Pre-service Teachers' Language Mindset and its Impact on the Engagement and Persistence in their Language Pedagogical Studies: A Study Conducted in EFL Teacher Education in Finland

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ABSTRACT

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In the mindset research field, pre-service teachers' mindsets are understudied. Their beliefs about the malleability of their English as a Foreign Language (EFL) ability (that it is a predetermined trait – fixed language mindset (FLM), a changeable trait – growth language mindset (GLM) or an intermediate state – mixed language mindset (MLM)), also known as language mindsets are likely to impact the levels of engagement and persistence in their EFL pedagogical studies. This study examines the impact of language mindsets of the pre-service teachers on the engagement and persistence in their EFL pedagogical studies.

A quantitative analysis derived from questionnaire responses of 116 EFL pre-service teachers attending three Finnish universities showed that 6.9% of the participants had FLMs, 19.8% had MLMs and 73.3% had GLMs and the participants with GLMs displayed higher academic engagement and persistence, while those with FLMs exhibited lower academic engagement and persistence. The mere exposure to English or its frequent usage did not significantly promote GLMs. Additionally, FLM holders exhibited lower self-perception regarding their English language skills, indicating uncertainty about their potential.

The findings imply that fostering GLMs among the EFL pre-service teachers could be a promising strategy to enhance their own engagement and persistence in their studies and also to culminate GLMs in their students in future. The study also recommends the use of GLM mediated teacher instruction, feedback and tools for language pre-service teacher training in Finland.

Keywords: language mindset, engagement, persistence, correlation, EFL pedagogical studies

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1   INTRODUCTION

This chapter provides the background to language teacher education, in particular, English as a foreign language (EFL) teacher education in Finland which provides the context to the study, and a general introduction to language mindsets. Moreover, the chapter comprises the significance and relevance of the study in relation to the field of mindsets in language education and teacher education in Finland. The purpose of the study, its objectives and the research questions formulated to fulfill the determined objectives are also included in this chapter.

1.1   Background and Context

Mindset is an area of research that had been widely studied within the field of psychology, but of late, the concept of mindsets has crossed the threshold into the field of education wherein it is gaining increased popularity, especially with regards to language education (Lou & Noels, 2016, 2017, 2019, 2021; Mercer & Ryan 2010 & 2021). However, the meager focus on pre-service teachers' mindsets and their beliefs on the different roles of mindset makes mindset-related research a field that is immoderately dominated by studies on learners' mindsets in language learning. The present study examines the impact of the pre-service teachers' language mindsets on the engagement and persistence in their EFL pedagogical studies to add to the limited yet expanding research corpus in language mindsets and EFL education with pre-service teachers in Finland being in focus.

Mindsets stand for the idea that a person has about the ability to change his or her potentials (Dweck, 2006) such as intelligence, performance in a sport, language competence or any other ability. Recently, studies that investigate on language education have discerned mindsets as a factor that can impact language learning (Bai & Wang, 2021; Lou & Noels, 2020). While understanding learners' mindsets is important, equally, "Teachers' beliefs are important in understanding teachers' thought processes, instructional practices, and change and learning

to teach" (Zheng, 2009, p. 73). Exploring mindset ideologies among pre-service EFL teachers is especially important as they are educators whose professional competencies are still under construction and if they are given help to comprehend the importance of promoting growth language mindsets (GLMs) towards their language pedagogical studies, they will gain a lot from their studies both at present and in future and will show more persistence and more successfully save themselves from work burnout as teachers (Haukås & Mercer, 2021). Due to the increased attrition rates in teaching, especially at the beginning of the profession it is paramount to delve into any beliefs that could be inhibiting the pre-service teachers' growth, engagement and persistence (Haukås & Mercer, 2021) in their language pedagogical studies. Lou and Noels (2017) have taken on the key principles and propositions of the mindset theory (Dweck, 1999, 2006) to develop the concept of language mindsets: fixed language mindset (FLM), mixed language mindset (MLM) and GLMs. Studies have found that learners are far better when they trust that their intellectual abilities can be altered positively – the idea being growth mindset (GM), than when they believe that their intelligence is immutable – the belief being fixed mindset (FM) (Lanvers et al., 2021).

In teacher education, the little number of studies that exist in the field of teacher mindset usually explore how the teachers' mindset affect the learning of the students (Rattan, et al., 2015), but very rarely studies look at how the mindsets relate to their own competence (Asbury et al., 2016). Teachers are the role models who shape the learning experience of children. In order to succeed in teaching as their profession in future, the pre-service teachers should succeed in their own pedagogical studies and teacher training. Thus, it is important that future teachers receive quality education which is designed in a way that all the factors that affect their learning are addressed; in other words, an education that addresses the language mindsets of pre-service teachers. Even though the number of studies that have proven the significance of promoting GLMs among learners is ample, studies that testify the same among pre-service teachers are yet to disperse within the field of mindset research. Moreover, mindset studies that focus on ESL and/or EFL education are also not prominent; instead, research on other subjects

such as mathematics, ICT or economics are abundant. Therefore, the researcher believed that selecting pre-service EFL teachers as the sample would be ideal and timely to contribute majorly to an untrodden niche in the field of mindsets.

1.2   Aims and Objectives

This study mainly aims at evaluating the relationship between the language mindsets and the academic engagement and persistence of the EFL pre-service teachers who receive language pedagogical studies in Finnish universities, for the purpose of highlighting the significance of promoting GLMs in teacher education and ultimately, assisting to draw implications in teacher education to generate new ways of thinking about educating preservice EFL teachers, and their personal, educational and professional growth and development. To fulfill this purpose, the researcher developed four objectives: Objective 01 - to identify the mindsets held by the EFL pre-service teachers in Finnish universities. Objective 02: to identify the relationship between the EFL pre-service teachers' language mindsets and their characteristics. The characteristics of the EFL pre-service teachers which are taken into consideration under this objective are, the language identity: monolingual, functional bilingual, full bilingual or multilingual, language mostly used at home, beginning point of starting to learn English, current year of studies at the university, medium of education at the university, and self-perceived English language skills. Objective 03: To identify the correlation between the language mindsets and the academic engagement of the EFL pre-service teachers. Objective 04: To identify the correlation between the language mindsets and the persistence of the EFL pre-service teachers.

1.3   Research Questions

In order to address the said objectives, the study designed four research questions (RQs) as follows:

RQ1 - What language mindsets (FLM, MLM or GLM) are held by the EFL pre-service teachers?

RQ1 was answered by identifying each participant's mindset category, whether he or she carries an FLM, MLM or a GLM. Moreover, this part also attempted to see which language mindsets are the most and least distributed among the EFL pre-service teachers.

RQ2 - What is the relationship between language mindsets and the characteristics of the EFL pre-service teachers?

The RQ2 found out the relationship between the characteristics of the language learners and the language mindset categories. It was hypothesized that the language mindsets would be related to at least one of the characteristics.

RQ3 - What is the relationship between language mindsets and the academic engagement of the EFL pre-service teachers in their EFL pedagogical studies?

The answer to RQ3 was guided by two hypotheses. It was hypothesized that language mindsets and academic engagement correlate, and the level of academic engagement may differ across the three mindset categories. If not in all three mindset categories, at least one of the language mindset categories was assumed to show a difference, presumably displaying higher engagement in the GLM group and lower engagement in the FLM group.

RQ4 - What is the relationship between language mindsets and the learner persistence of the EFL pre-service teachers in their EFL pedagogical studies?

The answer to RQ4 was guided by the hypotheses that the learner persistence would differ across the three mindset categories and higher persistence would be associated with GLMs while lower persistence would be associated with FLMs. The next three chapters of the study build the literature review which provides the readers with the theoretical understanding of the research.

2 TEACHER EDUCATION

This chapter comprises two main sections. The first section discusses the teacher education in Finland. Under the first section, the structure and nature of Finnish teacher education and the pathway of being a teacher in Finland are explained under two subsections. The second section elaborates on the language teacher education in Finland in which two subsections explain the structure and nature of language teacher education in Finland and the means of becoming an EFL teacher in Finland. The aim of this chapter is to give an explicit elaboration on the Finnish education system and teacher education in Finland with a special focus on EFL teacher education to the readers.

2.1 Teacher Education in Finland

2.1.1 The Structure and Nature of Teacher Education in Finland

There are two types of universities in Finland as research universities and applied science universities. Both these institutions provide teacher education, but more precisely, "teacher education in Finland is organized in 8 universities in 11 campuses that are spread across the country" (Malinen et al., 2009, p. 569). Teachers can be grouped into five categories depending on in which age in the education system they teach: "kindergarten teachers, primary school teachers, subject teachers for upper grades, special education teachers and vocational education teachers" (Dong, 2016, p. 9).

The aim of the Finnish teacher education programs is to promote both professional and personal competences of the pre-service teachers. More focused attention is given to developing pedagogical thinking skills that permit the pre-service teachers to well comprehend the instructional processes with regards to the most up-to-date knowledge and training in education (Sahlberg, 2012). Finnish teacher education is based on research (Dong, 2016; Eklund, 2014; Tirri, 2014). Research-based teacher education stands for supporting the teaching process

through scientific comprehension and focusing on the thinking and cognition manifested in the process of researching (Jakku-Sihvonen & Niemi, 2006). Teacher education rooting from a research approach is supposed to provide a general yet comprehensive understanding of research procedures and develop enthusiasm towards research (Westburry et al., 2005) which is important because teachers need to be rational in their classroom choices, autonomous in their teaching activities such as designing teaching aids and classroom activities, and appropriate in testing, evaluation and assessment.

2.1.2 Becoming and Being a Teacher in Finland

As Dong (2016) states thousands of candidates apply for teacher education in Finland per annum and in order to get admitted to a university to receive teacher education, a student must sit for a national entrance exam, possess a positive personality with high interpersonal skills, and subsequently face an interview. In order to become a subject teacher or a class teacher at different levels in the education system, one has to follow different teacher education programs because a single common teacher qualification will not license an individual as eligible to teach at different levels nor as a class teacher or a language teacher in Finland. In primary school which runs from grades 1 to 6 usually the class teacher teaches the same learner group for more than one year and in addition to class teachers, primary schools also enroll few subject teachers to teach language. Depending on one's end goal: whether to be a subject teacher or a primary school class teacher and so forth, the number of European Credits (ECTS) that has to be competed differs. For instance, the Finnish National Agency of Education (2024), specifies that to become a class teacher, a candidate must have earned either a,

> "master's degree in education, at least 60 credits of multidisciplinary studies in subjects and cross-curricular themes and at least 60 credits in teacher's pedagogical studies, or studies required from a subject teacher in primary and lower secondary education, and at least 60 credits of multidisciplinary studies in subjects and cross-curricular themes" (Qualification of Class Teacher Section, para. 6).

The teacher training process is always guided by experienced teachers, professors and other personnel from the schools and universities whereas the supervising teacher would be the mentoring person in the journey.

2.2   Language Teacher Education in Finland

2.2.1   The Structure and Nature of Language Teacher Education in Finland

Within the teacher education is language teacher education around which the present study revolves. As Larzén-Östermark (2009) mentions, language teacher education does not deviate much from other subject teacher education in Finland. For language teachers, their studies focus majorly on one language alongside their pedagogical studies. They have to have high language proficiency in one of the country's national languages and study a major language such as English and a minor language such as French. The studies usually run for 5 years in order to complete 300 ECTS (In the final year, they are called master's students), but in some universities the time duration differs. Depending on which age group the pre-service teacher likes to teach, the workload and the number of credits that have to be fulfilled are different. If a student's intention is to become a teacher in the lower secondary school or adult education, it is sufficient that the student completes 60 ECTS in language studies, but if the plan is to be employed as a language teacher in higher grades, 120 ECTS are required.

The Finnish teacher education enables growth mindset pedagogy and the broad goal of education, according to the National Core Curriculum for Basic Education (2014), is to build individuals who can understand their best level of ability. Moreover, the education system is rooted in having trust in the autonomy and professionalism of the teachers (Tirri, 2014). The newest reform of the national core curriculum mentions that learners' faith in their ability must encouraged though positive yet un-exaggerated feedback (Finnish National Agency for Education, 2014). According to some quantitative studies, Finnish teachers tend to carry more GMs over FMs as per the measurements of the Dweck's scale (Laine et al., 2016; Laine & Tirri, 2023). However, although the literature testifies to the

growth mindsets of teachers in Finland and how that national core curriculum promotes growth mindset pedagogy, formal research on the mindsets of the pre-service teachers is very little.

In Finland, teaching could be a profession which can promote both engagement and disengagement or persistence and apathy in both the pedagogical studies and the work itself owing to ceaseless new expectations and challenges, in terms of an "increasingly heterogenous pupil population due to immigration and reforms towards inclusive special needs education, endeavors to digitalize schools, as well as cuts and savings in school funding" (Salmela-Aro et al., 2019, p. 2). Therefore, although the pre-service teachers could be highly motivated to engage and persist in their studies, their journey could sometimes be challenging due to various internal and external factors. Given the numerous external factors studied abundantly, through this research, the researcher tried to identify and explore deeply an intrinsic factor: language mindsets, that could have an influence on the engagement and persistence in EFL pedagogical studies among pre-service teachers in Finland.

2.2.2   Becoming and being an EFL Teacher in Finland

There are language teacher education programs in almost all universities in Finland. Entering into such a program to complete necessary requirements to become an EFL subject teacher in Finland is not an easy course. When becoming an EFL teacher, the pre-service teachers have to first begin their studies by completing language studies as language learning is one of the salient features of language teacher training. These language studies do not conventionally focus on grammar or history of English, but spreads on a wider scope which relates language studies with cultural and global trends in education. The language studies comprise courses in linguistics that encompasses applied linguistics in language teaching-learning and discourse studies, culture, literature and media, research and verbal and written communication (Toomar, et al., 2011). Secondly, pedagogical studies are demonstrated in two ways: theoretical and practical, are compulsory for pre-service EFL teachers. During the teaching practice the pre-service

teachers perform several roles such as homeroom teachers, observing EFL teaching and co-teaching.

In language teacher education, about half of the studies are taught in the language of the pre-service teachers' major studies and most of the time, it is not their first language (Leinonen, 2016). Using and learning a language in subject studies other than one's first language (L1) can cause different types of negative impacts which can even affect the process of becoming a professional foreign language teacher (Horwitz, 2001; Renko, 2012 & Tikkanen, 2014). Beliefs about one's own abilities and low self-esteem can have a drastically negative impact on linguistics skills (Stephenson & Hewitt, 2010) of the EFL pre-service teachers. Thus, it is important that the pre-service teachers believe in their own abilities and be confident about their competence to succeed in their language pedagogical studies in a way that they feel motivated to engage and persist in the coursework. The numbers suggest that learners drastically drop out of their studies and these dropout rates are directly linked to the levels of engagement and persistence in the language pedagogical studies. When the want to engage in academic work is reducing, more students are likely to give up their studies which ultimately leads to terminating their studies at an abrupt point. However, to pursue pedagogical studies in English and to become a successful EFL teacher, the mere presence in the class and meeting deadlines are not sufficient. The pre-service teachers have to be driven from within to engage and persist in the studies. This is where the language mindsets come into play. Language mindsets, specifically GLMs can promote the academic and professional success of the teacher students. The next section explains in detail about mindset theory, language mindsets and language mindsets.

3 MINDSETS IN EDUCATION

In this chapter, a review of previous literature on language mindset and its related theory is presented. By examining the existing literature, the researcher attempted to locate the areas that need more attention in the field of language mindset in order to establish a research gap. The compilation of previous studies served to supplement the arguments and claims made in the present study. The chapter is organized as follows: (1) Theoretical foundations of mindsets and (2) Mindsets in EFL education, which are then further divided into subsections.

3.1 Theoretical Foundations on Mindsets

Researchers and educators constantly investigate the driving forces that lie at the core of the motif to engage and persist in academic tasks related to language education (Cao, 2011; Farrington et al., 2012; Peng, 2012;). In order to feel the need to learn something and to succeed at it, learners need to view themselves and their studies in a certain way (Dweck et al., 2011). In other words, the want to engage in academics is driven by the learners' mindset towards learning (Dweck & Legget, 1988; Dweck, 1999; Dweck, 2006). In this study, the mindset in language education is identified as how the learner believes about the extent to which his or her ability to perform in the particular learning task (in this case, language pedagogical studies) can be changed. The main theoretical reference to the present study is Dweck's (1999, 2006) implicit theories. However, Lou & Noels (2017, 2019) adopted Dweck's findings into the context of foreign language education which is also used as a frame of reference in this study.

3.1.1 Dweck's Mindset Theory

By investigating a wide range of economically, socially, and ethnically different student groups, Dweck and colleagues have conducted much research on learners' mindsets about their intelligence (e.g., Dweck & Legget, 1988; Dweck et al.,

1995; Dweck, 1999; Dweck, 2006; Dweck, 2015). Mindset concepts or implicit theories refer to individuals' salient ideologies about their own capabilities such as their intelligence, personality and abilities, in particular whether they are malleable or unchangeable (Dweck & Legget, 1988). Emerging from a social cognitive perspective, Dweck's (1999) theory of fixed and growth mindsets explicates the notion that human thought processes have a crucial role on motivation and action (Merriam et al., 2007). Although the original influential research work on mindset had been published in 1988 (Dweck & Leggett, 1988), some experts and scholars in the field announce that studies on growth mindset are still in their infant phase and yet to be explored extensively and make known about mechanisms of nurturing growth mindsets in learners (Chen & Liu, 2023; Dweck, 2018; Savvides & Bond, 2021). According to the initial theories of Dweck (1999), there are two main categories related to human intelligence: entity theory or fixed mindset and incremental theory or growth mindset and the implicit theories of people can be plotted on a continuum ranging from growth to fixed mindset. However, opposing her own claims, in her later research, Dweck (2006) identifies another derivative on the learners' mindsets as the mixed mindset. The next section defines the key terminology and an extensive explanation on the three mindset categories proposed by Dweck (1999, 2006). Dweck's theory lays a framework for brain research which has proven that learners who are typified to have growth mindsets have a tendency to recover from mistakes rapidly in comparison to the learners with fixed mindsets by taking measurements through error monitoring event-related brain potentials (ERP) (Moser et al., 2011; Schroder et al., 2017).

However, there have been instances where GMs are not always related to higher academic engagement, performance or persistence. For example, contradicting to the results produced by Dweck, several empirical studies have landed on findings which displayed no significant correlation between mindset, achievement or motivation (e.g., Burgoyne et al., 2020; Leaondari & Gialamas, 2002; McCabe et al., 2020; Robins & Pals, 2002). Apart from that, several research have discovered that although a positive correlation existed, the strength of the relationship to be way weaker than what is presented in previous studies (e.g. Zhang

et al., 2017). Therefore, with the understanding that it is not reliable to depend solely on the claims of the previous studies that support growth mindsets in language learning and as pre-service teachers' mindsets about their own language pedagogical studies have been given little or no attention in the field of mindset-related research in Finland, as the first step, the present study aimed at exploring whether a correlation between the language mindsets of the pre-service teachers in the engagement and persistence of their language pedagogical studies actually exists. In the imminent subsections, the three mindset categories are described in detail.

3.1.2   Fixed Mindset (FM)

An FM is a person's idea or belief that abilities are unchangeable (Zee et al., 2020) and such mindsets are most of the time related to negative results (King, 2017). On a more elaborative note, students that carry a fixed mindset (entity theorists) hold on to the idea that their intellectual ability is limited and henceforth, contemplate more about evincing their intelligence and talent over improving them (Dweck & Legget, 1988). This behavior often leads to feelings of humiliation, desire to give up, and underestimation of their own worth. They believe that their intelligence is stagnant; some naturally have it while some do not (Auten, 2013). Primarily, such learners are convinced that they do not possess sufficient capability to engage in the given tasks, thus, retreat from the challenge (Sousa & Tomlinson, 2011). Except that, learners with fixed mindsets are inclined towards posting for tasks that can guarantee their success and get exasperated when they have a hard time in working on a skill or a concept (Jacovids et al., 2020).

The results of the study executed by Lou and Noels (2016) for evaluating the effect of mindsets on academic work, results affirmed that learners who carried FLMs demonstrate comparatively higher performance goals and as these learners who were identified to be FLM holders set relatively higher goals in their performance in comparison to GLMs, they indicated higher anxiety, hesitance to acknowledge feedback, and did not want to take the risk of responding to challenging questions in the classroom. The entity theorists were more worried about

being viewed as failures because learners with fixed mindsets usually identify failure as an indicator of their incapacity to learn and acquire natural abilities in that area; this inaccurate and unnecessary fear impel them to safe guard their self-esteem and self-confidence by avoiding challenging circumstances or participating in self-demeaning conduct like repudiating to engage assigned tasks and self-destruction (Lou & Noels, 2016; Lou & Noels, 2020).

Having a fixed mindset as teachers not only affects their own studies but it can also affect the learning process of their students negatively. Teachers who are inclined more towards entity theory beliefs may execute classroom practices that make aspiring growth mindsets invalid and inapplicable (Yeager et al., 2021). For example, such teachers would promote notions that would imply only certain learners are talented enough to secure A grades nor a particular learner is a 'language person' (Muenks et al., 2020; Rattan et al., 2012). Therefore, the process of creating and becoming a teacher is a responsible task as the future of many learners lies in the teachers' hands which is why proper pedagogical studies that promote correct language mindsets among pre-service teachers are vital.

3.1.3   Mixed Mindset (MM)

The idea of a mixed mindset is not very popular among mindset studies. Most of the work that has been done on mindset theory is quantitative and the research designs employ the simple binary dichotomy of fixed and growth mindsets. There are qualitative studies such as that of Mercer and Ryan (2010, 2012) that bring into light the dubious binary placement of learners into two extreme ends and therefore, suggest outspreading mindsets on a continuum in which a considerable proportion of learners could place in a mid-position that blends both fixed and mixed characteristics. Dweck, et al. (2009) suppose that it is perfectly possible for individuals to possess both entity and incremental theories, but one mindset could be more dominant than the other. Supporting these claims, recently, Lou and Noels (2019) have also put forth their speculations regarding the 'categorical' nature of mindsets and proposed that many can carry a fusion of beliefs with a person seldom been in agreement with a single exclusive set of beliefs.

Henceforth, mindset categories cannot be simplified to only fixed and growth, dichotomy since it is more complex than it appears to be, as learners may have both fixed and growth beliefs simultaneously (Lou & Noels, 2017). Evidently, some studies on mindsets show that people own mindsets combined of both incremental and entity mindsets which shift back and forth rather than having either a purely fixed or growth mindset (Lou & Noels, 2016). In furtherance, research testifies to the fact that humans have the potential to be regulated to carry a specific mindset category more than another type of mindset depending on the guidance they acquire regarding mindsets (Lou & Noels, 2016). Discussing students, most students tend to possess a combination of fixed and growth mindsets in diverse contexts (Dweck & Yeager 2019). An in-depth review of previous studies proves that not many studies have addressed mixed mindsets in their research designs, but there are some (e.g., Lou & Noels, 2017; Molway and Mutton, 2019) that exist in the domain. In order to contribute more to the corpus on all three mindset categories, this study identifies and explores mixed mindsets too as one mindset type.

3.1.4   Growth Mindset (GM)

A GM is the idea that intelligence and certain traits are changeable, and possibly developed. Students with growth mindsets (incremental theorists) are willing to engage in hard work, are motivated, employ learning strategies, and display higher academic achievement (Curry et al., 2006; Dweck & Legget, 1988). They view their challenges in a different light - as a chance to develop and acquire knowledge. They prefer to perceive difficult or challenging tasks as a platform to upgrade their competences (Blackwell, et al., 2007) and search for demanding academic experiences which allow them to grow (Muller & Dweck, 1998; Romeo et al., 2014). Most of the time, a GM is perceived as a positive psychological construct (Chan et al., 2020). So, studies have discovered that learners with GMs engage and achieve more than learners with FMs (Blackwell, et al., 2007; Romeo et al., 2014; Stipek & Granlinski, 1996). In general, an incremental mindset is highly

likely to assist students achieve their potential and display positive trajectories in their performance (Blackwell et al., 2007; Zhang et al., 2017).

Promoting GLMs in pre-service teachers would benefit in two ways: for their own language pedagogical studies and for the learning of their students. As per the mindset-plus-supportive-context hypothesis, teachers who have incremental ideologies will promote the idea that mistakes can be turned into learning opportunities without interpreting them as markers of inadequate or low ability and reinforce this perception using tasks and tests recompensing persistent improvement (Canning et al., 2019; Muenks et al., 2020).

3.2   Mindsets in EFL Education

3.2.1   Language Mindsets in EFL Education

Latest research revealed that certain linguistic beliefs regarding the likelihood or the impossibility to change one's language learning abilities impact the language confidence and motivation of language learners (Lou & Noels, 2017; Lou & Noels, 2019). Irie et al. (2018) stated that the most recent and promising study on mindsets in foreign language education is by Lou & Noels (2017) who proposed a research tool, the Language Mindset Inventory (LMI) which is used as the tool to gather data on language mindsets of the pre-service teachers in this study. Language learners who view their potential to acquire a new language as malleable are highly likely to impose goals to develop their foreign language skills and thus, experience comparatively low fear and anxiety in engaging with a target language (Lou & Noels, 2019). In contrast, FLM holders strongly believe that their language mindsets are predetermined unchangeable. According to them, the already accumulated ability can never be developed (Zarrinabadi et al., 2021). Conversely, GLM holders strongly believe that through sufficient effort and appropriate strategies, one can enhance their language learning abilities. These incremental beliefs encourage learners to set new goals, adapt to different situations and guide them towards achieving outcomes (Dweck & Legget, 1988). When extended to experimental research, GLMs have predicted higher academic success

in a target language (Lou & Noels, 2016; Lou & Noels, 2019; Papi et al., 2019) proving the vitality of advancing GLMs in learners.

3.2.2. Language Mindsets of Pre-service Teachers

Most often, within the education field, the learner has been the center of attention. As a result, the number of research on mindsets of pre-service teachers is very little and, the existing small body of research on the mindset of teachers commonly explores the mindsets of educators have on their students' capabilities and mostly evaluates the influence of these mindsets on their pedagogical behaviors (e.g., Patrick & Joshi 2019; Rissanen et al., 2019). On the contrary, investigations of pedagogical expertise and teachers' beliefs on their self-potential as educators in a particular field is scarce (Haukås & Mercer, 2021). One out of the scarcely available body of research of mindsets of pre-service teachers is a study conducted by Irie et al. (2018). One of the main goals of this study was to offer a novel perception on exploring pre-service EFL teachers' perspectives on the ability to learn a number of major competences in teaching.

> "The data indicate that the most common mindset among the pre-service teachers is one based around a strong belief in the learnability of the more technical aspects of teaching, while interpersonal skills tend to be regarded as more of a natural talent fixed within the individual. One practical implication of this finding is that teacher education programs may need to pay more attention to explicitly developing the interpersonal side of teaching" (Irie et al., 2018, p. 575).

However, the subjective study is different from the study by Irie et al. (2018) because the present study does not look at the views of the preservice EFL teachers on the learnability of certain competences, but on the beliefs they have about their own mindsets about their pedagogical studies in EFL teaching and how their language mindsets reflect their current academic engagement and future selves in EFL pedagogical learning can be changed.

The mindset beliefs of teachers about their own teaching competences are crucial in many aspects such as for developing growth mindsets in the learners. Teachers own growth mindset can promote GMs in learners (Rissanen et al., 2021). Dweck (2014) summarized the main findings of a study by Gero which

explored the mindsets of teachers as follows: teachers with GMs were welcoming feedback more, they are more concerned about professional growth, and prefer more to participate in peer assessment. She especially stresses the issues regarding pre-service teachers who may have FMs about their teaching competence or view their teaching abilities to be dependent upon a pre-determined or inherent potential. She remarked that teachers with fixed mindsets might give up their job with the claim that, "they didn't really have the talent in the first place or that the kids were intractable" (p. 13). Moreover, teachers' mindsets are vital for their own professional growth (Dweck, 2014), but many mindset studies have retained learners as the central focus with little consideration on the part of the teachers' mindsets whether it is pre-service or in-service (Haukås & Mercer, 2021). Holding an incremental attitude does not stop at helping the pre-service teachers to thrive in their academics only, but also helps to perform well in the professional career as their mindset beliefs are related to the way they deal with the obstacles that have to be surpassed in the teaching career while maintaining their wellbeing and resilience (Zeng et al., 2019).

As discussed previously, language mindsets are identified as a pivotal aspect of determining the learners' academic engagement and persistence, but although a considerable number of scholars have agreed that GLMs are directly proportional to the academic engagement and persistence of learners, the relationship between language mindsets and academic engagement and persistence has been ignored and untheorized except for few studies. So, the present study strived to map the relationship that language mindsets share with the pre-service teachers' engagement and persistence. The next chapter introduces the reader to the concepts of engagement and persistence in this study.

4   ENGAGEMENT AND PERSISTENCE IN EFL PEDAGOGICAL STUDIES

In the educational context, engagement stands for learners giving attention and effort towards a specific learning task 'in the moment' (Hargraves, 2020) whereas as per the Learning and the Adolescent Mind (n.d.), "persistence is evidenced by willingness to continue to try in the face of challenge" (Effective Effort section, para. 1). In general, it is believed that the higher the engagement and persistence, the more the learning is improved in students. Engagement and persistence can be promoted by teachers by making the classroom activities more meaningful and interesting, but the engagement and persistence that comes through external force could sometimes be short-lived and thus, it is more important if self-directed engagement and persistence could be promoted within the learner-self. Ramage (1990) argued that students who persist in their language studies have an intrinsic interest in foreign languages.

Engagement takes place when students invest psychologically in learning and when they consider that learning is simply not about getting good grades but gaining knowledge and internalizing the acquired knowledge in their real lives (Newman, 1992). Simultaneously, Franklin et al. (1997) claimed that the beliefs of the student about their own success in language learning is a contributing factor to persist in foreign language study. Academic engagement or learner engagement can be defined in numerous ways and scholars take diverse approaches to explain the concept of engagement. Numerous studies have identified engagement to be a necessary and significant characteristic in the field of education, but agreement on a commonly agreed definition is not observed (Taylor & Parsons, 2011). In this study, the foreign language course engagement is identified as the want and need of the pre-service teachers for meaningful participation in the EFL pedagogical studies to achieve their academic and professional goals and learner persistence refers to the willingness to continue EFL pedagogical studies amidst setbacks.

Most of the time, student engagement is used in portraying their preference to take part in school activities such as being present in the class, doing homework, and following the directions of the teacher (Chapman, 2003). Apart from this commonplace definition, engagement is viewed through a more advanced lens as the meaningful involvement of the students in a learning environment wherein learners are also considered as subjects that can contribute to designing curriculum and classroom management (Fletcher, 2005). Research on engagement usually employ ideas from both socio-cultural perspectives and psychological perspectives in order to demonstrate student engagement in a tripartite dimension: affect, behavior and cognition and with these perspectives, they denote engagement as a means in which students harness themselves to their role as a learner while displaying high energy in the learning tasks (Burch et al., 2015). Most often students tend to give up on learning tasks when encountered with difficulty, but teachers can assist students to realign themselves in the learning process, (Castagno-Dysart & Matera, 2019) otherwise, to persist through the challenges. Livy et al., (2018) explain that teachers must communicate to the learners that struggling is part of the learning process which "stimulates brain growth and helps to develop a growth mindset (p. 18).

Owing to the crucial importance of the teachers' roles in shaping the lives of learners and the role of mindsets in shaping the teaching career of the pre-service teachers themselves, the exploration of pre-service teachers' beliefs about their own abilities to learn EFL is of utmost significance to widen the limited focus on pre-service teachers' language mindsets. Since the analysis guided by the four RQs (explained in Introduction) proved that the pre-service teachers' mindsets positively correlate with the levels of academic engagement and persistence in the EFL pedagogical studies, this study is expected to contribute to understanding a significant reason for low engagement and student attrition and ultimately, spotlighting the need of promoting GLMs that lead to higher engagement and persistence in EFL pedagogical studies. The next chapter elaborated on the methodology employed to derive these results.

5 RESEARCH METHODS

In this chapter, the research design and the methodology are explained in detail. The methodology unfolds information on the research population, sample, instrument, data collection, sampling procedures, data analysis and ethical considerations.

5.1 Research Design

This study follows a quantitative approach, and the research design is correlational. The study is developed on already built and existing theories about mindsets and the connection between mindsets and learner engagement and persistence. Thus, this research is based on a deductive approach. A research strategy was designed (Figure 01) to test the theory.

When developing the study, the correct research philosophy has to be chosen and relied upon throughout the research process to select the best methods to collect data which would subsequently fulfil the aim of answering the research questions effectively. Sunders et al., (2019) defines research philosophy as a conglomeration of perceptions and speculations on the development of knowledge. The present study's data collection and analysis were rooted in the post-positivist paradigm. In academic research, many of the studies that employ empirical observations and measurements and yearn to achieve the goal of verifying existing theory base their work on a post-positivist approach. A deterministic philosophy where the cause predicts the outcome is what the post-positivists believes lay on. They believe in empiricism which is the notion of observation and measurement being at the center of scientific endeavors. Post-positivist beliefs are also reductionist because they attempt to bring down ideas to a distinct testable set such as the variables constituting the hypotheses and/or the RQs. The knowledge derived from a post-positivist view is most of the time based on measurement of the worldly objective reality. Most of the quantitative research is initiated with testing a theory and in such research which is quantitative and based

on post-positivist ideologies, knowledge is shaped by data, evidence and rationale (Phillips and Burbules, 2000). Henceforth, this study draws on the principles of the post-positivist paradigm and tries to identify the mindsets of preservice English language teachers in Finland and their levels of engagement and persistence by quantifying the data collected through their responses.

5.1.1 Conceptual Framework

The conceptual framework was designed in a way that the language mindset of the preservice EFL teachers were determined by six items about the mindsets of ESL learners (Lou and Noels, 2017). The academic engagement of the preservice teachers in their pedagogical studies was measured by nine items by Salmela-Aro and Upadyaya (2014). Learner persistence was measured by five items in the scale that measures the intention to pursue studies in L2 (Noels et al., 2000). These measures will be discussed in detail in section 4.2.4. The tested model is demonstrated in Figure 01.

Figure 01

Conceptual framework
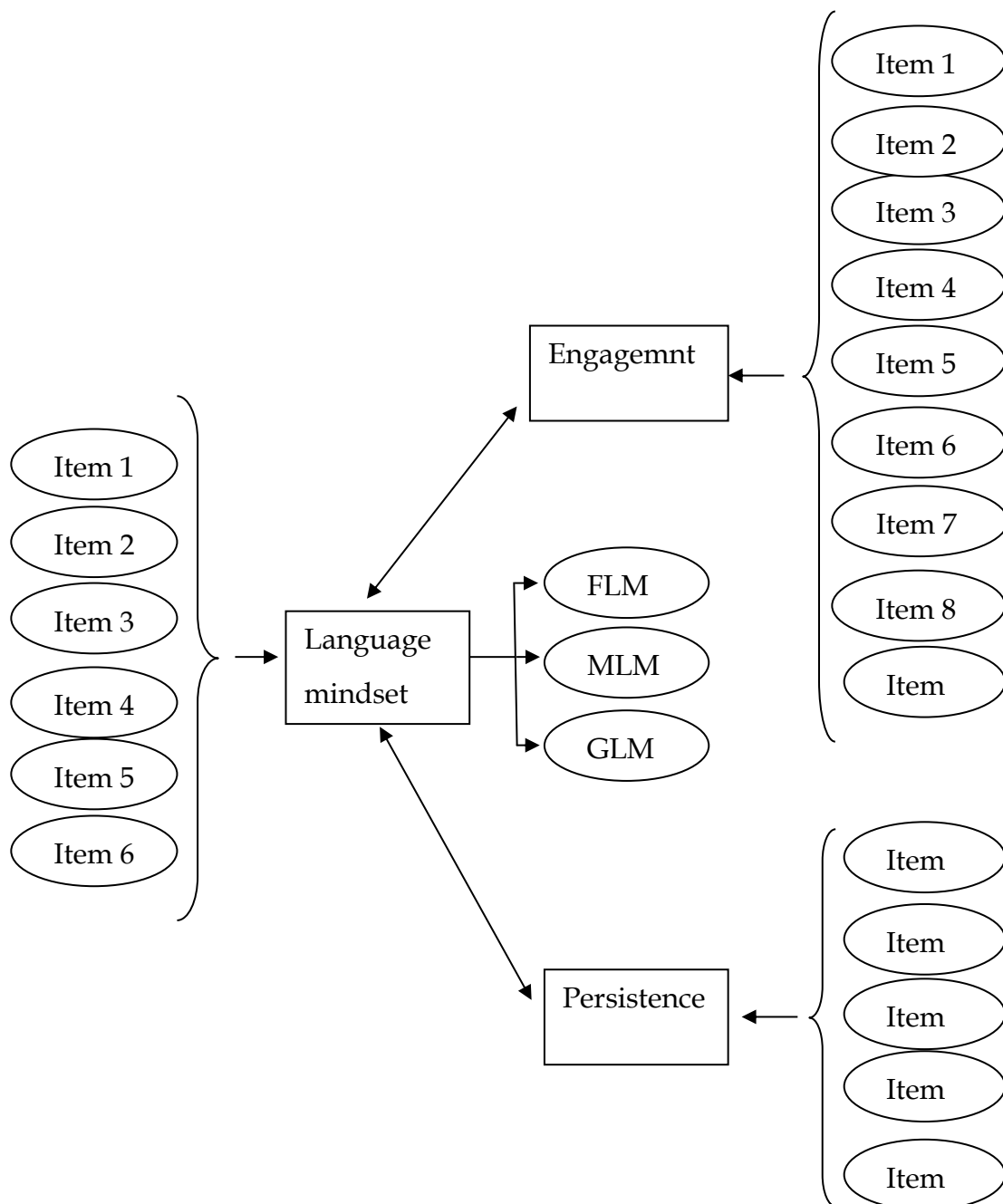
5.2. Data Collection

5.2.1. Participants

In this study, the research sample is preservice teachers (*N* = 116) who follow language pedagogical studies in Finnish universities. They are enrolled in language pedagogical study programs in their respective universities to prepare themselves for becoming future subject language teachers in English or class

teachers specialized in language education. All the participants are bachelor's and master's degree level students, and the study years vary from the first year to the fifth year.

5.2.2. Sampling Method

The sampling methods used in the study are snowball sampling and convenience sampling. First, the research instrument was distributed among the bachelor's level university students in Finland who follow pedagogical studies in English pertaining to their English language subject teacher programs. The distribution was done by the researcher herself and the thesis supervisor. Both of the main distributors have asked more participants and other involved persona to share the questionnaire among more known people who are eligible to fill out the questionnaire. Therefore, snowball sampling method was employed. Second, to determine which university teachers to be contacted, information regarding potential teachers was gathered from the supervisor and the mentioned persona were contacted via email. Moreover, the supervisor helped to collect data from her own students and her teacher-colleagues' students which makes convenience sampling another sapling method used in the study.

The sample carried both male and female pre-service teachers studying in any year during their bachelor's studies. The sample was determined by assessing certain inclusion criteria. For example, whether the respondent is attending university in Finland and whether the respondent is following EFL pedagogical studies in his or her bachelor's level courses. The criteria that were used in including or excluding respondents in the sample are as in Table 01.

Table 1

Inclusion and Exclusion Criteria

	Criteria	
	Inclusion Criteria	Exclusion Criteria
Criterion 01	Pre-service teacher	In-service teacher

Note. (Table continues)

	Criteria	
	Inclusion Criteria	Exclusion Criteria
Criterion 02	Bachelor's and master's student	Non bachelor's or master's student
Criterion 03	Follows pedagogical studies in English	Does not follow pedagogical studies in English
Criterion 04	Studies to become an English language subject teacher or a class teacher specialized in language studies	Does not study to become an English language subject teacher a class teacher specialized in language studies
Criterion 05	Attends university in Finland	Attends university outside Finland

5.2.3. Instrument

Primary data for the study was collected by distributing a link to the questionnaire (Appendix 1) among the preservice service teachers by the researcher, the supervisor and lectures of the University of Jyväskylä and other universities in Finland. The participants were given freedom to fill out the questionnaire at any time or setting within the stipulated time period allocated until the public link to accept responses was restricted.

5.2.4. Measures

The questionnaire used several measures in terms of Multiple-Choice Questions (MCQs), Likert scales and short answers. Three separate Likert scales were employed to measure the variables language mindset, academic engagement and learner persistence which is described in detail in the following sections.

Demographic data. Background information was collected through MCQs and Likert scales. The MCQs gathered information on the language identity of the respondents, mother tongue, the year in which they study at the university, medium of education at the university, the mostly used language at home, and the starting point of learning English. The last question that gathered demographic data required the pre-service teachers to rate their self-perception on their English language skills: reading, writing, speaking and listening on a 5-

point (1 = Very Weak; 5 = Very Good) Likert scale (α = .91). A mean score was calculated for the scale.

Language mindset scale. The language mindset was measured by 6 items that ranged on a scale of 6 points (1 = strongly disagree; 6 = strongly agree). Cronbach's alpha for the Likert scale was .85. The items were extracted from the Language Mindset Inventory (LMI) by Lou and Noels (2017). Lou and Noels (2017) have adapted these items from the original mindset scale of the implicit theories by Dweck (1999). They have modified the wording of the items to match the context of language learning. The score of these items was used to determine the language mindset categories of the EFL preservice teachers. In the LMI, there were 3 items (LM1 – "To a large extent, a person's biological factors (e.g., brain structures) determine his or her abilities to learn new languages", LM2 – "It is difficult to change how good one is at English language", and LM3 – "Many people will never do well in English language even if they try hard because they lack natural language intelligence".) that were worded negatively and differed in direction from the other 3 items (LM4 – "One can always change his/her English language ability", LM5 – "In learning English language, if one works hard at it, he/she will always get better", and LM6 – "How good one is at using English language will always improve if he/she really works at it") in the scale which are positively worded statements. The negatively worded items in the scales were reverse scored and a mean score was calculated.

Academic engagement scale. The academic engagement of the preservice teachers in their language pedagogical studies were measured using a 5-point scale (1 = never; 5 = always). The scale carried 9 items (α = .91). The items were extracted from the Schoolwork Engagement Inventory by Salmelo-Aro and Upadyaya (2014). Used originally for measuring the engagement of students who receive education at schools, the scale was adapted by Lou and Noels (2017) to the context of ESL learning (e.g. "When I am learning "English", I forget everything around me") which in this study was adapted to suit the context of language pedagogical studies (e.g. "When I am learning "language pedagogical studies, I forget everything around me"). The items in this scale measured the

way in which the respondents feel about attending and being present in their pedagogical lessons, and their opinions and emotions about their current language pedagogical studies. There were no negatively worded items in the scale used to measure the engagement and no reversing was therefore needed. A final mean score was calculated for the scale.

Learner persistence scale. Learner-persistence was measured by using 5 items on a 5-point scale (α = .74) (1 = never; 5 = always). The items were extracted with the intention to continue second language studies scale by Noels et al., (2000). The terminology was adapted to suit the language pedagogical context (e.g., "I would like to give up learning 'language pedagogical studies'"). These items were aimed at assessing the plans of the preservice teacher about continuing to engage in language pedagogical studies in future. There were two negatively worded items in the learner-persistence scale (PERS1 – "I would like to give up learning my language pedagogical studies", and PERS3 – "I intend to stop learning my language pedagogical studies as soon as I can"). These items were reverse scored, and a mean score was calculated.

In total, 116 pre-service teachers from the Finnish universities to which the link was distributed had completed the questionnaire and their responses were used in the data analysis. The dataset was organized by assigning manual and nominal codes to each variable for the accuracy and convenience of data handling and processing. The data analysis is explained in detail in the next section.

5.3. Data Analysis

The process of data analysis followed a purely quantitative approach. Quantifying results is best in cases where the aim is to generalize results within large populations. The purpose of the research is to identify the existence of a relationship between preservice teachers' language mindset and their engagement and persistence in language pedagogical studies and the nature of the relationship. Post identification of the relationship, the results were expected to be applied to EFL preservice teachers in Finland. Therefore, a comparatively large sample was used

in the study. However, to attain more reliability, it is noteworthy that the sample could be larger. Following a research procedure in which scientific approaches with concrete steps are defined is crucial in cases where the relationship among three abstract concepts is evaluated. This purpose can be best achieved by means of following scientific deduction thoroughly which is fulfilled in the regime of quantitative data analysis. Henceforth, the researcher decided to choose the data analysis approach that produces solid and quantified results with numerical proof and statistical explanation.

The statistical software used in the analysis was SPSS version 23. The preliminary analysis of data included reliability tests, normality checks and reverse scoring data. The main analysis was done by the operations, correlation, cross tabulation, and ANOVA. In cases where both the variables are numerical, normally distributed with no outliers and shares a linear distribution, Pearson correlation coefficient is an ideal measure (Turney, 2022). The respondents were grouped into the three main mindset categories: FLM, MLM, and GLM. The basis for the grouping was adapted from Glerum et al., (2019) that group the participants,

> "with a low score (1) representing agreement with an entity theory, and a high score (6) agreement with an incremental theory. Participants with a score of 3.0 or below are typified as having a fixed mindset and participants with a score of 4.0 or above a growth mindset" (Glerum et al., 2019, p. 4).

Glerum et al., (2019) have adapted these criteria from the original study conducted by Dweck et al., (1995). Using the above cut-off values, it could be realized that about 15-20% of the respondents' mean score vary between 3.00 and 4.00 and this group is typified to fall into the mixed mindset category who are roughly evenly dispersed between a fixed and growth mindset (Dweck, et al., 1995). Accordingly, the present study follows the cut-off marks for the 3 groups as follows: a score of 3.00 or below is a fixed mindset; a score between 3.001 – 4.00 is a mixed mindset and a score of 4.001 or above is a growth mindset.

In order to determine the relationship between language mindset and academic engagement and learner persistence, Pearson correlation was used. In the

same manner, Pearson correlation was used to explore the relationship that language mindset shares with the current year of studies, starting point of learning English, and perceived English language skills. Cross-tabulation is used to describe the relationship between two categorical variables (Qualtrics, 2024). In cases where the variables were not continuous such as language identity, and the medium of education at the university, Pearson correlation could not be employed. Therefore, crosstabs were generated to look for any relationship between the said variables and language mindsets.

Analysis of Variance (ANOVA) is used in analyzing difference between the means of multiple groups (Bevans, 2020). This study used one-way ANOVA to compare academic engagement and learner persistence across the three groups (FLM; MLM and GLM). For post hoc-test, Bonferroni was employed for group comparisons in the measures with equal variances, and Dunnett's T3 was used for those without equal variances. Cohen's d effect sizes were also calculated for group comparisons. Cohen's d was computed using the means and standard deviations, with the criteria for effect sizes being d ≤ 0.2 for a small effect, d ≥ 0.5 for a medium effect, and d ≥ 0.8 for a large effect (Cohen, 1988).

5.4.   Ethical Solutions

The ethical considerations of this study are thorough, well-adhered to and had several steps. A research notification and an invitation letter (Appendix 2) which included information about the invitation to the study, voluntariness, study progress, possible benefits, and other information were provided. Moreover, a privacy notice (Appendix 3) which explained data security was created and sent to the participants. This document carried information on data controller(s), processor(s) of personal data, anonymity personal data protection, rights of the data subject and archiving. Then, an invitation letter to participate in the study was formulated. This letter explained about the researcher, the supervisor, the rela-

tionship of the researcher with the university under which the study is conducted, the study purpose and the contact information of the student-researcher and the supervisor.

In scientific research, it is vital that the participants are explained why the study is conducted (Heath et al., 2010). The participants were explained explicitly the purpose of the research and its expected outcomes. Also, the information that their responses will be stored behind passwords in the JYU U-drive, and no third party would have access to the data were clearly mentioned. Following the Ethical Guidelines of JYU (n.d.), after the research is published, the data will be disposed of in a secure way that affirms the protection of data without dispersing it among third parties. The anonymity of data and the fact that the data will only be used for research purposes were also promised. Participant-consent was taken through a consent question in the questionnaire where they recorded their willingness or unwillingness to take part in the study. Depending on the answer, the questionnaire directed the respondents to the next section or ended further processing of the survey.

When applying quantitative methods in research, it is crucial that the principle of objectivity is mirrored practically (Johnson, et al., 2015). Therefore, the results interpreted subjectively. Moreover, besides objective interpretation, the method of arriving at the results should be well presented in the research (Franco, et al., n.d.) which is duly followed in the present study step by step.

6. RESULTS

This chapter contains the results of the statistical analysis. The results are presented with regards to each research question under five main sections. The first section (6.1.) is the descriptive statistics with the preliminary analyses which describe the results of the preparatory operations such as checking for errors, reliability, reverse scoring, normality check and descriptive analysis. The data analysis presented in the second section (6.2.) answers the first research question by showing to which language mindset categories the respondents are grouped. The third section (6.3.) answers the second research question by presenting the results of the relationship between the respondents' characteristics and the language mindset groups and the final section (6.5.) builds on how the language mindset categories are related to academic engagement and learner persistence.

6.1. Descriptive Statistics

As the preliminary analyses, the negative worded items in the scales were reverse scored, the correlation between the items of the scales and the range of correlations were checked, reliability tests were run for each Likert scale for the purpose of determining the internal consistency of the survey, mean scores were calculated for each scale and normality checks were done by looking at the Skewness and Kurtosis values, extreme outliers, and histograms. It was decided to use the Skewness and Kurtosis values to assess normal distribution over the Shapiro-Wilk and Kolmogorov normality tests because these tests are most concrete and strict in the production of results. Even though the cut-off values for Skewness and Kurtosis are often debated among researchers, values between -2 and +2 are considered acceptable (George & Mallery, 2010; Kline, 2015). As the data were within the range of -2 to +2 with no extreme outliers, data were considered to approximate normal distribution. Table 1 shows the descriptives of the data: the count, the count in percentage, the minimum and the maximum, mean, standard deviation, and the Skewness and Kurtosis values.

Table 2

Descriptive Statistics

Measure	N	%	Min	Max	M	SD	Skewness	Kurtosis
In terms of your language use, do you identify as a:	116						-.57	-.33
Monolingual	11	9.5						
Full bilingual	21	18.1						
Functional bilingual	54	46.6						
Multilingual	30	25.9						
What is your current year of studies at the university?	116		1	5	2.82	1.34	.16	-1.19
First year	24	20.7						
Second year	29	25						
Third year	23	19.8						
Fourth year	24	20.7						
Fifth year	16	13.8						
What is your medium of education at the university?	116						-.54	-.36
Finnish	11	9.5						
English	44	37.9						
Finnish and English	59	50.9						
Other	2	1.7						
What language(s) do you mostly use at home?	116						.43	-1.31
Finnish	50	43.1						
English	21	18.1						
Finnish and English	26	22.4						
Other	19	16.4						
When did you start learning English?	116						-.05	-1.09
Kindergarten	30	25.9						
Pre-school	40	34.5						
Primary school	43	37.1						

Note. (Table continues)

Measure	N	%	Min	Max	M	SD	Skewness	Kurtosis
Other	3	2.6						
Perceived English language skills scale	116		3.00	5.00	4.35	.55	-.24	-.99
Language Mindset Inventory	116		2.00	6.00	4.63	.89	-.65	.24
Learner persistence scale	116		1.80	5.00	3.70	.71	-.39	-.45
Academic engagement scale	116		1.11	5.00	3.53	.71	-.31	.61

In Table 2, the perceived English language scale presents the mean score for the reading, writing, listening and speaking items. The Language Mindset Inventory presents the mean score of its 6 items. The learner persistence scale presents the mean score of its 5 items. The academic engagement scale presents the mean score of its 9 items. According to the descriptive statistics, the majority of the preservice teachers stated that they are functional bilinguals while monolinguals are the least distributed. Moreover, most participants claimed that their medium of instruction at the university is Finnish and English and that they mostly use Finnish at home. 37.1% of the respondents, which is the highest proportion, claimed that they began to study English at the primary school. However, the difference between the respondents who claimed to have begun to study English at preschool and at primary school is only 2.6%. Participants who have initiated English language education at kindergarten are the least distributed after the 'other' option.

6.2. Determining the Language Mindset Categories

The first Research Question (RQ) aimed to group the preservice teachers to the three language mindset categories. As the initial step, the entity theory items were reverse scored, so that higher scores present greater language mindset. There were 3 negatively worded items in the LMI. Secondly, a mean score of the 6 items in the inventory was calculated. Then, the respondents were grouped into

the three mindset categories. Table 3 shows the distribution of the three mindset categories across the sample.

Table 3

Language mindset categories across the pre-service teacher sample

Language Mindset Category	N	%
Fixed language mindset	8	6.9
Mixed language mindset	23	19.8
Growth language mindset	85	73.3

Depending on the decided cut-off marks for the grouping, the vast majority of the pre-service teachers were GLM holders while FLM holders were the least distributed across the sample. Thus, the results suggest that most of the pre-service teachers carry an incremental mindset about their language pedagogical studies. The MLM holders fall in between the GLM and FLM holders with a percentage of 19.8%. Nevertheless, given the smaller cut-off interval assigned to MLM holders, the amount of MLM holders surpassing the amount of FLM holders, making them the least abundant across the pre-service teachers is an interesting and positive result.

6.3. The Relationship between Language Mindsets and the Characteristics of the Pre-Service Teachers

The second RQ attempted to explore the relationship that the language mindsets share with the different characteristics of the preservice teachers. Since language identity, medium of education at the university, language used at home and the starting point to learn English were categorical variables, cross-tabulation and a chi-square test were used. As the data were normally distributed, Pearson correlation was calculated in the other characteristics: current year of studies, perceived English language skills and the mindset categories. The cross-tabulation

and chi-square tests of independence showed no statistically significant association between any of the measured characteristics of the participants and the language mindsets.

6.3.1. Language Identity

In order to determine the relationship between the language mindset category and the language identity (self-perceived) of the pre-service teachers, cross- tabulation (Table 4) and chi-square test of independence (Pearson chi-square test) were used.

Table 4

Cross-tabulation of language mindsets and language identity

| | | | Language mindset groups | | | |
			FLM	MLM	GLM	Total
Language identity	Monolingual	Count	1	2	8	11
		% within language identity	9.1	18.2	72.7	100.00
		% within language mindset groups	12.5	8.7	9.4	9.5
		% of total	0.9	1.7	6.9	9.5
		Adjusted residual	.3	-.1	0	
	Full bilingual	Count	1	5	15	21
		% within language identity	4.8	23.8	71.4	100.00
		% within language mindset groups	12.5	21.7	17.6	18.1
		% of total	0.9	4.3	12.9	18.1
		Adjusted residual	-.4	.5	-.2	
	Functional bilingual	Count	6	13	35	54

Note. (Table continues)

		FLM	MLM	GLM	Total
		Language mindset groups			
		FLM	MLM	GLM	Total
	% within language identity	11.1	24.1	64.8	100.00
	% within language mindset groups	75.0	56.5	41.2	46.6
		FLM	MLM	GLM	Total
	% of total	5.2	11.2	30.2	46.6
	Adjusted residual	1.7	1.1	-1.9	
Multilingual	Count	0	3	27	30
	% within language identity	0.0	10.0	90.0	100.00
	% of total	0.0	2.6	23.3	25.9
	Adjusted residual	-1.7	-1.6	2.4	
Total		8	23	85	116
	% within language identity	6.9	19.8	73.3	100.00
	% within language mindset groups	100.00	100.00	100.00	100.00
	% of total	6.9	19.8	73.3	100.00

The chi-square test suggested that there is no significant association between language mindsets and language identification (χ^2 (6) = 7.49, p = .27). However, as per the results of the crosstabulation (Table 4), multilinguals are overrepresented in the GLM group (adj. res = 2.4).

6.3.2. Medium of Education at the University

Cross-tabulation was used to explore the relationship between the medium of education at the university and the language mindset categories (Table 5).

Table 5

Cross-tabulation of language mindset and the medium of education at the university

			FLM	MLM	GLM	Total
			Language mindset groups			
Medium of education	Finnish	Count	3	1	7	11
		% within medium of education	27.3	9.1	63.6	100.0
		% within language mindset groups	37.5	4.3	8.2	9.5
		% of total	2.6	0.9	6.0	9.5
		Adjusted residual	2.8	-.9	-.8	
	English	Count	2	10	32	44
		% within medium of education	4.5	22.7	72.7	100.0
		% within language mindset groups	25.0	43.5	37.6	37.9
		% of total	1.7	8.6	27.6	37.9
		Adjusted residual	-.8	.6	-.1	
	Finnish and English	Count	3	11	45	59
		% within medium of education	5.1	18.6	76.3	100.0
		% within language mindset groups	37.5	47.8	52.9	50.9
		% of total	2.6	9.5	38.8	50.9
		Adjusted residual	-.8	-.3	-.7	
	Other	Count	0	1	1	2
		% within medium of education	0.0	50.0	50.0	100.0
		% within language mindset groups	0.0	4.3	1.2	1.7
		% of total	0.0	0.9	0.9	1.7
		Adjusted residual	-.4	1.1	-.8	
	Total	Count	8	23	85	116
		% within medium of education	6.9	19.8	73.3	100.0

Note. (Table continues)

	Language mindset groups			
	FLM	MLM	GLM	Total
% within language mindset groups	100.0	100.0	100.0	100.0
% of total	6.9	19.8	73.3	100.0

The chi-square test suggested that there is no significant association between language mindsets and the medium of education (χ^2 (6) = 9.54, p = .14). However, according to Table 4, pe-service teachers who receive their education in Finnish are overrepresented in the FLM group (adj, res = 2.8).

6.3.3. Language(s) Mostly Used at Home

Cross-tabulation was used to examine how pre-service teachers, categorized by the languages they used at home (Finnish, English, Finnish and English and other languages), are distributed across three mindset categories (Table 6).

Table 6

Cross-tabulation of language mindsets and the language(s) mostly used at home

			Language mindset groups			
			FLM	MLM	GLM	Total
Language used at home	Finnish	Count	7	9	34	50
		% within language used at home	14.0	18.0	68.0	100.0
		% within language mindset groups	87.5	39.1	40.0	43.1
		% of total	6.0	7.8	29.3	43.1
		Adjusted residual	2.6	-.4	-1.1	
	English	Count	1	5	15	21
		% within language used at home	4.8	23.8	71.4	100.0
		% within language mindset groups	12.5	21.7	17.6	18.1

Note. (Table continues)

		Language mindset groups			
		FLM	MLM	GLM	Total
	% of total	0.9	4.3	12.9	18.1
	Adjusted residual	-.4	.5	-.2	
Finnish and English	Count	0	5	21	26
	% within language used at home	0.0	19.2	80.8	100.0
	% within language mindset groups	0.0	21.7	24.7	22.4
	% of total	0.0	4.3	18.1	22.4
	Adjusted residual	-1.3	-.1	1.0	
Other	Count	0	4	15	19
	% within language used at home	0.0	21.1	78.9	100.0
	% within language mindset groups	0.0	17.4	17.6	16.4
	% of total	0.0	3.4	12.9	16.4
	Adjusted residual	-1.6	1	.6	
Total	Count	8	23	85	116
	% within language used at home	6.9	19.8	73.3	100.0
	% within language mindset groups	100.0	100.0	100.0	100.0
	% of total	6.9	19.8	73.3	100.0

The chi-square test suggested that there is no significant association between language mindsets and the language used at home (χ^2 (6) = 7.65, p = .26). However, as denoted in Table 5, the respondents who mostly use Finnish at home are overrepresented in the FLM group (adj. res = 2.6).

6.3.4. Starting Point to Learn English

Cross-tabulation was used to examine how pre-service teachers, categorized by when they first began to learn English, are distributed across three mindset categories (Table 7).

Table 7

Cross-tabulation of language mindsets and the starting point to learn English

			Language mindset groups			
			FLM	MLM	GLM	Total
Starting point to learn English	Kindergarten	Count	1	6	23	30
		% within starting point to learn English	3.3	20.0	76.7	100.0
		% within language mindset groups	12.5	26.1	27.1	25.9
		% of total	0.9	5.2	19.8	25.9
			FLM	MLM	GLM	Total
		Adjusted residual	-.9	0	.5	
	Preschool	Count	6	10	24	40
		% within starting point to learn English	15.0	25.0	60.0	100.0
		% within language mindset groups	75.0	43.5	28.2	34.5
		% of total	5.2	8.6	20.7	34.5
		Adjusted residual	2.5	1.0	-2.3	
	Primary school	Count	1	6	36	43
		% within starting point to learn English	2.3	14.0	83.7	100.0
		% within language mindset groups	12.5	26.1	42.4	37.1
		% of total	0.9	5.2	31.0	37.1
		Adjusted residual	-1.5	-1.2	2.0	

Note. (Table continues)

| | | Language mindset groups | | | |
		FLM	MLM	GLM	Total
Other	Count	0	1	2	3
	% within starting point to learn English	0.0	33.3	66.7	100.0
	% within language mindset groups	0.0	4.3	2.4	2.6
	% of total	0.0	0.9	1.7	2.6
	Adjusted residual	0.0	.6	-.3	
Total	Count	8	23	85	116
	% within starting point to learn English	6.9	19.8	73.3	100.0
	% within language mindset groups	100.0	100.0	100.0	100.0
	% of total	6.9	19.8	73.3	100.0

The chi-square test suggested that there is no significant association between language mindsets and the language used at home (χ^2 (6) = 9.102, p = .16). However, according to Table 6, the number of participants who started to learn English at the preschool are overrepresented in the FLM group (adj. res = 2.5) whereas they are underrepresented in the GLM group (adj. res = -2.3).

Pearson correlations were calculated to examine the association between current study year, self-perceived skills in the English language and the language mindset groups. Pearson's correlation coefficients for association between all study variables are reported in Table 8. Significant medium correlation for variable, perceived English language skills, and significant strong correlation for variables, academic engagement and learner persistence were identified.

Table 8

Correlation table for current year of studies, perceived English language skills, engagement, and learner persistence and language mindsets

		1.	2.	3.	4.
1.	Current year of studies				
2.	Perceived English language skills	.163			
3.	Academic engagement	-.259**	.285**		
4.	Learner persistence	-.110	.242**	.518**	
5.	Language mindset	.055	.380**	.510**	.492**

*Note. *p < .05, **p < .01, ***p < .001*

The results indicated that the relationship between language mindset and the current year of studies at the university was non-significant (r = .055, p = .56). However, the results showed a significant medium correlation between language mindsets and perceived English language skills (r = .380, p = .01). One-way ANOVA was used to compare the self-perceived English language skills among the three language mindset groups. There was a statistically significant difference in the perceived English language skills scores for the three language mindset groups (F (2, 113) = 8.447, p < .05). The effect size was medium, $\eta2$ = 0.13. Further, post-hoc comparisons using Bonferroni test indicated that belonging to the growth mindset (M = 4.46, SD = .59) had significantly higher self-perception on their English language skills than those belonging to the fixed mindset group (M = 3.81, SD = .59) and the mixed mindset group (M = 4.13, SD = .59). The effect size of the differences between GLM and FLM groups (d = 1.99) was large while that of GLM and MLM groups (d = 0.61) was medium.

6.4. Language Mindsets Group Differences in Engagement and Persistence

Pearson correlation coefficient was calculated to explore the relationship that language mindsets share with academic engagement and persistence of the pre-service teachers in their language pedagogical studies. A statistically significant large correlation between the mean scores of language mindsets and engagement

(r = .510, p < .001) was identified (Table 7). One-way ANOVA was used to compare the levels of engagement of the EFL pre-service teachers in the three language mindset groups. There was a statistically significant difference in the engagement scores for the three language mindset groups (F (2, 113) = 10.794, p < .05). The effect size was large, η2 = 0.1778. Further, post-hoc comparisons using Bonferroni test indicated that belonging to the growth mindset (M = 3.70, SD = .66) had significantly higher engagement than those belonging to the fixed mindset group (M = 2.77, SD = .56) and the mixed mindset group (M = 3.14, SD = .63). The effect sizes of the differences between GLM and FLM groups (d = 1.49) and GLM and MLM groups (d = 0.85) were large. There was no significant difference between FLM and MLM groups.

A statistically significant medium correlation between the mean scores of language mindset and learner persistence (r = .49, p < .001) was identified (Table 7). One-way ANOVA was used to compare the persistence in language pedagogical studies in the three language mindset groups. There was a statistically significant difference in the persistence scores for the three groups (F (2, 113) = 21, p < .05). The effect size was large, η2 = 0.2709. Further, post-hoc comparisons using Bonferroni test indicated that belonging to the growth mindset (M = 3.90, SD = .609) had significantly higher persistence than those belonging to the fixed mindset group (M = 2.62, SD = .47) and the mixed mindset group (M = 3.33, SD = .67). The effect sizes of the differences between GLM and FLM groups (d = 1.02) and GLM and MLM groups (d = 0.88) were large. Also, there was a significantly higher persistence in those who belong to MLM than those who belong to an FLM. This difference is accompanied by a large effect size (d = 1.22).

7. DISCUSSION

This chapter discusses the results. A synopsis of the results followed by an elaboration of the results in terms of each RQ by also referring to previous literature, is provided. The next section discusses the pedagogical implications, and the chapter ends with limitations, recommendations and a conclusion.

7.1. Summary of the Results

The study discovered that among the participants of the study, GLM is the most abundant mindset category while MLMs take the second place and FLMs, the last. Out of the tested antecedents of the participants, only self-perceived English language skills showed a significant positive correlation with language mindsets. In supposition with the majority of mindset related research, the findings of this research align with the notion that language mindsets are significantly associated with academic engagement and learner persistence. Most importantly, the study discovered that higher academic engagement and persistence are attached to GLMs and vice versa.

7.2. Language Mindsets and its Impact

The major finding that the pre-service teachers' language mindsets is a vital factor that impacts their EFL pedagogical studies, invites educators and researchers to expand their research and pedagogy towards promoting incremental mindsets among the pre-service teachers. Supporting the claims of previous research that higher academic engagement and persistence are associated with GLMs and lower engagement and persistence are associated with FLMs (Lou & Noels, 2017, 2019, 2020), the findings of the present study produced the same results. Thus, in order to make learners more engaged towards their studies in a foreign language, while also motivating them to continue their studies, it is important that they believe they have the potential to change their language learning abilities. The

students should have faith in their abilities and be open to challenges rather than backing away from difficultly perceived tasks for the fear of being recognized as incapable or for the unwillingness to tarnish their image as gifted, intelligent or talented.

7.2.1. Distribution of Language Mindsets

RQ 1 was addressed by dividing the language mindset categories of the pre-service teachers. The finding that the majority of participants had growth GLMs positively reflect the present status of the pre-service EFL teachers in Finnish universities in terms of their attitude towards the EFL pedagogical studies. The amount of GLM holders being 73.3% which is a significantly high distribution, favors the nature of teacher education and profiles of pre-service teachers enrolled in language pedagogical study programs. The higher number of GLM holders over the MLM and FLM holders prove that many learners believe that their ability to learn pedagogical studies in English can be changed through constant practice and effort and that their language learning abilities are not inherent or unchangeable. This result is an implication of the high standard and success of the selection process of candidates to the teacher education programs in Finland and also an indicator of the quality profiles of the selected candidates.

In furtherance, MLMs being the second most distributed mindset category among the three, and the distribution being about 15% of the total respondents, permit deriving the notion that the findings of this study lie in parallel with that of some previous studies (e.g., Glerum et al., 2019; Dweck, et al., 1995; Irie et al., 2018; Lou et al., 2021). As the amount of MLM holders is near 20% of the total sample and is higher than that of the FLM holders, the necessity to mediate teacher instruction to shift the pre-service teachers with MLMs towards GLMs without allowing FLMs to be dominant within them by promoting growth mindsets and making them aware of the possibility to change the mindsets towards the positive through practice should be given special attention.

FLM holders show higher reluctance to engage in challenging or difficult tasks; thus, views language learning as a challenge that cannot be developed through effort and practice, but an innate ability built within oneself (Dweck,

2006). With this mindset, it is difficult to propel forwards in the journey of EFL pedagogical studies. While working towards the development of an incremental view towards EFL, it is equally important to help students with FLMs to free themselves from entity theory beliefs by raising self-confidence through the implantation of the idea that their ability to master EFL is malleable and with effort and practice they can achieve the target of mastering a foreign language and EFL pedagogical studies. However, since the number of FLM holding pre-service teachers is trivial, the current situation about their mindsets is not alarming in general.

7.2.2. The Impact of Language Mindsets on the Pre-service Teachers' Characteristics

To answer the RQ2, the study collected responses on the characteristics of the pre-service teachers and hypothesized that language mindsets will associate with at least one of the characteristics. The characteristics that were tested are, the language identity: monolingual, full-bilingual, functional bilingual or multilingual, the current year of studies at the university, medium of education at the university, mostly used language at home, starting point to learn English and self-perceived language skills in English: reading, writing, listening and speaking.

Being immersed in a multi-lingual society can promote growth mindsets (Lou & Noels, 2019) and Finland is a country where multiple languages are in use. In such communities, many people are multilingual or at least bilingual. Thus, as Lou and Noels (2019) remark, such communities should possess GLMs. Their claim was affirmed in this study as the majority of the learners were GLM holders. However, there was no significant relationship between language identity and language mindsets. Moreover, the current year of studies at the university was not identified as a factor that associates with the distribution of language mindsets among the EFL pre-service teachers which implies the idea that irrespective of the current point at which the learner is: for instance, at the beginning or towards the end of the studies, does not affect their language mindsets. To gain a deeper insight into the role of language used at home in determining the language mindset of the learners, the study investigated the distribution of the

language mindsets among the mainly spoken language at home: Finnish, English, Finnish and English or any other language (e.g. Swedish). Findings suggested that the mostly spoken language being English or English and Finnish shared no significant association with EFL pedagogical studies among the EFL pre-service teachers implying the idea that frequent exposure or usage of a particular language alone does not culminate GLMs in that target language. Supporting the previous idea that increased exposure to English does not guarantee GLMs, the findings of the study proved that the medium of education at the university (e.g. English) did not show a significant association with language mindsets of the pre-service teachers. In the same manner, there was no effect of starting to learn English at an earlier stage (e.g. at kindergarten) on fostering growth language mindsets among the learners. The significant implication of the above findings is that the mere exposure to English does not have the potential to cultivate growth mindsets among the learners.

At this point, the significant role of teachers can be highlighted as the resource persons to deliver mindset mediated instruction, correctly worded feedback, classroom activities and educational tools to foster GLMs in the classroom. As Dweck (2015) mentions, the concepts and principles of mindset have been misinterpreted widely leading to its distorted delivery. Dweck (2015) highlights the importance on the correct usage of words when encouraging students: for instance, if the teacher says, "when you learn how to do a new kind of problem, it grows your math brain", it can promote growth mindset, instead of saying "not everybody is good at math". Just do your best" which is likely to promote a fixed mindset. Moreover, Dweck (2015) suggests that if a teacher notices a student saying, 'I am not a math/[language] person', make sure to conclude the utterance with 'yet'. Her explanation shows how deliberate the wording of feedback and instruction should be if the goal is to foster GLMs, reinforcing this study's implication that frequent or early exposure to English alone does not guarantee the accomplishment of GLMs, but it needs professional intervention.

As the final characteristic, the researcher engaged the learners to rate their own levels in the four language skills as they perceive, with the aim of investigating whether an association between the mindset categories and the perceived skill levels in English exists. It was found that overall skill levels as perceived by the pre-service teachers shared significant relationship with their mindsets. The highest self-perception was associated with GLMs and the lowest self-perception on the English language skill levels was associated with the FLMs. According to this finding, students who were deemed as FLM holders had low self-esteem and confidence about their four sub-skills in English. Individuals internalize beliefs about the malleability of their abilities and the beliefs they hold can construct a semantic system through which people identify themselves and their potential (Dweck, 1999). Thus, mindset theory is closely related to the realization of self and the formation of self. In a study conducted by Ozdemir and Papi (2021), growth L2 mindset is identified as a powerful predictor of self-confidence in a second language. So, it is crucial that pre-service believe in themselves and their potential to be able to be successful in their language learning. By incorporating strategies, techniques and classroom practices that promote GLMs when designing EFL lesson plans, and implementing theory into practice in the EFL classroom, language educators can achieve dual aims at one attempt; that is, they can teach the foreign language using activities that interest the learners while also promoting GLMs which are guaranteed to produce positive impact on the emotional experiences of the learners.

7.2.3. The Impact of Language Mindsets on Engagement and Persistence

Lastly, the study formulated the hypothesis that there is a positive correlation between the variables, language mindsets and engagement and language mindsets and persistence. Parallel to the previous studies that confirm a positive correlation between the [language] mindsets of the students and their academic output (e.g., Bai & Wang, 2021; Bai et al., 2021; Li & Bates, 2019; Lou & Noels, 2020; Mercer & Ryan, 2010; Boaler, et al., 2018; Muller & Dweck, 1998), this study discovered the existence of positive correlations between the language mindsets and

academic engagement and learner persistence among the EFL pre-service teachers in Finnish universities.

This finding is important in terms of EFL learning among language pre-service teachers in Finnish universities because even though many potential factors such as motivation, and socio economic and cultural backgrounds have been identified through a number of studies, to date, language mindsets have not been widely identified or investigated as a factor that can determine the academic engagement and persistence of EFL pre-service teachers in Finland. In the Western world, mindset have been recognized to be influential towards the intelligence and talent of the learners (Dweck, 1999; Dweck, 2006) many years ago and to be influential towards ESL and EFL learning (Lou & Noels, 2017) quite recently, but ever since researchers have been testing mindsets in the field of language education by mainly focusing on school students as the sample. Contributing to address this lack through the present study can opens new avenues in the fields of research on mindsets and language education in Finland.

7.2.4. The Importance of Growth Language Mindset

Previous literature (e.g., Bai & Wang, 2021; Bai et al., 2021; Li & Bates, 2019; Lou & Noels, 2020) foreground the importance of holding GLMs for higher academic engagement, performance and achievement and how GLM holders show higher academic engagement and persistence. As a whole, growth mindsets help at recognizing potential and exhibit direct proportionality with academic achievement (e.g., Blackwell et al., 2007; Boaler, 2013; Bostwick, et al., 2017; Haimovitz et al., 2011; Yeager et al.,2016; Zhang et al., 2017). The findings of the present study along with that of numerous previous studies, the need to encourage growth mindsets in educational settings is strongly recommended. Teachers act a prominent part in promoting GLMs. Nonetheless, it is vital to note that educators are not the only accountable party for the students' learning, but parents and/or guardians too have a responsible role in the process. Parents lay the foundations for student mindsets, for example, how they praise children (Gunderson et al., 2013; Park et al., 2016) impact mindset mediation and levels of accomplishment of some learners. Henceforth, it is crucial for parents to foster growth mindset

beliefs and thinking patterns in their children from a young age. Parents should assess whether the approaches used by the teacher align with their parenting styles through close parent-teacher contact and comment if these strategies would work with their child's personality (Jacovidis et al., 2020) because often, they know the child better.

Approaches to promoting growth mindset thinking largely differ from macro-scale government policies and international education programs to small-scale classroom practices. Therefore, separate programs should be implemented to address GLM development in both learners and educational stakeholders. Until mindset and policy related research are published it is best to introduce growth mindset development programs and awareness workshops at local levels such as research centers, education agencies, and schools, and philanthropic organizations as mapping the direct influence of policy on growth mindsets is challenging. To induce growth mindsets in learners, teachers should be well trained through teacher training programs which manifest solid actions that can facilitate learners' growth mindset, theory related mindset studies and research on language mindsets. Moreover, working together with the fields of Brainology, neurology and psychology is also a possibility since these fields have arrived at promising discoveries on brain plasticity.

Additionally, Yeager et al., (2021), in their study highlighted the positive impact of teachers who themselves have growth mindsets exert on the learners because in their study, they found out that the learners who were inclined more towards a fixed mindset benefitted more from the teachers who were growth mindset holders. Therefore, GLMs are not only important for the pre-service teachers to engage and persist in their own studies, but also as future teachers who would take into hands the responsibility of many children's education.

7.3. Pedagogical Implications

The study mainly attempted at identifying whether language mindsets is a contributing factor for the engagement and persistence in language pedagogical studies among pre-service teachers in Finland. As the results proved so, and pre-

service teachers with GLMs tend to engage and persist more in the language pedagogical studies, the next step can be exploring the ways to foster GLMs among the pre-service EFL teachers.

Known widely is the fact that learners' mindsets can be highly impacted by environmental feedback (Pomerantz & Kempner, 2013). The mindset of educators (Rattan et al., 2012; Canning et al., 2019; Bostwick et al., 2020) and the manners in which feedback is given by them (Schmidt et al., 2015; Zeeb et al., 2020) are vital in student learning. As studies reveal that mindsets can be controlled externally, teachers must be able to create useful tools that promote mindsets of students and help them to achieve more (Lou & Noels, 2016). Instructing clearly about language mindsets, reasoning the role of failure, developing productive learner- environments, providing constructive feedback, and carrying growth mindsets by the teachers themselves are several examples of such teacher tools (Lou & Noels, 2016, 2017). A common mistake made by teachers is comparison which can unconsciously promote fixed mindsets and to avoid this, teachers can motivate learners to set personal goals opposite to peer comparison (Mercer & Ryan, 2010). Moreover, since teaching is more multimodal nowadays with technology being an integral part of language teaching, using internet-based interventions in teaching is an effective classroom technique. Previous research showed that technology has an efficient potential to encourage growth mindset beliefs, alter mindsets, and improve learner achievement (Lou & Noels, 2017). Furthermore, teachers can also directly teach the students about language mindsets. Lou and Noels (2016) highlight the importance of clear teacher instruction on language mindsets as they have discovered that it is,

> "Effective to explicitly teach students the scientific evidence about incremental theories through lectures and other types of intervention so that students can learn that they can improve their language ability and establish a sense of mastery over the learning process" (p. 49).

It is important that teachers provide their students with accurate and relevant demonstrations and exemplification to avoid painting a wrong picture on language mindsets in learners' minds. One mode of delivery is workshops. Workshops can teach students how studies have proved that language intelligence can

"grow like a muscle" through which learner motivation can be promoted to focus on learning as growth (Lou & Noels, 2017, para. 72). By being formally educated about mindsets and their role, learners can overcome the traits that bind them to fixed mindsets. As per previous research, students who are educated about growth mindsets feel comparatively less anxiety; thus, instructing learners clearly could be a prime concern of educators (Lou & Noels, 2017; Marlow, 2021).

While working on promoting GLMs, teachers should help learners to break free from FLMs. For this, teachers should accept FLMs holders and make them believe that their entity beliefs can be transferred towards incremental beliefs. To do this, teachers should address the positive role of failing at something as an indicator for growth and development as it may divert learners from focusing on their fear or anxiety towards non-success, but rather on the opportunities that failure brings before them (Lou & Noels, 2016). This can be done through U-shaped learning, which is a cycle of cognitive development with three steps wherein "the learner first learns the correct behavior, then abandons the correct behavior, and finally returns to the correct behavior once again" (Carlucci & Case, 2013, p. 57). However, the GLM holders have to be taught about the nature of failure too because growth mindsets tend to make learners be overly critical about themselves and nurture the idea that they failed due to insufficient effort which can negative affect their performance (Lou & Noel, 2019). Thus, teachers can demonstrate to the learners the approaches to be critical about what hinders their growth; that sometimes one can fail due factors other than less effort (Lou & Noels, 2019). Moreover, teachers must avoid pressurizing students with remarks such as, "if students put in effort, they should not fail repeatedly" (Lou & Noels, 2019, p. 24) because this can be a catalyst of learner anxiety developed through the exaggeration of the possibility to control the linguistic competence.

The results identified that there is a higher proportion of students who hold MLMs as well. These students should also be given attention when developing pedagogical practices. Teachers can always promote growth mindsets by creating learning environments that support GLMs and social engagement because it would help to reduce anxiety towards foreign language learning (Lou & Noels,

2016; Lou & Noels, 2020). When learner mindsets waiver between incremental and entity mindset categories in various contexts, the aforementioned strategy is mostly advantageous (Lou & Noels, 2016). Correct feedback could be used in these circumstances. Irrespective of the feedback type: effort related feedback or entity comfort feedback, feedback is capable of influencing the language mindsets of learners (Lou & Noels, 2017). A significant portion of attention should be allocated to the process of learning and development over intelligence and pre-determined traits when giving feedback (Lou & Noels, 2016).

7.4. Limitations and Future Recommendations

This study identifies three major limitations. The first limitation is regarding the number of participants involved in the study. There are 13 universities and 22 applied sciences universities in Finland and many institutes out of these 35, offer pedagogical training. Future research can focus on recruiting more participants in the study. The scope can even be broadened to address not just the pre-service teachers, but also in-service teachers in the sample.

Secondly, the study context was Finnish universities and the pedagogical studies required to be a teacher in Finland. The educational context, content and system are not the same across the world, or even across Europe itself. Henceforth, the room to generalize the findings of a study that follows the given specificity of a local concern to other contexts, is limited (Yeager et al., 2018). Therefore, the reliability of the study is affected due to the less generalizability. Participants from across other countries in Europe and even beyond Europe, can be recruited in the sample in order to collect data from a wider scope to receive a higher diversity index in the responses and/or to extend the research into comparative studies. This would also help in generalizing the results effectively.

The third main limitation of this study, which has also been identified as a limitation in another study by Yeager et al, (2019), is how the teachers' mindsets were measured, not manipulated. Since these were pre-service teachers who plan to become EFL teachers in future, it is obvious to them that what is expected of them is to hold a positive attitude towards their own studies. Therefore, response

bias could have been involved when responding to the questionnaire. Thus, collecting direct responses may have had an impact on the reliability of the responses, but the instruments' internal validity and reliability were at high levels statistically and objectivity in the interpretation of results was ensured by the researcher which in turn supports to upheave the reliability of the study. Nevertheless, to remedy this potential limitation, future studies can focus on developing tools or tasks that would measure the mindsets of the respondents without the respondents themselves having to rate it on a scale.

7.5. Conclusion

Exploring the relationship between the language mindsets and the engagement and persistence in EFL pedagogical studies learning was the main purpose of this research. To fulfil the main purpose of the study, the researcher formulated three RQs. The findings were thought to be significant in contributing to the field of EFL pedagogical studies in Finland. Overall, the study developed the significant conclusion that a positive correlation exists between the language mindsets and the engagement and persistence in EFL pedagogical studies.

Now that mindsets are identified to exert an effect in the preservice teachers' EFL pedagogical studies course engagement and persistence, teachers, educators, policy makers, and curriculum designers can take necessary actions to implement growth mindset mediated instruction and feedback in the classrooms and raise awareness among teachers and learners about the importance of having GLMs to improve their EFL pedagogical skills. However, since mindsets are gaining increased popularity to influence academic engagement and achievement in language learning but with little attention on its effect on pre-service language teachers, it is time that researchers and educators focus more on this population because it is not only about the future of the pre-service teachers, but also about the future students of these teachers as the responsibility of the language learning of thousands of students lay on the hands of future language teachers.

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APPENDICES

Appendix 1 Questionnaire

Dear student,

You are invited to fill out this survey as a means of data collection for the master's thesis titled, "Preservice teachers' language mindset and its impact on the engagement and persistence in their language pedagogical studies: a study conducted in the EFL teacher education in Finland". The study is conducted by Sonali Perera, a student of the master's degree program in educational sciences at the Faculty of Education and Psychology – University of Jyväskylä.

The purpose of the study is to explore how the language mindsets of EFL preservice teachers in Finland affect the level of their academic engagement and persistence in their English language pedagogical studies. The findings of the study are expected to contribute significantly to the field of education with regards to the importance of taking into future teachers' language mindset and working towards fostering growth language mindsets among them.

The questionnaire includes 28 questions, and the approximate time for completion is less than 10 minutes. The responses are completely anonymous. Your answers will be securely stored in the JYU university's U-drive and will not be shared with another third party.

If you are willing to participate in the study, your consent can be given by clicking 'yes'. By choosing 'yes', you also agree that you have understood the aim of the study.

Please answer the survey by the 03rd of December 2023, at the latest. I appreciate your time and effort. Thank you.

1. Your consent.

- Yes, I have understood the aims, and I am willing to participate in the study.

- I am not willing to participate in the study.

Part I – Background information

Please choose the best option that describes your situation and provide further explanations where necessary.

2. In terms of your language use, do you identify yourself as a,

A. Monolingual

B. Full-bilingual

C. Fuctional bilingual

D. Multilingual

3. What is your current year of studies at the university?

A. First year

B. Second year

C. Third year

D. Fourth year

E. Fifth year

4. What is your medium of education at the university?

A. Finnish

B. English

C. Finnish and English

D. Other

5. Which language(s) do you mostly use at home?

A. Finnish

B. English

C. Finnish and English

D. Other

If other, please specify ....

6. When did you start to learn English?

A. Kindergarten

B. Preschool

C. Primary school

D. Other

If other, please specify ....

For the following scales, select the alternative that best matches your skill levels as you believe.

7. My English writing skill is

Very weak	Weak	Average	Good	Very good
1	2	3	4	5

8. My English reading skill is

Very weak	Weak	Average	Good	Very good
1	2	3	4	5

9. My English-speaking skill is

Very weak	Weak	Average	Good	Very good
1	2	3	4	5

10. My listening skill in English is

Very weak	Weak	Average	Good	Very good
1	2	3	4	5

Part II – Language Mindset

Please rate how much you personally agree or disagree with these statements. There is no right or wrong answer. I am interested in your ideas.

11. *To a large extent, a person's biological factors (e.g., brain structures) determine his or her abilities to learn new languages.

Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1	2	3	4	5	6

12. *It is difficult to change how good you are at foreign languages (E.g. English).

Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1	2	3	4	5	6

13. *Many people will never do well in foreign languages even if they try hard because they lack natural language intelligence.

Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1	2	3	4	5	6

14. You can always change your foreign language ability.

Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1	2	3	4	5	6

15. In learning a foreign language, if you work hard at it, you will always get better.

Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1	2	3	4	5	6

16. How good you are at using a foreign language will always improve if you really work at it.

Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1	2	3	4	5	6

Part III – Academic Engagement

Thinking about your experience in your pedagogical studies, please choose the alternative that best describes your situation (estimation from the previous months).

17. In my language pedagogical studies, I am bursting with energy.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

18. I feel strong and energized when I am studying language pedagogical lessons.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

19. I feel like going to my language pedagogical courses.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

20. I find my language pedagogy coursework full of meaning and purpose.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

21. I am enthusiastic about my language pedagogical studies.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

22. My university work on language pedagogical studies inspires me.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

23. Time flies when I am studying language pedagogy.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

24. When I am working in my language pedagogy studies, I forget everything else around me.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

25. I feel happy when I am working intensively at my language pedagogical studies.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

Part IV – Academic Engagement

Thinking about your experience in your language pedagogical class, please choose the alternative that best describes your situation.

26. I would like to give up learning my language pedagogical studies.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

27. I intend to study language pedagogical studies again in the future, even if it's no required by my job or program of study.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

28. I intend to stop my language pedagogical studies as soon as I can.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

29. I want to keep on learning pedagogical studies as long as possible.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

30. I want to continue to learn language pedagogical studies after I finish this course.

Never	Rarely	Sometimes	Mostly	Always
1	2	3	4	5

Thanks for the answers!

Appendix 2 Invitation Letter

Inviting to participate in a Master's study

07.07.2023

Dear student,

I am a master's student at the Faculty of Education and Psychology, University of Jyväskylä. My supervisor is senior lecturer, Josephine Moate. I am contacting you about my master's thesis study concerning the relationships between language mindsets and the engagement and persistence in preservice teachers' EFL pedagogical studies and I would be grateful if you could participate in this study by filling out a questionnaire.

The purposes of the study are to (1) determine the language mindsets held by the EFL preservice teachers and (2) investigate the impact of the mindsets (fixed, mixed, or growth) on their levels of academic engagement and persistence in the current pedagogical studies. The study can contribute significantly to the field of education with regards to the engagement in English taught-pedagogical studies of preservice teachers who study English as a Foreign Language and also in the area of mindset theories. The study is expected to yield important findings in the importance of taking into account the future language teachers' opinions on mindsets and working towards the development of growth mindsets among them as future teachers. Your contribution to this study by filling out the questionnaire would be gratefully appreciated.

Your identity will not be revealed in any phase of the study. The collected data will be stored in a secure location using JYU digital services place at the university and only the researcher and supervisors will have access to them. For any inquiries regarding the study, do not hesitate to contact me. For further information, you can also contact my supervisor:

Josephine Moate

josephine.moate@jyu.fi

If you would like to participate in the study, please provide your consent by clicking 'yes' ('no', if you do not give consent) for the consent question at the beginning of the questionnaire; preceded by an introduction to the study, its purposes and privacy and anonymity status, which will be provided to you via an online link. The privacy notice of the study is provided to you with this invitation letter.

Kind regards,

Sonali Perera

email: alejandrareehu@gmail.com | sonali.sp.ushettige@student.jyu.fi

Tel.: +358 415702910

Appendix 3 Privacy notice

Date 07.07.2023

UNIVERSITY OF JYVÄSKYLÄ

Privacy notice

You are participating in a scientific research. This privacy notice informs you about the processing of your [and/or your child's] personal data as part of the research. You have a legal right to receive this information in accordance with the European Union and Finnish legislation.

1. **Data Controller(s)**

The Data Controller is responsible for lawful processing of personal data in this research.

The Data Controller of this research is: The researcher (the Data Controller and implementer of the research), Ushettige Sonali Sathsara Perera [Contact information – sonali.sp.ushettige@student.jyu.fi].

Supervisor's name: Josephine Moate, senior lecturer and researcher, Department of Teacher Education [contact information - josephine.m.moate@jyu.fi].

2. **Processor(s) of personal data**

In this research, personal data are processed by researchers of Department of Education of Faculty of Education and Psychology.

3. **Other disclosure of personal data during research**

Your personal data will be handled confidentially and without disclosing them to any outsiders.

4. **Personal data to be processed in "Pre-service teachers' language mindset and its impact on the engagement and persistence in their language pedagogical studies: a study conducted in EFL teacher education in Finland"**

Your personal data will be processed for the research purpose described in the information letter.

In this research, we will collect the following personal data on you [e.g. survey responses]. Data collection is based on the research plan.

This research does not involve processing of personal data of special categories.

This privacy notice is published on the website of the study and data subjects have received access to this information."

[All data subjects are adults, over the age of 15 and/or under the age of 15.]

5. The lawful basis for processing personal data in scientific research

☒Scientific research serving a public interest (GDPR, Article 6.1e, special personal data categories 9.2j)

☐Data subject's consent (GDPR, Article 6.1a, special personal data categories 9.2a)

6. Transfer of personal data outside the EU/EEA area

In this research, your personal data will not be transferred outside the EU/EEA area.

7. Protection for personal data

Processing of personal data in this research is based on an appropriate research plan and the study has a designated person in charge. The personal data collected and saved for this research will include only such data that is necessary for the research purpose.

Preventing identification

☐The data set is anonymised at the compilation stage (all identification data are fully removed so that there will be no return to the identifiable data and no new data can be connected to the data set).

☒As a protective measure, any direct identification data are removed upon the compilation of the data set (pseudonymised data allowing restored identification by means of codes or equivalent information, and also new data connected to the data set).

☐No direct identification data are collected, a data subject can be identified from the data only indirectly, i.e. by connecting the data with information from other sources in order to identify the person.

☐The data is analysed with direct identification data because (a justification for keeping the direct identification data):

The personal data processed in this research will be protected by means of:

☒ user ID   ☒password   ☐registered use   ☒access control (physical spaces)

8. PROCESSING OF PERSONAL DATA AFTER *THE RESEARCH HAS ENDED*

☐ The research register will be deleted after the research has ended, approximately by month.year, or

☐ The research register will be anonymised after the study has ended, approximately by month.year. This means that all identification data are fully removed so that there will be no return to the identifiable personal data, neither any new data can be connected to this data set or

☒The research register will be archived with identification data, i.e. including personal data, after the study has ended, approximately from 09.24.

Lawful basis for archiving personal data included in research data after the study has ended

☐ Archiving of research data and cultural heritage material based on general interest (a research data set is archived after the study has ended and the archived material includes personal data), a value assessment is made for the material to be archived (GDPR, Article 6.1e, special personal data categories 9.2j).

9. Rights of the data subject

Cancellation of consent (GDPR, Article 7)
You have the right to cancel your consent if the processing of personal data is based on consent. Such a cancellation has no impact on the lawfulness of consent-based processing conducted before the cancellation of consent.

Right to access your personal data (GDPR, Article 15)
You have the right to get to know whether and which personal data of yours are processed. If you wish, you can also request a copy of your personal data to be processed.

Right to rectification (GDPR, Article 16)
If there are any inaccuracies or errors in your personal data to be processed, you are entitled to request that these be rectified or supplemented.

Right to erasure (GDPR, Article 17)
You have the right to demand in some cases that your personal data be erased. However, the right of erasure is not applicable if the erasure would prevent or greatly hinder reaching the goal of processing in a scientific research.

Right to restriction of processing (GDPR, Article 18)
You have the right to restrict the processing of your personal data in some cases, like when you challenge the correctness of your personal data.

Deviating from the rights
In some individual cases, it is possible to deviate from the described rights on the grounds stipulated in the GDPR and the Data Protection Act insofar as the rights would prevent or greatly hinder reaching the goals of scientific or historical research or statistical purposes. The need

for deviating from the rights is always assessed case-specifically. It is also possible to deviate from the rights if the data subject cannot, or cannot any longer, be identified.

Archiving
When personal data are processed for archiving purposes serving a public interest, the data subjects do not generally have the above-described rights. The authenticity, reliability, and research value of archived materials would be at risk if the personal data included were changed. Deviation from data subject rights is based on the Data Protection Act, section 32, and the GDPR, Article 17.3.

Profiling and automatised decision-making

In this research, your personal data will not be used for any automatic decision-making. In this research, the purpose of the processing of personal data is not to assess your personal qualities, i.e. profiling, but personal data and qualities are considered from the perspective of broader scientific research.

Reporting an actual or suspected information security breach to JYU

You have to lodge a complaint with a supervisory authority especially with a locally relevant one in terms of your permanent place of residence or work if you regard that the processing of personal data violates the EU General Data Protection Regulation (EU) 2016/679. In Finland, the supervisory authority is the Data Protection Ombudsman.

Updated contact information of the Office of Data Protection Ombudsman: https://tieto-suoja.fi/etusivu