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# Reconceptualizing Informal Learning in an Online Learning Environment

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# DEDICATION

This dissertation is dedicated to my parents who gave me the most precious gift of all:

Life

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ABSTRACT

In 2020, many organizations moved their formal training programs to an online learning context due to COVID-19. Informal learning, which refers to activities that are self-guided and occur independently outside of formal learning contexts has gained significant interest among researchers and practitioners in the past two decades as it has been identified as the primary type of learning in today's organizations. Despite the increasing interest in informal learning, no attempt has been made to examine and understand informal learning in an online learning environment.

This dissertation provides an integrative review of prior work on formal and informal learning in online and traditional face-to-face environments. It addresses the following research questions: (1) How can informal learning be conceptualized and measured in an online learning environment? (2) How do the coping styles of proactive coping, reflective coping, strategic planning, preventive coping, and support-seeking drive informal learning in an online learning environment? (3) How important are psychological capital and time structure for online learning behavior and, (4) How do contextual influences such as learning conditions and social support moderate the relationships between antecedents, coping, and informal learning behavior?

This study contributes to our understanding of how informal learning unfolds in an online learning environment. All five of the examined coping styles are positively related to informal learning behavior online and four of these coping styles (proactive

coping, reflective coping, strategic planning, preventive coping,) also mediate the relationship between time structure and informal learning behavior. Support for mediation between psychological capital and informal learning was only found for proactive coping behavior. The results of this study showed that the examined contextual influences of social support, learning conditions, and informal learning did not moderate the relationships between psychological capital, time structure, coping behavior, and informal learning behavior.

For this study, data were collected from undergraduate students enrolled in an asynchronous introductory management class in the Fall of 2020. The collected data was analyzed using correlation analysis, descriptive analysis, and path analysis to answer the empirical research questions. This study provides theoretical and practical implications for human resource development and highlights suggestions for future research.

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# CHAPTER 1

## INTRODUCTION

BACKGROUND OF THE STUDY

In early 2020, a new virus (COVID-19) resulted in an ongoing pandemic that swept across most parts of the world and temporarily brought social and economic activities to a standstill. As much of the workforce started working remotely from home and training and development activities for employees were conducted in an online learning setting, it became clear that the solid shift for online learning and training challenges our current conceptualization and understanding of formal and informal learning, in particular, the mechanisms through which they occur in an online context.

The most important difference between formal and informal learning is that the former is structured, intentional (e.g., lectures, assigned readings), and guided by a third person (e.g., instructor), whereas the latter is unstructured. Formal learning has been discussed in the literature for decades, and traditionally, most organizations spend a large amount of their budget on formal training of employees (Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012); however, it should be noted that the trend of total training expenditures in the United States has been decreasing since 2017. While organizations still spent a total of 93.6 billion on workplace training in 2017, training expenditures dropped by more than 11 billion dollars in the last three years (Statista, 2020). Recent empirical research has shown that employee development increasingly occurs through informal learning (Burns, Schaefer, & Hayden, 2005). It is estimated that up to 80 percent

of what employees learn is derived from informal learning (Cross, 2007; Koopmans, Doornbos, & Eekelen, 2006; Marsick and Watkins, 1990). Reasons for the increasing importance of informal learning are the widespread use of technology and availability of "fingertip" knowledge, cost effectiveness, increased innovation and productivity through knowledge-sharing and collaboration with peers (Cross, 2011). However, most scholars in this domain agree that it is crucial to consider both formal and informal learning in employee development (Slotte, Tynjälä, Hytönen, 2004; Svensson, Ellström, & Åberg, 2004) because "when learning takes place, elements of both informal and formal learning are present" (Manuti, Pastore, Scardigno, Gianacaspro, & Morciano, 2015, p. 12). This has led to a significant research stream covering these topics in various disciplines such as education and organizational psychology.

Prior research has significantly contributed to our understanding of what factors influence formal and informal learning and found that personal and situational characteristics are likely to facilitate learning behavior. For example, individual differences such as psychological capital, learning goal orientation, motivation, and self-efficacy have been examined in the literature (Choi, Noe, & Cho, 2019; Lohman, 2005; Tews, Michel, & Noe, 2017; Schürmann & Beausaert, 2016; Noe, Tews, & Marand, 2013; Noe & Wilk, 1993).  Prior studies have also investigated the influence of informal learning in the workplace on various outcomes and found positive relationships between informal learning behavior and increased productivity and cost savings at the organizational and individual level, increased knowledge and skills of individuals (Choi et al., 2019; Dale & Bell, 1999; Ellinger & Cseh, 2007; Leslie, Aring, & Brand, 1998),

and changes in indivdiuals' beliefs or points of view through collaboration with coworkers (Meirink, Meijer, Verloop, & Bergen, 2009).

Past research on informal learning, which is more self-directed than formal learning, has typically investigated informal learning behavior in face-to-face environments where regular interactions between two or more individuals occur. Within the context of online learning, these social interactions are significantly reduced or take place in different forms. Social Cognitive Theory (Bandura, 1986), which has often been used to explain the process of self-regulation during learning, asserts that learning takes place in a dynamic social context. If learning is socially constructed and contextually embedded (Lave & Wenger, 1991), individuals in an online learning context who lack the traditional form of social interaction may have to divert their behavior to different mechanisms. If predictors and mechanisms through which informal learning occurs in an online learning environment differ from those in a face-to-face environment, they are also likely to influence cognitive, behavioral, and attitudinal outcomes differently. Exploring the mediating mechanism of different coping styles between personal predispositions, social support, and informal learning behavior will help us understand how individuals participate in informal learning behavior if the learning environment is virtual. Understanding these relationships in this specific context will enable organizations to strategically develop learning interventions for online learning environments, resulting in increased informal learning behaviors and desired outcomes.

Globalization and advanced technology suggest that the transition to online education is not a temporary phenomenon and will have a lasting impact well beyond the Covid 19 pandemic. The increase in workplace learning that occurs online raises the

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question of whether both types of workplace learning (formal and informal) can be done effectively in an online learning environment. Past research indicates that online learning often fails to deliver educational goals. Persistence and completion rates are low compared to face-to-face instructions, even with self-regulation interventions (Kizilcec, Reich, Yeoman, Dann, Brusnkill, Lopez, Turkay, Williams, Tingley, 2020). According to Kizilicec et al. (2020), contextual influences need to be considered to fully understand the effects of online education because learning is socially constructed and contextually embedded (Jarvis, 1987; Lave & Wenger, 1991).

Empirical research on informal learning has found that various contextual factors can inhibit engagement in informal learning. Lohman (2005) found that lack of free time, lack of proximity to colleagues' work areas, lack of access to computer technology, lack of monetary rewards, and lack of recognition predicted participation in workplace learning activities. In particular, a lack of social interaction in online learning contexts may inhibit some individuals from recognizing the usefulness of informal learning. In addition, those constrained by time and resources may not engage in informal learning activities (Westbrook & Veale, 2001; Wheatley, 1994). However, some research also suggests that differentiation between formal and informal learning in an online context is difficult (Cox, 2013), calling for additional investigation of both types of learning in a virtual environment.

<center>RESEARCH PURPOSE AND CONTRIBUTION</center>

This study investigates the extent to which individuals engage in informal learning activities in an online learning environment, examines the influence of individual characteristics (e.g., psychological capital) and contextual factors (i.e., social

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support, learning conditions, formal learning) and explains the mechanism of proactive coping through which informal learning behavior occurs. Specifically, this study will test a mediation model of factors that influence informal learning behavior through five different coping styles of the proactive coping inventory. Additionally, social support, supportive learning conditions, and formal learning will be considered as moderators. Lastly, this dissertation will suggest directions for future expansions of the proposed model of this study (e.g., KSAOs as outcomes). Finding an answer to the research questions in this dissertation will help organizations develop and train employees in an online learning context.

This study contributes to the literature on learning and human resource development in several ways. First, this study expands on existing research by conceptualizing and examining informal learning in an online learning environment. As previously discussed, learning is often socially constructed and contextually embedded; exploring proactive coping as a mediating mechanism between individual characteristics and informal learning behavior helps expand online learning environment theory and practice. Despite the increasing importance of online learning contexts and informal learning behavior, very few studies have investigated the formal aspects of learning in an online learning environment and integrated informal learning activities in the same context. One study by Czerkawski (2016) examined formal and informal learning networks for online learning. However, the focus of this study was on online learning networks and how to distinguish formal and informal uses of such without further investigation of potential factors that might influence these two learning constructs. The lack of integration in prior research causes a lack of understanding of how these types of

learning complement or hinder each other in an online learning environment making it difficult to foster informal learning in a virtual context.

Second, this study identifies antecedents of informal learning that are relevant in an online learning environment. The theoretical model in this dissertation includes psychological capital and time structure as important predictors. Prior research suggests that contextual factors also play a crucial role in the effectiveness of online learning (Marsick & Volpe, 1999). Thus, situational factors are likely to influence informal learning behaviors in an online learning environment. This study examines how supportive learning conditions and formal learning influence the relationship between different coping styles and informal learning behavior and how social support from peers and instructors influence the relationship between psychological capital, time structure, and different coping styles to expand research on types of person x context interactions in the learning and training literature. It is essential to gain insights into these relationships in an online learning environment so that informal learning can be supported, encouraged, and developed (Marsick & Volpe, 1999).

Third, from a theory-building perspective, exploring proactive coping as a mechanism through which informal learning occurs helps us understand the underlying process by which individuals may engage in informal learning activities. In most previous studies, informal learning has been investigated as the mediating mechanism through which various predictors (e.g., individual differences) result in desired outcomes (e.g., performance). A great deal is already known about mediating mechanisms through which formal learning occurs. For example, a meta-analysis by Colquitt, LePine, and Noe (2000) on training motivation, its antecedents, and outcomes found that the effects of

individual and situational characteristics were partially mediated by the motivation to learn, self-efficacy, valence, and job/career variables. Mediating mechanisms play a crucial role in formal training and development and need to be investigated for informal learning. However, little is known about mediating mechanisms for informal learning, especially informal learning in an online learning environment. Thus, this study will examine proactive coping styles as mediators between antecedents and informal learning behavior.

## RESEARCH QUESTIONS

There are seven main variables of interest in this study: Psychological Capital, Time Structure, Social Support from peers and instructors, coping behavior, learning conditions, formal learning, and informal learning. To assess the relationships between these variables, this dissertation will address the following research questions: (1) How can informal learning be conceptualized and measured in an online learning environment? (2) How do the coping styles of proactive coping, reflective coping, strategic planning, preventive coping, and support-seeking drive informal learning in an online learning environment? (3) How important are psychological capital and time structure for online learning behavior and, (4) How do contextual influences such as learning conditions and social support moderate the relationships between antecedents, coping, and informal learning behavior?

## OVERVIEW OF THE STUDY

This dissertation consists of five chapters. Chapter 1 includes the background of the study, the purpose of the study, and contributions to the literature. Chapter 2 situates the current study in related literature and discusses the theoretical underpinnings of

informal learning to guide the study. This includes a critical review of prior research and current practice of informal learning and issues relevant to integrating informal learning into an online learning environment. In this regard, I undertook a cross-disciplinary approach drawing on literature from training and development, higher education, and educational technology. Combining these insights, chapter 2 argues for the need to investigate informal learning in an online learning environment. The most critical gaps in the literature are identified, and I will develop a theoretical framework from which I derive hypotheses. Chapter 3 addresses the methodological issues and research design, study context, theoretical and procedural descriptions of instruments used in the study to collect, present and analyze data. Chapter 3 also presents the results of the data analysis for the hypotheses stated in chapter 2.

In chapter 4, I discuss the results presented in chapter 3. Based on that, implications and recommendations are drawn to inform theory and practice. Finally, chapter 5 contains the conclusion and reflective evaluation of this study and suggests further research agendas.

# CHAPTER 2

## LITERATURE REVIEW AND THEORY DEVELOPMENT

This chapter is organized into five sections. The first section reviews the literature regarding the conceptualizations and operationalizations of formal and informal learning and the relationship between formal and informal learning. The second section discusses the literature related to online learning versus traditional face-to-face learning environments. The third section examines the extent of formal and informal learning in an online learning environment. The fourth section reviews personal characteristics and work environment characteristics as factors influencing informal learning. The fifth section discusses proactive coping as a mediating mechanism between personal characteristics and informal learning behaviors.

**Theoretical foundation – social cognitive theory**

Bandura expanded his views on social learning (Bandura & McClelland, 1977) by proposing social cognitive theory (1986). Both theories assert that individuals learn new behaviors by observing others. With the introduction of social cognitive theory, Bandura emphasized the importance of cognitive behaviors in the learning process. The learner is shaped by his or her environment and has an agency that allows the individual to regulate inner forces. The underlying assumptions of social cognitive theory are that learning is mediated by four cognitive processes: attention, retention, production, and motivation (Bandura, 1986). In addition, self-efficacy, which is the personal belief in one's capability to plan and act in response to environmental events, was added as a significant

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component of social cognitive theory.  Figure 2.1 illustrates the *triadic reciprocal determinism* between personal factors, the behavior itself, and the environment.

Social cognitive theory has been used to explain how people tend to regulate their behavior through enforcement and control. The agentic perspective of social cognitive theory suggests that individuals are self-developing, self-regulating, self-reflecting, and proactive. The main aspect of social learning and social cognitive theory revolves around knowledge acquisition. In prior research, scholars have often used social cognitive learning theory to explain formal and informal learning processes in a social context where the learner can observe behavior directly. However, in a series of experiments, Bandura and his colleagues demonstrated that modeling is not limited to live demonstrations, but behavior can also be learned by modeling verbal and written behaviors or behavior observed through media (Bandura, Ross & Ross, 1963).

**Formal vs. Informal Learning**

Learning is defined as "the process of employees enhancing their human capital through acquiring knowledge, skills, abilities, and other characteristics" (Noe, Clarke, Klein, 2014, p. 247). Researchers in educational and organizational sciences have studied formal and informal workplace learning for decades and contributed a lot to the training and development literature by examining a wide variety of antecedents and outcomes. The many different learning constructs that emerged during the last several decades resulted in different taxonomies introduced by several authors (e.g., Eraut, 2004; Schugurensky, 2000; Watkins & Marsick, 1992). According to Watkins and Marsick (1992), workplace learning can be categorized into three different forms: formal, informal, and incidental learning. Formal learning, which is defined as structured

learning, includes training and development programs, courses, and planned events that are highly structured, institutionally sponsored, and classroom-based learning with an instructor, all of which prepare an individual to obtain a set of specific, explicit knowledge and skills (Marsick & Watkins, 1990; Noe et al., 2014). Informal learning occurs due to everyday experiences through daily interactions, reflecting on people's actions, and making sense of these experiences and interactions encountered during their daily work (Watkins & Marsick, 1992). Examples of informal learning include self-directed learning (activities pursued outside of a particular course), networking, coaching, and mentoring. While informal learning implies intentionality, incidental learning has been defined as a "by-product" or unintended outcome of learning experiences and interactions such as learning by mistake or sensing the organizational culture (Marsick, Watkins, Callahan, Volpe, 2006). This study will only discuss formal and informal learning as both forms involve intentionality and conscious action (Noe, Tews, & McConnell Dachner, 2010; Tannenbaum, Beard, McNall, & Salas, 2010). For this study, formal learning activities are defined as mandatory learning activities that are part of a learning program (college course).

In an attempt to clarify the extensive domain of related learning constructs, Wolfson et al. (2018) developed a three-dimensional taxonomy of different types of learning. The first point of differentiation refers to formal versus informal learning settings. Formal settings include classroom-based settings where an instructor provides formal training and development (Cerasoli, Alliger, Donsbach, Matthieu, Tannenbaum & Orvis, 2018; Noe et al., 2014). In formal learning settings, training programs are typically designed for individuals to acquire and apply a defined domain of knowledge, skills,

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abilities, and other characteristics (KSAOs) (Wolfson et al., 2018). Informal settings are settings outside of the formal classroom. Informal learning settings are often thought of to occur in an individual's natural work environment that increases his or her KSAOs in some way. There is no designated KSAO domain for informal learning, although individuals determine their own learning needs through planning/scanning, socializing, experimenting, adapting, and reflecting (Willis, 2019). Different types of learning can occur in either formal or informal settings (e.g., on-the-job training, continuous learning, self-directed learning) (Wolfson et al., 2018). The second point of distinction is intentionality. "Intentional learning refers to active and conscious actions by an individual to acquire new knowledge and skills, whereas incidental learning refers to learning that occurs without intent" (Wolfson et al., 2018, p. 16). Formal learning always occurs intentionally. Wolfson (2018) argues that informal learning may occur either intentionally or incidentally; similarly, other scholars argue that informal learning occurs with the intent and conscious action driven by an individual agent (Noe et al., 2010, Tannenbaum et al., 2010). The third dimension differentiates between self-directed and other-directed learning. Self-directed learning occurs when the learner takes on responsibility for his own learning needs and action steps to acquire new knowledge and skills by him or herself. Informal learning is self-directed. Formal learning is other-directed because a designated instructor teaches and conveys relevant knowledge guided by pre-set learning objectives.

Organizations rely heavily on formal training and development to help employees acquire the necessary KSAOs to help them achieve their goals (Noe et al., 2014). Formal learning has often been used interchangeably with training and development, which is

defined as a "process of systematically developing work-related knowledge and expertise in people to improve performance" (Swanson, Holton & Holton, 2001, p. 204). After an organization has identified its needs in terms of training and development, training objectives guide the design of instructional processes (Goldstein & Ford, 2002). Formal learning activities can occur either on-the-job or off-the-job, where the former refers to learning that takes place at the actual work setting, and the latter takes place away from the work setting (e.g., classroom, web-based training) (Jacobs & Park, 2009). According to Eraut (2000, p. 114), formal learning has the following characteristics: a prescribed learning framework, an organized learning event, the presence of a designated teacher, the award of qualification or credit, and the external specification of outcomes.

Despite its importance for acquiring explicit KSAOs, formal learning does not account for all aspects of employee training and development. Learning has become increasingly controlled by the learner, and most KSAOs are acquired through informal learning (Burns et al., 2005; Enos, Kehrhan, & Bell, 2003; Kwakman, 2003). Past empirical research has shown that informal learning accounts for up to 80 % of what employees need to know for their job (e.g., Marsick & Watkins, 1990). Informal learning is strongly influenced by individual and situational characteristics (e.g., Cerasoli et al., 2018; Choi & Jacobs, 2011). Understanding the contributing factors to informal learning behavior is becoming increasingly important as organizations expect their employees to engage more in self-initiated learning and rely less on formal training and development provided by the organization.

A comprehensive literature review of the informal learning construct by Wolfson et al. (2018) revealed that informal learning consists of different facets: action,

experiential, continuous, incidental, and self-directed learning. For this study, I adopt the definition of informal learning behavior offered in a recent meta-analysis by Cerasoli et al. (2018, p. 204).

> "Informal learning behaviors (ILBs) are non-curricular behaviors and activities pursued in favor of knowledge and skill acquisition that takes place outside formally designed learning contexts. Such activities are predominantly self-directed, intentional, and field-based. Informal learning behaviors are not syllabus-based, discrete, or linear."

Other scholars have conceptualized informal learning in similar ways. For example, Lohman (2000, 2006) stated that informal learning activities are initiated by employees in the workplace and develop their professional knowledge and skills. Thus, informal learning behavior can be characterized as activities that are self-guided, intentional, and occur independently outside of formal learning contexts, typically through observing others, questions, practice, and reflection (Sambrook, 2005). These previous conceptualizations of informal learning in the literature raise the question of how informal learning occurs in an online learning environment where many of these activities have to be modified.

As previously noted, formal and informal learning are often difficult to differentiate, especially in an online learning environment where technology mixes learners' participation in formal and informal learning behavior. Formal learning activities in this context are structured by the instructor and syllabus-based, such as attending virtual class meetings or completing assigned tasks such as watching video lectures, taking quizzes and exams, or reading assigned material. A recent research trend

addresses blending formal and informal in a virtual environment using learning networks and mobile technologies (Czerkawski, 2016), suggesting that informal learning is increasingly becoming part of formal learning. The student sample for this study illustrates how an online learning environment can be an environment for both types of learning.

In the literature, informal learning behavior is typically conceptualized and operationalized as a higher-order construct ranging from three sub-dimensions (e.g., Lohman, 2006; Noe et al., 2013; Wolfson et al., 2018) to five sub-dimensions (Willis, 2019). In order to understand how informal learning behavior occurs in an online learning environment, it is essential to measure a sufficient number of behaviors and dimensions; thus, for this study, I adopted the five-dimensional framework developed by Willis (2019), which includes the sub-dimensions of planning and scanning, socializing, experimenting, reflecting, and adapting. In an online learning environment, the learner acts as an agent of his learning behavior, and informal learning activities are not controlled or influenced by the instructor.

**Planning and Scanning**

Informal learning behavior begins with recognizing a deficit between what the learner should know and what he or she knows. If the individual is motivated enough to close the gap, he or she will look for ways to improve the situation. Planning how to close the knowledge gap and environmental scanning falls under the planning and scanning subdimension of informal learning. The planning and scanning subscale refers to future-oriented informal learning behaviors, including thinking ahead when one directs his or her learning and searching the environment for new information (Willis, 2019).

These behaviors are highly intentional, individually driven, and motivated by challenges in an individual's environment (Willis, 2018). Lohman and Woolf (1998) found that environmental scanning included independently scanning and gathering information from sources outside the workplace.

Planning and scanning have been included in other instruments developed to measure informal learning as well. Noe et al. (2013) included "reading professional magazines and vendor publications, searching the Internet for job-relevant information, and reading management books," all of which refer to non-interpersonal sources. For example, an individual might set a goal and then plan to achieve this goal and scan the environment for materials and resources needed. The planning and scanning subdimension is important for informal learning behavior because making concrete plans helps people follow their intentions.

**Socializing**

Most scholars agree that learning is an inherently social process (e.g., Kraiger, 2008) and especially important for informal learning because many learning opportunities derive from natural interactions with peers during which learners can discuss and share their experiences and knowledge. Maintaining relationships with peers can foster social learning through observing and imitating others and identifying positive role models. Mentoring and coaching relationships with supervisors or peers often result from personal interactions and constitute a big part of informal learning. Information and feedback-seeking are valuable resources for individuals in work and educational settings (Crommelinck & Anseel, 2013). These behaviors help individuals adapt and learn by gaining additional information as well as raising self-awareness.

Related to this subdimension of socializing is the organizational socialization process of newcomers. The socialization process entails familiarizing new employees with organizational culture, including the role of specific members in groups. Informal learning associated with being socialized has been defined as a "curiosity-driven process where individuals seek the new information needed to situationally perform specific tasks and roles in light of cultural norms and expectations" (Reio & Callahan, 2004)

**Experimenting**

Most informal learning measures include experimenting as a subscale. A study conducted by Choi (2009) suggests that self-experimentation is the most frequently used type of his three proposed types of informal learning (i.e., learning with others, self-experimentation, external scanning). The experimenting subscale of informal learning includes proactive behaviors in which individuals try out new ideas, take on challenging tasks, and often take risks to produce alternative solutions to problems (Willis, 2019). Experimenting includes new ways of performing that enhances learning and often results in learning from mistakes. In a traditional face-to-face learning environment, individuals often have ample opportunities to experiment and actively explore new ideas and techniques. A non-punitive work environment that encourages individuals to learn from mistakes is most likely to foster this type of informal learning behavior.

**Reflecting**

Reflecting is a frequently studied concept in informal learning as it is based on the assumptions that awareness of one's performance is vital for self-improvement and awareness (Maurer, Leheta, & Conklin, 2017). Individuals may reflect on their organization and coworkers (Leslie et al., 1998), performance reviews and feedback (Van

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der Pol, Van den Berg, Admiraal, Simons, 2008), and daily activities and routines (Bednall, Sanders, & Runhaar, 2014). Previously developed measures also included reflecting as a subdimension of informal learning. For example, Wolfson et al.'s (2018) three-dimensional measure includes "reflecting and feedback" as one form of informal learning behavior. Noe et al. (2013) combined "reflecting and experimenting" as a subdimension of their multidimensional measure of informal learning. The three-dimensional measure proposed by Tannenbaum et al. (2010) includes reflection defining it as seeking understanding about one's own experiences. Reflecting on past experiences often results in new perspectives, changes in behavior, and new knowledge. In sum, reflective activities are an essential part of informal learning that can increase knowledge and future performance.

**Adapting**

Adapting refers to any change in behavior or ways of thinking to deal with a new situation successfully. Increasingly complex and constantly changing work environments require employees to respond to these changes. For example, implementing new work processes and technology requires individuals to respond with adaptive behaviors, including learning more about changes and adopting new skills. Adapting to constantly changing environments enables individuals to cope with change and eventually learn new behaviors, skills, and ways of thinking. The adapting dimension of informal learning behavior involves responding to novel events at work (Willis, 2019).

**Relationship Between Formal and Informal Learning**

Several scholars have emphasized that informal learning can complement or even substitute formal learning. For example, Bednall and Sanders (2017) argued that formal

learning opportunities are positively related to informal learning activities. Formal learning provides the basic knowledge on which employees can build with additional self-directed study and share their knowledge and skills (Schürmann & Beausaert, 2016). Similarly, Rowden (2002) and Westbrook and Veale (2001) found that individuals with more experience and formal education tend to devote more time to self-directed learning activities. One reason for this is the previously mentioned basic knowledge provided by formal learning; this basic knowledge enables individuals to reflect on their performance and identify learning gaps more quickly, which they can then address through informal learning activities. Another reason for the positive relationship between formal and informal learning is the often-blurred boundary between these two types of development and education. Formal and informal learning usually occur concurrently, and it is often difficult for a learning activity to be classified as either entirely formal or informal (e.g., Doyle & Young, 2004). For example, it is impossible to determine how much is learned in a formal classroom setting with normal instructor-student and student-student interactions formally and informally. To this end, it is not surprising that these two forms of learning interact with each other, although it is likely that this interaction may vary depending on the learning situation.

In an online learning environment, this relationship may not hold if the novelty of online learning increases time pressure on individuals and limit access to specific resources. Informal learning behavior is typically time-consuming and has been found to result in decreased performance in the short term (Ahearne, Lam, Mathieu, & Bolander, 2010) before the individual can benefit from it. According to the conservation of resources (COR) theory, individuals are determined to maintain their current resources

(e.g., time) and pursue new resources (Hobfoll, 1989). If individuals experience a loss of resources (e.g., time spent on formal training activities), they will experience psychological stress, making it unlikely to spend additional resources (time) on informal learning behavior. This study examines formal learning as a situational constraint that inhibits individuals' likelihood of engaging in informal learning behavior.

**Face-to-Face vs. Online Learning Environments**

Traditional face-to-face learning is an instructional method where teachers and students interact in a traditional classroom setting, and the course content is taught live in a physical classroom. Teachers are responsible for delivering content, answering questions, and testing learned knowledge (Noe, 2003). Face-to-face learning environments have been shown to have many benefits as students can get direct feedback from their instructors and are also able to interact with fellow learners, which is vital for networking and maintaining social relationships. The disadvantages of face-to-face learning include higher costs for space and time of instructors, higher time involvement due to commutes to the place of learning, and less flexibility for learners as face-to-face learning is set to occur at a scheduled time and place and usually follows a strict timeline.

During the last several decades, organizations, governments, and many institutions of higher educations have expanded their training to an online learning environment. The Covid-19 pandemic accelerated this trend. An online learning environment refers to a learning context in which technology is used for teaching and learning. However, past research has used a variety of terms to refer to learning with technology, such as online learning, distance learning, blended learning, e-learning, and virtual learning, and there is no universal agreement on what each of these terms means

(Moore, Dickson-Deane, Galyen, 2011). *Distance learning* is a formal learning activity (Appana, 2008) and the umbrella term for learning across distance and not in a traditional classroom. *Online learning* is one form of distance learning and has become the most popular form of distance learning since the introduction of the Internet. Online learning is always conducted through the Internet. Although it may not always be asynchronous, the study context for this dissertation was an asynchronous learning environment in which instructors post resources and assignments online using web-based tools and platforms. This asynchronous approach requires students to complete coursework individually and independently. Online learning and virtual learning are often used interchangeably as both methods occur through the Internet. However, virtual learning typically includes face-to-face interactions between instructors and students via a video platform. This allows students to ask questions for needed clarity and interact with peers and the instructor (Walsh-Rurak, 2021). Instructions conducted in this type of setting are also termed web-based instructions (WBI) (Sitzmann, Kraiger, Stewart, & Wisher, 2006).

According to the 2019 Training Industry report, traditional classroom-based training still constitutes the most formal training across organizations ranging from 36% at large companies to 44% at small companies (Bouchrika, 2020). Virtual classroom/Webcast and online computer-based methods sum up to 42% (Online: 27%) for small companies, 47% (Online: 30%) for mid-sized companies, and 47% (Online: 32%) for large companies (Bouchrika, 2020). It must be noted that these numbers refer to the year 2019 before the outbreak of Covid-19, which changed the way we think of learning. These numbers illustrate that online learning was already on a trajectory to continuous growth even before the global pandemic.

As more and more organizations adopt online learning to train their employees (Simmons, 2002) and higher education institutions continue to offer online courses, the benefits and challenges of online learning must be carefully evaluated to design appropriate training programs. Self-regulation and motivation have been identified as crucial components for success in online learning (Matuga, 2009). Self-regulated learners often favor online learning formats because of the greater flexibility it provides (e.g., Kirtman, 2009; You & Kang, 2014). This flexibility cannot be underestimated for learners and instructors alike. In an online environment, distance and time cease to exist, and learning can occur anywhere at any time. Studies that examined challenges associated with online learning found that the "isolated learner" may also experience various problems that can hinder online learning success (Gillett-Swan, 2017). Some of the most common challenges students face in an online learning environment are technical issues, distractions and time management, staying motivated, lack of in-person interaction, and understanding course expectations (e.g., Gillett-Swan, 2017; Song & Hill, 2007). Collectively, it can be said that online learning entails advantages and disadvantages for students and instructors alike. In order to fully understand why some students are successful in this learning context and others are not, it is critical to look at the form of learning that contributes much to an individual's knowledge. However, the distinction between formal and informal learning is typically overlooked in studies investigating the design, contextual factors, driving mechanisms (e.g., motivation), and individual characteristics of the learner to evaluate various outcomes. The missing link I am examining in this study is 'informal learning.' Examining how informal learning

occurs in an online learning environment can help clarify the interrelationships between individual characteristics, social support, learning conditions, and coping behavior.

**Informal Learning in an Online Learning Environment**

The following section aims to explore how various aspects of informal learning occur in an online learning environment. Past research on online learning mostly focused on formal learning activities, whereas research on informal learning was always conducted in traditional face-to-face settings. This is not surprising given that social interactions have always been deemed necessary for most informal learning activities. Individual learning has been termed a "social construct" and learning itself as a "social phenomenon" (Jarvis, 1987). However, informal learning may be critical and beneficial to students in an online learning environment.

As previously noted, informal learning is a complex and multidimensional construct embedded in a social context (Schulz & Roßnagel, 2010). However, according to Marsick & Watkins (2001), informal learning can occur in any environment where individuals have the need, motivation, and opportunity to learn. The previously cited definition of informal learning by Cerasoli et al. (2018, p. 204) points out several essential characteristics of informal learning.

> "Informal learning behaviors (ILBs) are *non-curricular behaviors* and *activities* pursued in favor of knowledge and skill acquisition that takes place *outside formally designed learning contexts*. Such activities are predominantly *self-directed, intentional*, and *field-based*. Informal learning behaviors are *not syllabus-based, discrete*, or *linear*."

These characteristics are "non-curricular behaviors and activities," "outside of formally designed learning contexts," "self-directed, intentional, and field-based," "not syllabus-based, discrete, or linear." The meaning of these characteristics in a traditional face-to-face environment is clear; much less is known about informal online learning, which has been defined as "the unstructured learning that happens in daily life while people are accessing the Internet" (Holland, p. 215, 2019). Consequently, informal learning behaviors in an online learning environment are also *self-directed*, *intentional,* and *field-based*.

Only a few attempts have been made in the literature to examine informal learning in a virtual or online learning environment focusing primarily on different types of online learning platforms such as social learning networks (e.g., Facebook, LinkedIn, Youtube) (Czerkawski, 2016) and peer-initiated online support groups (Morrow, 2006; Wright & Muhtaseb, 2011). Most recently, a meta-synthesis by Holland (2019) identified three effective principles of informal online learning, including (1) interaction opportunities online support knowledge construction and learner empowerment (2) segmented, titled, and tagged learning objects facilitate personalized learning; and (3) flexibility and choice are paramount because most adult learners are self-determined. In sum, to my knowledge, empirical research investigating the different sub-components that make up the complex higher-order informal learning construct does not exist to this day. In the following sections, I will theorize how the five dimensions of the informal learning framework developed by Willis (2019) can be applied to help us understand how individuals learn informally in an online learning environment.

**Planning and Scanning**

Marsick et al. (2009, p.572) noted that informal learning "requires greater attention to making the most of the learning opportunity, something that might involve planning and almost certainly involves some conscious attention, reflection, and direction." An online learning environment does not inhibit the planning/scanning dimension of informal learning; on the contrary, scanning the Internet for additional information is often the easiest and fastest way for individuals to find missing information. "Fingertip" knowledge through Internet searches is one of the most commonly used ways to learn informally (Paradise, 2008). Other sources outside the workplace, such as journals, conferences, or experts outside the workplace, may also be available.

Planning and scanning are highly intentional and individually-driven. Thus, this component of informal learning can quickly be done in any environment with access to technology and Internet access. Planning is crucial for self-directed learners with limited access to formal instructors, as is the case in online learning environments, but easy access to a significant amount of information online. Planning and scanning in an online learning environment may include sourcing information online, reading professional journals, and planning one's time and efforts. Although social interaction with peers and instructors is typically not needed for this informal learning dimension, planning may become necessary if the learner wants to communicate with peers and instructors through emails and virtual meetings to ask questions and discuss ideas. Because informal learning behavior often occurs to solve a specific problem (e.g., find the answer to a specific question, learn how to use an app), planning how to solve the problem and scanning

possible information sources are detrimental to all learning environments, in particular in an online learning environment where the learner takes more self-directed actions to solve problems.

**Socializing**

Informal learning in the workplace often occurs through social activities. Individuals learn through collaboration and knowledge-sharing (Kwakman, 2003; Lohman & Woolf, 2001). Social learning theory (Bandura & McClelland, 1977) stresses the importance of observing and imitating the behaviors of others for individual learning. An online learning environment represents a challenge for this type of social learning as learners rarely observe each other. Online collaborative learning activities encompass various challenges to students' social learning, such as miscommunication due to a lack of visual conversation cues and time lapses between interactions (Capdeferro & Romero, 2012; Irwin & Berge, 2006). These challenges make informal learning through socializing more complex in an online learning environment but not impossible. For example, in synchronous training formats, observing others in virtual class meetings, attending classes, actively participating, and communicating with the instructor and other students may be substituted for interactions in traditional face-to-face settings. However, asynchronous learning is generally an isolated activity without any virtual live interaction; thus, this learning environment usually lacks the socializing part of informal learning.

In an online learning environment, social learning occurs in an adapted form, which can be better understood when looking at how Bandura and McClelland's (1977) social learning theory can be applied to online learning. Social learning consists of four

principles: attention, retention, reproduction, motivation. Attention focuses the learner on the task at hand. Bandura asserts that social context helps to focus the learner. It is essential to ensure that the group's collective attention is focused on training exercises in an online learning environment. Retention is crucial for the learner because if one does not have a memory of the material taught, they will not apply it. In an online learning environment as well as in a traditional face-to-face environment, this means that the training needs to be memorable. This may be easier to accomplish in a traditional classroom where an instructor can use gestures, tone of voice, and facial expressions, but various online tools discussed at the end of this section can help make training memorable. Reproduction means that individuals get a better cognitive understanding if they repeat an action or material to be learned. It is crucial for the learner in an online environment to be able and try the lessons him/herself. Motivation means that individuals are motivated by observing others receiving rewards for specific accomplishments, so they are more likely to follow in their footsteps and imitate actions that result in desirable consequences.

To leverage social learning in an online environment, it needs to be an interactive environment where people can observe, get motivated by the behaviors of others, where their attention is focused on the task through group collaboration, and learners have opportunities to practice and apply their knowledge in order to retain it more easily. Incorporating a social element such as gamification, interactive group projects, and other features that allow learners to interact more fully can help fill the social void of online learning. Discussion forums can be a valuable tool for online learning where learners can socialize with others during their training. As Bandura (1986) described, observational

learning can occur through interacting, contributing ideas, and observing others'

contributions and discussions. These online interactions may provide valuable

experiences to learners who can share knowledge, gain new perspectives, and expand

their ideas.

**Experimenting**

Experimenting with new ideas, techniques, and tools is an essential element of

informal learning (Lohman, 2000; Noe et al., 2013). Experimentation refers to learning

taking an active form. This active learning approach occurs when individuals engage in

activities to acquire knowledge or skills through experimentation to explore rules,

principles, and strategies for effective performance (Bell & Kozlowski, 2008).

Individuals who experiment want to know what works and enjoy influencing or changing

situations by trying out new ideas or processes (Terrell & Dringus, 2000). Some scholars

have argued that experimenting includes self-reflection (e.g., Lohman, 2000), while

others have treated experimenting and reflecting as different subdimensions of informal

learning (e.g., Willis, 2019). In an online learning environment, opportunities for

experimenting are likely to be different from traditional face-to-face learning

environments and may be limited to the use of technology (e.g., apps). "Trial and error"

experiments will not result in the same immediate feedback as in a traditional face-to-

face learning environment. The online learner must take on a far more active role in

learning, experimenting, and seeking feedback than learners in traditional face-to-face

settings. Seeking feedback from others is vital for learning from experiments because it

stimulates reflection. Technology does provide various ways for experimenting with new

ways of performing and receiving feedback from others. Group interaction and online

communication skills are essential for an online learning environment to receive feedback on ideas and discuss strategies for performance improvement.

An online learning environment provides many opportunities for experimenting in new non-traditional ways. While the lack of immediate feedback from others may be a downside, it can be overcome by using technology. The availability of tools like messaging apps, video-conferencing software such as Zoom, discussion boards, chat rooms, and the like has increased exponentially in the last several years. In some instances, it may even be easier to seek feedback or talk more freely in an online environment because of a certain level of anonymity. The concept of time needs to be addressed in an online learning environment. Learners in online environments often have problems keeping up with deadlines, which often negatively impacts the learner's success. Experimenting with time management skills in an online learning environment is a vital skill set and necessary for online students. Online students may keep a time log to record all their activities, keep an online schedule with important deadlines and meetings, or experiment with many other apps available.

**Reflecting**

Reflecting often precedes experimenting in that it is essential for complex learning and problem-solving. It is an essential component of self-awareness and crucial to informal learning behavior, especially in an online learning environment. It allows learners to step back from their learning experience, identify their shortcomings, and take necessary actions for course corrections. Reflection has many different facets. For example, individuals may reflect on their performance after receiving performance reviews or feedback (Berg & Chyung, 2008; Eraut, 2004), on their daily activities,

coworkers, and supervisors (Leslie et al., 1998) but especially on their learning progress (Cunningham & Hillier, 2013; Hoekstra, Korthagen, Brekelmans, Beijaard, & Imants, 2009).

Reflecting is often used as a formal teaching technique in an online learning environment (e.g., discussion posts, weekly reports) to develop a learner's critical thinking skills, but is also valuable for informal learning behavior because it can be done individually but also through the use of dialogue and social interactions with others to benefit from multiple perspectives. One way in which individuals may reflect on their online learning experiences is through journal writing. Several studies found that writing requires learners to employ deep cognitive processing by systematically organizing concepts (Fulwiler, 1987; Langer & Applebee, 1987) and promotes systematic thinking and problem solving (Scardamalia, Bereiter, McLean, Swallow, & Woodruff, 1989). Students may also use blogging sites or discussion forums (e.g., Nuckles, Schwonke, Berthold, & Renkl, 2004) to write their reflections on their learning process. Reviewing and self-verbalizing experiences can promote self-regulated learning (Harris, 1990), which will lead to better outcomes of informal learning behaviors.

**Adapting**

Adapting is defined as a change in behavior to become accustomed to new conditions. Past research has categorized the type of learning that results from responding to new events at work as its subdimension of informal learning (Boud & Middleton, 2003; Doornbos, Bolhuis, & Simons, 2004, Willis, 2019). Adapting is a reactive behavior and includes adapting to new challenges and handling conflicts with others (Bednall et al., 2014; Cseh, 1999; Doornbos, Simons, Denessen, 2008; Hoekstra et al., 2009; Leslie

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et al., 1998). In a virtual environment, individuals are confronted with various challenges such as increased stress, less personal interaction, technological challenges, all of which make adapting necessary in this learning context.

Adapting is a necessary reactive behavior to novel situations. The literature on informal learning suggests that individuals learn through adapting. For example, some individuals may be driven to learn more about the change in a specific context and find clarification first. Most of the recent research regarding adapting in online learning environments addressed how individuals adapted to this new delivery method of learning and found that whether an individual can adapt depends very much on individual characteristics. Learners who are more familiar with technology and have better time-management and self-directed learning seem to adapt more quickly to online learning (Jun, 2005; Liu, Gomez, Khan, & Yen, 2007; Muse, 2003; Stewart, Bachman, & Johnson, 2010). Adapting itself as a subdimension of informal learning in an online learning environment is not different from adapting in a traditional face-to-face environment. People need to adapt to change in all types of environments. One crucial step in dealing with change is changing one's mindset and realizing the power of choice and information about the change.

The remaining sections of this chapter will provide a rationale for the hypothesized relationships displayed in Figure 2.2. I will start by discussing the relationship between five subscales of the proactive coping inventory and informal learning behavior in an online learning environment, as this is the most significant contribution of this study. I will then discuss how learning conditions and formal learning potentially moderate these relationships. The next step will be to look at various personal

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characteristics that influence proactive coping and discuss how proactive coping mediates the relationship between these personal characteristics and informal learning. Finally, I will examine social support as a moderator of the relationship between personal characteristics and proactive coping.

**Proactive coping strategies and informal learning behavior**

The unprecedented learning environment of 2020, where training and learning had to switch from traditional face-to-face settings to almost exclusively online settings, raised the question of how individuals responded to these unexpected and stressful events and how it impacted their learning behavior. Self-regulation theories offer a helpful way of explaining the mechanisms through which individuals engage in informal learning behaviors. Individuals who self-regulate in goal pursuits seek opportunities to better themselves and may be less negatively influenced by uncertain and stressful learning conditions, such as an online learning environment. Coping has been found to mediate the effects of stressors on various outcomes (Lazarus & Folkman, 1984; Pearlin & Schooler, 1978; Pearlin, Menaghan, Lieberman, & Mullan, 1981).

The self-regulatory strategy of proactive coping is a multidimensional and future-oriented construct (Greenglass, Schwarzer, Jakubiec, Fiksenbaum, & Taubert, 1999) and consists of seven subscales. It occurs on an attitudinal, cognitive-reflective, emotional, and behavioral level, distinguishing it from other forms of coping such as problem-focused and emotional-focused coping. Proactive coping emphasizes positive emotional strategies, including social resources (Greenglass et al., 1999). For this study, I utilize the following five subscales: strategic planning, instrumental support-seeking, reflective coping, proactive coping, and preventive coping. The coping styles of emotional-support

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seeking and avoidance were not examined in this study as I do not anticipate these to be relevant for this context. As previously discussed, formal learning and informal learning in a virtual environment are likely to occur simultaneously and are sometimes difficult to differentiate. Formal learning in this study will be treated as any activity that is required by the instructor and syllabus-based. Informal learning in a virtual study context refers to any activity that the learner engages in on his behalf. These can be individual activities, activities with peers (e.g., knowledge sharing through discussions), or with the instructor (e.g., seeking feedback or additional help). The following section describes how different coping styles may result in informal learning behaviors in an online learning environment.

**Proactive Coping**

The scale proactive coping of the proactive coping inventory (PCI) is the coping style that is most often examined in coping-related research. Proactive coping refers to proactive responses to resolving stressful situations and is driven by goal-striving. Generally speaking, proacting coping is the opposite of avoidance coping. For example, if an individual experiences disagreement with a coworker, he or she may try to resolve the disagreement instead of withdrawing proactively. Similarly, if an individual did not get an expected promotion, he or she might look for new ways to demonstrate good performance, including engagement in informal learning activities to increase job-relevant knowledge and skills. Thus, I anticipate that the proactive coping scale can be linked to informal learning.

Hypothesis 1a: Proactive coping is positively related to informal learning behavior in an online learning environment.

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**Reflective Coping**

Reflective coping refers to "simulation and contemplation about a variety of possible behavioral alternatives in the future by comparing their imagined effectiveness and includes brainstorming, analyzing problems and resources, and generating hypothetical plans of action" (Greenglass et al., 1999) (e.g., "I imagine myself solving difficult problems"). Reflective coping has been linked to proactive attitude and self-efficacy (Greenglass et al., 1999). The reflective coping style involves objective, problem-focused efforts. Individuals who use the reflective coping style tend to analyze behavioral alternatives and brainstorm practical actions to achieve their goals and are ultimately more likely to engage in informal learning behaviors.

Hypothesis 1b: Reflective coping is positively related to informal learning behavior in an online learning environment.

**Strategic Planning**

Strategic planning refers to coping that depends on one's efforts to changing a situation (Greenglass et al., 1999) and creating a goal-oriented plan of action. This includes dividing larger tasks into manageable parts. Past research has shown that the subscale of strategic planning correlates positively with proactive attitude and self-efficacy (Greenglass et al., 1999). Learners in an online learning environment have to learn how to monitor their actions, set goals, and find efficient strategies when encountering problems (Löfström & Nevgi, 2007). According to Löfström and Nevgi (2007), learners in a virtual environment are expected to have a high degree of independence and tolerance for ambiguity and stress. Individuals with the coping style of strategic planning can regulate their stress more effectively due to better time

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management. As a result, they can spend additional resources (time) on informal learning activities.

Hypothesis 1c: Strategic planning is positively related to informal learning behavior in an online learning environment.

**Preventive Coping**

Preventive coping refers to actions that are taken to reduce the impact of stressors in the future. Unlike the proactive coping subscale, preventive coping refers to a "potential threat in the future by considering experience, anticipation, or knowledge." (Greenglass et al., 1999). Preventive coping is positively correlated with proactive attitudes and self-efficacy and negatively correlated with job anxiety (Greenglass, 1999). An individual with a preference for this coping strategy may prepare for future events by adopting certain behaviors. For example, individuals may set sub-goals and scan their environment for additional resources to help them achieve goals. They may also network with peers to discuss topics that are relevant for future assignments. I theorize that individuals with the preventive coping scale engage in proactive informal learning behavior to prevent future stressors.

Hypothesis 1d: Preventive coping scale of the proactive coping inventory is positively related to informal learning behavior in an online learning environment.

**Instrumental Support Seeking**

The coping style of Instrumental Support Seeking focuses on obtaining advice, information, and feedback from people in one's social network when dealing with stressors. Past empirical research found that high levels of instrumental support-seeking are correlated with seeking assistance, information, or advice about what to do and

greater seeking of empathy from others (Greenglass et al. 1999). It is essential for

individuals who tend to use this coping strategy to maintain relevant relationships and

social networks from which they can seek support and share knowledge with. This

suggests that the instrumental support-seeking subscale of proactive coping would be

most strongly related to the "learning through socializing" subdimension. For the

conceptualized model introduced in this paper, I will only propose one positive

relationship between the coping style of instrumental support seeking and the overall

higher-order informal learning construct.

      Hypothesis 1e: Instrumental support seeking is positively related to informal

      learning behavior in an online learning environment.

**Linking Formal and Informal Learning**

      Various studies have shown the importance of formal learning for subsequent

informal learning behaviors (e.g., Bednall & Sanders, 2017; Choi & Jacobs, 2011;

Schürmann & Beausaert, 2016). This line of research has emphasized that formal

learning stimulates informal learning. For example, according to Choi and Jacobs (2011),

formal learning has a significant positive impact on informal learning because formal

learning provides the foundation knowledge on which employees can build with

additional self-directed study and increases the desire of individuals to learn informally

(Lohman, 2003). These results imply that organizations should provide sufficient training

to employees in order for them to engage in informal learning behavior. In line with this,

Bednall and Sanders (2017) found that formal learning opportunities enhanced by HRM

systems are positively related to long-term participation in informal learning activities.

An alternative line of reasoning casts doubts on this positive relationship between formal and informal learning. In an online learning environment, learners deal with additional stressors discussed in an earlier section (e.g., technology) that do not exist in a traditional face-to-face environment. Informal learning behavior consumes additional resources (e.g., time) and has been found to decrease performance in the short term (Ahearne et al., 2010). As the novelty of online learning may increase time pressure, individuals who engage in more formal learning activities may reduce the time spent on informal learning behaviors due to reduced coping. I theorize that formal learning acts as a time constraint in an online learning environment that influences the relationships between the five different coping styles in this study and informal learning behavior. For the following hypotheses, please also refer to Figure 2.2.

> Hypothesis 2a-e: Formal learning will moderate the positive relationships between the five coping styles of proactive coping (2a), reflective coping (2b), strategic planning (2c), preventive coping (2d), and instrumental support-seeking (2e) and informal learning behavior such that the relationships will be stronger when engagement in formal learning is low.

**The Moderating Impact of Learning Conditions**

Organizations play an important role in influencing learning behavior in the workplace (Marsick, 2009). Various scholars have explored the impact of learning conditions on informal learning behavior (e.g., Ellinger, 2005; Van Der Heijden, Boon, Van der Klink, & Meijs, 2009; Marsick, Li, Brake, Champion, Fuller, Gabel &Hatcher-Busch, 2009; Schürmann & Beausaert, 2016). For instance, Van Der Heijden et al. (2009) identified leader-member exchange, the learning value of the job, and internal and

external networks as critical factors to informal learning at the workplace. Ellinger (2005) found four organizational contextual factors (i.e., learning-committed leadership and management, an internal culture committed to learning, work tools and resources, relationships with people) increase informal learning behavior. Empirical support was also found for perceived organizational climate (Rowden & Conine, 2005) and learning culture (Berg & Chyung, 2008). In general, individuals are assumed to be more likely to engage in informal learning behaviors when plenty of opportunities exist (Noe et al., 2013). However, Choi and Jacobs (2011) examined three characteristics of a perceived supportive learning environment (i.e., organizational support, supervisor support, job characteristics) and found no significant relationship between a supportive learning environment and informal learning. These inconsistent findings warrant further investigation of how organizational support may hinder or foster informal learning, particularly in an online learning environment. It is reasonable to assume that specific learning support and learning conditions (e.g., traditional vs. online learning) impact informal learning behaviors differently. To this end, I will examine learning conditions as a multidimensional construct proposed by Kyndt & Beauseart (2017).

Supportive learning conditions refer to situations where individuals can cooperate and collaborate with others, receive feedback, and be coached. Kyndt and Beauseart (2017) distinguish between six learning conditions on five dimensions of workplace learning. The five dimensions include on-or-off-the-job learning, formal or informal learning, role of facilitator, role of peers, and proactive role of learner. For this study, I will investigate cooperation, coaching, and feedback-seeking as organizational learning conditions.

**Opportunities for cooperation.**

Prior research has shown that learning through cooperation with others is an essential component of informal learning as it can help achieve results and improve competencies (e.g., Eraut, 2007; Tynjälä, 2008). In addition, cooperation increases the interaction among learners through asking questions, discussing issues with others, and asking for feedback (Anderson & Harris, 1997; McDonald and Gibson, 1998; Palloff and Pratt, 1999). As a result of increased interaction, individuals share knowledge and learn from each other's experiences. In particular, in a web-based learning environment, the interaction between learners has been shown to improve learning satisfaction (Bray, Aoki, & Dlugosh, 2008). Organizations can provide opportunities for cooperation by employing online project teams or providing opportunities for individuals to share their ideas with colleagues (Kyndt, Dochy, & Nijs, 2009).

**Feedback opportunities.**

In a learning environment, feedback can be defined as information provided to the learner in response to his or her engagement in learning activities (Race, 2001). Feedback is an integral part of learning as it allows the learner to reflect on his performance and help redirect his or her efforts toward developing competencies and achieving the learning goal. Thus, providing opportunities for receiving feedback is likely to contribute to supportive learning conditions and enhance informal learning. In an online learning environment, instructors and peers can provide unsolicited verbal and written feedback (Kyndt et al., 2009), which helps learners understand their strengths and weaknesses and facilitate informal learning behavior.

**Being coached.**

Coaching is a type of development in which a more experienced person guides learners to improve their performance and expand competencies (Ellinger, Watkins, & Bostrom 1999; Pulce 2005). Coaching can be an informal relationship between two individuals, one of whom is the more experienced coach or a more knowledgeable individual who can be formally assigned by an organization and provided with the necessary time to guide a less experienced employee (Kyndt et al., 2009). Access to coaches helps people recognize opportunities to enhance their performance and competencies (Ellinger et al., 1999; Mink, Owen, & Mink, 1993), making it a vital learning condition for supportive learning.

Taken together, these three learning conditions of opportunity for cooperation, feedback opportunities, and being coached constitute a supportive learning environment for online learners and are likely to influence an individual's engagement in informal learning behavior positively.

> Hypothesis 3a-e: Supportive learning conditions will have a moderating effect on the five proactive coping styles (i.e., proactive coping, reflective coping, strategic planning, preventive coping, instrumental support-seeking) and informal learning behavior such that the positive relationship between the five coping styles and informal learning behavior is high when supportive learning conditions are perceived as high.

**Antecedents that influence informal learning through proactive coping**

As previously described, the second goal of this study is to identify antecedents of proactive coping and informal learning relevant in a virtual environment. Antecedents of

informal learning can broadly be divided into personal antecedents (e.g., personality, attitudes, and demographics) and situational antecedents (job/task characteristics, support, and learning opportunities (Cerasoli et al., 2018; Tannenbaum, 2010). Although many of the predictors of informal learning examined in this study are well established in the literature, we lack an understanding of the mechanisms through which these variables influence informal learning behavior. This study will focus on personal characteristics as predictors of informal learning behavior through proactive coping. Furthermore, this study considers the moderating influence of social support (peers and instructors) on the relationships between individual antecedents and coping styles.

**Individual Characteristics**

Individual characteristics that have been examined in prior research include Big Five personality traits (Noe, Tews, & Marand, 2013), adaptability (Mumford, Baughman, Threlfall, Uhlman, & Costanza, 1993) and curiosity (Reio & Wiswell, 2000), learning goal orientation, motivation to learn, generalized self-efficacy (Choi & Jacobs, 2011). Cerasoli et al.'s recent meta-analysis (2018) confirmed a positive relationship between personality/propensity factors and learning-related motives factors with informal learning behaviors. Furthermore, demographic factors such as age, sex, education, rank/tenure, marital status, and income were positively related to ILBs. Support and opportunities for learning were also positively related to ILBs (Cerasoli et al., 2018).

**Psychological capital**

Psychological capital (PsyCap) has been defined as an individual's state of development in self-efficacy, optimism, hope, and resiliency (Luthans, Avolio, Avey, & Norman 2007). This higher-order construct is characterized by (1) having confidence

(self-efficacy), which is central to Bandura's social cognitive theory (1986); (2) making positive attributions (optimism) about the future; (3) persevering toward goals (hope); and (4) being able to bounce back quickly from difficult situations (Luthans et al., 2007). PsyCap is a well-established construct in the literature that has been linked to a variety of outcomes such as improved job performance (e.g., Abbas, Raja, Darr, Bouckenoughee, 2018; Walumba, Peterson, Avolio, & Hartnell, 2010), job satisfaction (Abbas et al., 2018) and in a recent study by Choi et al., (2019) to performance mediated by informal learning. For this study, I only assessed the sub-dimensions self-efficacy, optimism, and resiliency of the higher-order construct of psychological capital.

As noted in an earlier section, coping is a mechanism through which individuals deal with stressors. According to Lazarus and Folkman (1984), individuals' coping strategies depend on their available resources. PsyCap as a resource has been linked to stress in previous studies. For example, PsyCap buffered stressors resulting in decreased adverse outcomes and increased positive outcomes (Liu, Chang, Wang, & Wang, 2012; Riolli, Savicki, & Richards, 2012). Furthermore, Li and He (2011) found that psychological capital significantly affected coping styles among female university graduates. PsyCap, a positive psychological resource, is likely to positively correlate with all five coping styles discussed earlier in this paper as individuals use a range of different coping strategies (Rabenu, Yaniv, & Elizur, 2017). Furthermore, all five coping strategies will mediate the relationship between PsyCap and informal learning behavior.

H4a-4e: Psychological Capital will be positively related to the five coping styles examined in this study (i.e., proactive coping, reflective coping, strategic planning, preventive coping, instrumental-support seeking).

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**Time structure**

Time structure has been defined as "the degree to which individuals perceive their use of time as to be structured and purposive" (Bond & Feather, 1988). The personal use of one's time was initially investigated in groups of unemployed and employed individuals. Prior research argued that unemployment includes psychological deprivation due to a lack of social experience outside of family life resulting in diminished mental health and well-being (Feather & Bond, 1983, Jahoda, 1981). Feather and Bond (1983) found that diminished time structure resulted in lower self-esteem and depression for people who could not fill their time in a meaningful way. Individuals who can maintain time structure were able to mitigate the adverse effects of their circumstances. According to Bond and Feather (1988), individuals with high scores on time structure engage in self-reported behaviors such as delay avoidance, good study habits, and effective work methods, all of which can be linked to higher performance.

Moreover, George (1991) found that time structure was positively related to satisfaction with life. These previous findings call for a further investigation of time structure in a different context. The five sub-dimensions of time structure (i.e., purpose, routine, present orientation, organization, and persistence) have often been aggregated to an overall score on the use of time in prior research. As such, time structure can be viewed as an individual's resource to cope with difficult circumstances by filling their time in meaningful ways (purpose), structure their time to follow plans (routine), do not daydream about the future, and are present in the moment (present orientation), are well organized (organization), and do not give up easily (persistence). Individuals with these

characteristics are likely to cope with situations more efficiently and ultimately engage in more informal learning behavior.

H5a-5e: Time structure will be positively related to the five coping styles examined in this study (i.e., proactive coping, reflective coping, strategic planning, preventive coping, instrumental-support seeking).

H8a-8e: All five coping styles (i.e., proactive coping, reflective coping, preventive coping, instrumental support-seek, strategic planning) will mediate the relationship between psychological capital, time structure and informal learning behavior.

**Social support from peers and instructors**

Past research (e.g., Johnson & Hall, 1988) has shown that work-related social support has a vital interaction factor on employees' health. Work-related social support refers to good relationships with colleagues, access to accurate information through them, understanding complex situations, and getting help when necessary (De Jong et al., 2003). Work-related social support has also been linked to workplace learning (Gijbels, Raemdonck, & Vervecken, 2010). In the informal learning literature, social support and learning opportunities have been measured alongside personal antecedents, arguing that informal learning behaviors are a voluntary form of behavior that is more likely to occur when reinforced (LePine et al., 2002). However, rarely have situational characteristics been treated as moderators. Therefore, the interaction in the form of person x situation remains unclear.

Support can be derived from three sources: people support, formal organizational support, and informal organizational support (Cerasoli et al., 2018). In the next section, I

will discuss how social support provided by peers and instructors and informal organizational support (i.e., perceived learning conditions) provide an effective resource for proactive coping behaviors and will ultimately lead to enhanced engagement in informal learning behaviors.

**Social support**

Social support is an interpersonal process and includes emotional support and instrumental support. It may come from different people such as supervisors, instructors, co-workers, family, and friends. Emotional support includes comforting gestures and has been linked to reducing uncertainty and anxiety (Sandstrom, 1996), stress (Jankowski, VidekaSherman, & Laquidara-Dickingson, 1996), hopelessness (Bolla, DeJoseph, Norbeck, & Smith, 1996), and depression (de Jonge, 2001). Physical presence is not always required (Finfgeld-Connett, 2005), and individuals in situations with much uncertainty (e.g., online learning environment) and minor daily interactions may benefit significantly from supportive instructors and peers who provide encouraging support and help them to develop their sense of security to cope with an uncertain situation. As illustrated in Figure 2.2, I propose the following relationships:

Hypothesis 6a-e: Social support from peers and instructors will exhibit a moderating effect on the positive psychological capital–coping relationships such that individuals who receive a high degree of social support from peers and instructors will exhibit higher levels of each coping style.

Hypothesis 7a-e: Social support from peers and instructors will exhibit a moderating effect on the time structure–coping relationships such that individuals

who receive a high degree of social support will exhibit higher levels of each coping style.

In the following chapter, I will describe the methods used to collect and analyze data and report the results of the data analysis. A discussion of the results and implications for theory and practice follows in chapter 4.
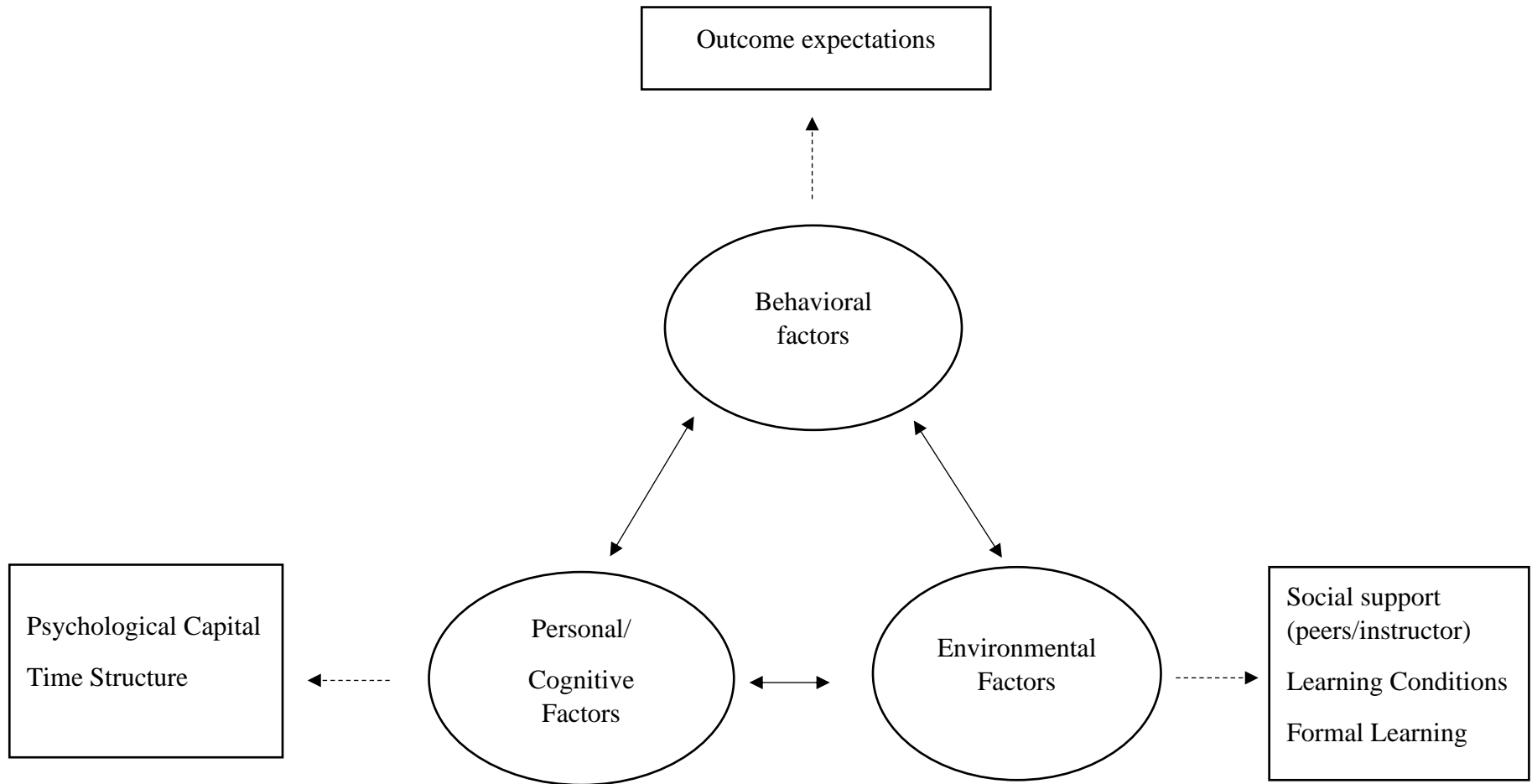
```
                    ┌─────────────────────┐
                    │ Outcome expectations │
                    └─────────────────────┘
                              ▲
                              ┆
                         ╭─────────╮
                         │Behavioral│
                         │ factors  │
                         ╰─────────╯
```

┌──────────────────────┐          ╭──────────╮          ╭──────────╮          ┌────────────────────┐
│Psychological Capital │          │Personal/ │          │Environmental│        │Social support      │
│                      │ ◄┄┄┄┄    │Cognitive │ ◄──────► │ Factors  │ ┄┄┄►    │(peers/instructor)  │
│Time Structure        │          │ Factors  │          │          │          │Learning Conditions │
└──────────────────────┘          ╰──────────╯          ╰──────────╯          │Formal Learning     │
                                                                              └────────────────────┘

*Figure 2.1:* Social Cognitive Theory / Triadic Reciprocal
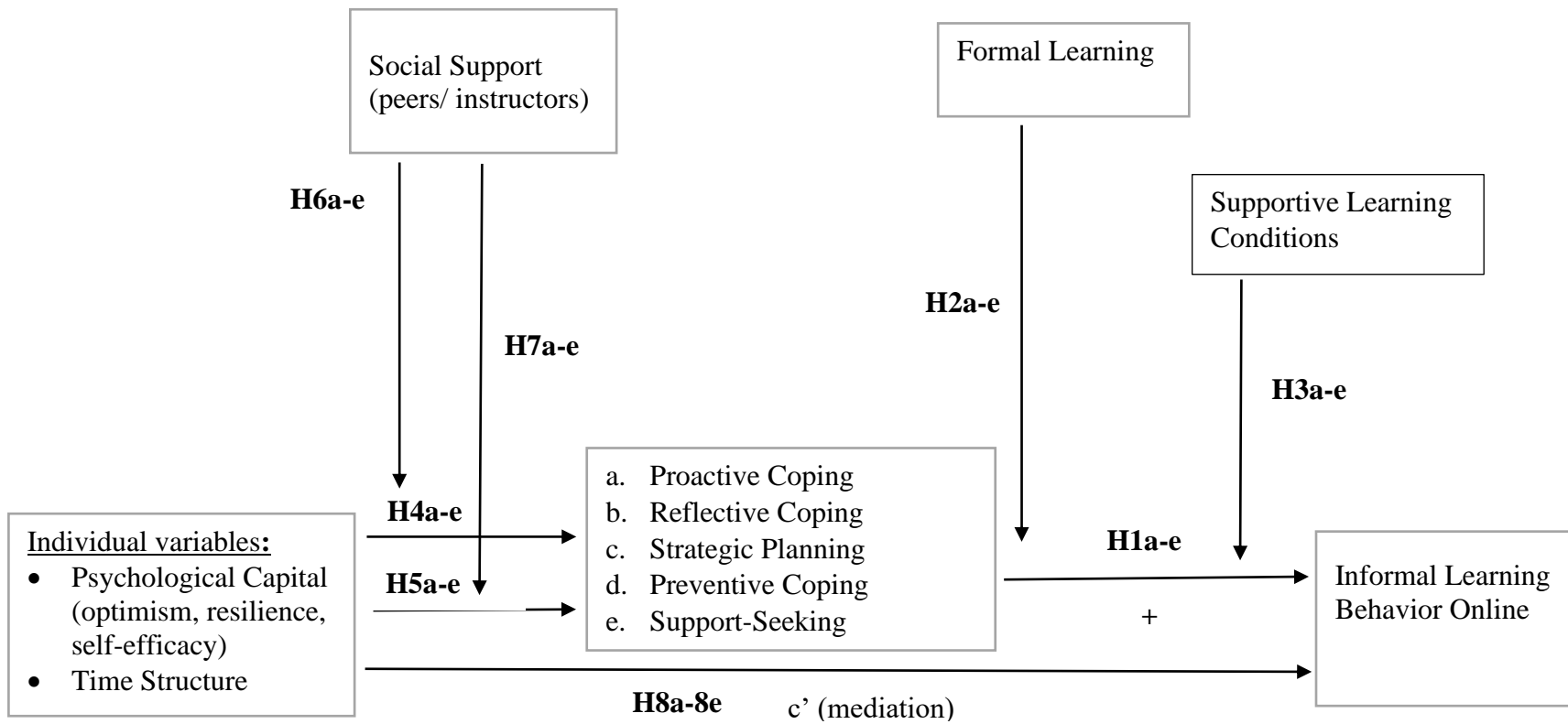Determinism

*Figure 2.2:* Hypothesized Relationships

# CHAPTER 3

## METHOD AND+ RESULTS

The primary goal of this study was to test the hypotheses that relate to psychological capital, time structure, social support, supportive learning conditions, coping mechanisms, formal learning, and informal learning as stated in chapter 2. To this end, separate instruments were utilized to measure these variables. The methodology employed to test the hypotheses is presented in this chapter. This chapter is organized into three sections: (a) sample and data collection, (b) instrumentation, and (c) data analysis and results

**Ethical Considerations**

Permission for this study was obtained from the university's institutional review board (IRB).  Students participating in this survey were made aware that their privacy is protected. All personal identifiers were removed from the final dataset after pairing all three individual surveys based on the respondents' last names. The data is stored on a password-protected computer. The surveys did not use a forced-response format; individuals were allowed to skip questions they did not wish to answer. Participation in all three surveys was voluntary, and completion of the survey was not required at any point.

**Sample and Data Collection**

This study employed a descriptive survey approach wherein undergraduate students enrolled in an asynchronous management class in the Fall of 2020 were

surveyed to examine how they engage in informal learning activities in an online learning environment. All class material was taught through pre-recorded video lectures and required no scheduled meetings, satisfying the examined "online learning environment" context of this study. This study adopted convenience sampling, which does not include a random selection of participants. Although convenience sampling does have its limitations, its use can be helpful when data need to be collected quickly and when members of the entire population are unknown and inaccessible to the researcher (Etikan, Musa, & Alkassim, 2016). For this present study, data had to be collected quickly during an ongoing pandemic, and participants had to meet the requirement of being enrolled in a web-based class without any traditional face-to-face meetings. The instructor of the class is one of the committee members.

One requirement for participation in this study was that students were enrolled in an asynchronous course during the Covid-19 pandemic. Asynchronous courses do not require real-time interaction in a physical or virtual classroom. Instead, formal learning activities occur in the form of assigned readings and pre-recorded video lectures—this study context allowed for the investigation of informal learning in an online learning environment because the course satisfied the requirements for an online learning course (e.g., no in-person class session were conducted throughout this semester).

An email with a link to a web-based survey was sent to 468 participants at three different times during the semester (beginning of semester, mid-semester, end of semester) via Qualtrics. All three surveys were paired based on respondents' last time for data analysis. All personal identifiers were subsequently deleted from the data files.

Participation was voluntary, but students received extra credit from their instructor for participation in each survey.

Survey one was administered at the beginning of the semester before students engaged in any type of learning online. In this survey, students' demographics, current psychological capital, time structure and perceived social support from peers and instructors. For survey one, 265 responses were returned. Survey two was administered mid-semester to assess student's coping behavior, perceived learning conditions and engagement in formal and informal learning activities. Survey two resulted in 383 responses. Data collected with survey three, which was administered at the end of the semester was not used for this study. Invalid responses (e.g., no personal identifiers, duplicate data) were excluded from all datasets resulting in 241 (51.5%) valid responses for survey one, 284 valid responses (60.7%) for survey two, and 214 valid responses (45.7 %) for survey three. After pairing responses from survey one and survey two, a sample size of 189 (40.4 % of total) remained of which 46.6% were male. One hundred seventeen students participated in all three surveys (25% of total) of which 44.4% were male. The final sample ($n = 189$) used for this dissertation consisted of participants who completed the survey at T1 and T2. 81% of the final sample were Caucasian with a mean age of 19.6 ($SD = 1.06$). The majority of participants were college sophomores (60.3%). Data collected at T3 and additional data that was collected in Fall of 2021 were not analyzed for this dissertation.

**Statistical Power Analysis**

A statistical power analysis was conducted to estimate the required sample size for this study. High statistical power is desired to minimize the risk of making a Type II

(false negative) error (Cohen, 1988). The power analysis for a general linear model was conducted in R Studio using the pwr.f2.test function of the "pwr package." The numerator degrees of freedom, u, is the number of coefficients (minus intercept) displayed in Figure 2.2. For this study: u= 12-1. The denominator degrees of freedom, v, is the number of error degrees of freedom: v = n-u-1 or n = v+u+1. For this study, v = 149.30 ($R^2$ = 0.1). The effect size, f2, is $R^2$ / 1-$R^2$. To determine the effect size, I hypothesized the proportion of variance explained ($R^2$) to be 10%. The level of significance used for this power analysis was set at 0.05 with a desired power of 0.80. Thus, the estimated sample size required for this study is a minimum of 162 students. The same power analysis was conducted with a more conservative hypothesized $R^2$ of 0.05 resulting in a required sample size of 330 students. Lastly, a power analysis was conducted with the current sample size of 189 (survey 1 and 2), a significance level of 0.05 and an estimated effect size of 0.05 resulting in a power of 0.49, which suggests that this study may be underpowered to detect smaller effects.

**Instrumentation**

The following instruments were used for data collection, all of which can be found in appendix A. Appendix B contains a description of instruments used for data collection but not included in the proposed model. The means, standard deviations, and Cronbach's alphas can be found in Table 3.1. All instruments have been previously validated in the existing literature (see references).

*Psychological Capital T1.* The measure developed by Luthans et al. (2007) consists of 22 items forming four subscales: "resilience," "optimism," and "self-efficacy," and "hope." For this study, only the items of the subscales "resilience," "optimism," and

"self-efficacy" were used and re-worded for the student sample. For example, the item "In one way or another, I can manage work and its difficulties" was worded as "In one way or another, I can manage school and its difficulties." Several items that were not deemed relevant for the sample were dropped from the administered measure (e.g., "I feel confident in representing my work area in meeting with the organization management"). Two additional items were added to assess the sub-dimension of self-efficacy in a virtual context (i.e., "I feel confident that I will do well in my virtual classes," and "I am confident in my ability that I will learn the material via my virtual classes"). These adaptations resulted in 13 positively worded items rated on a 6-point scale from 1 (strongly disagree) to 6 (strongly agree). Psychological Capital was measured at T1 ($\alpha =$ 0.88) at the beginning of the semester.

*Time Structure T1+T2.* The modified version of the time structure questionnaire (TSQ) (Bond & Feather, 1988) was used to measure the degree to which individuals perceive their use of time as structured and purposeful. The TSQ consists of 26 positively and negatively worded statements, which respondents rated on a scale from 1 (Yes always) to 7 (No never). For this study, negatively worded items of the time structure questionnaire were not used. Negatively worded items are often included in measures to reduce response bias; however, research has shown that this is rarely effective and often results in contamination of scores due to respondents' inattentiveness (e.g., Hughes, 2009; Van Sonderen, Sanderman, Coyne 2013). As a result, only eight positively worded items were included in the survey from the subscales of "persistence," "purpose," and "routine" due to their relevance for self-regulation in an online learning environment. Time structure was measured at T1 at the beginning of the semester ($\alpha = 0.91$) and T2 (0.93).

*Social support T1*. Social support from peers and instructors was assessed with six items each (Winefield, Winefield, & Tiggemann, 1992). Social support from family and friends was not assessed because it was not considered relevant for this study's context. Respondents rated the statements on a four-point scale ranging from 1 (never) to 4 (always). Internal consistency for social support from peers was 0.85 and for instructors and other authority figures 0.88.

*Learning Conditions T2*. At T2, learning conditions were measured with 12 adapted items from Kyndt and Beauseart (2017). Kyndt and Beauseart (2017) introduced six different factors of learning conditions, of which I used the ones relevant for this study context and could easily be reworded for the student sample (i.e., opportunities for cooperation, feedback opportunities, being coached). For example, "I participate in project teams composed of employees from different departments to work around a specific theme" was reworded as "I participate in team projects composed of other students from my class." Respondents rated these statements on a five-point scale ranging from 1 (totally disagree) to 5 (totally agree) ($\alpha = 0.92$).

*Formal Learning T2*. In line with its conceptualization, formal learning was operationalized as any planned, organized, or structured learning activity conducted for the online class. According to Rowold and Kauffeld (2009), formal learning includes off-the-job, lecture-based, or web-based training courses. Formal learning in past research is either assessed by time invested in formal training activities such as the number of days/hours spent on training (e.g., Van Der Heijden et al., 2009) or by asking respondents to rate their engagement on a list of varying activities (e.g., Choi & Jacobs, 2011). For this study, I developed a list of six formal learning activities that are likely to be

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performed by university students in an online learning environment. One sample item is "I participated in scheduled, virtual class meetings (e.g., via Zoom, Blackboard Collaborate." Participants rated their engagement from 1 (not at all) to 5 (a great deal). Students were also asked about how many hours on average they spent studying class material per week. Formal learning was assessed at T2 ($\alpha = 0.72$). The relatively low Cronbach's alpha for alpha for this measure could be a result of this measure being formative rather than reflective. The items of a formative measure are considered to be the cause of a latent variable and thus not likely to be as highly correlated as would be the case for a reflective measure.

*Proactive Coping T2.* The original proactive coping inventory (PCI) consists of 55 items making up seven sub-dimensions on a cognitive and behavioral level (Greenglass et al., 1999). For this study, the original items were adapted and reduced to five subscales, including 'proactive coping,' 'reflective coping,' 'preventive coping,' 'strategic planning,' and 'instrumental support-seeking,' which I considered relevant for this study context. Some items, for example, "I develop my job skills to protect myself against unemployment," were dropped from the questionnaire as they were not relevant for the student sample. Reverse-coded items were also not administered. Overall, 41 items were administered for the coping styles of "proactive coping" ($\alpha = 0.85$), "reflective coping" ($\alpha = 0.88$), "preventive coping" ($\alpha = 0.84$), "strategic planning" ($\alpha = 0.75$), and "instrumental support-seeking" ($\alpha = 0.90$). All items were rated on a four-point scale ranging from 1 (not at all true) to 4 (completely true).

*Informal Learning T2.* Informal learning was measured with 22 items of the 23-item multidimensional instrument developed by Willis (2019). The five dimensions of the

informal learning scale are planning/scanning, socializing, reflecting, experimenting, and adapting. One item from the original instrument was dropped for this study because it was not relevant for the student sample (i.e., "research how your job duties could change in the future"). Participants were asked to rate their informal learning behavior on a five-point scale ranging from 1 (not at all characteristic of me) to 5 (extremely characteristic of me). The informal learning measure has high internal consistency at 0.94.

*Demographic variables.* In addition to relational data, demographic data were collected from respondents, including age, gender, ethnicity, current GPA, SAT/ACT score, college classification, major, and the type of class formats participants are enrolled in the semester of data collection (100% asynchronous, 100% synchronous, a mix of both, traditional face-to-face, hybrid classes.

## Data Analysis and Results

This study employed a quantitative methodology of data collection and data analysis. Data were analyzed using the R Studio program to run statistical tests including path analyses and determine theory validation. Descriptive statistics were computed and are displayed in Table 3.1. Hypotheses were tested using the Lavaan package to determine the path coefficients of the proposed path diagrams. Results of hypotheses testing are reported in Tables 3.2 - 3.8

*The direct effect of coping mechanisms on informal learning behavior*

Prior to testing the mediation model, I determined the impact of the various coping styles (i.e., proactive coping, strategic planning, preventive coping, support-seeking, reflective coping) and informal learning in an online learning environment. Hypothesis 1a-1e predicted positive relationships between each coping style and informal

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learning behavior. Results of testing hypotheses 1a-1e are reported in Table 3.2. See also

Figure 3.1. In addition, I conducted a multiple regression analysis that included all five

coping styles predicting informal learning behavior (Model Total in Table 3.2).

Hypothesis 1a predicted a positive relationship between proactive coping and

informal learning behavior. The results of the regression analyses are statistically

significant and support Hypothesis 1a ($\beta = 0.54$, $p < 0.05$; see Table 3.2, Model 1a).

Hypothesis 1b predicted a positive relationship between reflective coping and informal

learning behavior. The results of the regression analyses are statistically significant and

support Hypothesis 1b ($\beta = 0.47$, $p < 0.05$; see Table 3.2, Model 1b). Hypothesis 1c

predicted a positive relationship between strategic planning and informal learning

behavior. The results of the regression analyses are statistically significant and support

Hypothesis 1c ($\beta = 0.51$, $p < 0.05$; see Table 3.2, Model 1c). Hypothesis 1d predicted a

positive relationship between preventive coping and informal learning behavior. The

results of the regression analyses are statistically significant and support Hypothesis 1d ($\beta$

$= 0.56$, $p < 0.05$; see Table 3.2, Model 1d). Hypothesis 1e predicted a positive

relationship between support-seeking and informal learning behavior. The results of the

regression analyses are statistically significant and support Hypothesis 1e ($\beta = 0.41$, $p <$

$0.05$; see Table 3.2, Model 1e). In conclusion, the results suggest that all five coping

styles examined in this study play a significant role in the extent to which individuals

engage in informal learning behavior in an online learning environment.

The following results of a multiple regression analysis in which all five coping

styles were simultaneously added to the model are also summarized in Table 3.2. The

results of the multiple regression analyses are statistically significant for hypothesis 1a ($\beta$

= 0.30, $p < 0.05$; see Table 3.2). Hypothesis 1b and 1c were not supported when informal learning was regressed on all five coping styles simultaneously. Hypothesis 1d was supported ($\beta = 0.24$, $p < 0.05$). Hypothesis 1e was also supported ($\beta = 0.13$, $p < 0.05$). In conclusion, the results suggest that although all five coping styles examined in this study are correlated with informal learning, only proactive coping, preventive coping, and support-seeking play a significant role in the extent to which individuals engage in informal learning behavior in an online learning environment.

*The interaction effect of formal learning and learning conditions*

Following this, I tested the moderation of formal learning (H2a-H2e) on these previous relationships. Hypotheses 2a-2e predicted that formal learning moderates the relationship between all five coping styles and informal learning behavior such that when formal learning is high it will reduce the positive relationship between each coping style and informal learning. These hypotheses were not supported (see Table3.3, Model 2a-2e). The extent of formal learning behavior in an online learning environment does not significantly influence the relationship between coping behavior and informal learning behavior.

Next, I tested the interaction effect of learning conditions on the relationship between coping mechanisms and informal learning behavior. Hypotheses 3a-3e predicted that if supportive learning conditions are high, the positive relationships between each of the coping styles and informal learning behavior will be strengthened. These hypotheses were not supported (Table 3.4, Model 3a-3e). Perceived learning conditions did not significantly influence the relationships between coping behavior and informal learning behavior. These results suggest that if proactive coping behavior is already high in an

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online learning environment perceived supportive learning conditions do not further enhance or hinder informal learning behavior.

*The direct effect of psychological capital and time structure on coping mechanisms*

The next step in the analysis was to determine the direct effect between psychological capital and the five different coping styles (path *a1* in the mediation models). Hypotheses 4a predicted that psychological capital is positively related to proactive coping. The results of the regression analyses are statistically significant and support Hypothesis 4a ($\beta = 0.45$, $p < 0.05$; see Table 3.5, Model 4a). Hypotheses 4b predicted that psychological capital is positively related to reflective coping. The results of the regression analyses are statistically significant and support Hypothesis 4b ($\beta = 0.29$, $p < 0.05$; see Table 3.5, Model 4a). Hypotheses 4c predicted that psychological capital is positively related to strategic planning. The results of the regression analyses are statistically significant and support Hypothesis 4c ($\beta = 0.28$, $p < 0.05$; see Table 3.5, Model 4c). Hypotheses 4d predicted that psychological capital is positively related to preventive coping. The results of the regression analyses are statistically significant and support Hypothesis 4d ($\beta = 0.24$, $p < 0.05$; see Table 3.5, Model 4d). Lastly, hypotheses 4e predicted that psychological capital is positively related to support-seeking. The results of the regression analyses are statistically significant and support Hypothesis 4e ($\beta = 0.17$, $p < 0.05$; see Table 3.5, Model 4e). In sum, psychological capital is a significant predictor of all five coping behaviors. Individuals who have high levels of psychological capital are likely to engage in more coping behaviors. The strongest association was found between psychological capital and proactive coping behavior.

Likewise, I tested the direct effects between time structure and coping styles. Hypotheses 5a – 5e predicted that time structure is positively related to the coping styles of proactive coping (5a), reflective coping (5b), strategic planning (5c), preventive coping (5d), and support-seeking (5e). All five hypothesis are supported (path *a2* in the mediation models). Hypothesis 5a is statistically significant. Time structure is positively related to proactive coping ($\beta = 0.36$, $p < 0.05$; see Table 3.6, Model 5a). Hypothesis 5b is statistically significant. Time structure is positively related to reflective coping ($\beta = 0.34$, $p < 0.05$; see Table 3.6, Model 5b). Hypothesis 5c is statistically significant. Time structure is positively related to strategic planning ($\beta = 0.38$, $p < 0.05$; see Table 3.6, Model 5c). Hypothesis 5d is statistically significant. Time structure is positively related to preventive coping ($\beta = 0.41$, $p < 0.05$; see Table 3.6, Model 5d). Hypothesis 5e is statistically significant. Time structure is positively related to support-seeking ($\beta = 0.20$, $p < 0.05$; see Table 3.6, Model 5e). These results show that there is a positive association between time structure and all examined coping styles with the strongest association being between time structure and preventive coping.

*The interaction effect of social support from peers and instructors*

Hypotheses 6a-6e predicted that social support from peers and instructors moderates the relationship between psychological capital and the five coping styles of proactive coping (6a), reflective coping (6b), strategic planning (6c), preventive coping (6d), and support-seeking (6e) such that if individuals experience a high degree of social support from peers and instructors, they exhibit a higher degree of coping. These hypotheses were not supported as displayed in Table 3.7, Model 6a-6b. Perceived social

support from peers and instructors does not influence the relationship between

psychological capital and coping.

Similarly, hypotheses 7a-7e predicted that social support from peers and

instructors moderates the relationship between time structure and the five coping styles of

proactive coping (7a), reflective coping (7b), strategic planning (7c), preventive coping

(7d), and support-seeking (7e) such that if individuals experience a high degree of social

support from peers and instructors, they exhibit a higher degree of coping. Hypothesis 7e

was partially supported. Support from instructors interacts with the relationships between

time structure and support-seeking. Individuals who perceive support from instructors to

be high engage in more support-seeking coping ($\beta = 0.17$, $p < 0.05$; see Table 3.8, Model

7e). The interaction effect is displayed in Figure 3.9. However, the moderating effect of

peer support was not significant. Hypotheses 7a-7d were also not supported (see Table

3.8, Model 7a-7d). Perceived social support from instructors and peers did not moderate

the relationship between time structure and proactive coping, reflective coping, strategic

planning, and preventive coping. These results indicate that a participant's engagement in

coping behaviors was not influenced by outside social support from peers and instructors.

It is also possible that social support was measured at the wrong time during the semester

as I will further discuss in the next chapter.

*The indirect effect of psychological capital and time structure through coping styles*

The last step of this analysis was to conduct a path analysis in Lavaan to

determine direct and indirect effects for each of the five mediators. Hypotheses 8a-8e

predicted that the effect of psychological capital and time structure on informal learning

is mediated by all five coping styles (i.e., proactive coping, reflective coping, strategic

planning, preventive coping, support-seeking). A bias-correcting percentile bootstrapping confidence interval for the indirect effects based on 2,000 bootstrap samples was entirely above zero for all tested hypotheses. The specified models are displayed in the appendix (Figure 3.3-3.8) and in Table 3.9, Models 8a-8e. Results showed there was a significant positive effect of psychological capital on informal learning via proactive coping (indirect effect = 0.17, SE 0.04, CI [0.08, 0.25]. There was also a significant effect of time structure on informal learning via proactive coping (indirect effect = 0.05, SE 0.04, CI [0.01, 0.09]. Thus, hypothesis 8a was supported.

Hypotheses 8b-8d were partially supported. Time structure was significantly related to informal learning via reflective coping (indirect effect = 0.06, SE 0.02, CI [0.02, 0.11], via strategic planning (indirect effect = 0.08, SE 0.03, CI [0.04, 0.14], preventive coping (indirect effect = 0.12, SE 0.02, CI [0.07, 0.17], but psychological capital had no significant relationship via reflective coping, strategic planning, and preventive coping. Hypothesis 8e was not supported. Neither psychological capital nor time structure were significantly related to informal learning via support-seeking. Results are displayed in Table 3.9, model 8a-8e.

Lastly, a path analysis with all five mediators was conducted. The results are shown in two separate Figures (i.e., 4a and 4b) for the ease of display, however the analysis included all five mediators and both independent variables (i.e., psychological capital, time structure).

In the next chapter I will discuss the implications of these findings for theory and practice and point out limitations of this study and suggest directions for future research in this area.

**Table 3.1**

*Descriptive Statistics and Correlations*

| Variable | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Age | 19.60 | 1.06 | (-) | | | | | | | | | |
| 2. GPA | 3.70 | 0.28 | -0.247* | (-) | | | | | | | | |
| 3. SAT | 1225.34 | 220.91 | -0.270* | 0.166* | (-) | | | | | | | |
| 4. PsyCap | 4.33 | 0.74 | 0.050 | 0.013 | 0.001 | (0.88) | | | | | | |
| 5. Time Structure | 5.00 | 1.18 | 0.060 | -0.009 | 0.041 | 0.504* | (0.91) | | | | | |
| 6. Support Peers | 2.62 | 0.61 | -0.215* | 0.043 | 0.160* | 0.209* | 0.220* | (0.85) | | | | |
| 7. Support Instructor | 2.44 | 0.69 | -0.007 | 0.052 | -0.044 | 0.346* | 0.303* | 0.282* | (0.88) | | | |
| 8. Proactive Coping | 3.24 | 0.42 | 0.082 | -0.075 | 0.017 | 0.454* | 0.361* | 0.165* | 0.175* | (0.85) | | |
| 9. Strategic Planning | 3.18 | 0.57 | 0.062 | -0.121 | -0.084 | 0.281* | 0.377* | 0.108 | 0.162* | 0.497* | (0.75) | |
| 10. Preventive Coping | 3.16 | 0.49 | 0.003 | -0.108 | -0.031 | 0.241* | 0.408* | 0.103 | 0.144* | 0.529* | 0.637* | (0.84) |
| 11. Reflective Coping | 3.21 | 0.47 | 0.011 | -0.111 | 0.049 | 0.289* | 0.338* | 0.112 | 0.174* | 0.541* | 0.626* | 0.642* |
| 12. Support Seeking | 3.23 | 0.56 | 0.024 | -0.165* | -0.107 | 0.174* | 0.201* | 0.165* | 0.145* | 0.283* | 0.505* | 0.494* |
| 13. Formal Learning | 3.16 | 0.70 | 0.169* | -0.111 | 0.040 | 0.218* | 0.246* | 0.070 | 0.166* | 0.362* | 0.377* | 0.403* |
| 14. Informal Learning | 3.52 | 0.73 | 0.038 | -0.052 | -0.014 | 0.335* | 0.321* | 0.207* | 0.310* | 0.537* | 0.510* | 0.557* |
| 15. Learning Cond. | 3.41 | 0.91 | 0.146* | -0.136 | -0.227* | 0.145* | 0.135 | 0.157* | 0.193* | 0.462* | 0.360* | 0.334* |

**Table 3.1 cont.**

| Variable | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|
| 11. Reflective Coping | **(0.88)** | | | | |
| 12. Support Seeking | 0.413*** | **(0.90)** | | | |
| 13. Formal Learning | 0.370*** | 0.280*** | **(0.72** | | |
| 14. Informal Learning | 0.469*** | 0.414*** | 0.447 | **(0.95)** | |
| 15. Learning Condit. | 0.248*** | 0.297*** | 0.295 | 0.462* | **(0.92)** |

*Note:* * = $p < 0.05$, ** = p < 0.01, *** = 0.001

**Table 3.2**

*Results of Regression Analyses of Proactive Coping (1a), Reflective Coping (1b), Strategic Planning (1c), Preventive Coping (1d), and Support Seeking (1e) Predicting Informal Learning.*

| | Model 1a Informal Learn. | | Model 1b Informal Learn. | | Model 1c Informal Learn. | | Model 1d Informal Learn. | | Model 1e Informal Learn. | | Model Total Informal Learn. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B | SE | B | SE | B | SE | B | SE | B | SE | B | SE |
| Intercept | 0.00 | 0.06 | 0.00 | 0.06 | 0.00 | 0.06 | 0.00 | 0.06 | 0.00 | 0.07 | -0.01 | 0.06 |
| Proactive Coping | 0.54*** | 0.06 | | | | | | | | | 0.30*** | 0.07 |
| Reflective Coping | | | 0.47*** | 0.06 | | | | | | | 0.01 | 0.08 |
| Strategic Planning | | | | | 0.51*** | 0.06 | | | | | 0.13 | 0.08 |
| Preventive Coping | | | | | | | 0.56*** | 0.06 | | | 0.24** | 0.09 |
| Support-Seeking | | | | | | | | | 0.41*** | 0.07 | 0.13* | 0.07 |
| Total R$^2$ | 0.29 | | 0.22 | | 0.26 | | 0.31 | | 0.17 | | 0.42 | |

*Note.* $N = 189$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Standardized coefficients are reported in all cases.

**Table 3.3**

*Results of Regression Analyses of Proactive Coping (2a), Reflective Coping (2b), Strategic Planning (2c), Preventive Coping (2d), and Support Seeking (2e) Predicting Informal Learning Moderated by Formal Learning.*

| | Model 2a Informal Learn. | | Model 2b Informal Learn. | | Model 2c Informal Learn. | | Model 2d Informal Learn. | | Model 2e Informal Learn. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | SE | B | SE | B | SE | B | SE | B | SE |
| Intercept | -0.02 | 0.06 | 0.01 | 0.06 | -0.02 | 0.06 | -0.03 | 0.06 | -0.00 | 0.06 |
| Formal Learning | 0.32*** | 0.06 | 0.31*** | 0.07 | 0.34*** | 0.07 | 0.32*** | 0.07 | 0.36*** | 0.07 |
| Proactive Coping | 0.46*** | 0.07 | | | | | | | | |
| Proactive Coping x Formal Learning | 0.05 | 0.04 | | | | | | | | |
| Reflective Coping | | | 0.35*** | 0.07 | | | | | | |
| Reflective Coping x Formal Learning | | | -0.02 | 0.05 | | | | | | |
| Strategic Planning | | | | | 0.42*** | 0.06 | | | | |
| Strategic Planning x Formal Learning | | | | | 0.04 | 0.05 | | | | |
| Preventive Coping | | | | | | | 0.47*** | 0.06 | | |
| Preventive Coping x Formal Learning | | | | | | | 0.06 | 0.05 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Support-Seeking | | | | | 0.32*** | 0.07 |
| Support-Seeking  x Formal Learning | | | | | 0.01 | 0.05 |
| Total R² | 0.37 | 0.31 | 0.36 | 0.39 | 0.29 | |

*Note.* $N = 189$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Standardized coefficients are reported in all cases.

**Table 3.4**

*Results of Regression Analyses of Proactive Coping (3a), Reflective Coping (3b), Strategic Planning (3c), Preventive Coping (3d), and Support Seeking (3e) Predicting Informal Learning Moderated by Learning Conditions.*

| | Model 3a Informal Learn. | | Model 3b Informal Learn. | | Model 3c Informal Learn. | | Model 3d Informal Learn. | | Model 3e Informal Learn. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | SE | B | SE | B | SE | B | SE | B | SE |
| Intercept | -0.01 | 0.06 | 0.01 | 0.06 | -0.01 | 0.06 | -0.00 | 0.06 | 0.02 | 0.06 |
| Learning Conditions | 0.36*** | 0.06 | 0.37*** | 0.06 | 0.32*** | 0.06 | 0.31*** | 0.06 | 0.37*** | 0.06 |
| Proactive Coping | 0.47*** | 0.06 | | | | | | | | |
| Proactive Coping x Learning Conditions | 0.02 | 0.04 | | | | | | | | |
| Reflective Coping | | | 0.36*** | 0.06 | | | | | | |
| Reflective Coping x Learning Conditions | | | -0.04 | 0.05 | | | | | | |
| Strategic Planning | | | | | 0.40*** | 0.07 | | | | |
| Strategic Planning x Learning Conditions | | | | | 0.01 | 0.05 | | | | |
| Preventive Coping | | | | | | | 0.46*** | 0.06 | | |
| Preventive Coping x Learning Conditions | | | | | | | 0.01 | 0.05 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Support-Seeking | | | | | 0.28*** | 0.07 |
| Support-Seeking  x Learning Conditions | | | | | -0.05 | 0.05 |
| Total R$^2$ | 0.41 | 0.35 | 0.35 | 0.39 | 0.30 | |

*Note.* N = 189, * *p* <0.05, ** *p* < 0.01, *** *p* < 0.001
Standardized coefficients are reported in all cases.

**Table 3.5**

*Results of Regression Analyses of Psychological Capital Predicting Proactive Coping (4a), Reflective Coping (4b), Strategic Planning (4c), Preventive Coping (4d), and Support Seeking (4e).*

| | Model 4a Proactive Coping | | Model 4b Reflective Coping | | Model 4c Strategic Planning | | Model 4d Preventive Coping | | Model 4e Support-Seeking | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | SE | B | SE | B | SE | B | SE | B | SE |
| Intercept | 0.00 | 0.07 | 0.00 | 0.07 | 0.00 | 0.07 | 0.00 | 0.07 | 0.00 | 0.07 |
| Psychological Capital | 0.45*** | 0.07 | 0.29*** | 0.07 | 0.28*** | 0.07 | 0.24*** | 0.07 | 0.17* | 0.07 |
| Total $R^2$ | 0.21 | | 0.08 | | 0.08 | | 0.06 | | 0.03 | |

*Note. N = 189, * p <0.05, ** p < 0.01, *** p < 0.001*
Standardized coefficients are reported in all cases.

**Table 3.6**

*Results of Regression Analyses of Time Structure Predicting Proactive Coping (5a), Reflective Coping (5b), Strategic Planning (5c),*

*Preventive Coping (5d), and Support Seeking (5e).*

| | Model 5a Proactive Coping | | Model 5b Reflective Coping | | Model 5c Strategic Planning | | Model 5d Preventive Coping | | Model 5e Support-Seeking | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | SE | B | SE | B | SE | B | SE | B | SE |
| Intercept | 0.00 | 0.07 | -0.00 | 0.07 | 0.00 | 0.07 | 0.00 | 0.07 | 0.00 | 0.07 |
| Time Structure | 0.36*** | 0.07 | 0.34*** | 0.07 | 0.38*** | 0.07 | 0.41*** | 0.07 | 0.20** | 0.07 |
| Total $R^2$ | 0.13 | | 0.11 | | 0.14 | | 0.17 | | 0.04 | |

*Note.* $N = 189$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Standardized coefficients are reported in all cases.

**Table 3.7**

*Results of Regression Analyses of Psychological Capital Predicting Proactive Coping (6a), Reflective Coping (6b), Strategic Planning (6c), Preventive Coping (6d), and Support Seeking (6e) Moderated by Social Support from Peers and Instructors.*

| | Model 6a Proactive Coping | | Model 6b Reflective Coping | | Model 6c Strategic Planning | | Model 6d Preventive Coping | | Model 6e Support-Seeking | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | B | SE | B | SE | B | SE | B | SE | B | SE |
| Intercept | 0.01 | 0.07 | 0.02 | 0.08 | 0.00 | 0.08 | -0.01 | 0.08 | -0.03 | 0.08 |
| Psychological Capital | 0.44*** | 0.07 | 0.26*** | 0.08 | 0.25** | 0.08 | 0.21** | 0.08 | 0.12 | 0.08 |
| Social Support Peers | 0.07 | 0.07 | 0.03 | 0.08 | 0.03 | 0.08 | 0.04 | 0.08 | 0.12 | 0.08 |
| Social Support Instructors | 0.01 | 0.07 | 0.10 | 0.08 | 0.07 | 0.08 | 0.05 | 0.08 | 0.05 | 0.08 |
| Soc. Support Peers x Psych. Capital | 0.02 | 0.07 | 0.09 | 0.08 | 0.07 | 0.08 | -0.01 | 0.08 | -0.01 | 0.08 |
| Soc. Support Instruct. x Psych. Capital | -0.04 | 0.08 | -0.11 | 0.09 | -0.05 | 0.09 | 0.03 | 0.09 | 0.08 | 0.09 |
| Total $R^2$ | 0.21 | | 0.10 | | 0.09 | | 0.06 | | 0.06 | |

*Note. N* = 189, * *p* <0.05, ** *p* < 0.01, *** *p* < 0.001
Standardized coefficients are reported in all cases.

**Table 3.8**

*Results of Regression Analyses of Time Structure Predicting Proactive Coping (7a), Reflective Coping (7b), Strategic Planning (7c), Preventive Coping (7d), and Support Seeking (7e) Moderated by Social Support from Peers and Instructors.*

| | Model 7a Proactive Coping | | Model 7b Reflective Coping | | Model 7c Strategic Planning | | Model 7d Preventive Coping | | Model 7e Support-Seeking | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | SE | B | SE | B | SE | B | SE | B | SE |
| Intercept | 0.01 | 0.07 | -0.01 | 0.07 | -0.01 | 0.07 | 0.01 | 0.07 | -0.03 | 0.07 |
| Time Structure | 0.32*** | 0.07 | 0.32*** | 0.07 | 0.36*** | 0.07 | 0.40*** | 0.07 | 0.18* | 0.08 |
| Social Support Peers | 0.08 | 0.07 | 0.01 | 0.08 | 0.02 | 0.07 | 0.01 | 0.07 | 0.08 | 0.08 |
| Social Support Instructors | 0.07 | 0.08 | 0.07 | 0.08 | 0.04 | 0.08 | 0.03 | 0.08 | 0.05 | 0.08 |
| Soc. Support Peers x Time Structure | -0.09 | 0.07 | 0.03 | 0.07 | 0.08 | 0.06 | -0.09 | 0.06 | -0.09 | 0.07 |
| Soc. Support Instruct. x Time Structure | -0.03 | 0.08 | -0.01 | 0.08 | -0.04 | 0.08 | 0.05 | 0.08 | 0.17* | 0.08 |
| Total $R^2$ | 0.15 | | 0.12 | | 0.15 | | 0.18 | | 0.08 | |
| $\Delta R^2$ | | | | | | | | | $0.04^1$ | |

*Note.* $N = 189$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
$^1 \Delta R^2$  Model 5e vs. Model 7e.
Standardized coefficients are reported in all cases.

**Table 3.9**

*Results of Path Analysis with one mediator per model. Psychological Capital and Time Structure Predicting Informal Learning*

*Behavior Through Proactive Coping (8a), Reflective Coping (8b), Strategic Planning (8c), Preventive Coping (8d), and Support*

*Seeking (8e).*

| | Model 8a Informal Learn. | | Model 8b Informal Learn. | | Model 8c Informal Learn. | | Model 8d Informal Learn. | | Model 8e Informal Learn. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | SE | B | SE | B | SE | B | SE | B | SE |
| Psychological Capital (path a1) | 0.21*** | 0.06 | 0.10 | 0.07 | 0.09 | 0.07 | 0.03 | 0.06 | 0.08 | 0.07 |
| Time Structure (path a2) | 0.06** | 0.03 | 0.10*** | 0.03 | 0.15*** | 0.04 | 0.16*** | 0.03 | 0.07 | 0.04 |
| Proactive Coping (path b) | 0.81*** | 0.16 | | | | | | | | |
| Reflective Coping (path b) | | | 0.60*** | 0.13 | | | | | | |
| Strategic Planning (path b) | | | | | 0.56*** | 0.12 | | | | |
| Preventive Coping (path b) | | | | | | | 0.75*** | 0.11 | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Support-Seeking (path b) | | | | | | | | | 0.45*** | 0.11 |
| Indirect Effect (a1b) | 0.17*** | 0.04 | 0.06 | 0.04 | 0.05 | 0.04 | 0.02 | 0.05 | 0.03 | 0.03 |
| Indirect Effect (a2b) | 0.05** | 0.02 | 0.06*** | 0.02 | 0.08*** | 0.03 | 0.12*** | 0.02 | 0.03 | 0.02 |
| Total R$^2$ Informal Learning | 0.31 | | 0.27 | | 0.30 | | 0.35 | | 0.26 | |
| Total R$^2$ Coping Styles | 0.23 | | 0.13 | | 0.15 | | 0.17 | | 0.05 | |

*Note.* $N = 189$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Unstandardized coefficients are reported in all cases.

**Path Diagram**
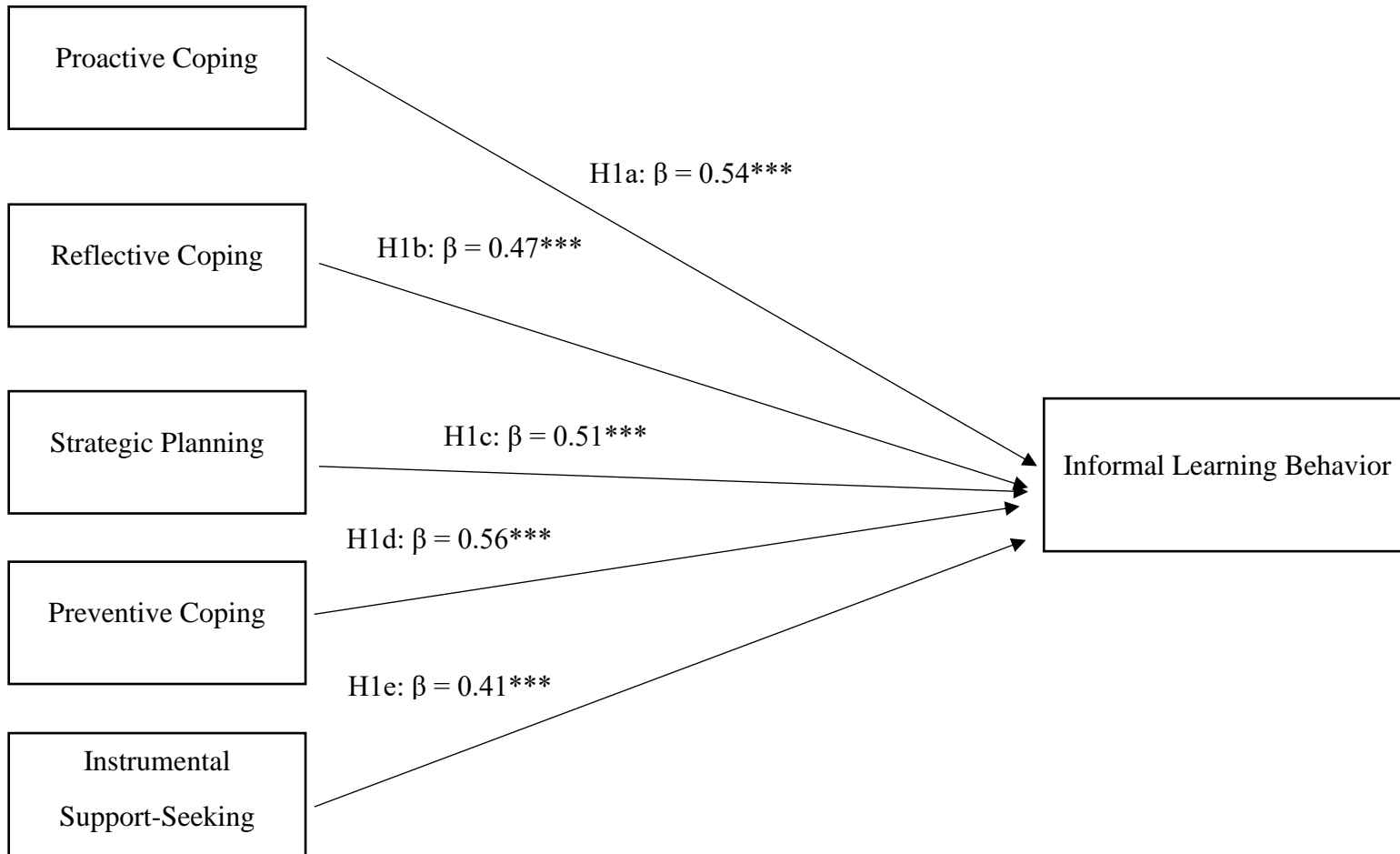


*Figure 3.1:* Hypotheses 1a-1e

**Path Diagram**



*Figure 3.2*: Model 8a Identification

**Path Diagram**



Psychological capital (optimism, resilience, self-efficacy) T1 — 0.06 → Informal Learning behavior T2

Psychological capital — 0.10 → Reflective Coping T2

Time Structure T1 — 0.10*** → Reflective Coping T2

Reflective Coping T2 — 0.60*** → Informal Learning behavior T2

Time Structure T1 — 0.06*** → Informal Learning behavior T2

*Figure 3.3*: Model 8b Identification

**Path Diagram**
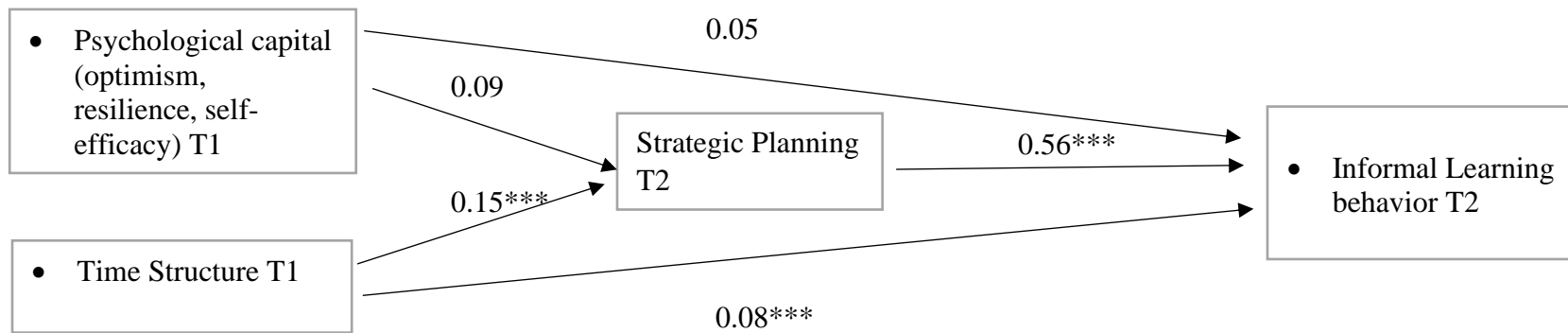


*Figure 3.4*: Model 8c Identification
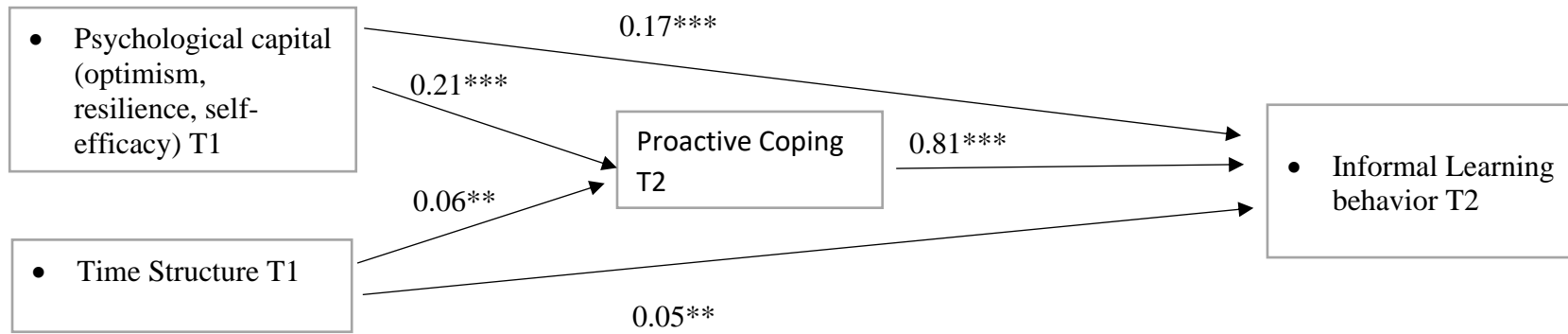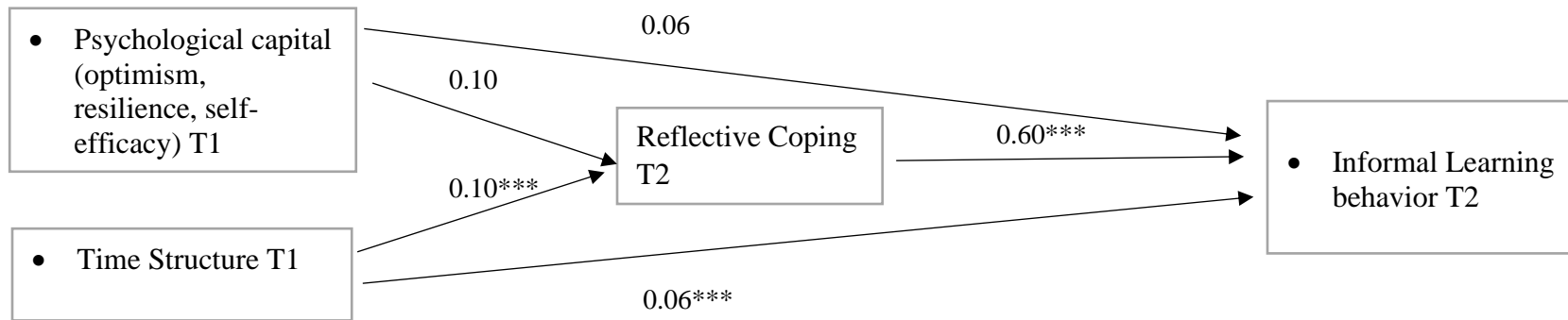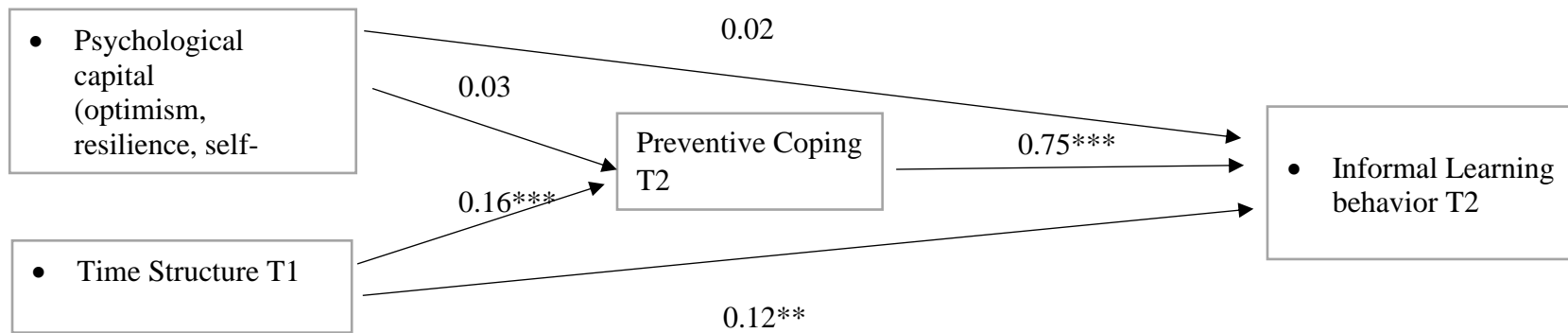
*Figure 3.5*: Model 8d Identification

**Path Diagram**
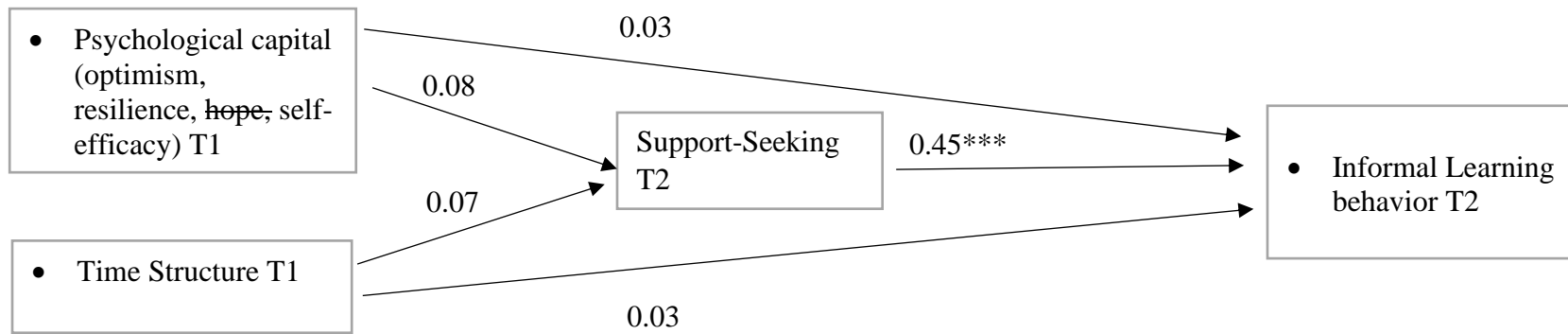


*Figure 3.6*: Model 8e Identification

**Path Diagram**



Proactive Coping

a1= 0.21***

a1b1 = 0.10**

b1= 0.45***

a3= 0.09

Reflective Coping

b2= 0.02

a3b2 = 0.00

Psychological Capital

a5= 0.10

Strategic Planning

b3= 0.16

Informal Learning Behavior

a7= 0.03

a5b3 = 0.02

b4= 0.37***

Preventive Coping

Time Structure

Path coefficients for time structure see Figure 4b below

a9= 0.07

a7b4 = 0.01

b5= 0.17*

Support-Seeking

a9b5= 0.04
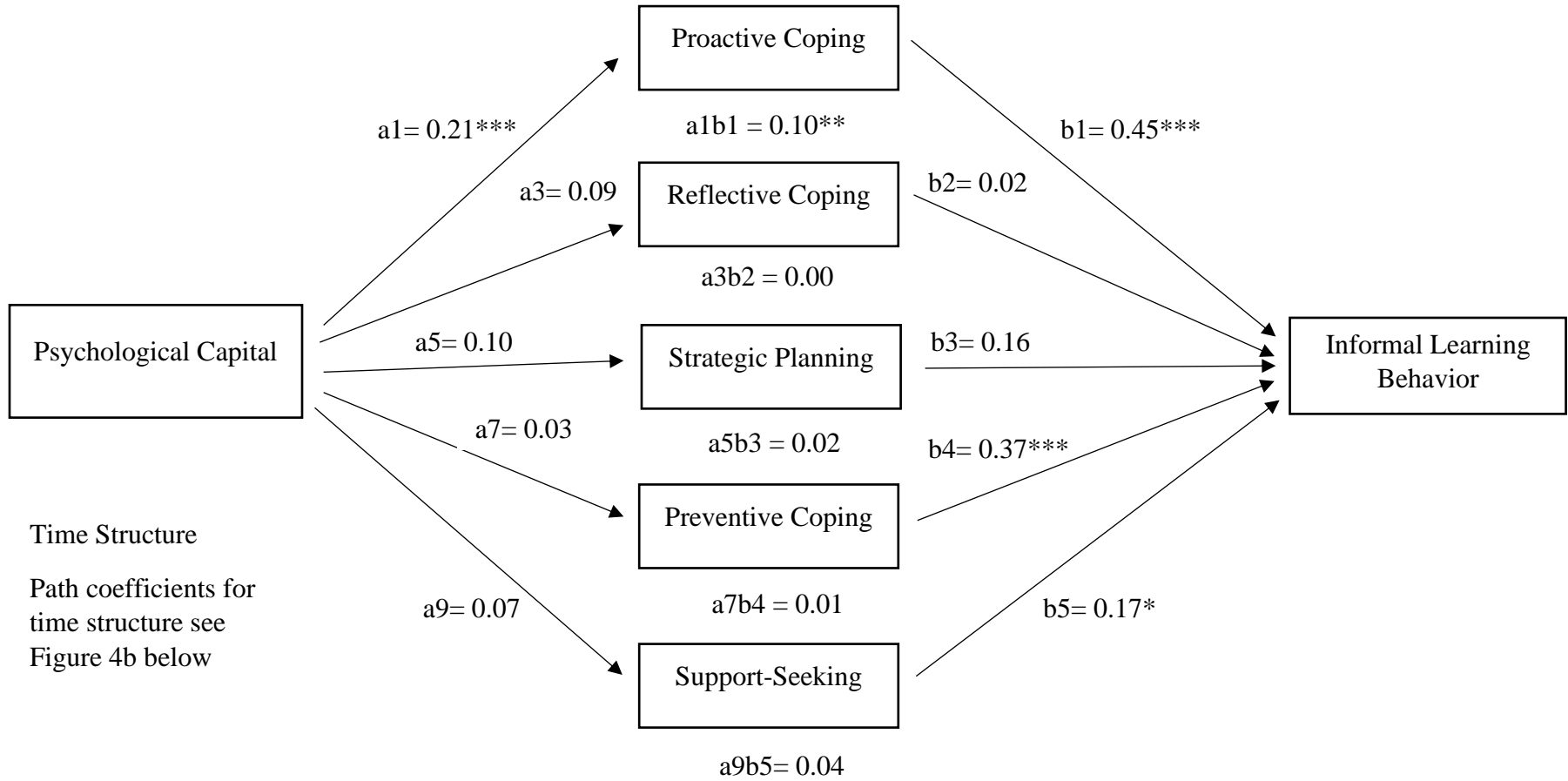
*Figure 3.7: Model including all mediators*

**Path Diagram**

Psychological Capital

Path coefficients for PsyCap see Figure 4a above



| | Proactive Coping1 | |
|---|---|---|

a2 = 0.07*    a2b1 = 0.02*    b1 = 0.45***

a4 = 0.11**    Reflective Coping    b2 = 0.02

a4b2 = 0.00

Time Structure    a6 = 0.14***    Strategic Planning    b3 = 0.16    Informal Learning Behavior

a8 = 0.16***    a6b3 = 0.02    b4 = 0.37***

Preventive Coping

a10 = 0.07    a8b4 = 0.06*    b5 = 0.10*

Support-Seeking

a10b5 = 0.01

*Figure 3.8: Model including all mediators*

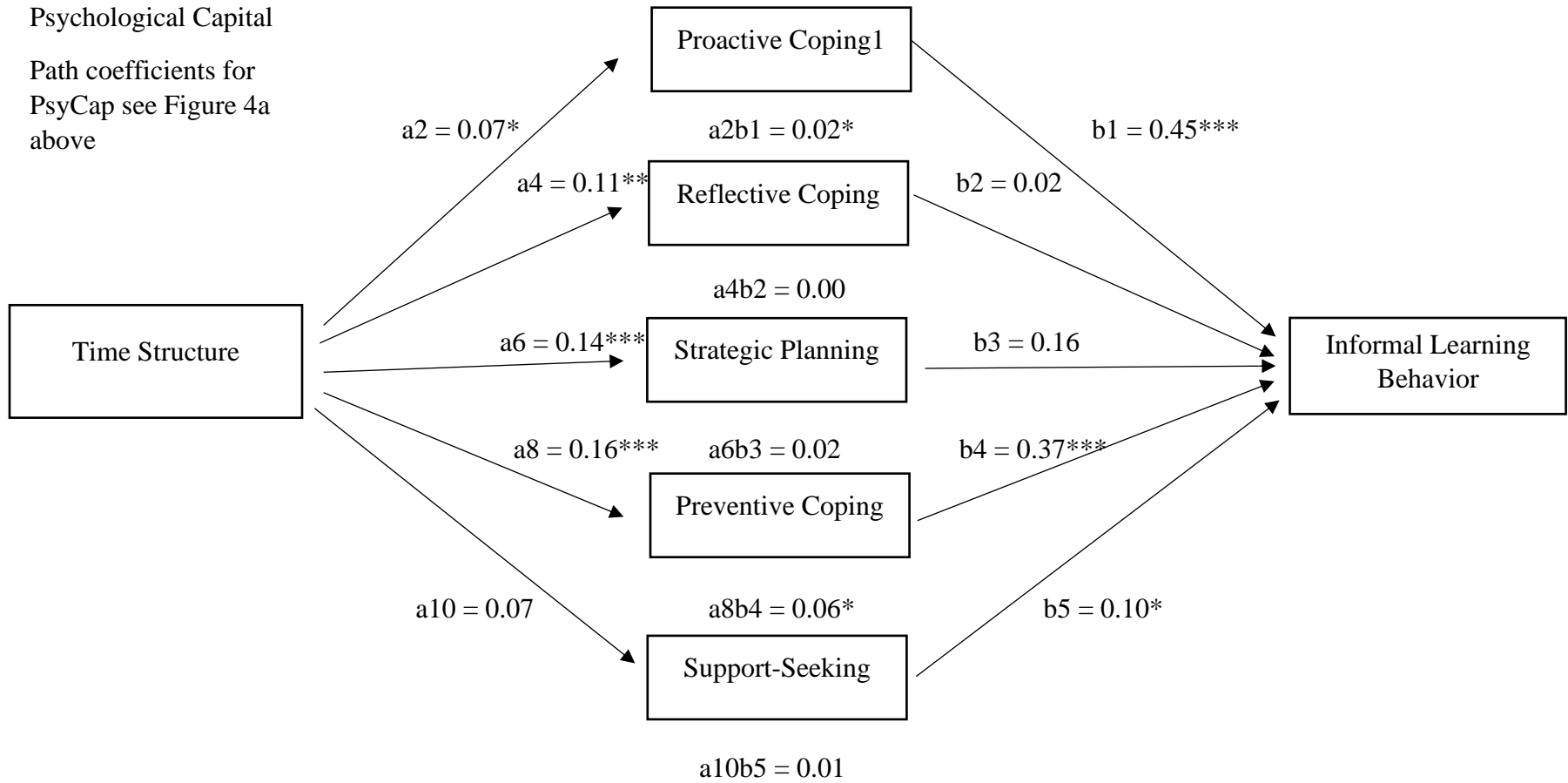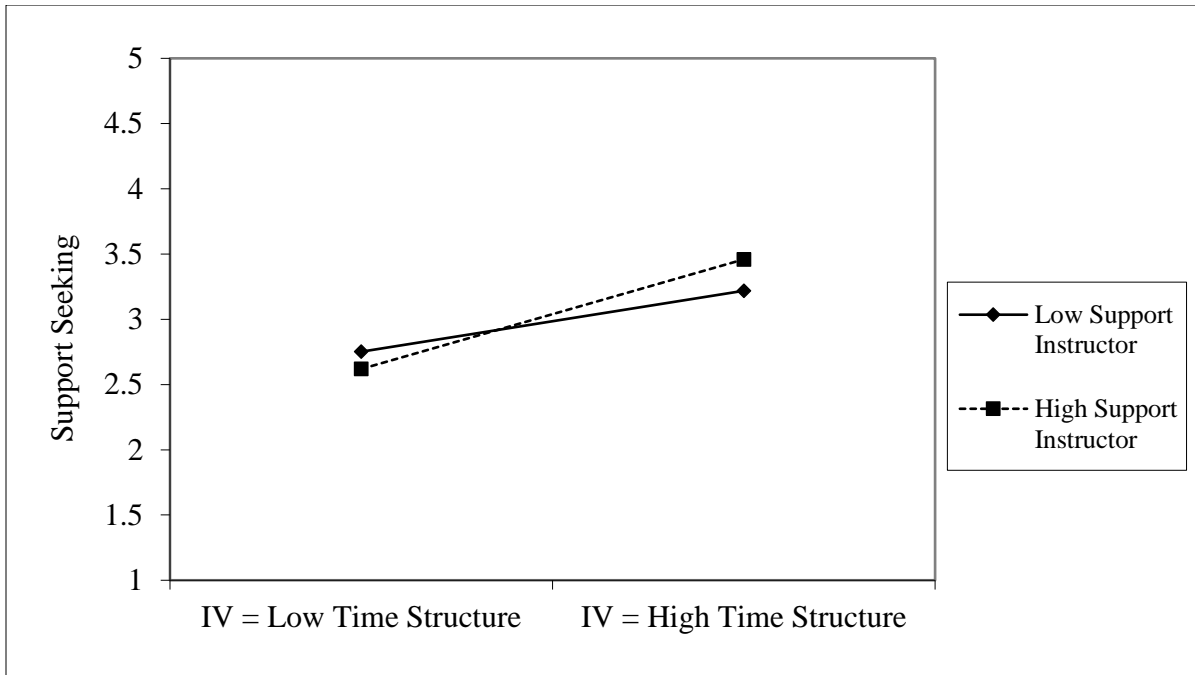*Figure 3.9.* Interaction between Support Instructor and Time Structure on Support-

Seeking. The interaction plot was created with unstandardized variables.

# CHAPTER 4

## DISCUSSION OF RESULTS AND IMPLICAITONS

This chapter summarizes the results of the study and discusses its findings in relation to theory, practice, and future research directions. In this chapter I also consider the limitations of this research. Overall, the results of this study establish the extent to which the five coping styles of proactive coping, reflective coping, strategic planning, preventive coping, and instrumental support-seeking influence informal learning behavior in an online learning environment. The following paragraphs further elaborate and summarize these findings. These findings expand prior research on informal learning in that they examine informal learning behavior in an online learning context and take into consideration the mediating role of various coping mechanisms.

Informal learning has become an important aspect of workplace learning in organizations. It is important for employee development and career advancements that learners are able to reflect on their performance, identify their knowledge gaps, strategically plan to close these knowledge gaps and adapt to changing work environments by constantly being an active agent of their own knowledge management. In addition to the increasing importance of informal learning, the increasing popularity of online learning and training is challenging learners and organizations to examine how informal learning can be utilized in a non-traditional context. The lack of social interaction, which has been assumed to be a vital part of informal learning raises the question of how online learners cope with this missing piece in an online environment.

Self-regulation has been identified as a crucial component for the success in online learning (Matuga, 2009). In order to understand how self-regulating processes, influence informal learning behavior in an online learning environment, this dissertation examined various coping styles to gain a better understanding of how these coping styles are useful in an online learning environment and how they mediate the relationship between individual characteristics (i.e., psychological capital, time structure) and informal learning.

To address the lack of research examining how informal learning may occur online, in this study informal learning in an online learning environment was conceptualized. To lay the groundwork for this study, previous research relating to informal learning and online learning vs. traditional face-to-face learning was reviewed. This informed the development of a conceptual model that promotes informal learning via five different coping styles. The main assumption was that coping behaviors help individuals alleviate stressful situations (e.g., change in learning environment from face-to-face to online) and promote the engagement in informal learning behavior. This assumption was supported by the data analysis in this study.

As expected, the five coping styles examined in this study were positively related to informal learning behavior. Surprisingly, there was no interaction between formal learning and coping behavior although I found a significant positive relationship between formal learning and informal learning, which is in line with previous research. Several studies have shown the importance of formal learning for subsequent informal learning behaviors (e.g., Bednall & Sanders, 2017; Choi & Jacobs, 2011; Schürmann & Beausaert, 2016). In an online learning environment, the foundation knowledge provided by formal

learning appears to increase the desire of individuals to engage in informal learning behavior. The findings of my data analysis also do not support an interaction between supportive learning conditions and coping behaviors. Supportive learning conditions was treated as a multidimensional construct consisting of opportunity for cooperation, feedback, and coaching. A supplemental analysis of treating each sub-dimension as its own construct also did not result in any significant interactions. As discussed in Chapter 2, previous research of the influence of informal learning conditions on informal learning also found conflicting results. It is important to point out that neither of these aforementioned studies examined supportive learning conditions in an online learning environment. Further investigation of learning conditions is warranted in this context.

Furthermore, the results from this study suggest psychological capital and time structure are significant predictors of proactive coping, reflective coping, strategic planning, preventive coping, and support-seeking. The strongest positive relationship was found between psychological capital and proactive coping. This is not surprising given that proactive coping refers to proactive responses to resolving stressful situations. Individuals who score high on psychological capital, which has been defined as an individual's state of development in self-efficacy, optimism, hope, and resiliency (Luthans, Avolio, Avey, & Norman 2007), are more likely to be equipped to employ a proactive coping mechanism to deal with difficult situations. The survey for this study did not include the items of the sub-dimension of "hope." The coping styles of "emotional support-seeking" and "avoidance coping" of the proactive coping inventory were also omitted from this study as they were not seen as instrumental to this study

context. However, to provide a more complete picture of the proposed framework, these items were included in a second study that was conducted in Fall of 2021.

Social support from peers and instructors were also not found to be significant predictors of coping behaviors. These items were included in survey one at the beginning of the semester. It is possible that study participants were not able to evaluate the support of their peers and instructors at this point because of a lack of interaction. It would have been more appropriate to include the items for this construct in survey two at mid-semester. One significant interaction was found between social support from instructors and the relationship between time structure and instrumental support-seeking. Instrumental support-seeking focuses on obtaining advice, information, and feedback from people when dealing with stressors (Greenglass et al., 1999). It is therefore important for individuals who use this coping strategy to maintain relationships with people from whom they can seek support and share knowledge. This suggests that if individuals perceive social support from instructors to be high, they feel more confident in engaging in more support-seeking coping behavior. As previously noted, social support is an interpersonal process, which includes emotional support and instrumental support. In study 2, I expect to also find a significant interaction between social support from instructor on the relationship between time structure and emotional support-seeking.

The results of the path analysis were mixed. While proactive coping acted as a mediator through which psychological capital and time structure positively influenced informal learning behavior, reflective coping, strategic planning, and preventive coping only mediated the relationship between time structure and informal learning, but not the

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relationship between psychological capital and informal learning. Lastly, instrumental support-seeking was not a significant mediator.

**Supplementary Analysis**

To better understand the results and gain a more nuanced understanding of the impact of contextual factors (i.e., social support, formal learning, learning conditions) on coping behavior and informal learning, several additional analyses were conducted. These analyses relate to including control variables (i.e., gender, ethnicity) when testing interaction effects. No significant effects were found for the control variables age and gender with the exception of hypothesis 7e. The significance for hypotheses 2a-2e, 3a-3e, and 6a-6e did not change when including the control variables. Hypotheses 7a-7e also did not change in significance. The predicted interaction effect of hypotheses 7e was still supported when including gender as a control variable but non-significant when ethnicity was included.

A supplementary analysis of the data collected at Time 3 at the end of the semester showed that engagement in informal learning has many positive outcomes. Informal had a significant positive association with perceived employability, engagement, satisfaction with life, time structure and psychological capital at the end of the semester. In past research, informal learning has often been linked to performance (e.g., Choi et al., 2019; Wolfson et al., 2018), however in the student sample of this study informal learning was not significantly related to anticipated grade in the class or current GPA.

**Practical Implications**

Organizations increasingly rely on employees becoming active agents in their own learning and development while at the same time advanced technologies and globalization increase the use of virtual training and development. As more and more jobs as well as training opportunities transition to a virtual environment it becomes crucial for organizations to understand how informal learning, which heavily relies on social interaction occurs online and whether individuals with certain characteristics are better suited for online training. Organizations must understand the mechanisms and particular contexts that promote informal learning among employees so they can guide new employees by providing resources and information as well as develop successful training programs. One important practical contribution made by the results is demonstrated by the importance of formal training and development for informal learning behavior. This study has shown that formal learning is not a contextual constraint to informal learning, but instead prior research findings were supported. Employees need to have a certain amount of formal learning before they can engage in informal learning behavior. This suggests that informal learning cannot replace formal training and development and this is especially relevant to an online learning environment that relies heavily on formal instructions. Organizations could design their online training and development in a way that gives specific directions for individual or collaborative informal learning activities.

**Limitations of this Study**

There are several limitations of this study that have implications for future research. Most of these limitations are of methodological nature. The first pertains to

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generalizability of my findings. Because the sample of this study was undergraduate students in the US, the generalizability of this study to the general population is limited and should be replicated in an organizational setting and potentially in other cultural contexts. Although the examined variables in this study have been used in different study context and especially coping behavior has been linked to dealing with stressful situations for various populations the findings of this study may not capture the workforce completely. Future research is needed to examine the extent of the proposed relationships among more experienced participants. The survey-design of this study also does not allow for conclusions about causality. Experimental studies, however, which require random assignment may be problematic for the examined research questions of this study especially in an organizational context. One solution to circumvent or at least minimize this problem would be a longitudinal study that examines informal learning during an online training and development program at different times.

The second limitation of this study refers to the measures used in this study and data collection. Some of the measures (i.e., social support from peers and instructors) should have been administered at a different time during the semester to assess the real extent of a certain perception or behavior. Also, some of the measures used for this study had to be strongly reworded to be appropriate for the student population and some of the content validity of these measures may have got lost in this process. Future research in an organizational context for which the originally worded items of these measures can be used. Lastly, some of the measured were shortened due to constraints to survey length, (i.e., psychological capital, coping inventory, learning conditions), however some of these omitted sub-dimensions, in particular "hope" of the higher-order construct

"psychological capital" were included in the original measure because they capture an important aspect of this construct. In a follow-up study (study 2), I administered the complete measures.

In summary, trying to differentiate informal learning from formal learning in an online learning context is a difficult undertaking because both types of learning are strongly intertwined in this kind of environment. By definition, formal learning occurs in a structured and organized environment, which in this study was online. Informal learning on the other hand is expected to occur in daily life or through self-directed activities by the learner. It often occurs without the learner being specifically aware of his or her learning. This specific study context restricted the place of learning for both types of learning to the same online environment and eliminated or drastically changed many of the opportunities through which learners often learn informally. To this end, it is important for future research to adapt informal learning measures and further explore how informal learning online can be quantified and distinguished from formal learning.

**Implications for Future Research**

Some of the implications for future research based on the limitations of this study have already been discussed in the previous section. This dissertation has opened up several avenues of exploration for future research including improvements of an instrument to assess informal learning in an online learning environment. As discussed in this dissertation, informal learning occurs is an adapted form when learning occurs online.  It is very likely that the currently available measures for informal learning do not capture the full extent of informal learning that occurs online. Future research should

either optimize a currently available measure that assesses informal learning or develop a new measure explicitly for this context.

Second, we know from prior research that informal learning is an important phenomenon that contributes to the development of KSAOs in organizations. Past research has investigated some of the outcomes (e.g., performance) of informal learning. Moving forward in this research domain, it is important to understand the types of outcomes that result from informal learning in the long run. A longitudinal study could provide valuable insights into the effects of informal learning on various important outcomes.

A last suggestion for future research includes the examination of support in online learning environments. The current study did not find significant results of social support and supportive learning conditions as contextual influences. The examination of external factors that either lead to failure or support online learning should be further examined by using multi-source data as self-reported data has its limitations. For example, supervisors and customers could evaluate an individual's learning progress and not just performance. Future research should find ways in which learning can be assessed other than performance. As this study shows, perceived employability has a strong association with informal learning. Future studies that show us the positive long-term outcomes of informal learning online could provide organizations with ideas for interventions during training and development activities.

**Conclusion**

The purpose of this dissertation was to explore the extent of informal learning in an online learning environment and examine the effect of five different coping styles on

informal learning behavior as well as psychological capital, time structure and contextual factors such as supportive learning conditions, social support and formal learning. The present research provides some evidence that individuals who engage in more coping behavior are also more likely to engage in more informal learning behavior. Coping behavior also mediates the relationship between time structure and informal learning behavior. As training and development in the 21st century relies more frequently on online learning and requires employees to take on a more active role in their own learning (i.e., informal learning), it becomes more and more important to understand how informal learning behavior differs in a virtual setting from a traditional setting and what factors can influence informal learning in an online setting. This study provides one of the first attempts to close this knowledge gap, however much more work needs to be done in the future to fully understand this phenomenon.

# REFERENCES

Abbas, M., Raja, U., Darr, W. and Bouckenooghe, D. (2014), "Combined effects of perceived politics and psychological capital on job satisfaction, turnover intentions, and performance", Journal of Management, Vol. 40 No. 7, pp. 1813-1830.

Ahearne, M., Lam, S. K., Mathieu, J. E., & Bolander, W. (2010). Why are some salespeople better at adapting to organizational change? Journal of Marketing, 74(3), 65-79.

Anderson, S.E. and Harris, J.B. (1997), "Factors associated with amount of use and benefits obtained by users of a statewide educational telecomputing network", Educational Technology Research and Development, Vol. 45 No. 1, pp. 19-50.

Appana, S. (2008). A review of benefits and limitations of online learning in the context of the student, the instructor and the tenured faculty. International Journal on E-learning, 7(1), 5-22.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, N.J: Prentice-Hall.

Bandura, A., & McClelland, D. C. (1977). Social learning theory (Vol. 1). Prentice Hall: Englewood cliffs.

Bandura, A., Ross, D., & Ross, S. A. (1963). Imitation of film-mediated aggressive models. The Journal of Abnormal and Social Psychology, 66(1), 3.

Bednall, T. C., & Sanders, K. (2017). Do opportunities for formal learning stimulate follow-up participation in informal learning? A three-wave study. Human Resource Management, 56(5), 803-820.

Bednall, T. C., Sanders, K., & Runhaar, P. (2014). Stimulating informal learning activities through perceptions of performance appraisal quality and human resource management system strength: A two-wave study. Academy of Management Learning & Education, 13(1), 45-61.

Bell, B. S., & Kozlowski, S. W. (2008). Active learning: effects of core training design elements on self-regulatory processes, learning, and adaptability. Journal of Applied psychology, 93(2), 296.

Berg, S. A., & Chyung, S. Y. Y. (2008). Factors that influence informal learning in the workplace. Journal of workplace learning.

Bond, M. J., & Feather, N. T. (1988). Some correlates of structure and purpose in the use of time. Journal of personality and social psychology, 55(2), 321.

Bouchrika, I. (2020, June 18). 68 Training Industry Statistics: 2020 Data, Trends & Predictions « Guide 2 Research. Guide2Research. https://www.guide2research.com/research/training-industry-statistics

Boud, D., & Middleton, H. (2003). Learning from others at work: communities of practice and informal learning. Journal of workplace learning.

Bray, E., Aoki, K., & Dlugosh, L. (2008). Predictors of learning satisfaction in Japanese online distance learners. The International Review of Research in Open and Distributed Learning, 9(3).

Burns, J. Z., Schaefer, K., & Hayden, J. M. (2005). New Trade and Industrial Teachers' Perceptions of Formal Learning versus Informal Learning and Teaching Proficiency. Journal of Industrial Teacher Education, 42(3), 66-87.

Capdeferro, N., & Romero, M. (2012). Are online learners frustrated with collaborative learning experiences? International Review of Research in Open and Distributed Learning, 13(2), 26-44.

Carayon, P., Schoepke, J., Hoonakker, P. L. T., Haims, M. C., & Brunette, M. (2006). Evaluating causes and consequences of turnover intention among IT workers: The development of a questionnaire survey. Behaviour & Information Technology, 25(5), 381-397.

Cerasoli, C. P., Alliger, G. M., Donsbach, J. S., Mathieu, J. E., Tannenbaum, S. I., & Orvis, K. A. (2018). Antecedents and outcomes of informal learning behaviors: A meta-analysis. Journal of Business and Psychology, 33(2), 203-230.

Choi, W. (2009). Influences of formal learning, personal characteristics, and work environment characteristics on informal learning among middle managers in the Korean banking sector (Doctoral dissertation, The Ohio State University).

Choi, W., & Jacobs, R. L. (2011). Influences of formal learning, personal learning orientation, and supportive learning environment on informal learning. Human Resource Development Quarterly, 22(3), 239-257.

Choi, W., Noe, R., & Cho, Y. (2019). What is responsible for the psychological capital-job performance relationship? An examination of the role of informal learning and person-environment fit. Journal of Managerial Psychology.

Cohen J, 1988. Statistical Power Analysis for the Behavioral Sciences, 2nd ed. Hillsdale, New Jersey: Erlbaum

Colquitt, J. A., LePine, J. A., & Noe, R. A. (2000). Toward an integrative theory of training motivation: a meta-analytic path analysis of 20 years of research. Journal of applied psychology, 85(5), 678.

Cox, M. J. (2013). Formal to informal learning with IT: research challenges and issues for e-learning. Journal of computer assisted learning, 29(1), 85-105.

Crocetti, E., Rubini, M., & Meeus, W. (2008). Capturing the dynamics of identity formation in various ethnic groups: Development and validation of a three-dimensional model. Journal of adolescence, 31(2), 207-222.

Crommelinck, M., & Anseel, F. (2013). Understanding and encouraging feedback-seeking behaviour: a literature review. Medical education, 47(3), 232-241.

Cross, J. (2011). Informal learning: Rediscovering the natural pathways that inspire innovation and performance. John Wiley & Sons.

Cseh, M. (1999). The impact of globalization on managerial learning: the case of Romania. Advances in Developing Human Resources, 1(4), 55-68.

Cunningham, J., & Hillier, E. (2013). Informal learning in the workplace: key activities and processes. Education+ Training.

Czerkawski, B. C. (2016). Blending formal and informal learning networks for online learning. International Review of Research in Open and Distributed Learning, 17(3), 138-156.

Dale, M., & Bell, J. (1999). Informal learning in the workplace (Vol. 83). London: Department for Education and Employment.

Diener, E., Emmons, R.A., Larsen, R.J., & Griffin, S. (1985). The Satisfaction with Life Scale. Journal of Personality Assessment, 49, 71-75.

Doornbos, A. J., Bolhuis, S., & Simons, P. R. J. (2004). Modeling work-related learning on the basis of intentionality and developmental relatedness: A noneducational perspective. Human Resource Development Review, 3(3), 250-274.

Doornbos, A. J., Simons, R. J., & Denessen, E. (2008). Relations between characteristics of workplace practices and types of informal work-related learning: A survey study among Dutch Police. Human resource development quarterly, 19(2), 129-151.

Doyle, W., & Young, J. (2004). E-learning and small business: A Nova Scotia perspective.

Ellinger, A. D. (2005). Contextual factors influencing informal learning in a workplace setting: The case of "reinventing itself company". Human resource development quarterly, 16(3), 389-415.

Ellinger, A. D., & Cseh, M. (2007). Contextual factors influencing the facilitation of others' learning through everyday work experiences. Journal of Workplace Learning.

Ellinger, A. D., Watkins, K. E., & Bostrom, R. P. (1999). Managers as facilitators of learning in learning organizations. Human Resource Development Quarterly, 10(2), 105-125.

Enos, M. D., Kehrhahn, M. T., & Bell, A. (2003). Informal learning and the transfer of learning: How managers develop proficiency. Human Resource Development Quarterly, 14(4), 369-387.

Eraut, M. (2000). Non-formal learning and tacit knowledge in professional work. British journal of educational psychology, 70(1), 113-136.

Eraut, M. (2004). Informal learning in the workplace. Studies in continuing education, 26(2), 247-273.

Eraut, M. (2007). Learning from other people in the workplace. Oxford review of education, 33(4), 403-422.

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. American journal of theoretical and applied statistics, 5(1), 1-4.

Fulwiler, T. (1987). Teaching with Writing. Boynton/Cook Publishers, Inc., PO Box 860, 52 Upper Montclair Plaza, Upper Montclair, NJ 07043.

Gillett-Swan, J. (2017). The challenges of online learning: Supporting and engaging the isolated learner. Journal of Learning Design, 10(1), 20-30.

Goldstein IL, Ford J (2002), 4th edition, Belmont, CA: Wadsworth.

Gould, S. (1979). Characteristics of career planners in upwardly mobile occupations. Academy of Management Journal, 22(3), 539-550.

Greenglass, E., Schwarzer, R., Jakubiec, D., Fiksenbaum, L., & Taubert, S. (1999, July). The proactive coping inventory (PCI): A multidimensional research instrument. In 20th International Conference of the Stress and Anxiety Research Society (STAR), Cracow, Poland (Vol. 12, p. 14).

Liu, S., Gomez, J., Khan, B., & Yen, C. J. (2007). Toward a learner-oriented community college online course dropout framework. International Journal on E-learning, 6(4), 519-542.

Harris, K. R. (1990). Developing self-regulated learners: The role of private speech and self-instructions. Educational psychologist, 25(1), 35-49.

Hobfoll, S. E. (1989). Conservation of resources: a new attempt at conceptualizing stress. American psychologist, 44(3), 513.

Hoekstra, A., Korthagen, F., Brekelmans, M., Beijaard, D., & Imants, J. (2009). Experienced teachers' informal workplace learning and perceptions of workplace conditions. Journal of workplace learning.

Holland, A. A. (2019). Effective principles of informal online learning design: A theory-building metasynthesis of qualitative research. Computers & Education, 128, 214-226.

Hughes, G. D. (2009). The impact of incorrect responses to reverse-coded survey items. Research in the Schools, 16(2).

Irwin, C., & Berge, Z. (2006). Socialization in the online classroom. E-Journal of Instructional Science and Technology, 9(1), n1.

Jacobs, R. L., & Park, Y. (2009). A proposed conceptual framework of workplace learning: Implications for theory development and research in human resource development. Human resource development review, 8(2), 133-150.

Jarvis, P. (1987). Meaningful and meaningless experience: Towards an analysis of learning from life. Adult education quarterly, 37(3), 164-172.

Jun, J. (2005). Understanding E-dropout? International Journal on e-learning, 4(2), 229-240.

Kirtman, L. (2009). Online versus in-class courses: An examination of differences in learning outcomes. Issues in teacher education, 18(2), 103-116.

Kizilcec, R. F., Reich, J., Yeomans, M., Dann, C., Brunskill, E., Lopez, G., Turkay, S., Williams, J.J., & Tingley, D. (2020). Scaling up behavioral science interventions in online education. Proceedings of the National Academy of Sciences, 117(26), 14900-14905.

Koopmans, H., Doornbos, A. J., & Eekelen, I. M. V. (2006). Learning in interactive work situations: it takes two to tango; why not invite both partners to dance? Human Resource Development Quarterly, 17(2), 135-158.

Kraiger, K. (2008). Transforming our models of learning and development: Web-based instruction as enabler of third-generation instruction. Industrial and Organizational Psychology, 1(4), 454-467.

Kwakman, K. (2003). Factors affecting teachers' participation in professional learning activities. Teaching and teacher education, 19(2), 149-170.

Kyndt, E., & Beausaert, S. (2017). How Do Conditions Known to Foster Learning in the Workplace Differ Across Occupations? J.E. Ellingson & R.A. Noe (Eds). Autonomous Learning in the Workplace. (pp. 201-218). New York. Routledge.

Kyndt, E., Dochy, F., & Nijs, H. (2009). Learning conditions for non-formal and informal workplace learning. Journal of Workplace Learning.

Langer, J. A., & Applebee, A. N. (1987). How Writing Shapes Thinking: A Study of Teaching and Learning. NCTE Research Report No. 22. National Council of Teachers of English, 1111 Kenyon Rd., Urbana, IL 61801.

Lave, J., & Wenger, E. (1991). Situated learning: Legitimate peripheral participation. Cambridge university press.

Lazarus, R. S., & Folkman, S. (1984). Stress, appraisal, and coping. Springer publishing company.

Leslie, B., Aring, M. K., & Brand, B. (1998). Informal learning: The new frontier of employee & organizational development. Economic Development Review, 15(4), 12.

Li, L., & He, X. (2011). The researches on positive psychological capital and coping style of female university graduates in the course of seeking jobs. Psychology Research, 4, 98–103.

Liu, L., Chang, Y., Fu, J., Wang, J., & Wang, L. (2012). The mediating role of psychological capital on the association between occupational stress and depressive symptoms among Chinese physicians: a cross-sectional study. BMC public health, 12(1), 1-8.

Löfström, E., & Nevgi, A. (2007). From strategic planning to meaningful learning: diverse perspectives on the development of web-based teaching and learning in higher education. British Journal of educational technology, 38(2), 312-324.

Lohman, M. C. (2000). Environmental inhibitors to informal learning in the workplace: A case study of public school teachers. Adult Education Quarterly, 50, 83-101

Lohman, M. C. (2005). A Survey of Personal and Environmental Factors Influencing the Engagement of Two Professional Groups in Informal Workplace Learning Activities. Online Submission.

Lohman, M. C. (2006). Factors influencing teachers' engagement in informal learning activi- ties. Journal of Workplace Learning, 18, 141-156.

Lohman, M. C., & Woolf, N. H. (1998). Toward a Culture of Teacher Learning in the Public Schools: A Human Resource Development Perspective. Teaching and Change, 5, 276-93.

Lohman, M. C., & Woolf, N. H. (2001). Self-initiated learning activities of experienced public school teachers: Methods, sources, and relevant organizational influences. Teachers and Teaching, 7(1), 59-74.

Luthans, F., Avolio, B. J., Avey, J. B., & Norman, S. M. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. Personnel psychology, 60(3), 541-572.

Manuti, A., Pastore, S., Scardigno, A. F., Giancaspro, M. L., & Morciano, D. (2015). Formal and informal learning in the workplace: a research review. International journal of training and development, 19(1), 1-17.

Marsick, V. J. (2009). Toward a unifying framework to support informal learning theory, research and practice. Journal of workplace learning.

Marsick, V. J., & Volpe, M. (1999). The nature and need for informal learning. Advances in developing human resources, 1(3), 1-9.

Marsick, V. J. & Watkins, K. E. (1990). Informal and Incidental Learning in the Workplace, London & New York: Routledge.

Marsick, V. J., & Watkins, K. E. (2001). Informal and incidental learning. New directions for adult and continuing education, 2001(89), 25.

Marsick, V. J., Watkins, K. E., Callahan, M. W., & Volpe, M. (2006). Reviewing Theory and Research on Informal and Incidental Learning. Online Submission.

Matuga, J. M. (2009). Self-regulation, goal orientation, and academic achievement of secondary students in online university courses. Journal of Educational Technology & Society, 12(3), 4-11.

Marsick, V. J., Li, J., Brake, G., Champion, A., Fuller, T., Gabel, S., & Hatcher-Busch, L. (2009). Workplace learning: the roles of knowledge accessibility and management. Journal of Workplace Learning.

Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. Journal of organizational behavior, 2(2), 99-113.

Maurer, T. J., Leheta, D. M., & Conklin, T. A. (2017). An exploration of differences in content and processes underlying reflection on challenging experiences at work. Human Resource Development Quarterly, 28(3), 337-368.

McDonald, J., & Gibson, C. C. (1998). Interpersonal dynamics and group development in computer conferencing. American Journal of Distance Education, 12(1), 7-25.

Meirink, J. A., Meijer, P. C., Verloop, N., & Bergen, T. C. (2009). Understanding teacher learning in secondary education: The relations of teacher activities to changed beliefs about teaching and learning. Teaching and teacher education, 25(1), 89-100.

Mink, O.G., Owen, K.Q. and Mink, B.P. (1993), Developing High-Performance People: The Art of Coaching, Addison-Wesley Publishing Company, Inc., Reading, MA.

Moore, J. L., Dickson-Deane, C., & Galyen, K. (2011). e-Learning, online learning, and distance learning environments: Are they the same? The Internet and Higher Education, 14(2), 129-135.

Morin, C. M., Vallieres, A., & Ivers, H. (2007). Dysfunctional beliefs and attitudes about sleep (DBAS): Validation of a brief version (DBAS-16). Sleep, 30, 1547-1554.

Morrow, P. R. (2006). Telling about problems and giving advice in an Internet discussion forum: Some discourse features. Discourse studies, 8(4), 531-548.

Mumford, M. D., Baughman, W. A., Threlfall, K. V., Uhlman, C. E., & Costanza, D. P. (1993). Personality, adaptability, and performance: Performance on well-defined problem-solving tasks. Human Performance, 6(3), 241-285.

Muse Jr, H. E. (2003). The web-based community college student: An examination of factors that lead to success and risk. The Internet and Higher Education, 6(3), 241-261.

Noe, R. A. (2003). Employee Training and Development. New York: McGraw-Hill.

Noe, R. A., Clarke, A. D., & Klein, H. J. (2014). Learning in the twenty-first-century workplace. Annual. Review Organ. Psychol. Organ. Behav., 1(1), 245-275.

Noe, R. A., Tews, M. J., & Marand, A. D. (2013). Individual differences and informal learning in the workplace. Journal of vocational behavior, 83(3), 327-335.

Noe, R. A., Tews, M. J., & McConnell Dachner, A. (2010). Learner engagement: A new perspective for enhancing our understanding of learner motivation and workplace learning. The Academy of Management Annals, 4(1), 279-315.

Noe, R. A., & Wilk, S. L. (1993). Investigation of the factors that influence employees' participation in development activities. Journal of applied psychology, 78(2), 291.

Nückles, M., Schwonke, R., Berthold, K., & Renkl, A. (2004). The use of public learning diaries in blended learning. Journal of Educational Media, 29(1), 49-66.

Palloff, R. M., & Pratt, K. (2010). Collaborating online: Learning together in community (Vol. 32). John Wiley & Sons.

Paradise, A. (2008). 2008 State of the industry report: ASTD's Annual review of trends in workplace learning and performance. Alexsandria, VA: ASTD.

Pearlin, L. I., & Schooler, C. (1978). The structure of coping. Journal of health and social behavior, 2-21.

Pearlin, L. I., Menaghan, E. G., Lieberman, M. A., & Mullan, J. T. (1981). The stress processes. Journal of Health and Social behavior, 337-356.

Ployhart, R. E., & Bliese, P. D. (2006). Individual adaptability (I-ADAPT) theory: Conceptualizing the antecedents, consequences, and measurement of individual differences in adaptability. In Understanding adaptability: A prerequisite for effective performance within complex environments. Emerald Group Publishing Limited.

Pulce, R. (2005). Burned out employees: Is your workplace stressful or stress-free? Nurse Leader, 3(2), 9-11.

Rabenu, E., Yaniv, E., & Elizur, D. (2017). The relationship between psychological capital, coping with stress, well-being, and performance. Current Psychology, 36(4), 875-887.

Race, P. (2001). The lecturer's toolkit: a practical guide to learning, teaching & assessment. Psychology Press.

Reio, T. G., & Callahan, J. L. (2004). Affect, curiosity, and socialization-related learning: A path analysis of antecedents to job performance. Journal of Business and Psychology, 19(1), 3-22.

Reio Jr, T. G., & Wiswell, A. (2000). Field investigation of the relationship among adult curiosity, workplace learning, and job performance. Human resource development quarterly, 11(1), 5-30.

Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. Academy of management journal, 53(3), 617-635.

Riolli, L., Savicki, V., & Richards, J. (2012). Psychological capital as a buffer to student stress. Psychology, 3(12), 1202.

Rothwell, A., Herbert, I., & Rothwell, F. (2008). Self-perceived employability: Construction and initial validation of a scale for university students. Journal of vocational behavior, 73(1), 1-12.

Rowden, R. W. (2002). The relationship between workplace learning and job satisfaction in US small to midsize businesses. Human Resource Development Quarterly, 13(4), 407-425.

Rowden, R. W., & Conine, C. T. (2005). The impact of workplace learning on job satisfaction in small US commercial banks. Journal of workplace Learning.

Rowold, J., & Kauffeld, S. (2009). Effects of career-related continuous learning on competencies. Personnel review.

Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2012). The science of training and development in organizations: What matters in practice. Psychological science in the public interest, 13(2), 74-101.

Sambrook, S. (2005). Factors influencing the context and process of work-related learning: Synthesizing findings from two research projects. Human Resource Development International, 8(1), 101-119.

Scardamalia, M., Bereiter, C., McLean, R. S., Swallow, J., & Woodruff, E. (1989). Computer-supported intentional learning environments. Journal of educational computing research, 5(1), 51-68.

Schürmann, E., & Beausaert, S. (2016). What are drivers for informal learning? European Journal of Training and Development.

Schugurensky, D. (2000). The forms of informal learning: Towards a conceptualization of the field.

Schulz, M., & Roßnagel, C. S. (2010). Informal workplace learning: An exploration of age differences in learning competence. Learning and Instruction, 20(5), 383-399.

Simmons, D. E. (2002). The forum report: E-learning adoption rates and barriers. In A. Rossett (Ed.), The ASTD e-learning handbook (pp. 19– 23). New York: McGraw-Hill

Sitzmann, T., Kraiger, K., Stewart, D., & Wisher, R. (2006). The comparative effectiveness of web-based and classroom instruction: A meta-analysis. Personnel psychology, 59(3), 623-664.

Slotte, V., Tynjälä, P., & Hytönen, T. (2004). How do HRD practitioners describe learning at work? Human Resource Development International, 7(4), 481-499.

Song, L., & Hill, J. R. (2007). A conceptual model for understanding self-directed learning in online environments. Journal of Interactive Online Learning, 6(1), 27-42.

Spector, P. E., Dwyer, D. J., & Jex, S. M. (1988). Relation of job stressors to affective, health, and performance outcomes: a comparison of multiple data sources. Journal of Applied Psychology, 73(1), 11.

Statista Research Department. (2020). U.S.: Training Industry Expenditure 2020. Retrieved March 20, 2021, from https://www.statista.com/statistics/788521/training-expenditures-united-states/#:~:text=Following%20a%20dramatic%20increase%20of, billion%20U.S.%20dollars%20in%202020.

Stewart, C., Bachman, C., & Johnson, R. (2010). Students' characteristics and motivation orientations for online and traditional degree programs. Journal of Online Learning and Teaching, 6(2), 367-379.

Svensson, L., Ellström, P. E., & Åberg, C. (2004). Integrating formal and informal learning at work. Journal of Workplace Learning.

Swanson, R. A., Holton, E., & Holton, E. F. (2001). Foundations of human resource development. Berrett-Koehler Publishers.

Tannenbaum, S. I., Beard, R., McNall, L. A. and Salas, E. (2010), 'Informal learning and development in organizations', in S.W.J. Kozlowski and E. Salas (eds), Learning, Training, and Development in Organizations (New York: Routledge), pp. 303–32.

Terrell, S. R., & Dringus, L. (2000). An investigation of the effect of learning style on student success in an online learning environment. Journal of Educational Technology Systems, 28(3), 231-238.

Tews, M. J., Michel, J. W., & Noe, R. A. (2017). Does fun promote learning? The relationship between fun in the workplace and informal learning. Journal of Vocational Behavior, 98, 46-55.

Tynjälä, P. (2008). Perspectives into learning at the workplace. Educational research review, 3(2), 130-154.

Van Deale, C., & Amstutz, J. (2020, June 30). Online, self-directed Nightmare nobody talks about. Retrieved March 28, 2021, from https://hrprofessionalsmagazine.com/2020/06/06/online-self-directed-nightmare-nobody-talks-about/

Van Der Heijden, B., Boon, J., Van der Klink, M., & Meijs, E. (2009). Employability enhancement through formal and informal learning: an empirical study among Dutch non-academic university staff members. International journal of training and development, 13(1), 19-37.

Van der Pol, J., Van den Berg, B. A. M., Admiraal, W. F., & Simons, P. R. J. (2008). The nature, reception, and use of online peer feedback in higher education. Computers & Education, 51(4), 1804-1817.

Van Sonderen, E., Sanderman, R., & Coyne, J. C. (2013). Ineffectiveness of reverse wording of questionnaire items: Let's learn from cows in the rain. PloS one, 8(7). -

Walsh-Rurak, J. (2021). Virtual Instruction: How does it differ from online learning? Retrieved May 07, 2021 from https://www.fusionacademy.com/blog/a-tale-of-two-approaches-online-learning-versus-virtual-instruction/

Walumbwa, F. O., Peterson, S. J., Avolio, B. J., & Hartnell, C. A. (2010). An investigation of the relationships among leader and follower psychological capital, service climate, and job performance. Personnel psychology, 63(4), 937-963.

Watkins, K. E., & Marsick, V. J. (1992). Towards a theory of informal and incidental learning in organizations. International journal of lifelong education, 11(4), 287-300.

Westbrook, T. S., & Veale, J. R. (2001). Work-related learning as a core value: An Iowa perspective. Human Resource Development Quarterly, 12(3), 301-318.

Wheatley, M. J. (1994). Leadership and the new science: Learning about organization from an orderly universe. Berrett-Koehler Publishers, Inc., 155 Montgomery Street, San Francisco, CA 94104-4109.

Willis, C. M. G. (2019). Validating and implementing the informal learning behavior scale (Doctoral dissertation, Colorado State University).

Winefield, H. R., Winefield, A. H., & Tiggemann, M. (1992). Social support and psychological well-being in young adults: The Multi-Dimensional Support Scale. Journal of personality assessment, 58(1), 198-210.

Wolfson, M. A., Tannenbaum, S. I., Mathieu, J. E., & Maynard, M. T. (2018). A cross-level investigation of informal field-based learning and performance improvements. Journal of Applied Psychology, 103(1), 14.

Wright, K. B., & Muhtaseb, A. (2011). Personal relationships and computer-mediated support groups. Computer-mediated communication in personal relationships, 137-155.

You, J. W., & Kang, M. (2014). The role of academic emotions in the relationship between perceived academic control and self-regulated learning in online learning. Computers & Education, 77, 125-133.

# APPENDIX A

## DATA TRANSPARENCY TABLE

The variables below are measured across at the three time points described in this manuscript. Only the variables in bold are reported because they are based on the theory and used to test the hypotheses. I measured a variety of additional variables because I felt it was important to measure variables that might provide additional context or address alternative explanations.

| Variables | Time 1 | Time 2 | Time 3 |
|---|---|---|---|
| **Psychological Capital** | **X** | | X |
| **Time Structure** | **X** | X | X |
| **Social Support Instructor** | **X** | | |
| **Social Support Peers** | **X** | | |
| **Proactive Coping** | | **X** | |
| **Reflective Coping** | | **X** | |
| **Strategic Planning** | | **X** | |
| **Preventive Coping** | | **X** | |
| **Support-Seeking** | | **X** | |
| **Formal Learning** | | **X** | |
| **Learning Conditions** | | **X** | |
| **Informal Learning** | | **X** | |
| Age | X | | |
| Gender | X | | |
| Race | X | | |
| Work experience | X | | |
| College classification | X | | |
| Major | X | | |
| Types of Classes | X | | |
| GPA | X | | |
| SAT/ACT | X | | |
| Adaptability | X | | |
| Emotional Exhaustion | X | X | X |
| Satisfaction with life | X | X | X |
| Sleep quantity & quality | X | X | X |
| Career planning | X | | |
| Career identity | X | | |
| Engagement | | | X |
| Intention to drop out of college | | | X |
| Reasons for dropping out | | | X |

**Table continued**

| | |
|---|---|
| Perceived employability | X |
| Anticipated grade in class | X |
| Anticipated change in GPA | X |

## APPENDIX B

## LIST OF ITEMS USED FOR THIS STUDY

Psychological Capital

  I feel confident when I am looking for a solution to a long-term problem
  I feel confident that I will do well in my virtual classes
  I am confident in my ability that I will learn the material via my virtual classes
  I am able to define set goals for my virtual classes
  In one way or another, I can manage school and its difficulties
  At school, if necessary, I am able to stand "at my own risk"
  In general, I can easily step over the more stressful things at school
  I can overcome the difficult times at school, because I already came through difficulties
  in the past
  I feel that I can handle many things at the same time at school
  When things are uncertain for me at school, I usually expect the best
  In my classes, I always look on the positive side of things
  At school, I am optimistic about what will happen in the future
  I work with the conviction that every setback has a positive side

Time Structure

  Do you have a daily routine which you follow? (ROUTINE)
  Once you have started an activity, do you persist at it until you have completed it?
  (PERSISTENCE)
  Do you plan your activities from day to day?  (ROUTINE)
  Do you plan your activities so they fall into a particular pattern during the day?  (ROUTINE)
  Could you tell how many useful hours you put in last week? (ROUTINE)
  Looking at a typical day in your life, do you think that most things you do have a purpose?
  (PURPOSE)
  Do your main activities during the day fit together in a structured way? (ROUTINE)

Social Support

  Now think of other people of about your age that you know, who are like you students at
  a university

How often did they really listen to you when you talked about your concerns or problems?
How often did you feel that they were really trying to understand your problems?
How often did they try to take your mind of your problems by telling jokes or chattering about other things?
How often did they help you in practical ways, like doing things for you or lending you money?
How often did they answer your questions or give you advice about how to solve your problems?
How often could you use them as examples of how to deal with your problems?

Lastly, think about the people in some sort of authority over you. If you are a student it means your instructors, lecturers and tutors
How often did they really listen to you when you talked about your concerns or problems?
How often did you feel that they were really trying to understand your problems?
How often did they try to take your mind of your problems by telling jokes or chattering about other things?
How often did they fulfill their responsibilities towards you in helpful practical ways?
How often did they answer your questions or give you advice about how to solve your problems?
How often could you use them as examples of how to deal with your problems?

## Proactive Coping

I am a "take charge" person
After attaining a goal, I look for another more challenging one.
I like challenges and beating the odds.
I visualize my dreams and try to achieve them.
Despite numerous setbacks, I usually succeed in getting what I want.
I try to pinpoint what I need to succeed.
I always try to find a way to work around obstacles; nothing really stops me.
I turn obstacles into positive experiences.
If someone tells me I can't do something, you can be sure that I will do it.
When I experience a problem, I take the initiative in resolving it.
I imagine myself solving difficult problems.
Rather than acting impulsively, I think of various ways to solve a problem
In my mind I go through many different scenarios in order to prepare myself for different outcomes.
I tackle a problem by thinking about realistic alternatives.
When I have a problem with my co-workers, friends, or family, I imagine beforehand how I will deal with them successfully.
Before tackling a difficult task, I imagine success scenarios.
I take action only after thinking carefully about a problem.
I imagine myself solving a difficult problem before I actually have to face it.
I address a problem from various angles until I find the appropriate action.

When there are serious misunderstandings with co-workers, family members or friends, I practice before how I will deal with them.

I think about every possible outcome to a problem before tackling it.

I often find ways to break down difficult problems into manageable components.

I make a plan and follow it

I break down a problem into smaller parts and do one part at a time.

I make lists and try to focus on the most important things first.

I plan for future eventualities.

Rather than spending every cent I make, I like to save for a rainy day.

I prepare for adverse events.

Before disaster strikes, I am well-prepared for its consequences.

I plan my strategies to change a situation before I act.

I think ahead to avoid dangerous situations.

I plan strategies for what I hope will be the best possible outcome.

I try to manage my money well in order to avoid being destitute in old age.

When solving my own problems other people's advice can be helpful.

I try to talk and explain my stress in order to get feedback from my friends.

Information I get from others has often helped me deal with my problems.

I can usually identify people who can help me develop my own solutions to problems.

I ask others what they would do in my situation.

Talking to others can be really useful because it provides another perspective on the problem.

Before getting messed up with a problem I'll call a friend to talk about it.

When I am in trouble, I can usually work out something with the help of others.

Formal Learning

How many hours a week do you spend on studying for all of your classes?
*How frequently did you engage in the following activities this semester?*
Participated in scheduled, virtual class meetings (e.g., Zoom, BB collaborate)
Watched assigned video lectures
Completed assigned tasks (e.g., homework) for my class
Completed assigned readings for my class
Took scheduled exams for my class
Wrote assigned class papers

Informal Learning Behaviors

Set a learning goal for yourself
Pick new topics or skills to learn to enhance your performance in class
Plan to learn something new
Search for new information or ideas on the internet (e.g., using a search engine)
Share your knowledge (content, technical process, etc.) with peers

Discuss challenges with tasks or assignments you have in class with peers
Work together with a team to complete a task
Network with peers to exchange ideas or knowledge
Assist peers with their homework/assignments/studying as a way to learn more in class
Reflect on feedback you have received from peers
Reflect on feedback you have received from instructors
Reflect on challenging moments you have experienced in class
Reflect on the performance of others in class
Evaluate your personal performance in class
Challenge existing assumptions about ideas in class
Take calculated risks
Take on challenging tasks in class
Come up with new ideas
Respond to change in school by learning more about the change
Start ambiguous tasks by first finding clarifying information
Learn about a change that occurred in school
Use what you have learned to address the unanticipated consequences of decisions made in school

Supportive Learning Conditions

I participate in team projects composed of other students from my class
I have the opportunity to participate in project discussions
I have the opportunity to participate in study groups
I have the opportunity to present my ideas in class
I have the chance to ask peers and instructors about my own performance
I receive feedback from peers that makes me reflect on it
I receive feedback from my instructor that makes me reflect on it
I can rely on guidance when I need it
I have the opportunity to rely on a "study buddy" (someone in the same class, but more experience)
I have/had the chance to mirror a mentor as a freshman
I have the opportunity to ask for advice from a specific contact
As a new student I have/had the opportunity to be supported by a mentor