fixed）. Prior empirical studies have examined the influence of growth mindset and fixed mindset on individuals' behaviours in various aspects（Dweck and Yeager, 2019）. Particularly, supported by numerous correlational studies, experimental and meta-analysis showed that growth mindset promotes learning, persistence and positive outcomes when facing obstacles and failures（Burnette *et al*., 2013）. That is, mindset has a particular effect on helping individuals keep in a good state when facing changes, tensions, and challenges by triggering their motivations, and thus promoting effort and individual learning（Ng, 2018）. Thus, there is a growing research focus on how mindsets result in individual learning based on various theoretical

frameworks（Keating and Heslin, 2015）. However, little is known about the relationship between mindsets and individual learning in the context of work（Keating and Heslin, 2015）. Moreover, how to stimulate employees' continual learning is an important issue for contemporary human resources development（HRD）.

Therefore, by reviewing published articles, this paper provides a systematic and comprehensive review of the prior research on mindsets and individual learning. After illustrating the importance and concept of mindsets in the culture of organizations, a brief review will be conducted to introduce the antecedents of individual learning. Next, the types, consequences, mediators, and moderators of mindsets will be explained. Since previous studies have not analysed most empirical studies together, this paper allows us to catch the potential link between employees' mindsets and learning behaviours, moreover, provides fresh insights into the underlying mechanisms of employees' mindsets in the workplace（Dweck and Yeager, 2019）.

Second, this paper advances previous literature in mindsets and individual learning theory. As both mindsets and learning are dynamic concepts enabling people to accomplish the more challenging goals （Bapuji and Crossan, 2004; Yeager and Dweck, 2012; Heslin *et al*., 2019）, the present study links mindsets and learning, unleashing the importance of embracing individuals' mindsets with individual learning to fulfil job demands, and furthermore, shedding some light on the future empirical research.

Third, as well as developing theoretical knowledge of mindsets and individual learning, this review paper has significant practical implications for human resources management. Despite the importance of employees' mindsets on their attitudes and behaviours in the job, the relationship between mindsets and individual learning provides useful work practices for fostering the development of both individuals and organizations. Human resources managers should make use of work practices and training to help employees adopt positive mindsets and be engaged in learning.

This study has conducted searches on a number of academic databases including Web of Science, EBSCO Host, Emerald and Science Direct by mainly using keywords mindsets and learning. In addition, this study examined the reference lists of all retrieved articles for supplementary articles. Therefore, published articles were selected between 1988（the first time Dweck and Ellen Leggett tested the proposed mechanisms of mindsets）and the end of 2019. Second, this paper included studies mentioning mindsets in their title, abstract, or keywords. Finally, 55 articles focused on the consequences of mindsets were included for inclusion in the review, and 15 of 55 were empirical studies.

This paper is structured as follows. Section 2 introduces the results of reviewing and analysing previous literature on mindsets and individual learning. Section 3 discusses the primary theories of mindsets and learning in the contexts of organizations. Section 4 demonstrates the potential relationship between mindsets and learning and explains how mindsets may affect employee learning at the individual level. Section 5 is the conclusion and future research agenda.

2. Theoretical backgrounds

2.1 Mindsets

Mindsets are the beliefs that people have about the nature of human characteristics（Dweck and

Leggett, 1988）. That is, mindsets are the mental frameworks that guide how people think, feel, and act in the achievement contexts（Dweck, 2006）. Implicit theories of intelligence were the foundation theory for mindsets research. As proposed in the implicit theories, entity theory refers to the beliefs that human attributes are fixed or invariant while incremental theories are concerned about the beliefs that human attributes can be improved or developed（Molden and Dweck, 2006）. In prior studies, the implicit theories were known to have provided new insights into the role of intelligence in determining the way students approach learning and achievement situations, specifically, individuals get over such situations through the goal they have and mediated by effort, persistence, and achievement（Duperyrat and Mariné, 2005）.

Developed from the implicit theories, there are two important issues highlighted in the concept of mindsets. First, mindsets are associated with divergent goals（Dweck, 1996）. For example, people with growth mindset strive to increase their competence and mastery toward learning goals（Blackwell et al., 2007）and they view failure as chances to learn（Murphy and Dweck, 2016）. In contrast, individuals adopt fixed mindset tend to pursue performance goals and they treated failure as negative evaluations that they are not smart or talented（Hong et al., 1999）. Second, mindsets shape the view of effort, in other words, people with growth mindset highlight the value of effort because they think development can be enhanced through effort（Grant and Dweck, 2003）, while effort is less valued by individuals with fixed mindset（Murphy and Dweck, 2016）.

Furthermore, as the concept of mindsets developed from implicit theories, it focused on the self-evaluation of self-abilities. Mindset is more than the positive state of individuals, it indicates the potential effort, resilience of difficulties in challenging context（Dweck and Yeager, 2019）. Additionally, as suggested by Heslin and Keating（2017）, to clarify the nature of mindsets, it is necessary to consider similar concepts such as attributional biases, locus of control, self-esteem, self-efficacy, self-regulatory style, and goal orientation. For example, self-efficacy refers to the belief in one's capability to modify their motivation and relevant cognitive courses to meet the demands（Bandura, 1986）, while mindsets reflect assumptions about the basis of capabilities. Besides, the relationship between self-efficacy and mindsets has been examined that self-efficacy would be sustained by adopting the growth mindset （Bandura, 1986）. Thus, compared with other related constructs, mindset is unique as it shapes individuals' motivation（Dweck, 1999）and especially growth mindset motivates individuals to seek opportunities to enhance their skills and abilities over time（Murphy and Dweck, 2016）.

Previous empirical research provided evidence for the association between different types of employees' mindsets and positive job outcomes. For example, employees who have paradox mindsets（e.g., view tensions as opportunities to find potential solutions in the job）tend to manage their work proactively contributing to in-role job performance and innovation（Miron-Spektor et al., 2018）; global mindset（mindsets combing openness to and awareness of diversity across cultures and markers and the ability to synthesize the diversity）（Gupta and Govindarajan, 2002）affects managers' decision-making which is crucial for the direction of organizations（Jiang et al., 2018）. Therefore, mindsets not only showed the psychological power shaping individuals' state to achieve their goals with effort, but also are about the nature of human characteristics enabling individuals to perform work goals intrinsic motivation. That is, mindsets are human's great capacity to adapt, change, and grow（Dweck, 2012）. Thus, mindsets enable

individuals to be more adaptive to the changing and challenging work environment proactively.

2.2 Types of mindsets

By reviewing the current empirical literature on mindsets in the context of the organization, this paper conducted a comprehensive search for relevant studies. Accordingly, searching for the keywords "mindsets", "employees' mindset", "individuals' mindsets", "mindsets and learning", and "mindsets and individual development" in the four databases（Web of Science, EBSCO Host, Emerald and Science Direct）. In total, this paper concluded six types of mindsets（growth mindset and fixed mindset, global mindset, paradox mindset, and entrepreneurial mindset）in the workplace by reviewing 15 current empirical studies exploring the relationship between employees' mindsets and individual learning.

2.2.1 Growth mindset and fixed mindset

Growth mindset refers to the belief that human capacities can be developed through personal effort, good learning strategies and mentoring support from others. In contrast, fixed mindset believes that intelligence cannot be developed（Dweck, 2006）. Dweck（2006）developed the concept of growth mindset and fixed mindset from the implicit theories of intelligence including entity and incremental theories. Entity theories proposed that people believe their attribute is of malleable quality that can be changed and developed, while entirety theory suggests the opposite opinion（Dweck, 1986）. Since scholars have paid attention to the potential applicability of implicit theories in organizational psychology（Kanfer, 1990）, numerous empirical studies have examined the impact of implicit theories on employees' behaviours and organizational outcomes such as performance appraisal（Scullen *et al*., 2000）and work motivation（Kanfer, 1990）.

By constant thinking and conducting experiments to explore the underlying mechanism, Hong *et al*., （1999）discussed the meaning system that guiding people's motivation and behaviour, was related to the effort beliefs（effort is a positive thing that helps grow ability）and the concept of growth mindset was finally enriched. One key issue highlighted in the growth mindset theory is the challenge-seeking hypothesis, indicating that people are motivated to develop their ability and to engage more effort, simultaneously, persistence happens when facing setbacks and challenges（Molden and Dweck, 2006）. Therefore, recent research tends to investigate how growth mindset enables employees to cope with challenges in the workplace. For example, Heslin and Keating（2017）conceptually indicated that leaders with growth mindset have the motives of influencing experiential learning, moreover, of fostering professional or development based on intensive literature analysis. Notably, some empirical studies examined the relationship between growth mindset and work outcomes within organizations. For example, growth mindset has a significant impact on work engagement（Caniëles *et al*., 2018）; influences consumer's preferences and psychology（Murphy and Dweck, 2016）as well as job and life satisfaction （Burnette and Pollack, 2013）.

Given the background above, this paper focuses on explaining the potential mechanism of how mindset promotes individual learning. Research in the growth mindset children studies by Dweck（2015）said that, the growth mindset helps children feel good in either short and long terms, facilitate them in thriving on challenges and setbacks on the way to learning. This argument has been supported by many experimental studies of students. For example, students with growth mindset are more willing to explore

their English disadvantages and view these as opportunities to correct or improve them（Hong *et al.*, 1999）. Additionally, Nussbaum and Dweck（2008）also conducted experiments and the findings showed that students desire to learn after going through failure.

Although research on growth mindset and learning is mostly applied in the education area, few studies have investigated the mechanisms of how mindsets influence employees to learn in organizations（Dweck and Yeager, 2019）. One exception was the research by Heslin and Keating（2017）. They found that individuals who have growth mindset are more likely to have the self-improvement motive, which promoted experiential learning.

2.2.2 Global mindset

Global mindset refers to the mindsets combing openness to and awareness of diversity across cultures and markets, and the ability to synthesize the diversity from the multidimensional perspective（Gupta and Govindarajan, 2002）. It has been a popular concept in the context of organizations for the attention to the global environment that organizations are currently facing（Levy, 2005）. Moreover, global mindset has been regarded as a key individual capacity and long-term competitive advantage for organizations（Levy, *et al.*, 2015）.

The concept of global mindset is developed from three main perspectives including strategic perspective, cultural perspective, and multidimensional perspective by Levy（2005）. Notably, cognitive complexity and cognitive capabilities are the underlying dimensions indicating that managers need to develop the capabilities and improve the control over complexity（Levy, 2005）. Previous research combined different levels with three perspectives developing the framework of global mindset. One key issue of studying global mindset is that all perspectives highlighted the cognitive psychology and the innate qualities（Kobrin, 1994; Levy, 2005）of global mindset affecting organizational outcomes in the workplace（Jeannet, 2000）. In the information-processing model of global mindset, the cognitive structure of individuals significantly affects the information process, thereby impacting the strategic capabilities of firms（Levy, 2005）. Moreover, the interaction between cognitive structures and global mindset affects the process of attention, interpretation, and future action（Daft and Weick, 1984）. Thus, the operationalization of the global mindset is a great concern as developing the global mindset of managers is the capability that contributes to sustainable development（Levy, 2015）.

Recent research has investigated the relationship between global mindset and job outcomes empirically. For example, global mindset contributes to the entry mode decisions（Jiang *et al.*, 2018）and financial indicators of the international performance（Nummela *et al.*, 2004）. However, the results of empirical studies are inconsistent and only little is known about the relationship between global mindset and individual characteristics（Levy, 2005）. This paper aims to explore the link between mindsets and individual learning by analysing the relationship between global mindset and individuals' attitudes as well as behaviours in the workplace.

2.2.3 Paradox mindset

Paradox mindset is defined as the extent to which one is accepting of and energized by tensions（Miron-Spektor *et al.*, 2018）. The concept of paradox mindset is developed based on paradox theory（Smith and Lewis, 2011）and mindset theory（Miron-Spektor *et al.*, 2018）. Drawing on paradox theory, individuals who treat paradoxes as opportunities, feel more comfortable with tensions, and such mindset

is called paradox mindset（Miron-Spektor *et al.*, 2018）. The rapidly changing global environment pushes firms to face harsh competitions and competing demands. Therefore, there is an increasing concern on investigating the role of paradox mindset in the workplace. Empirical studies have examined the effect of paradox mindset on organizational outcomes. For example, paradox mindset was found to be positively related to innovative work behaviour through striving at work（Liu *et al.*, 2020）; in-role job performance and innovation（Miron-Spektor *et al.*, 2018）; employee creativity（Leung *et al.*, 2018）; and escalation of commitment（Sleesman *et al.*, 2019）.

It is noted that people who have paradox mindset, view tensions as new chances to learn and improve themselves（Smith and Lewis, 2011; Miron-Spektor et a., 2018）. The underlying mechanisms of paradox mindset in promoting individual learning may provide insights into the relationship between mindset and individual learning.

2.2.4 Entrepreneurial mindset

Entrepreneurial mindset refers to a way of thinking that enables you to overcome challenges, to be decisive, and to accept responsibility for your outcomes, which captures the benefits of uncertainty in the business（Mcgrath and Macmillan, 2000）. Entrepreneurial mindset was found to have a positive impact on tolerance for ambiguity（Begley and Boyd, 1978）; autonomy（Utsch *et al.*, 1999）; action orientation（Seibert *et al.*, 2001）; persistence and passion（Baum and Locke, 2004）, and creativity（Cromie, 2000）. Therefore, business success in the new economy is merely not a function of relevant skills; but also requires people to have entrepreneurial mindsets. Exploratory studies have investigated entrepreneurial mindset and small & medium enterprise success（Ngek, 2012）, and provided evidence for the positive impact on organizational development.

Entrepreneurial mindset researchers have focused primarily on those cognitive processes that slow down adaptive cognitions in the face of dynamic, and uncertain environments（Mitchell *et al.*, 2000）. People with entrepreneurial mindset tend to constantly improve skills, learn from mistakes, and take continuous action on ideas. It is also evident that entrepreneurs need to possess a growth mindset that their intelligence can grow and change with efforts, i.e., trying other approaches or seeking help when facing with difficulties（Ngek, 2012）. Acquiring an entrepreneurial mindset requires re-learning on how to motivate themselves, take the risk, and become creative. Moreover, entrepreneurial mindset enables individuals to maintain a state of constant learning, which may provide some evidence for the potential link between mindsets and individual learning.

Taken together, Table 1 provides a summary of various types of mindsets by highlighting concepts and authors that relate to each type of mindset in the organization literature.

2.3 Individual learning

Since individual learning is defined as the tendency to increase individuals' capacity and to take effective action in the context of working（Kim, 1993）, it stimulates employees' self-development and increases their job satisfaction and commitment（Wang *et al.*, 2010）. Thus, recent research has focused on how people learn in the workplace（Tynjälä, 2008）. By analysing prior studies, the antecedents of individual learning are generally divided into the following types. One primary learning research argued that employees learn in their daily lives: solving problems at work informally or incidentally called

Table 1 Definitions of mindsets

Types of mindsets	Authors	Level of analysis	Definition-Description
Growth mindset	Dweck (2006)	Individual level	The belief that your basic qualities are things you can cultivate through your efforts, your strategies, and help from others
Fixed mindset	Dweck (2006)	Individual level	Believing that your qualities are carved in stone and are therefore not malleable
Global mindset	Rhinesmith (1992)	Individual level	Global mindset means that we can see the world from a broad perspective, always looking for unexpected trends and opportunities to achieve personal, professional or organizational objectives
Global mindset	Gupta and Govindarajan (2002)	Individual level	Global mindset as one that combines an openness to and awareness of diversity across cultures and markets with a propensity and ability to synthesize across this diversity
Paradox mindset	Miron-Spektor et al., (2018)	Individual level	Paradox mindset shapes the way we make sense of tensions; tend to value, accept, and feel comfortable with tensions
Entrepreneurial mindset	Mcgrath and Macmillan (2000)	Individual level	A way of thinking about the business that captures the benefits of uncertainty

informal learning （Argyris *et al.*, 1996）. Particularly, scholars emphasised that learning is a part of social learning within the workplace （Garrick, 1998）. That is to say, employees learn through social interactions and relationships with people （Koopmans *et al.*, 2006）. For example, when individuals are talking and collaborating with others, they learn informally （Enos *et al.*, 2003）. In contrast, formal learning takes place in a formal environment such as classroom-based learning or workshops （Bednall and Sanders, 2017）. Furthermore, previous studies have found various antecedents of formal and informal learning such as job characteristics and self-directed learning orientation （Raemdonck *et al.*, 2014）.

Another widely acknowledged theory studying individual learning is Kolb's （1984） experiential learning model. As suggested, "learning is the process whereby knowledge is created through the transformation of experience". Based on the four basic learning styles of experiential learning: diverging （people have the "brainstorming" characteristics viewing and performing tasks with broad perspectives）, assimilating （people tend to invest in more time to think through; treat information and solve problems logically）, converging （people are practical to find ways to deal with problems and make decisions） and accommodating （people learn from primarily "hands-on" experience）. Researchers have examined factors which influence these learning styles （Kolb *et al.*, 2001）. Specifically, personality types, early educational specialization, professional career, current job role and adaptive competencies are the five levels of behaviour impacting experiential learning （Kolb *et al.*, 2001）.

Despite these main research streams of individual learning, some scholars have investigated individual learning from the nature of learning in the workplace. For example, learning is "context-bound" which is situated and negotiated （Wenger, 1998）. In specific contexts, individuals are driven by different factors. Besides, Engeström （2001） introduced a new approach to learning which is called expansive learning and this kind of learning focused on the processes where a subject acquires some identifiable knowledge or skills. As this concept developed from learning theory of Bateson （2000）, there are three levels of learning. Level one of learning refers to the acquisition of correct information and answers; Level two of learning refers to the process of acquiring the deep-seated rules and patterns; Level three of learning is about how individuals get a deeper understanding of their context and begin to have their own thinking to construct a wider alternative context. Therefore, the framework of four questions （e.g., who are learning; why do they learn?） was constructed, which provides a complementary perspective to the horizontal learning （Engeström, 2001）.

Accordingly, regarding the potential antecedents of individual learning, Collin （2002） conducted phenomenographic analysis based on the interviews and the results showed six categories of learning processes. First, people learn at work by doing the work themselves in their everyday problem-solving situations. Second, individuals learn through co-operating and interacting with colleagues and working with clients （Bereiter and Scardamalia, 1993）. Third, learning through accumulating and evaluating work experiences. Particularly, learning at work almost comes from experiences and other people. Fourth, people learn through taking over something new. Fifth, employees equate learning with extra-situational factors such as challenging and new tasks, formal education. Sixth, learning through extra-work contexts.

Thus, it is important to note that in the pursuit of organizational survival, how to help employees build the capacity to adapt to the changing work environments is the key issue （Sambrook, 2005）.

However, such conceptual propositions in how employees within the organization perceive the working environment and its influence on individual learning have not been well investigated（Heslin and Keating, 2017）. Particularly, mindset was found to play a critical role in keeping individuals in a good state in changing and challenging situation（Ng, 2018）, moreover, it may trigger potential effort and learning（Heslin and Keating, 2017）. Therefore, the present study aims to provide new insights into the relationship between employees' mindsets and individual learning by systematically reviewing mindset literature in the context of work.

3. Empirical findings

Mindset theory provides the mental framework for individuals, guiding them to think, feel and act in challenging achievement situations（Dweck 1986, 1999）, which significantly influences the cognitions, feelings, and behaviours of individuals（Dweck and Leggett, 1988）. Thus, drawing on mindset theory, studies have focused on examining mindsets' consequences embracing with particular situations or characteristics in the workplace. Table 2 showed the consequences of mindsets.

3.1 Consequences of mindsets
By reviewing and analysing the empirical studies, this paper recognized the important consequences of different mindsets and their relations to employees' learning at the individual level.
3.1.1 Work engagement
Growing research related to mindset theory has examined the effects of mindsets on work outcomes. Particularly, work engagement plays a critical role in flourishing organizations through the impact of employees' positive behaviours（Bakker and Schaufeli 2008）. Findings of growth mindset and fixed mindset showed that growth mindset was found to have promoted employee's engagement interacting with proactive personality and transformational leadership（Caniëls, 2018）. Moreover, Keating and Heslin（2015）proposed growth mindset as a personal resource promoting engagement through enthusiasm for development, the construal of effort, focus of attention, interpretation of setbacks, and interpersonal interactions. Such finding provides fresh insights into the potential role of mindsets in promoting individual learning and enhancing work engagement（Keating and Heslin, 2015）.
3.1.2 Job performance
A number of studies have established a positive link between mindsets and job performance. Findings in the previous study on global mindset, have shown that managers who have global mindset can promote financial indicators of the firm's performance through the proactiveness, commitment and international vision（Nummela et al., 2004）. As for the paradox mindset, research has revealed the important role of it in the workplace. For example, paradox mindset was found to have the positive impact on in-role job performance and innovation（Miron-Spektor et al., 2018）. Similarly, growth mindset increases performance appraisal（Heslin et al., 2005）and negotiation performance（Kray and Haselhuhn, 2007）. Based on these studies, to achieve work goals, manage paradoxes, and improve job performance, mindsets may boost individual learning（Heslin et al., 2015; Miron-Spektor et al., 2018; Nummela et al., 2004）.

3.1.3 Employee creativity

A growing body of research has examined the effect of mindsets on employee creativity. For example, paradox mindset was found to not only have a positive impact on the team's innovative work behaviour （Liu *et al.*, 2020）, but also promote individuals' creativity （Phipps and Prieto, 2012; Miron-Spektor *et al.*, 2018）. In a similar vein, individuals who have entrepreneurial mindset tend to re-learn and find innovative ways to （Ngek, 2012）. Therefore, such findings may provide insights into the role of individuals' mindsets in unleashing employees' learning in the process of stimulating their innovative behaviours.

3.1.4 Cognitive flexibility and complex thinking

Regarding the cognitive changes, cognitive flexibility and complex thinking are the consequences of paradox mindset and global mindset （Miron-Spektor *et al.*, 2018; Levy, 2015; Osland *et al.*, 2006）. As global mindset refers to the highly complex cognitive structure which reflects the cognitive abilities and information processing capabilities, it allows managers to understand the complex global dynamics （Levy *et al.*, 2007; Levy *et al.*, 2015）. Notably, global mindset embraces complex cognitive structure on both global and local levels, in other words, it is the cognitive ability to mediate and integrate across this multiplicity （Levy *et al.*, 2015）. Thus, global mindset enhances complex thinking, which is about the capacity and willingness to differentiate and integrate different perspectives （Levy *et al.*, 2007; Tetlock, 1993）. In a similar vein, individuals who learn to confront tensions tend to seek new solutions and strategies and then broaden their divergent perspectives （Rothman and Melwani, 2017）. Such cognitive flexibility in return extends their understanding of tensions （Poole and Van de Ven, 1989）. Moreover, individuals with paradox mindset are likely to questions existing assumptions and explore more effective responses in dealing with tensions （Lüscher and Lewis, 2008）. Particularly, paradox mindset was found to contribute to differentiating and integrating opposing elements （Tetlook *et al.*, 1993）. Thus, such findings may provide new insights into the role of mindsets in triggering cognitive changes and potential learning behaviours.

3.1.5 Self-development and learning behaviours

In addition to job outcomes, there is growing evidence of link between mindsets and employees' self-development. As proposed by Heslin and Keating （2017）, mindsets guide leaders in experiential leadership development through self-enhancement or self-improvement motive. This suggests that mindsets have the potential to stimulate leader's development （Heslin and Keating, 2017）. Thus, based on these findings, it is commonly acknowledged that individuals with growth mindset are more likely to adopt learning goals and catch opportunities to learn in contrast to people with fixed mindset （Burnette *et al.*, 2013; Kray and Haselhuhn, 2007）.

Moreover, although a limited number of studies have investigated the relationship between mindsets and individual learning, a few exceptions have paid attention to the impact of mindsets in promoting learning. For example, researchers have found that individuals who have growth mindset may embrace a learning orientation （Heslin and Keating, 2017）. Moreover, growth mindset is positively related to learning performance （Dweck, 2006）.

Additionally, prior research also provided evidence for paradox mindset in promoting self-improvement. For example, Liu *et al.* （2020）examined the effect of paradox mindset on thriving at

Table 2. Consequences of mindsets

| Types of mindsets	Authors	Level of analysis	Country	Sample	Consequences
Growth/fixed mindset	Caniëls (2018)	Individual level	Netherlands	Employees in internaitonally operating high-tech organizations	Employee engagement
Growth/fixed mindset	Heslin et al., (2005)	Individual level	Canada	Managers from public corporation operating a combiniation of complex nuclear, fossil-fuel, and hydroelectric generating stations	Performance appraisal
Growth/fixed mindset	Heslin et al., (2006)	Individual level	Southwestern U.S. university	Managers engaged in professional MBA module	Employee coaching
Growth/fixed mindset	Hoyt et al., (2012)	Individual level	Southeastern United States	Undergraduates recruited in a smililar fashion	Leadership performance
Growth/fixed mindset	Kray and Haselhuhn (2007)	Individual level	A largeWest Coast university	MBA students enrolled in negotiations course	Negotiation performance
Growth/fixed mindset	Burnette and Pollack (2013)	Individual level	Meta-anaysis	Meta-analysis	Job and life satisfaction
Global mindset	Nummela et al., (2004)	Organizational level	Finland	Executive officers or managing directors in companies	Financial indicators of the firms' international performance
Global mindset	Ananthram and Li (2018)	Individual level	China	Headquarters and subsidiary senior managers o: multinational enterprises	Managerial decision-making
Paradox mindset	Miron-Spektor et al., (2018)	Individual level	U.S., UK, Israela and China	Employees in various occupations	In-role job performance and innovation
Paradox mindset	Liu et al., (2019)	Individual level	China	Employees in IT, financial industry, machine manufacturing and service industry	Innovative work behaviour
Paradox mindset	Sleesman (2019)	Individual level	Using AmazonMechanical Turk(MTurk)	Undergraduate business students	Escalation of commitment
Entrepreneurial mindset	Phipps and Prieto (2012)	Individual level	South region of U.S.	Employees in the marketing, new product development and research and development departments	Employee creativity
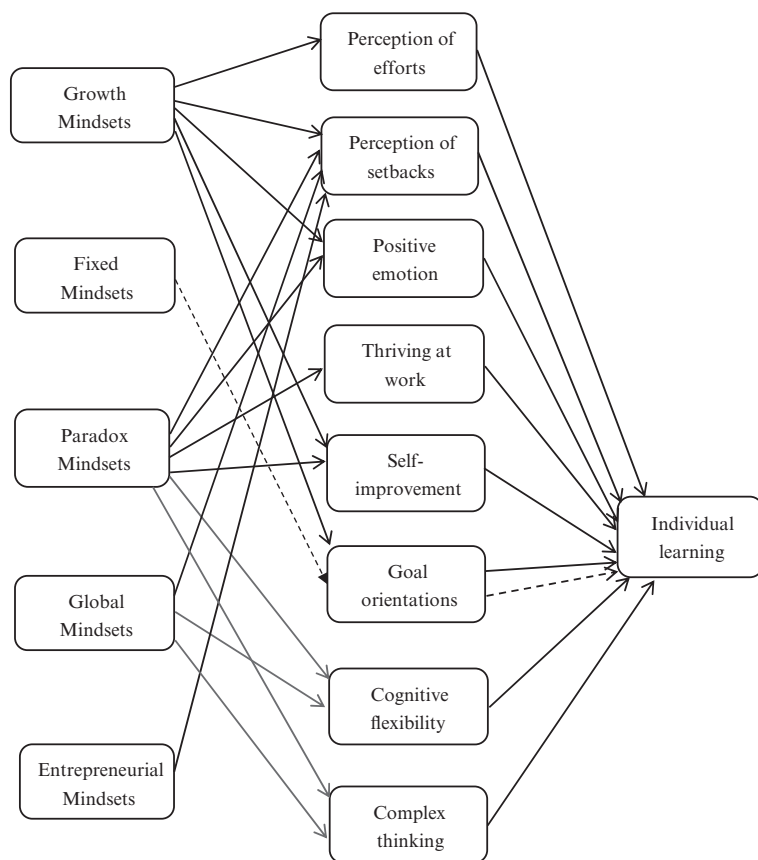
Figure 1. Mindsets and paths to individual learning based on literature review

Notes: The dotted line indicates partial effect. Individuals who have growth mindset affirm goal orientations more strongly than ones with fixed mindset（Blackwell *et al.*, 2007）. Moreover, in specific situations such as sufficient supportive environment, the goal orientations of individuals with fixed mindset are boosted（Blackwell *et al.*, 2007）. Thus, according to previous findings, this paper proposes that fixed mindset has a partial effect on goal orientations and individual learning because this relationship may be mediated or moderated by other organizational factors.

work. That is, as a self-adaptive process, thriving at work is about how individuals self-regulate, develop and improve themselves adapting to their work environment（Spreitzer *et al.*, 2005; Liu *et al.*, 2020）. Thus, paradox mindset was found to enhance thriving at work which refers to the self-improvement and then affect individuals' innovative behaviours（Liu *et al.*, 2020; Leung *et al.*, 2018; Miron-Spektor *et al.*, 2011）. Thus, such findings provide further insights into the role of mindsets in motivating individuals to be goal-oriented, self-improve and learn at work.

4. Mindset and individual learning

In Fig.1 this study synthesizes key observations from the review to provide a summary of the relationship among mindsets, potential mediators, and individual learning. There are in total eight mediators may result in individual learning based on literature review and their common underlying mechanisms.

Review of the literature on mindsets led to some key findings on the relationship between mindsets and individual learning. First, as can be seen in Fig.1, various mindsets had a positive effect on their attitudes, perceptions, and psychological states in the workplace. For example, growth mindset promotes the positive perception of efforts and setbacks, and such perceptions reflect how individuals treat setbacks as opportunities to learn and put more effort to achieve goals（Heslin and Keating, 2017）. Similarly, prior research has found that individuals who have paradox mindset, global mindset and entrepreneurial mindset tend to show proactive and positive attitudes to setbacks and embrace it as chances to learn and improve（Miron-Spektor *et al.*, 2018; Burnette *et al.*, 2013; Ngek, 2012）. In addition, as can be seen in Fig.1, positive emotion triggered by mindsets was found to be positively related to individual learning. In the majority of studies reviewed, positive emotion is related with personal characteristics and people who have growth mindset and paradox mindset are more likely to adjust their emotion to face changes and challenges（Dweck, 1999; Smith and Tushman, 2005）. This may be the reason why positive emotion is a potential predictor of individual learning as it enhances motivational processes（Dweck, 1986）.

Furthermore, mindsets influence employees' psychological states and then result in individual learning. For example, thriving at work referring to individuals' self-adapted and psychological state when a sense of vitality and learning is experienced（Spreitzer *et al.*, 2005）. It was found to have mediated paradox mindset and innovative behaviours, moreover, it may enhance employees' motivation to learn（Liu *et al.*, 2020）. Thus, taken together, mindsets can be a predictor of individual learning by promoting positive attitudes, perceptions, and psychological states.

As displayed in Fig.1, self-improvement is another important factor that may promote individual learning. Previous studies have examined the effect of different mindsets on employees' development. For example, individuals with growth mindset believed that they could learn to improve their sociability and they construed social situations as valuable opportunities to learn（Keating and Heslin, 2017）. Such a mindset increases their proactivity and enthusiasm for self-improvement which motivates individuals to learn（Hong *et al.*, 1999）.

As evident in Fig.1, Keating and Heslin（2017）argued that growth mindset can be regarded as personal resources which enabled goal orientation and then triggered the learning activities based on job demands-resources theory. Although this review study uncovers that growing empirical work has been conducted on the consequences of growth mindset, there have been a few studies which integrate theories to explain the influential process of mindsets on learning behaviours. Furthermore, this research highlighted two cognitive factors that provide new insights into the predictors of individual learning and both were examined in the relationship between paradox mindset, global mindset and positive job outcomes. The findings of mindsets in promoting cognitive flexibility and complex thinking indicated that individuals who adopt paradox mindset tend to cognitively differentiate and integrate different perspectives, and trigger complex thinking（Miron-Spektor *et al.*, 2018）. In a similar vein, integrative complexity was examined as the key personal cognitive antecedents of paradoxical leader behaviours which motived individuals to be open to tensions and learning-oriented in dealing with paradoxes （Zhang *et al.*, 2015）. Furthermore, manager who have global mindset has the cognitive complexity and cognitive capabilities which facilitate them to control complex environment（Levy, 2015）. Therefore,

mindsets trigger cognitive changes and complex thinking which may stimulate individual learning.

5. Conclusions and future directions

This review paper examined in total 55 studies including 15 empirical studies on different types of mindsets and individual learning. In the present review study, main theories include learning theory （Kolb, 1984）; implicit theories （Dweck and Leggett, 1988）; mindset theory （Dweck, 1986, 1999, 2006）; paradox theory （Smith and Lewis, 2011）.

The review of this study suggests that mindsets embodied in various assumptions, play a critical role in influencing individuals' attitudes and behaviours, which promotes various positive work-related outcomes. Importantly, mindsets may foster individual learning through self-improvement and self-enhancement motives; perceptions of efforts; goal orientations; perception of setbacks; thriving at work; cognitive flexibility and complex thinking based on previous studies （Heslin and Keating, 2017; Caniels 2018; Burnette *et al*., 2013; Liu *et al*., 2020; Tetlock *et al*., 1993; Nussbaum and Dweck, 2008; Rothman and Melwani, 2017; Miron-Spektor *et al*., 2018; Heslin *et al*., 2006）.

Moreover, this present study offers a systematic review of different types of mindsets including introducing the concepts, consequences, moderators, and mediators. This may help scholars with a more implicit understanding of the relationship between mindsets and consequences in the workplace. Although some scholars have proposed some research direction on mindsets in the workplace （see Heslin and Keating, 2015, 2016, 2017）, previous studies have not systematically reviewed mindsets research collectively and therefore future research is required to explore potential mechanism between mindsets and job outcomes.

Importantly, this paper clarified the potential mechanism linking different types of mindsets and individual learning. Although studies have highlighted the role of mindsets in promoting positive outcomes in the context of work such as work engagement （Keating and Heslin, 2015）; leadership experiential development （Heslin and Keating, 2017）, how mindsets enhance individual learning was not fully known. Therefore, this study aimed to provide a more comprehensive analysis of mindsets and individual learning based on reviewing previous literature. For example, there are some common mechanisms shared by the research on paradox mindset and growth mindset in the organizational culture, suggesting that individuals with such mindsets view tensions or setbacks as opportunities to improve （Miron-Spektor *et al*., 2018; Nussbaum and Dweck, 2008）.

Second, as mindsets are powerful tools for individuals in challenging work environment and help them better cope with difficulties, future research may examine mindsets as moderators and mediators linking potential attitudes, behaviours, and outcomes in the workplaces. This may provide a more nuanced understanding of mindsets in the workplace and how mindsets influence employees （Heslin and Keating, 2016）.

Third, individual learning is a sustainable concept for individuals and organizations （Kim, 1993）, it would be interesting to investigate and construct a framework linking mindsets and individual learning, which may fulfil the studies on learning theory. Moreover, exploring potential training, coaching or workshops for cultivating mindsets may provide practical insights into human resources management.

Finally, this review has highlighted the role of different types of mindsets in influencing employee's attitudes and behaviours, fostering positive job outcomes and personal growth within organizations. This indicates that managers should understand how mindsets have an impact on their subordinates and why some employees showed higher performance and creative behaviours（Miron-Spektor *et al.*, 2018）. Furthermore, this study provides some suggestions for the potential mechanisms between these two variables. Thus, how to embrace mindsets with individual learning in the workplace is still a key issue to be considered for managers（Dweck and Yeager, 2019）.

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