BENGÜ CİLALI

PATHWAYS TO NEED-SUPPORTIVE INSTRUCTION

A DOCTORAL DISSERTATION

BY

BENGÜ CİLALI

THE PROGRAM OF CURRICULUM AND INSTRUCTION

İHSAN DOĞRAMACI BILKENT UNIVERSITY

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Dedicated to all educators who contributed to

my academic and professional growth…

Docendo discimus!

PATHWAYS TO NEED-SUPPORTIVE INSTRUCTION

A Dissertation

Submitted in Partial Fulfilment of the Requirements

for the Degree of Doctor of Philosophy

in

Curriculum and Instruction

by

Bengü Cilalı

The Graduate School of Education

of

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September 2024

İHSAN DOĞRAMACI BILKENT UNIVERSITY
GRADUATE SCHOOL OF EDUCATION

Pathways to Need-Supportive Instruction
Bengü Cilalı
September 2024

I certify that I have read this doctoral dissertation and have found that it is fully adequate, in scope and in quality, as a dissertation for the degree of Doctor of Philosophy in Curriculum and Instruction.

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Assoc. Prof. Dr. Jennie Farber Lane (Advisor) Asst. Prof. Dr. Aikaterini Michou (2nd Advisor)

I certify that I have read this doctoral dissertation and have found that it is fully adequate, in scope and in quality, as a dissertation for the degree of Doctor of Philosophy in Curriculum and Instruction.

Assoc. Prof. Dr. Armağan Ateşkan (Examining Committee Member)

I certify that I have read this doctoral dissertation and have found that it is fully adequate, in scope and in quality, as a dissertation for the degree of Doctor of Philosophy in Curriculum and Instruction.

Prof. Dr. Özgür Erdur-Baker, Middle East Technical University (Examining Committee Member)

I certify that I have read this doctoral dissertation and have found that it is fully adequate, in scope and in quality, as a dissertation for the degree of Doctor of Philosophy in Curriculum and Instruction.

Asst. Prof. Dr. Martin Daumiller, University of Augsburg (Examining Committee Member)

I certify that I have read this doctoral dissertation and have found that it is fully adequate, in scope and in quality, as a dissertation for the degree of Doctor of Philosophy in Curriculum and Instruction.

Asst. Prof. Dr. Athanasios Mouratidis, National and Kapodistrian University of Athens (Examining Committee Member)

Approval of the Graduate School of Education

Prof. Dr. Alipaşa Ayas (Director)

ABSTRACT

PATHWAYS TO NEED-SUPPORTIVE INSTRUCTION

Bengü Cilalı

PhD in Curriculum and Instruction

Advisor: Assoc. Prof. Dr. Jennie Farber Lane

2nd Advisor: Asst. Prof. Dr. Aikaterini Michou

September 2024

How learners and teachers respond to academic challenges is essential for attaining desired achievement outcomes. When faced with challenges, some show perseverance, while others give up easily. Two essential mechanisms underlying these differences are mindset beliefs (growth or fixed) and types of motivation (well-internalized or poorly internalized). However, little is known about how mindsets relate to different types of motivation, and even less about how educators' teaching mindsets and motivation contribute to need-supportive instruction. Two separate yet complementary studies were conducted to address these research gaps. Study 1 meta-analytically reviewed 45 studies with 112 effect sizes on the relationships between mindset beliefs and different types of motivation, revealing medium effect sizes for the relationships between growth mindset and well-internalized motivation types. These findings suggest that those with a growth mindset are more likely to have autonomous motivation which helps them handle challenges better. Based on this evidence, Study 2 examined to what extent English as a Foreign Language (EFL) instructors' (N = 348) teaching mindsets and quality of teaching motivation matter for their need-supportive instruction. Structural Equation Modeling (SEM) results showed that fixed teaching mindset beliefs directly and negatively predicted autonomy-supportive teaching. Furthermore, fixed teaching mindset beliefs negatively predicted competence-supportive teaching through the external regulation of teaching motivation. Additionally, intrinsic regulation of teaching motivation mediated the relationships between fixed teaching mindset beliefs and both competence-supportive and relatedness-supportive teaching styles. These findings highlight the importance of promoting a growth mindset and intrinsic motivation among educators to create need-supportive learning environments.

Keywords: Mindset Theory, Self-Determination Theory, Expectancy-Value Theory, Teaching English as a Foreign Language, Higher Education, Meta-analysis, SEM

ÖZET

İHTİYAÇ DESTEKLEYİCİ ÖĞRETİME GİDEN YOLLAR

Bengü Cilalı

Eğitim Programları ve Öğretim Doktora Programı

Danışman: Doç. Dr. Jennie Farber Lane

İkinci Danışman: Dr. Öğr. Üyesi Aikaterini Michou

Eylül 2024

Öğrencilerin ve öğretmenlerin akademik zorluklara nasıl tepki verdikleri, istenen başarı sonuçlarına ulaşmak için çok önemlidir. Zorluklarla karşı karşıya kaldıklarında bazıları sebat ederken, diğerleri kolayca pes eder. Bu farklılıkların altında yatan iki temel mekanizma, zihniyet inançları (gelişim veya sabit) ve motivasyon türleridir (iyi veya zayıf şekilde içselleştirilmiş). Ancak zihniyet inançlarının farklı motivasyon türleriyle nasıl ilişkili olduğu hakkında çok az şey bilinmektedir ve eğitimcilerin öğretim zihniyetlerinin ve motivasyonlarının ihtiyaç destekleyici öğretime nasıl katkıda bulunduğu hakkında daha da az şey bilinmektedir. Bu araştırma boşluklarını gidermek için iki ayrı fakat tamamlayıcı çalışma yapılmıştır. Çalışma 1, zihniyet inançları ve farklı motivasyon türleri arasındaki ilişkiler üzerine 112 etki büyüklüğüne sahip 45 çalışmayı meta-analitik olarak gözden geçirmiş, gelişim zihniyeti ile iyi içselleştirilmiş motivasyon türleri arasındaki ilişkiler için orta etki büyüklüklerini ortaya koymuştur. Bu bulgular, gelişim zihniyetine sahip olanların, zorluklarla daha iyi başa çıkmalarına yardımcı olan özerk motivasyona sahip olma olasılıklarının daha yüksek olduğunu göstermektedir. Bu kanıtlara dayanarak, Çalışma 2, İngilizce öğretim görevlilerinin (N = 348) öğretim zihniyetlerinin ve öğretim motivasyonunun kalitesinin, ihtiyaç destekleyici öğretimleri için ne ölçüde önemli olduğunu incelemiştir. Yapısal Eşitlik Modellemesi (YEM) sonuçları, sabit öğretim zihniyetinin özerkliği destekleyici öğretimi doğrudan negatif yönde yordadığını göstermiştir. Ayrıca, sabit öğretim zihniyeti, öğretim motivasyonunun dışsal düzenlemesi yoluyla yeterliliği destekleyici öğretimi olumsuz yönde yordamıştır. Bununla birlikte, öğretim motivasyonunun içsel düzenlemesi, sabit öğretim zihniyeti ile hem yeterliliği destekleyici hem de ilişkiselliği destekleyen öğretim stilleri arasındaki ilişkilere aracılık etmiştir. Bu bulgular, ihtiyaç destekleyici öğrenme ortamları yaratmak için eğitimciler arasında gelişim zihniyetini ve içsel motivasyonu teşvik etmenin önemini vurgulamaktadır.

Anahtar kelimeler: Zihniyet Teorisi, Öz-Belirleme Teorisi, Beklenti-Değer Teorisi, Yabancı Dil olarak İngilizce Öğretimi, Yüksek Öğretim, Meta-analiz, YEM

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LIST OF ABBREVIATIONS AND SYMBOLS

β	Standardized Beta
CFI	Comparative Fit Index
CI	Confidence Intervals
CoHE	Council of Higher Education of Türkiye
df	Degrees of freedom
EFL	English as a Foreign Language
ELT	English Language Teaching
f	Frequency
GFI	Goodness of Fit Index
I^2	Higgins & Thompson's I^2 statistic
k	Number of studies in a meta-analysis
L2	Second/Foreign Language
MANOVA	Multivariate Analysis of Variance
M	Mean
η2	Eta-Squared, an effect size showing the strength of a relationship
ρ	Meta-analytic correlation
p	Probability value getting a result by random chance
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
Q	Cochran's Q statistic
r	Pearson's correlation
REML	Restricted Maximum Likelihood
RMSEA	Root Mean Square of Error Approximation
SD	Standard Deviation

SDT	Self-Determination Theory
SE	Standard Error
SEM	Structural Equation Modeling
SEVT	Situated Expectancy-Value Theory
SPSS	Statistical Package for the Social Sciences
SRMR	Standardized Root Mean Square
τ^2	between-study variance estimate
TEFL	Teaching English as a Foreign Language
TLI	Tucker-Lewis Index
Λ	Wilk's multivariate test criterion
WLSMV	Weighted Least Squares Mean and Variance estimation
χ^2	Chi-Square test value

CHAPTER 1: INTRODUCTION

Introduction

Making up a vast and diverse workforce across the globe, teachers are expected to exhibit a great deal of variance in their instructional practices (Richardson et al., 2014). Such heterogeneity could be attributed to several factors. One reason underlying such individual differences in teaching practices is the belief that educators hold about the malleability of human capacities (Dweck & Yeager, 2019). As Bandura (1997) stated, beliefs, not the truth itself, direct individuals' motives, decisions, and actions. Therefore, educators' beliefs about their learners and themselves are likely to have a significant influence on how they teach and how they respond to challenging situations in the teaching profession.

Although research has documented that teachers' beliefs regarding the development of human potential are closely linked to their instructional practices (Aragón et al., 2018; Matteucci et al., 2017), there is a lack of comprehensive examination of the mechanisms through which these beliefs are transferred into action. When considered thoroughly, teachers who believe in their students' potential would also be adequately energized to manifest effective teaching behaviors (Vermote et al., 2020). Simply put, holding beliefs about the malleability of human capacities alone might not be sufficient to promote optimal teaching behaviors. It is hence reasonable to consider educators' motivation to teach as another potential reason behind their differing teaching practices as well as an important stimulant to engage in motivational teaching behaviors (Slemp et al., 2020; Stupnisky et al., 2018), which in turn would eventually facilitate student motivation and learning.

Within the context of second/foreign language (L2) teaching and learning, educators' motivating instructional practices are of great importance because learning an L2 is often viewed as a challenging, anxiety-provoking, and ego-threatening experience (Dörnyei & Ushioda, 2011; Horwitz, 2010; Piechurska-Kuciel, 2011; for a meta-analysis, see Zhang, 2019). With respect to progress in learning, Lamb et al. (2019) clarified the distinction between learning a new language and other academic subjects by emphasizing the substantial effort required. They particularly stated that "…even for highly achievement-oriented, goal-driven language learners, progress can be frustratingly slow and can easily lead to a downward spiral of negative learning experiences, reduced effort, and fewer rewards" (p. 5). With this in mind, L2 educators should undoubtedly play a leading role in helping struggling learners overcome challenges along the way and sustain their motivation to master the target language. Parallel to the general education domain, what teachers believe about language ability also matters in the L2 education domain, as language learners are very sensitive to whether their teachers believe in their potential to learn L2 (Lou & Noels, 2020).

Several studies have demonstrated how students' beliefs about language learning are linked to their learning orientations (Lou & Noels, 2017) and how teachers' beliefs about language learning relate to their pedagogical practices (Zarrinabadi & Afsharmehr, 2024). However, whether and to what extent language teachers' beliefs about their own teaching ability contribute to their need-supportive teaching practices have not been thoroughly studied. Therefore, these questions deserve more scholarly attention because educators are unlikely to put effort into practicing need-supportive teaching unless they believe their teaching ability can improve.

Background

The central focus of motivation research within the realm of education has, until recently, typically been on student motivation and its relevance to learning outcomes. However, this trend has been changing since educational researchers began to systematically investigate the phenomenon of teacher motivation (Daumiller et al., 2020; Thommen et al., 2021). This shift was understandably necessary, as teacher motivation has been well-documented to have both direct and indirect relationships with student motivation and learning-related outcomes (Ahn et al., 2021; Roth et al., 2007). These findings are not surprising, as it is widely accepted that teaching and learning are mutually and interactively related (Bardach & Klassen, 2021). Along with the reciprocal relationship between teacher motivation and student-related variables, numerous studies have also reported the relevance of teacher motivation to teacher- or teaching-related variables, such as teachers' self-efficacy, well-being, job satisfaction, and motivating teaching styles (see Slemp et al., 2020 for meta-analytical evidence).

Researchers investigating teacher motivation have either adopted or adapted the well-established motivational theories prevalently employed in the domain of student motivation and learning to the domain of teacher motivation and teaching (Kaplan, 2014). One of these prominent motivational frameworks, Self-Determination Theory (SDT; Ryan & Deci, 2017), distinguishes itself from others by showing a unique interest in the "quality of motivation", unlike many other motivational theories solely paying attention to the "quantity of motivation" (Roth, 2014, 2019). Through segregating different types of regulations and motivational forces, SDT researchers (Ryan & Deci, 2017, 2019, 2020; Vansteenkiste et al., 2018) identified a taxonomy of motivation based on the degree of internalization (i.e., the

degree to which the reasons underlying the extrinsically motivated behavior can be accepted) and perceived relevance (i.e., the degree to which individuals find the behavior expected from them personally meaningful). SDT's taxonomy of motivation is divided into two major categories (i.e., intrinsic and extrinsic motivation), which consist of five sub-categories (i.e., intrinsic motivation and integrated, identified, introjected, and external regulations) that vary in their levels of internalization (Ryan & Deci, 2020). Internalization has the potential to transmute extrinsic motivation into something similar to, but still distinct from, intrinsic motivation (Howard et al., 2020, p. 848).

Table 1

Overview of SDT's Motivation Taxonomy

Type of Motivation	Extrinsic Motivation				Intrinsic Motivation
Type of Regulation	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Regulation
Quality of Motivation	Less self-determined (Low Quality: Controlled)		More self-determined (High Quality: Autonomous)		
Motivational Force	Commands, rewards, punishments	Guilt, shame, ego-involvement	Personal significance and value, relevance	Harmony and coherence with other values, commitments	Interest, enjoyment, curiosity
Internalization	Lack of internalization	Partial	Full	Fullest	Not required
Perceived self-relevance	Low	Medium	High	Very high	-

Note. Adapted from "Fostering Personal Meaning and Self-relevance: A Self-Determination Theory Perspective on Internalization" by M. Vansteenkiste et al., 2018, *Journal of Experimental Education, 86*(1), p. 31 (https://doi.org/10.1080/00220973.2017.1381067). Copyright 2018 by Taylor & Francis.

As depicted on the right-hand side of the taxonomy in Table 1, there is more self-determined motivation (aka autonomous motivation) representing a high-quality

motivation that consists of intrinsic motivation (i.e., acting out of sheer interest, enjoyment, and curiosity) and two highly internalized regulatory styles of extrinsic motivation: identified regulation (i.e., acting out of personal significance and values) and integrated regulation (i.e., acting in congruence with one's core values and commitments). On the left-hand side of the taxonomy, there is less self-determined motivation (or controlled motivation), representing a low quality of motivation that is composed of external regulation (i.e., acting out of external pressures such as attaining rewards or avoiding punishments) and introjected regulation (i.e., acting out of internal pressures such as feelings of guilt, shame, or ego-involvement).

To achieve theoretical integration and a higher level of parsimony, it is important to consider whether and in what ways certain motivation theories show conceptual (dis)similarities in the operationalization of their core constructs (Pekrun, 2024; Vansteenkiste & Mouratidis, 2016). As illustrated in the bottom row of Table 1, the notion of '*perceived self-relevance*,' which enhances the quality of motivation from the SDT perspective, has also been highlighted by Situated Expectancy-Value theorists (SEVT; Eccles & Wigfield, 2020, previously called EVT for Expectancy-Value Theory; Eccles-Parsons et al., 1983) in their operationalization of subjective task values (Eccles, 2005; Vansteenkiste et al., 2018). In both theories, the willingness to engage in and pursue a certain task depends on the degree of perceived self-relevance and personal meaning. In this regard, three regulatory styles of motivation (i.e., intrinsic, integrated, and identified regulations) and three components of subjective task value (i.e., intrinsic, attainment, and utility values) play similar roles in how individuals respond to challenging situations.

According to the Self-Determination Theory (SDT; Ryan & Deci, 2017), students experience more self-determined motivation (i.e., autonomous motivation)

when their teachers adopt need-supportive teaching by satisfying learners' basic psychological needs for autonomy (i.e., the need to feel ownership of one's actions), competence (i.e., the need to feel effective in one's actions), and relatedness (i.e., the need to feel connected with others). Growing evidence in the literature consistently indicates that these need-supportive teaching practices lead to a profound surge in high-quality student motivation, engagement, and achievement in the general education domain (Haw & King, 2022; Stroet et al., 2015; Yu & Levesque-Bristol, 2020).

Need-supportive teaching is particularly of high importance in L2 learning and teaching contexts where acquiring a new language is considered challenging and complex (Lamb et al., 2019). Noels and her associates (Noels et al., 1999; Noels, 2001) made the first attempt to test whether SDT propositions apply to L2 learning and teaching contexts. These initial findings, as assumed, revealed that language learners reporting their teachers as more need-supportive (i.e., satisfying their basic psychological needs) were driven by more autonomous forms of motivation to learn the target language. Since the late 1990s, need-supportive teaching behaviors have been systematically investigated in the L2 education domain and linked to autonomous forms of motivation (McEown et al., 2014), higher engagement (Oga-Baldwin & Nakata, 2015), greater achievement (Tanaka, 2017), and willingness to communicate in the L2 (Joe et al., 2017). Considering their positive outcomes in both L2 and other learning domains, gaining deep insight into the antecedents of need-supportive teaching should be of interest to educational researchers to better understand how to cultivate it in various learning environments. To this end, exploring whether certain motivational mechanisms serve as catalysts to help L2

instructors engage in and, more importantly, sustain their need-supportive teaching practices seems worthy of investigation.

Regardless of the learning domain or discipline, teaching is a rather demanding profession in which educators face a variety of challenges throughout their careers (Carbonneau et al., 2008). Motivating students is one of the biggest educational challenges that they need to deal with (Hattie et al., 2020), and poor student motivation has been reported to deteriorate teacher motivation (Pelletier et al., 2002). Mindset Theory (MT; Dweck, 1999, 2006) explains why some individuals thrive in the face of challenges, whereas others struggle or quit. According to Dweck (2006), individuals holding a fixed mindset —people who believe that human attributes such as intelligence and ability cannot improve— avoid challenging tasks with fear of failure, attribute failure to a lack of ability, and choose the easy way out to prove themselves. In striking contrast, individuals holding a growth mindset — people who believe that human attributes such as intelligence and ability can change and develop— seek challenging tasks to improve themselves, attribute failure to a lack of effort, and demonstrate higher levels of perseverance when confronted with challenging situations. When learners subscribe to a growth mindset, improving a specific ability becomes more important than proving themselves to others; they see mistakes as a tool to learn, and therefore they are more open to trying new strategies (Dweck & Yeager, 2019).

Considering the facilitating role of a growth mindset in dealing with challenges among student samples (Blackwell et al., 2007; Paunesku et al., 2015), it is also reasonable to assume that educators holding a growth mindset would better face motivational roadblocks and demonstrate higher levels of effort to improve their teaching practices accordingly. Research to date has clarified that educators' growth

mindset beliefs about students' intellectual abilities are indeed linked to their motivating teaching behaviors through which they support students' basic psychological needs (Leroy et al., 2007; Vermote et al., 2020). Likewise, educators endorsing a growth mindset about their teaching ability show perseverance and resilience, thereby maintaining their well-being and work engagement (Frondozo et al., 2020; Nalipay et al., 2021). However, research on English as a Foreign Language (EFL) teachers' mindset beliefs remains limited (Haukås & Mercer, 2022; Zarrinabadi et al., 2023). To the best of my knowledge, no cross-sectional study has thus far explored whether EFL instructors' teaching mindsets directly (or indirectly through the quality of teaching motivation) relate to their need-supportive behaviors.

From the perspective of SDT (Ryan & Deci, 2017), once students or teachers have internalized the purpose of a certain task and find personal meaning in it, they tend to develop a great sense of adaptation and become more willing to put more effort into performing it. In a similar vein, through the lens of MT (Dweck, 2006), when students and teachers perceive human capacities as malleable and improvable, they are more likely to develop a well-functioning adaptation mechanism according to the situational requirements of their environment. Such an adaptation mechanism also requires a high degree of internalization and therefore facilitates high-quality (more self-determined) motivation. On the other hand, when they see their human capacities as fixed entities, they are less likely to develop a well-functioning adaptation mechanism, thereby failing to internalize the requirements of novel situations. Given the likelihood of a low degree of internalization, individuals with a fixed mindset may become more vulnerable to controlled forms of motivation.

Having considered the potential connections between mindset beliefs and self-determined motivation, this dissertation aimed to investigate the contribution of

EFL instructors' mindset beliefs and self-determined motivation to their need-supportive teaching practices in the Turkish higher education context.

Problem

Despite the consensus between educational researchers and policymakers that more attention should be paid to improving instruction, most of their endeavors have been geared toward educational outcomes rather than educational processes (Correnti & Martínez, 2012). Teacher motivation, which is integral to effective instruction, has piqued the interest of educational researchers over the last few decades. Most of the initial studies worldwide, however, centered around what motivates individuals to enter the teaching profession (Richardson & Watt, 2014). Surprisingly, the factors motivating teachers to sustain their commitment to the profession over time have received relatively less scholarly attention (Richardson et al., 2014). Yet, the importance of in-service teacher motivation should be fully acknowledged, as it has consistently been shown to contribute to effective instructional practices, which, in turn, substantially impact student motivation and desired learning outcomes (Bardach & Klassen, 2021).

Need-supportive teaching, one frequently reported outcome of teacher motivation, has been well documented as a powerful instructional tool to boost student motivation and achievement (Haw et al., 2021; Leenknecht et al., 2017). As such, a thorough investigation of the antecedents of need-supportive teaching seems promising to ensure motivating learning environments and, consequently, student achievement. However, teaching, particularly foreign language teaching, is a demanding profession that requires high levels of resilience (Zhang, 2021). Beyond the typical difficulties faced by teachers of other academic subjects, foreign language teachers are subject to additional domain-specific challenges, such as "increased

emotional labor, shifting identities, energy-intensive teaching methodologies, language anxiety, and intercultural demands" (Mercer, 2021, p. 18). Given these challenges that are unique to the domain, providing and/or sustaining a motivating learning environment is probably much harder for foreign language educators. Thus, it is highly intriguing to explore the potential antecedents of need-supportive teaching, particularly in higher education EFL classrooms. In this vein, seeking answers to the following questions could enhance our understanding of teachers' personal beliefs related to their need-supportive teaching. When EFL instructors adopt a growth mindset, are they more likely to engage in need-supportive teaching practices? Are need-supportive teaching practices of growth-minded instructors emanating from a particular quality of motivation different from those of their fixed-minded counterparts? These critical questions guided me throughout the present study.

Purpose

In educational contexts, one of the main predictors of success is how students and teachers react to obstacles or failures in their academic and professional lives (Dweck & Yeager, 2019). When faced with difficulties, some are more likely to persevere and flourish, while others are more likely to exert less effort or give up more quickly. Learners' and educators' mindset beliefs (MT; Dweck, 2006) and their quality of motivation (SDT; Ryan & Deci, 2017) are two noteworthy potential factors that may cause such variations. However, the relationship between mindset and quality of motivation remains under-explored, and even less is known about the joint contribution of educators' teaching mindsets and their quality of motivation to their need-supportive instruction. To address these gaps, two separate yet complementary studies were conducted using different research designs.

Science advances through interpreting and building on the body of knowledge revealed in prior research. According to Ludwik Fleck (1935/1979), one of the pioneers of the constructivist philosophy of science, historical interpretation in understanding the existing body of knowledge should be emphasized to ensure meaningful scientific progress. Given Fleck's claim, any hypothesis (or a proposed theoretical model) developed solely based on the findings of a specific group of studies could be deemed biased and might not produce credible results. Therefore, I decided to conduct a meta-analytic review (S1) of the previous empirical studies investigating the nature of the relationships between mindset beliefs and different types of motivation within a broader educational context (i.e., including not only teacher but also student samples from various academic domains).

The meta-analytic evidence revealed in the first study (S1) enabled me to make informed assumptions, which guided the hypothesized model tested in the second study (S2: cross-sectional correlational study) to explore the relationships among EFL instructors' teaching mindsets, quality of teaching motivation, and need-supportive teaching practices. The overarching aim of this dissertation is to contribute to the quality of Teaching English as a Foreign Language (TEFL) by providing an in-depth understanding of the motivational pathways that promote need-supportive teaching practices in the Turkish higher education context.

Research Questions

Overall, six research questions were formulated to serve the purposes of this dissertation. In Study 1 (i.e., the meta-analytic review), I addressed the following research questions:

Research Question 1: Do growth mindset beliefs relate to different types of motivation in educational contexts?

Research Question 2: Do fixed mindset beliefs relate to different types of motivation in educational contexts?

Research Question 3: Are the relationships between mindset beliefs and different types of motivation moderated by certain sample, contextual, or study characteristics?

In Study 2 (i.e., the cross-sectional correlational study), I sought answers to the following research questions:

Research Question 1: Do EFL instructors' fixed teaching mindset beliefs predict different qualities of their teaching motivation?

Research Question 2: Do EFL instructors' different qualities of teaching motivation predict their need-supportive teaching styles (autonomy-supportive, competence-supportive, and relatedness-supportive teaching)?

Research Question 3: Are the relationships between fixed teaching mindset beliefs and need-supportive teaching styles partially mediated by autonomous and controlled forms of teaching motivation?

Significance

Central to both MT (Dweck, 2006) and SDT (Ryan & Deci, 2017) is the inquiry to understand the reasons why some people, as opposed to others, exert more effort and persistence when faced with challenges. While the former theory points to the advantage of holding a growth mindset over a fixed mindset, the latter highlights the advantage of autonomous motivation over controlled motivation. However, within teacher populations, the role of teaching mindsets and the quality of teaching motivation in explaining teaching-related variables has received surprisingly little attention (Nalipay et al., 2021). Even more remarkably, prior research, except for a recent experimental study conducted as part of a master's thesis (Akay, 2023), has

not sought to examine the joint contribution of EFL instructors' teaching mindsets and motivation to teach to their motivating teaching styles in higher education contexts.

Since need-supportive teaching has been consistently reported to link to the desired practice-relevant outcomes in L2 classrooms (Oga-Baldwin & Nakata, 2015; Tanaka, 2017), understanding which motivational processes drive need-supportive teaching is essential. Such awareness will enable educational researchers and teacher educators to design evidence-based, tactfully designed, and impactful teacher-focused interventions and/or professional development activities to promote motivating learning environments. Therefore, this dissertation aims to add to the existing scholarly understanding of teacher motivation by thoroughly investigating the key motivational mechanisms underlying need-supportive teaching practices in EFL teaching and learning contexts. The findings of this research and its practical implications may offer novel directions for pre-service teacher education programs by highlighting the significance of two crucial motivational pathways—instructors' quality of teaching motivation and their beliefs about the malleability of teaching ability— to need-supportive teaching practices in EFL classrooms. Furthermore, in-service teacher educators can also benefit from the findings of this study to design or adapt professional development activities offered to foster motivational learning environments.

Limitations

When interpreting the findings of the first study (S1), there are a few issues to be taken into consideration. To begin with, the meta-analytical evidence revealed through S1 is based on the data pooled from correlational studies, which restricts drawing definitive conclusions about the direction of the relationship between the

variables under investigation. In other words, it is not quite possible to establish causality based on a correlational meta-analysis. Future researchers may consider conducting a meta-analysis based on the effect sizes reported by the experimental studies. Another issue that merits attention is the limited number of studies examining how fixed mindset beliefs relate to various types of motivation. Therefore, a larger number of empirical studies are needed to provide more robust findings regarding the nature and strength of the relationship between fixed mindset beliefs and different types of motivation. The limited number of studies also prevents running multiple moderator analyses, aiming to uncover the complexities of the interplay of the constructs under investigation.

When interpreting the results of the second study (S2), some limitations must also be addressed. First, the cross-sectional design of the second study restricts the ability to infer cause-and-effect relationships between the constructs. As such, the findings of the second study only allow me to discuss the nature of the relationships among them, not the causality. To this end, longitudinal and experimental studies are needed to test whether fixed or growth teaching mindsets result in specific forms of teaching motivation and different manifestations of need-supportive teaching behaviors.

Second, I relied only on EFL instructors' self-reports to measure the extent to which they supported their students' basic psychological needs. However, a growing number of researchers (Daumiller et al., 2022) have recently pointed out the discrepancies between educators' self-ratings and others' ratings in the measurement of instructional practices. To avoid monomethod bias, future research may consider assessing instructors' need-supportive teaching behaviors through student reports, as well (Michou et al., 2023). Alternatively, lesson observations can be conducted to

objectively measure EFL instructors' need-supportive teaching practices (Stroet et al., 2015).

Third, I solely focused on the links between teaching mindset beliefs and need-supportive teaching practices. Prospective studies should also consider investigating the relationships between teaching mindsets and need-thwarting or need-indifferent instructional practices. Last, the bulk of the data was gathered from Turkish EFL instructors working in higher education. Conducting studies with instructors from different cultures or different teaching domains might enable future researchers to present cross-cultural and cross-domain differences, allowing them to generalize the findings beyond Türkiye or beyond the TEFL domain.

Definition of Key Terms

Attainment value: Attainment value is one of the subjective task values that concerns "the relative personal/identity-based importance attached by individuals to engage in various tasks or activities" (Eccles & Wigfield, 2020, p. 5).

Autonomous motivation: Autonomous motivation is high-quality motivation comprising "volition and choice and includes intrinsic motivation and well-internalized forms of extrinsic motivation" (Roth, 2019, p. 41).

Basic psychological needs: These are the needs "that must be satisfied for psychological interest, development, and wellness to be sustained" (Ryan & Deci, 2017, p. 10).

Controlled motivation: Controlled motivation is low-quality motivation that consists of "an external or internal sense of compulsion and includes poorly internalized forms of extrinsic motivation" (Roth, 2019, p. 41).

Fixed mindset: A fixed mindset is "the belief that personal characteristics, such as intellectual abilities are fixed and unchangeable" (Yeager & Dweck, 2020, p. 1270).

Growth mindset: A growth mindset is "the belief that personal characteristics, such as intellectual abilities, can be developed" (Yeager & Dweck, 2020, p. 1270).

Internalization: Internalization is "the process of taking in values, beliefs, or behavioral regulations from external sources and transforming them into one's own" (Ryan & Deci, 2017, p. 182).

Intrinsic value (or **interest value**): Intrinsic value is one of the subjective task values that concerns the "enjoyment one gains from doing the task" (Wigfield & Eccles, 2020, p. 168).

Mindsets (or **implicit theories**): Mindsets are "people's lay beliefs about the nature of human attributes such as intelligence or personality" (Bernecker & Job, 2019, p. 180).

Need for autonomy*:* The need for autonomy is one of the basic psychological needs concerning "a sense of initiative and ownership in one's actions" (Ryan & Deci, 2020, p. 1).

Need for competence: The need for competence is one of the basic psychological needs that concerns "the feeling of mastery, a sense that one can succeed and grow" (Ryan & Deci, 2020, p. 1).

Need for relatedness: The need for relatedness is the basic psychological need that concerns "a sense of belonging and connection" (Ryan & Deci, 2020, p. 1).

Need-supportive teaching styles: Need-supportive teaching styles are instructional practices that satisfy students' basic psychological needs for relatedness, competence, and autonomy (Stroet et al., 2013).

Task value: Task value is "a quality of the task that contributes to the increasing or decreasing probability that an individual will select it" (Eccles, 2005, p. 109).

Utility value: Utility value is one of the subjective task values about "how a task fits into an individual's future plans" (Wigfield & Eccles, 2020, p. 168).

CHAPTER 2: LITERATURE REVIEW

Introduction

The potential reasons why some students (and/or teachers), as opposed to others, are more likely to persevere when faced with difficulties deserve a thorough investigation. Their mindset beliefs (growth or fixed) and motivation types (well-internalized or poorly internalized) are two noteworthy factors causing such differences in their responses to challenging situations in academic life. However, it is not clear whether mindset beliefs relate to well- or poorly internalized types of motivation and how these relationships vary across studies. Therefore, in the first study (S1), I aimed to conduct a systematic review with a meta-analysis of the previous studies investigating the nature of the relationships between mindset beliefs and different types of motivation in a wider educational context, including both student and teacher samples. Informed by and built on the meta-analytical evidence revealed through S1, the second study (S2) aimed to model the relationships among EFL instructors' teaching mindset beliefs, quality of teaching motivation, and need-supportive teaching practices in the Turkish higher education context.

The first part of this chapter provides the theoretical frameworks in which this project was grounded and presents their core constructs that might be related to one another. Subsequently, the second part of the chapter will delve into the existing body of research portraying the linkages between these constructs, specifically within teacher samples. This targeted focus on educators directly aligns with the overarching goal of this dissertation, which was to elucidate the motivational pathways that promote need-supportive teaching.

Part I: Theoretical Frameworks

Motivational theorists have developed several frameworks to elucidate the origins and persistence of adaptive learning and teaching behaviors, with a focus on their antecedents, correlates, and outcomes. Both the first (S1) and the second (S2) studies of this dissertation have been heavily grounded on two major theories of motivation: Self-Determination Theory (SDT; Ryan & Deci, 2017) and Mindset Theory (MT; Dweck, 2006). In the meta-analytical review (S1), however, I also benefitted from the Situated Expectancy-Value Theory (SEVT; Eccles & Wigfield, 2020). Closely examining the survey items used to measure subjective task values within SEVT (i.e., intrinsic, attainment, and utility values), the conceptual overlaps between these items and the ones used to measure autonomous forms of motivation (i.e., intrinsic and identified motivations) within SDT caught my attention. These similarities have also been discussed by SEVT theorists in several studies (Eccles, 2005; Wigfield & Eccles, 2020; Wigfield et al., 2021). Despite employing two distinct theoretical lenses to explain motivational processes, SDT's autonomous forms of motivation and SEVT's subjective task values have apparent conceptual overlaps in their operational definitions, which is considered an important criterion for identifying sibling constructs (Lawson & Robins, 2021; Pekrun, 2024). As a result, I also turned to the Situated Expectancy-Value Theory by adding its value component to my search string of the systematic review to better serve the purposes of the meta-analytical study.

Mindset Theory (MT; Dweck, 2006) postulates two different mindsets (growth and fixed) to elucidate the reasons why individuals differ in their responses to academic challenges and how these responses ultimately influence their achievement motivation. When faced with challenges, individuals who adopt growth

mindset beliefs (beliefs about the malleability of intellectual skills) persist in their efforts and try alternative strategies. In contrast, those adopting fixed mindset beliefs (the beliefs about the fixedness of intellectual skills) are likely to lose interest when they struggle and hence show little or no perseverance. In a similar vein, both SDT and SEVT provide valuable insights into how individuals respond to obstacles and exhibit perseverance. Each theoretical framework seeks to explore what motivates or demotivates students and/or teachers to go the extra mile, pointing to the functional role of internalization of values or behavioral regulations. Once they have internalized a certain behavior, they will perform it with a sense of volition and tend to put effort into completing it as they perceive it to be personally meaningful and relevant. According to SDT, students and/or teachers tend to do so because they develop autonomous forms of motivation. Through the theoretical lens of SEVT, they perceive the importance of the task because of its relevance to their lives and self-images or the pure enjoyment they derive from the task. From the perspective of Mindset Theory (MT), when people see their abilities or intelligence as improvable (when they endorse growth mindsets), they develop a well-functioning adaptation mechanism according to the situational requirements and adjust their strategies correspondingly. All things considered, I argue that such an adaptation mechanism facilitates the development of interest and enjoyment in improving academically and/or professionally, as well as enhances the degree of internalization. In other words, holding a growth mindset could promote autonomous forms of motivation from the SDT perspective and help individuals recognize the subjective values of the tasks from the SEVT perspective. Conversely, when students and/or teachers see their abilities as fixed entities — when they hold a fixed mindset—, they are less likely to develop a well-functioning adaptation mechanism (as they believe ‘they

cannot really change their qualities') and more inclined to experience a lower degree of internalization. Therefore, they are often driven by controlled forms of motivation (being motivated out of external rewards, threats, or ego concerns).

Given that each theory contributes to an in-depth understanding of why people are driven to engage in academic endeavors and pursue them in the face of adversity, the first section of this chapter will briefly focus on these frameworks which offer distinct yet complementary perspectives to human motivation.

Self-Determination Theory

Self-Determination Theory (SDT; Ryan & Deci, 2017), a meta-theory of human motivation and behavior, has become one of the most well-established, far-reaching, and widely applied theories in the field of psychology. SDT originated with Edward L. Deci's early investigations into intrinsic motivation (Deci, 1971, 1975), and over time it gained a great deal of credibility and respect in academia thanks to his fruitful collaboration with Richard M. Ryan (Deci & Ryan, 1980a, 1980b). Subsequently, empirical research conducted in a wide range of domains, including education, has followed this brick-by-brick built theory with a growing number of interventional studies (Ryan & Vansteenkiste, 2023).

SDT, at its core, is concerned with *the self* and postulates that "throughout development, the primary task of the self is to assimilate, coordinate, and regulate inputs from both external (especially social and cultural) and internal (drives, emotions, needs) environments" (Ryan & Deci, 2019, p. 114). Through the lens of SDT, this idea of *self*—which is seen as an active integrative process—is characterized by two key concepts: internalization and intrinsic motivation, which can be supported through the satisfaction of three basic psychological needs (i.e., needs for autonomy, competence, and relatedness). The major postulations of SDT

regarding these theoretical constructs have been elaborated within the three important sub-theories of it, namely *Cognitive Evaluation Theory* (CET; Deci & Ryan, 1980a; Ryan & Deci, 2017), *Organismic Integration Theory* (OIT; Ryan et al., 1985; Ryan & Deci, 2017), and *Basic Psychological Needs Theory* (BPNT; Ryan & Deci, 2017). Due to their great relevance to this dissertation, I will specifically focus on these three among the six sub-theories of SDT.

Cognitive Evaluation Theory (CET)

Early research on SDT emerged and progressed with the lab experiments employing the *free-choice paradigm* which operationalized intrinsic motivation by measuring how long participants spend working on the target task when they are alone and free to choose in the absence of any external reasons to persist (Deci, 1971, 1972). The careful interpretation of the accumulated and consistent findings of these experiments on how some extrinsic factors such as rewards, feedback, and choice affect intrinsic motivation led to the formulation of the very first mini theory of SDT: Cognitive Evaluation Theory (CET; Deci &Ryan, 1980a). Since then, extensive research has validated the CET's core postulation explaining the fluctuations in intrinsic motivation in response to various undermining external events, such as offering rewards (see Deci et al., 1999, 2001 for meta-analytic evidence) and negative feedback (Weidinger et al., 2016), as well as to several facilitating external events such as providing choices (see Patall et al., 2008 for meta-analytic evidence) and positive feedback (Mabbe et al., 2018).

Furthermore, CET posits that experiences that hinder individuals' sense of autonomy or competence weaken intrinsic motivation, whereas experiences that promote perceived autonomy and competence strengthen it (Reeve, 2023). By exploring what facilitates or impedes intrinsic motivation, CET laid the groundwork

for new insights, particularly on the antecedents of interpersonal motivating styles, which are closely related to the proposed model in the second study of this dissertation. Considering CET's propositions about the social-contextual factors shaping intrinsic motivation, we may better comprehend how instructors driven by intrinsic motivation are more inclined to adopt need-supportive teaching practices such as offering choices to their students and giving constructive feedback on their task performance.

Organismic Integration Theory (OIT)

Organismic Integration Theory (OIT; Ryan et al., 1985) is the second mini theory of SDT that specifically focuses on how extrinsic motivation can evolve into autonomous action through the process of internalization and integration (Ryan & Deci, 2017). Unlike intrinsic motivation, extrinsic motivation comes into play when engaging in necessary but potentially uninteresting activities, such as fulfilling one's responsibilities and duties at work or completing course assignments (Ryan & Vansteenkiste, 2023; Vansteenkiste et al., 2010). The significance of the OIT within Self-Determination Theory lies in providing a discerning and nuanced understanding of extrinsic motivation. It also presents a taxonomy approach by segregating extrinsic motivation with varying degrees of internalization (Ryan et al., 2021). In other words, this mini theory within SDT goes beyond the dichotomy between intrinsic and extrinsic motivation by dividing the latter into four types. By doing so, SDT also distinguished itself from other motivation theories by considering motivation as a concept that can be explicated not just in terms of quantity but also in terms of *quality*, challenging other theories' simplistic ways of measuring and interpreting motivation.

As shown through Table 1 in the introduction chapter, autonomous motivation (i.e., high-quality motivation) consists of *intrinsic motivation* (acting out of sheer interest, enjoyment, and curiosity) and two internalized regulatory styles of extrinsic motivation: *identified regulation* (acting out of personal significance and values) and *integrated regulation*. Controlled motivation (i.e., low-quality motivation), on the other hand, is regulated by external pressures like rewards or punishments (*external regulation*) and introjected pressures like guilt, shame, or ego-involvement (*introjected regulation*).

According to OIT (Ryan & Deci, 2019), certain aspects of social contexts that foster basic needs ease the process of developing more autonomous forms of motivation. As such, both the first and second studies of the present dissertation were influenced by the fundamental propositions of OIT. Since teachers are the key socializing agents in academic settings, a thorough understanding of autonomous and controlled motivation to teach is crucial. An autonomously motivated teacher, for instance, is more likely to teach out of sheer joy and personal interest, whereas a teacher driven by controlled motivation would probably teach out of external reasons involving various instrumental values. Empirical research grounded in SDT has consistently shown the link between autonomous motivation and optimal human functioning across many groups, including students (Bureau et al., 2022) and employees (Gillet et al., 2013). In a similar vein, previous research conducted with teachers also revealed that autonomous motivation to teach was positively correlated with teachers' overall well-being and their motivating teaching styles, while controlled motivation to teach was found to be linked to distress and demotivating teaching styles (i.e., need-thwarting), which frustrate students' basic psychological needs (see Slemp et al., 2020 for meta-analytic evidence).

Basic Psychological Needs Theory (BPNT)

Basic Psychological Needs Theory (BPNT; Vansteenkiste et al., 2020), the third mini theory of SDT that predominantly guided the second study of the present dissertation, identifies three basic needs that are fundamental for human thriving and optimal functioning: autonomy, relatedness, and competence. The fulfillment of each need is deemed important as they are seen as indispensable nutrients for individuals' psychological well-being and growth (Ryan & Deci, 2017, 2019).

Autonomy is the basic psychological need to have control over our decisions and behaviors. When the need for autonomy is satisfied, we feel a sense of volition and act authentically. *Relatedness*, the second basic psychological need, is concerned with the feelings of connection and belonging that arise when we receive attention and compassion from significant others, such as parents, teachers, and friends. *Competence*, the last basic psychological need, pertains to feeling effective and capable in our actions. Fulfilling the need for competence involves successfully navigating the challenges we face and achieving mastery in our academic or professional lives (Vansteenkiste et al., 2023). On the other hand, the frustration of these three basic psychological needs might lead to severe negative consequences like maladaptive functioning and poor well-being (Ryan & Deci, 2017). Autonomy frustration, for instance, creates pressure and inner conflict, while relatedness and competence frustrations may result in feelings of loneliness or isolation, and failure or helplessness, respectively (Vansteenkiste et al., 2020; Vansteenkiste et al., 2023).

According to Ryan and Deci (2017), each need is essential on its own, yet they are closely interrelated, influencing one another. More precisely, fulfilling or thwarting one of these basic needs would possibly impact the other two correspondingly. For example, it is more likely for a student to feel competent

enough to solve a difficult problem if her teacher and classmates support her need for relatedness. That is, feeling a sense of belonging and connection will facilitate a safe environment in which students can take the initiative without the fear of failure, which directly concerns the need for competence and autonomy. Hence, it is critical to address all three needs together to gain a better understanding of BPNT's key postulations.

The central role of need satisfaction (or frustration) in ensuring optimal human functioning and well-being has led SDT researchers to explore how social environments can support (or thwart) the basic psychological needs of people (Aelterman & Vansteenkiste, 2023; Jungert et al., 2022). Therefore, identifying these essential needs and need-relevant experiences holds significant practical value in understanding the contribution of social contexts to the individuals' levels of motivation, engagement, and adaptation (Vansteenkiste et al., 2020). Teachers, *the primary socializing agents in educational contexts*, play a crucial role in facilitating high engagement and learning by nurturing students' basic psychological needs for autonomy, relatedness, and competence (Michou et al., 2023; Reeve & Cheon, 2021). The extent to which educators meet these basic needs determines their need-supportive teaching style, which will be elucidated in the second part of this chapter.

Situated Expectancy-Value Theory

It has been more than four decades since Eccles-Parsons and her colleagues (Eccles-Parsons et al., 1983) first introduced the expectancy-value model of achievement motivation. The name of the theory has recently been changed from Expectancy-Value Theory (EVT) to Situated Expectancy-Value Theory (SEVT) to highlight the important influence of certain situations on individuals' motivation and performance (Eccles & Wigfield, 2020; Gladstone et al., 2022).

According to the SEVT model of achievement motivation, the beliefs individuals hold about how successfully they will perform on a future task (i.e., *expectancies*) and the subjective meaning they place on a particular task (i.e., *values*) determine the degree of their engagement, performance, and persistence (Wigfield et al., 2021). Realizing its particular and integrative relevance to my research, I have solely addressed and specifically focused on the 'value' component of the Situated Expectancy-Value Theory.

Subjective Task Values

The *task value* (aka *achievement value*, Wigfield et al., 2017) construct of SEVT was defined as "a quality of the task that contributes to the increasing or decreasing probability that an individual will select it" (Eccles, 2005, p. 109). This definition of task value clearly emphasizes its function as a motivational driver for achievement-related choices and activities (Wigfield & Eccles, 2020). SEVT theorists prefer to call it '*subjective task value'* as they believe that different people might attach different values to the same task or even one single person might differently value a similar task with the same difficulty level (Eccles, 2005; Eccles & Wigfield, 2020). The overall value placed on any given task is determined by three dimensions of the value component of SEVT (i.e., intrinsic or interest, attainment, and utility values), all of which have been consistently reported to shape individuals' achievement-related outcomes (Harackiewicz et al., 2016; Marchand & Gutierrez, 2016; Part et al., 2020).

Intrinsic value (also called *interest value*) refers to the degree of enjoyment and/or interest an individual gains by engaging in a particular activity (Eccles, 2005; Wigfield & Eccles, 2020). Given this operational definition of the construct, intrinsic/interest value seems to be analogous to the construct of intrinsic motivation

within the SDT framework. Like SDT theorists, SEVT theorists also state that students show persistence in a specific activity if they find intrinsic value in it (Gladstone et al., 2022; Wigfield & Eccles, 2020).

Attainment value refers to the degree of personal importance placed on engaging in a specific task and fulfilling it successfully (Eccles, 2005). Attainment value has further been described by the extent of relevance of the characteristics of a given task to individuals' personal identities and *core selves* (Eccles, 2009; Wigfield & Eccles, 2020). This facet of attainment value was addressed in connection with SDT's construct of integrated regulation, the most autonomous form of extrinsic motivation (Eccles 2005, 2009).

Utility value pertains to the perceived usefulness and instrumentality of a given task for individuals' short-term or long-term plans (Eccles & Wigfield, 2020). This component of subjective task value, therefore, bears similarities to the internalized forms of extrinsic motivation within the SDT framework (Vansteenkiste et al., 2018). Wigfield and Eccles (2020) also pointed to this conceptual parallelism and stated that "In certain respects, utility value is similar to extrinsic motivation, because when doing an activity out of utility value, the activity is a means to an end rather than an end in itself" (p. 168). In other words, when people find utility value in a particular activity or a task, they perform it not for the sake of the inherent joy it brings, but for the benefits it might later bring (i.e., for the task's self-relevance and usefulness). In this sense, utility value within the SEVT framework can be regarded as a form of extrinsic motivation within the SDT framework as both consider the accomplishment of a task just a means to an end (Urhahne & Wijnia, 2023).

Considering the conceptual overlaps and semantic similarities between the items measuring task values within the SEVT framework and the items measuring

autonomous forms of motivation within the SDT framework, I decided to include subjective task values as sibling constructs to intrinsic and identified motivation in my search string of the systematic review. (Lawson & Robins, 2021; Pekrun, 2024). Further explanation and justification for this methodological decision have been provided in the subsequent chapter.

Mindset Theory

The mindset theory proposed by Dweck (1999, 2006) provides valuable insights into understanding the motivational processes contributing to the optimal functioning of individuals when they feel challenged. In her line of research, Dweck (2006) defined two types of mindsets (i.e., fixed vs. growth). Individuals who have a fixed mindset (also called *entity theory*, Hong et al., 1999) believe that their abilities and intelligence are fixed traits that can neither be altered nor improved. On the other hand, individuals who have a growth mindset (also called *incremental theory*, Hong et al., 1999) believe that their abilities and intelligence can grow through hard work and determination. According to Dweck (2006), people with a fixed mindset believe their qualities are set in stone, avoid challenging tasks with the fear of failure, attribute failure to a lack of ability, and therefore choose the easy way out to prove themselves and not to damage their self-image. In striking contrast, she described people with a growth mindset as having a strong passion for learning, seeking challenging tasks to improve, viewing failure as an opportunity to grow, and seeing effort as the path to success.

The positive outcomes of having a growth mindset have been well-documented in several longitudinal (Blackwell et al., 2007; Yeager et al., 2014), cross-sectional (Bostwick et al., 2017; Romero et al., 2014), and interventional (Aronson et al., 2002; Paunesku et al., 2015) studies. These studies have consistently

demonstrated that when individuals believe they can develop their abilities and intelligence, they can reach their full potential and become optimally functioning individuals. For instance, they are more likely to endorse learning goals (Blackwell et al., 2007; Dweck & Leggett, 1988), exert more effort by taking remedial actions (Hong et al., 1999; Nussbaum & Dweck, 2008), earn higher grades (Botswick et al., 2017; Romero et al., 2014), have higher levels of adaptability (Martin et al., 2013) and display mastery-oriented strategies (Robins & Pals, 2002).

Most research on mindset has investigated the links between students' mindsets and learning outcomes. Since teachers are known to be the most important agents of educational systems, their mindsets about the malleability of their teaching ability and students' learning ability should also be considered important predictors of their instructional practices. However, there is a dearth of research on teachers' mindsets about their teaching ability (Irie et al., 2018). How is holding a growth mindset translated to teachers' instructional practices? Are the instructional practices of growth-minded teachers emanating from a particular quality of motivation different than those of their fixed-minded counterparts? I embarked on this research project to seek answers to these intriguing questions.

Furthermore, mindset beliefs do not function alone and independently (Dweck & Yeager, 2019; Lou et al., 2022). They are interconnected with other motivational constructs like effort beliefs, attributions, and achievement goals in a coherent meaning system (Dweck & Molden, 2017; Yu & McLellan, 2020), which was coined as the Mindset Meaning System (MMS; Dweck & Molden, 2017). Given this broader meaning system, I also explored the possibility of a *Teaching Mindset Meaning System* in which teaching mindsets are intertwined with the quality of motivation to teach and need-supportive teaching styles.

Part II: Interpersonal Teaching Styles

Gaining a thorough understanding of what contributes to effective teaching is crucial for enhancing the overall quality of instruction and, thereby, yielding desired learning outcomes. Numerous educational researchers and commentators have addressed the simple question of '*what makes a good teacher*?' (Baier et al., 2019; Carroll et al., 2024; Day, 2019; Murray, 2021). Motivated by the same research question, McKnight et al. (2016) conducted a large-scale international survey with multiple respondents, comprising students, teachers, principals, parents, and policymakers (N = 13,225) in 23 countries with varying Human Development Index (HDI) scores, including high HDI countries (e.g., the USA, Germany), medium HDI countries (e.g., Türkiye, Brazil), and low HDI countries (e.g., Egypt, India). The results of this global report revealed that the top five valued qualities of an effective teacher are: (1) the ability to develop trusting and compassionate relationships; (2) a patient, caring, and kind personality; (3) professionalism; (4) subject matter knowledge; and (5) knowledge of the cognitive, social, and emotional development of learners. The most remarkable finding of this study is that all key stakeholders, irrespective of their context, prioritized the importance of teacher-student relationships over teachers' content knowledge or instructional techniques. This finding aligns well with how a good teacher (i.e., one with a motivating interpersonal teaching style) is portrayed through the lens of SDT researchers (Katz & Shahar, 2015). Interpersonal teaching styles, the strategies that teachers employ in the classroom to promote student learning and motivation, are called '*need-supportive/need-thwarting teaching'* as they differ in the extent to which educators *support* and/or *thwart* students' basic psychological *needs* (Ryan & Deci, 2017).

Need-Supportive Teaching: The Bright Side of Teaching

As previously introduced in Part I, Basic Psychological Need Theory (BPNT; Vansteenkiste et al., 2020) posits that satisfaction of basic psychological needs (BPNs) for *autonomy* (the need to feel ownership of one's actions), *competence* (the need to feel effective in one's actions), and *relatedness* (the need to feel connected with others) is crucial for optimal human functioning and well-being.

Within educational contexts, BPNT's trio of needs is described as "the nutrients needed by every learner to be actively and positively engaged" (Liu et al., 2016, p. 3). Thus, teachers who successfully fulfill these three needs are considered motivating (i.e., need-supportive), while others who frustrate these needs are considered demotivating (i.e., need-thwarting). The former group of teachers is characterized by showing high respect for students' perspectives and initiatives, along with an understanding and warm tone. In contrast, the latter group is distinguished by controlling students' thoughts, feelings, and behaviors through covert or overt forms of pressure (Reeve, 2016). Due to their direct and ongoing interaction with students, teachers play a key role in fulfilling students' trio of psychological needs at school, ensuring a "bright" pathway from need satisfaction to a positive learning environment (Haerens et al., 2016; Vansteenkiste et al., 2020) by catalyzing high-quality motivation (Vansteenkiste et al., 2024). On the contrary, teachers who tend to thwart learners' basic psychological needs pave the "dark" pathway from need frustration to poor or even maladaptive student functioning, such as procrastination (Opdenakker, 2021), oppositional defiance (Haerens et al., 2015), disaffection (Patall et al., 2018), and disengagement (Jang et al., 2016).

In addition to need-supportive or need-thwarting teaching behaviors, there may exist another group of behaviors that neither support nor thwart learners' needs,

characterized by showing an ‘indifferent’ attitude toward them (Ntoumanis, 2023a). Bhavsar et al. (2019) tested this tripartite conceptualization of interpersonal styles and coined the third style as “need indifferent”. In educational settings, instructors who adopt such an interpersonal style could be distant or unresponsive to others due to a lack of interest and/or time to adapt their instructional behaviors according to the individual needs of students (Ntounamis, 2023a). Later, Huyghebaert-Zouaghi et al. (2021) revealed supportive evidence for the predictive power of need-indifferent style in a work context, reporting a positive relationship between supervisors’ need-indifferent style and employees’ boredom and rumination. Though this new concept is positioned somewhere in between need satisfaction and frustration, thereby having the potential to reveal unexplained instructional behaviors, the findings regarding its predictive power are inconsistent. While Bhavsar and his associates (2019) reported promising findings regarding their function, a subsequent study (Bhavsar et al., 2020) failed to empirically support this tripartite conceptualization. However, in a more recent study, Reeve et al. (2023) tested a similar tripartite model through a new questionnaire developed to integrate the ‘dormant’ state of need satisfaction into the existing SDT framework. Their results provided evidence regarding the tripartite model’s superior predictive power to the dual-process model. Considering these mixed findings, the tripartite model seems to be still subject to prospective empirical investigations and further validation (Ntounamis, 2023; Reeve et al., 2023). Yet, in the present dissertation, whose overarching aim was to investigate the antecedents of need-supportive teaching, I have exclusively focused on the “bright” (i.e., need-supportive) side of teaching styles.

Need-supportive teaching practices have been consistently reported to relate to positive student outcomes such as higher levels of agentic engagement (Patall,

Vite, et al., 2024), autonomous motivation (Leenknecht et al., 2017), performance (Lavrijsen et al., 2024), self-regulation (Opdenakker, 2022), enjoyment (Mouratidis et al., 2011), and academic adjustment (Vandenkerckhove et al., 2019). There is also a growing body of meta-analytic evidence confirming the overall effects of need satisfaction on high-quality motivation, achievement-related outcomes, and well-being (Bureau et al., 2022; Howard et al., 2024; Slemp et al., 2024). Given the remarkable advantages of need-supportive behaviors, several interventional studies have been designed to enable instructors working in different educational domains to adopt more need-supportive teaching behaviors (Cheon et al., 2020; Flunger et al., 2019). Participating in such need-supportive intervention programs has also yielded several benefits for teachers themselves. For instance, following an intervention designed to train teachers to become more supportive of students' needs for autonomy and competence, teachers reported a greater sense of teaching efficacy, more positive relationships with learners, and higher levels of job satisfaction over time (Cheon et al., 2020). These findings indicate that teachers and students can obtain reciprocal gains when teachers provide support for autonomy, competence, and relatedness.

Autonomy-Supportive Teaching

Autonomy refers to the experience of volition, ownership, and self-initiation in one's actions, and it is an indispensable condition for autonomous motivation and optimal human functioning (Ryan & Deci, 2017). Correspondingly, teaching practices that make learners feel that they are participating in learning activities since they reflect their own preferences and values are considered autonomy-supportive (Patall et al., 2022). Autonomy-supportive teachers are the ones who take learners' perspectives into account, acknowledge their feelings and thoughts, offer multiple

opportunities to make informed choices, provide students with meaningful rationales for the assigned tasks, and use encouraging language while avoiding the use of controlling language and directives (Reeve, 2016; Reeve & Cheon, 2021). More recently, a large group of SDT researchers (Ahmadi et al., 2023) has created a comprehensive classification system to identify teachers' need-supportive and need-thwarting instructional behaviors. As for autonomy-supportive teaching, they agreed on several exemplary behaviors, such as offering learners meaningful choices, designing learning activities relevant to student preferences, and providing students with rationales to perform an activity (see Table 2).

Table 2

Need-supportive Teaching Styles

Teaching Style	Conceptual Definition	Exemplary Behaviors
Autonomy Supportive	Foster an environment in which learners feel volition and personal ownership	• Encourage learner input or choice • Teach in learners' preferred ways • Offer rationales
Competence Supportive	Foster an environment in which learners feel capable of reaching their goals	• Present optimal challenges • Give specific feedback • Praise progress or effort
Relatedness Supportive	Foster an environment in which learners feel accepted, understood, and cared	• Show unconditional positive regard • Ask about learners' progress, wellbeing, and/or feelings • Convey affection

Note. Adapted from "A Classification System for Teachers' Motivational Behaviors Recommended in Self-Determination Theory Interventions" by A. Ahmadi et al., 2023, *Journal of Educational Psychology, 115*(8), p. 1170 (https://psycnet.apa.org/doi/10.1037/edu0000783). Copyright 2023 by American Psychological Association.

The benefits of teacher autonomy support have been well portrayed in several longitudinal (Michou et al., 2023), cross-sectional (Flunger et al., 2024), and

experimental (Reeve et al., 2022) studies. Recently, Mammadov and Schroeder (2023) meta-analytically reviewed the prior research examining the relationships between autonomy support and positive learning outcomes. Their findings demonstrated that teacher autonomy support has the strongest relationships with autonomous motivation ($\rho = .29$), behavioral engagement ($\rho = .26$), and mastery-oriented achievement goal ($\rho = .28$). Moreover, there have been several teacher-focused interventions designed to train educators on how to become autonomy-supportive (Cheon et al., 2020; Flunger et al., 2019; Kaplan & Assor, 2012). Considering the growing number of such studies, Reeve and Cheon (2021) systematically reviewed 51 interventions to explore their overall effectiveness. Based on this review, they concluded that teachers can indeed learn how to provide autonomy support through carefully designed interventions.

Remarkably, autonomy-supportive teachers also tend to be competence- and relatedness-supportive, as they consider students' perspectives and respond effectively to students' concerns (Ryan & Deci, 2020). In other words, when educators adopt autonomy-supportive instructional practices, they are more likely to kill two birds with one stone (i.e., autonomy support). Although autonomy support has received the most scholarly attention of the three supports and yielded several positive outcomes, internalization — a fundamental process in socialization — cannot be facilitated without competence or relatedness support (Deci & Ryan, 2000). Vansteenkiste et al. (2024) described competence and relatedness supports as the necessary ingredients for students to acknowledge the purpose and value of the assigned learning tasks (i.e., internalizing the personal importance and relevance to them). Consistent with this description, the findings of a recent meta-analysis (Slemp et al., 2024) demonstrated the incremental effects of both support types on basic need

satisfaction over and above autonomy support, indicating the unique contributions of competence and relatedness supports to the satisfaction of basic psychological needs. In light of these findings, Slemp et al. (2024) call for future research to pay closer attention to both competence- and relatedness-supportive behaviors.

Competence-Supportive Teaching

Competence is the basic psychological need concerning the experience of a sense of effectiveness and mastery in one's actions, which can be supported by providing learners with clear structure (Ryan & Deci, 2020). It is for this reason that '*competence support*' is often called the '*provision of structure'*. Competence support entails a focus on the process, which enables the socializing agents (e.g., teachers, supervisors, coaches) to better align their practices with the current level and future potential of others (e.g., students, employees, athletes) as well as to identify the hurdles faced on the way to achievement (Aelterman & Vansteenkiste, 2023).

Teachers can support their learners' need for competence by introducing optimal challenges, giving constructive feedback, and acknowledging students' efforts through the effective use of praise (Ahmadi et al., 2023; see Table 2). According to Ryan and Deci (2020), the provision of structure should involve providing effective scaffolding and constructive feedback while maintaining the optimal challenge level. In a similar vein, Vansteenkiste et al. (2024) pointed to the importance of presenting optimal challenges and providing positive feedback, which in turn allows students to feel a sense of accomplishment. They further emphasized the critical role of competence support (i.e., the provision of structure) in cultivating intrinsic motivation. Nurturing the need for competence is indeed seen as the key to energizing students to put effort into learning (Stroet et al., 2013).

Previous research has demonstrated that when their need for competence is supported, students yield desirable learning outcomes, such as greater interest (Mabbe et al., 2018), higher levels of autonomous motivation (Mouratidis et al., 2022), self-regulation (Hospel & Galand, 2016), positive affect (Mouratidis et al., 2013), as well as agentic and behavioral engagement (Michou et al., 2023). More recently, Patall, Yates, et al. (2024) systematically reviewed both correlational and interventional studies investigating the role of teachers' provision of structure in contributing to positive learning outcomes to provide meta-analytical evidence. According to their findings, the provision of structure is positively and significantly related to several learning outcomes such as behavioral engagement ($r = .23$, $p < .001$), emotional engagement ($r = .22$, $p < .001$), cognitive engagement ($r = .23$, $p < .001$), achievement ($r = .11$, $p < .001$), and competence beliefs ($r = .22$, $p < .001$). Likewise, the meta-analytic evidence gathered from the interventional studies showed that learners whose teachers were trained to provide structure have higher achievement ($g = .33$, $p < .001$) and greater behavioral engagement ($g = .42$, $p < .002$) compared to the ones whose teachers were not trained. Furthermore, Patall and her colleagues reported a stronger relationship between structure and achievement when the provision of structure is accompanied by autonomy (or positive emotion). Based on this noteworthy finding, they suggested that competence support should not be seen as distinct from or opposed to the other two types of support (i.e., provision of autonomy and involvement). Therefore, teachers should adopt teaching practices that holistically support the trio of learners' basic psychological needs.

Relatedness-Supportive Teaching

Relatedness is the basic psychological need concerning the experience of a sense of belonging in one's social environment and a strong connection with others

(Ryan & Deci, 2020). Within educational contexts, when students feel that they are genuinely cared for, respected, and valued by their teachers, they are more likely to become autonomously motivated to perform the learning activities (Niemiec & Ryan, 2009; Niemiec et al., 2014), since a genuine sense of connection plays a significant role in the process of internalization (Vansteenkiste et al., 2020). The provision of involvement is indeed seen as the most crucial dimension of need support in the teacher-student relationship (Skinner & Belmont, 1993). Relatedness-supportive teachers are those who show sincere interest in students' experiences, express affection and compassion, communicate unconditional positive regard to their students, and present the lesson content with great enthusiasm (Ahmadi et al., 2023; see Table 2).

Prior research has shown that when learners' need for relatedness is supported by their teachers, they report higher levels of autonomous forms of motivation (Sparks et al., 2016), interest (Pavey et al., 2011), behavioral engagement (Raufelder et al., 2014), cognitive and emotional engagement (Zhou et al., 2022), as well as mastery-oriented goals and self-efficacy (Diseth et al., 2012). The statistically significant relationships between relatedness support received from different sources and positive outcomes were confirmed by meta-analytical evidence as well. More specifically, Slemp and his colleagues (2024) demonstrated that relatedness support is indeed correlated with intrinsic motivation ($\rho = .42$), identified regulation ($\rho = .40$), academic performance ($\rho = .13$), work performance ($\rho = .41$), and positive affect ($\rho = .50$). Given the benefits of relatedness support, Slemp et al. suggested that prospective SDT research and interventions should address how to provide each need support by moving beyond targeting autonomy support only.

Antecedents of Need-Supportive Teaching

Grounded in SDT (Ryan & Deci, 2017), a considerable body of research has documented the consequences of adopting need-supportive (or thwarting) teaching behaviors (Leenknecht et al., 2017; see Stroet et al., 2013 for a systematic review). However, less scholarly attention has been given to elucidating their antecedents. Having examined the factors influencing teachers' need-supportive and/or need-thwarting instruction, researchers have identified three main categories: (a) contextual factors such as having controlling or autonomy-supportive supervisors (Pelletier & Sharp, 2009); (b) student-related factors such as (dis)engagement or quality of motivation to learn (Pelletier et al., 2002); and (c) personal factors such as teachers' own beliefs, values, and their quality of motivation to teach (Reeve, 2009). Among these, the least explored one is probably the personal antecedents (Moè & Katz, 2020; Reeve et al., 2014).

Previous studies revealed several teacher-related personal antecedents of need-supportive and/or need-thwarting teaching behaviors such as teachers' personality-based characteristics and their causality orientations (Reeve et al., 2018), teacher self-efficacy (Buzzai et al., 2023; Lauermann & Berger, 2021), teacher responsibility (Lauermann & Berger, 2021), teacher self-compassion (Moè & Katz, 2020), teachers' emotion regulation (Moè & Katz, 2021), teachers' beliefs about the effectiveness and feasibility of adopting need-supportive styles (Reeve et al., 2014), beliefs about the effectiveness of rewards (Escriva-Boulley et al., 2021), beliefs about the malleability of human capacities (Leroy et al., 2007; Vermote et al., 2020), and their quality of motivation to teach (Aelterman et al., 2019; Katz & Shahar, 2015; Pelletier et al., 2002; Roth et al., 2007).

In the last SDT conference, Ntoumanis (2023b) shared the preliminary results of a systematic review and meta-analysis conducted to understand how need-supportive and need-thwarting behaviors develop across different life domains like education, parenting, and sports. Based on the results of their systematic review, the researchers identified several personal antecedents of the need-supportive interpersonal styles, such as need satisfaction, mastery goals, style-related beliefs, mindset beliefs about the malleability of human capacities, and adaptive motivation.

Considering their potential to predict need-supportive behaviors in the EFL context and their direct relevance to the purpose of this dissertation, I will be reviewing the prior research focusing on the contribution of teachers' mindset beliefs and teacher motivation to need-supportive instruction in the subsequent two sections.

Teachers' Mindset Beliefs

Beliefs are acknowledged as the antecedents to human behaviors (Bandura, 1997). As such, teachers' beliefs are expected to impact their instructional behaviors. Reporting the first results from the Teaching and Learning International Survey (TALIS), the OECD (2009) emphasized the relevance of teachers' beliefs to their instructional strategies for dealing with the daily challenges of the teaching profession.

According to Fives and Buehl (2016), teachers hold different beliefs about (a) the nature of teaching; (b) the nature of knowledge; and (c) the nature of human abilities (i.e., malleable vs. fixed). Given the well-documented linkages between students' mindset beliefs and desirable learning outcomes, such as motivation (Bedford, 2017), adaptive learning strategies (Nussbaum & Dweck, 2008), and achievement (Bostwick et al., 2017), there has been a recent surge in scholarly

interest directed toward exploring teachers' mindset beliefs (i.e., teachers' beliefs about the malleability of human capacities).

A recent literature review on educators' mindset beliefs yielded evidence for growth mindsets' relevance to the quality of instruction, effective teaching practices, and the development of students' mindset beliefs (Laine & Tirri, 2023). While this line of research has mostly focused on teachers' mindset beliefs regarding students' intellectual abilities, the body of research investigating teachers' mindset beliefs regarding their teaching ability (i.e., *teaching mindsets*, Nalipay et al., 2021) remains scarce. After presenting some research examining how teachers' beliefs about students' abilities relate to their instructional practices, relatively few studies on teaching mindsets will be reviewed.

Conducting a series of studies, Rattan, Good, et al. (2012) investigated how instructors' mindset beliefs shape their pedagogical practices in a US higher education setting. Their results demonstrated that when instructors believe student ability is a fixed trait, they interpret poor performance as a sign of limited capacity and therefore provide comfort-oriented feedback (e.g., "*It's just not the case that everyone is a math person*"). These findings indicate that instructors with a fixed mindset tend to resort to ineffective practices owing to lowering their expectations of struggling students. More concerningly, such an attitude displayed by instructors may lead students to doubt their future performance and develop fixed mindset beliefs about their abilities. Consequently, teachers' beliefs concerning the malleability of student ability influence how they interpret poor student performance or failure and how they respond to struggling students. Due to the discouraging messages teachers convey (e.g., "*It's just not the case that everyone is a math person*"), students may develop fixed mindsets about their learning ability.

In a qualitative case study carried out with two Finnish teachers, Rissanen et al. (2018) revealed that teachers holding different mindset beliefs exhibited certain instructional behaviors aligned with the mindset they hold. For instance, the fixed-minded teacher created a performance-oriented environment in which students were praised for their talents, whereas the growth-minded teacher created a process-oriented one in which students were praised for using effective learning strategies and putting in effort. The findings herein confirm the crucial role of teachers' mindset beliefs in their responses to student success and/or failure.

Leroy and her colleagues (2007) undertook one of the earliest studies investigating the contribution of teachers' mindset beliefs to their need-supportive practices in a French primary education context and reported a direct and negative path from teachers' fixed mindset beliefs to their autonomy-supportive practices, suggesting that teachers holding a fixed mindset are less inclined to offer need-supportive instruction. A possible interpretation of this finding is that teachers endorsing a fixed mindset might show reluctance to support students' basic needs as they do not believe in the chance of student progress or attainment.

More recently, Vermote et al. (2020) attempted to explore the potential role of instructors' mindset beliefs and their teaching motivation in their need-supportive behaviors in a Belgian higher education context. Their findings demonstrated that instructors' beliefs regarding the malleability of students' intellectual abilities, along with their motivation to teach, predicted the adoption of need-supportive teaching behaviors. Despite providing an interesting framework to explicate the antecedents of need-supportive practices—by addressing the role of instructors' mindset beliefs and quality of motivation—, they measured instructors' beliefs regarding the malleability of students' ability, not the beliefs about the malleability of their own

teaching ability. However, instructors' beliefs about their teaching ability (i.e., their teaching mindsets) hold significance not only for their current practices but also for their professional growth (Dweck, 2014).

Intrigued by exploring the potential link between instructors' teaching mindsets and their intentions to engage in professional development activities, Thadani et al. (2010, 2015) conducted two studies with different samples in a US higher education setting. The findings obtained from both studies supported the researchers' hypothesis. That is, when teachers believe there is room for improvement in their teaching skills (i.e., teachers with a growth mindset), they are more willing to engage in professional development activities such as collaborating with colleagues to develop effective strategies or attending a workshop on a new method or software which they can make use of in their classes (Thadani et al., 2010, 2015). One possible interpretation of this finding is that teachers holding a growth mindset are more likely to embrace challenges and/or changes in their field. As such, they become more open to adapting their teaching to the requirements of innovative approaches. Correspondingly, they seek ways to keep up with the current trends in education through professional development activities. From this perspective, when teachers believe that they cannot improve their teaching ability, they are more likely to show resistance to accommodating the advancements in the field. That's precisely why they tend to show reluctance to engage in professional development activities. To ensure the quality of education, examining the role of teaching mindsets in explaining desired teaching and learning outcomes might provide both theoretical and practical implications.

To the best of my knowledge, the first investigation on teaching mindsets was carried out in a US teacher education context (Fives & Buehl, 2008). The researchers

first conducted in-depth interviews with 57 in-service and 53 pre-service teachers to develop a comprehensive framework for teachers' beliefs about teaching knowledge and teaching ability. Findings gathered from the qualitative data helped researchers construct a scale to measure teachers' beliefs about the importance of teaching knowledge and the malleability of teaching ability. A subsequent study was conducted with 351 pre-service teachers to validate this new scale. The results of the validation study yielded a four-factor structure of the scale (namely, 'innate teaching abilities'; 'learned teaching abilities'; 'innate teaching abilities for some but learned for others', and 'innate teaching abilities that require polish'), suggesting that pre-service teachers had different perceptions about the nature of teaching ability: (a) an innate ability, (b) a learned skill, or (c) a combination of the two. The researchers further tested how these factors correlate with different aspects of teaching knowledge. They reported that participants who subscribed to a growth mindset (i.e., learned teaching ability) gave more value to 'pedagogical content knowledge' and 'knowledge of theory and development' compared to those who subscribed to a fixed mindset (i.e., innate teaching ability). Nevertheless, these initial results on teaching mindsets were based on data from pre-service teachers. Therefore, they can neither reflect in-service teachers' beliefs about the nature of teaching ability nor the link between teaching mindsets and real classroom practices.

Interestingly, the ensuing empirical studies on teaching mindsets have been predominantly conducted in a Filipino context by the same group of researchers (Frondozo et al., 2020; Nalipay et al., 2019, 2021, 2022), but the linkages between teachers' mindset beliefs and their actual teaching practices were not examined. Nalipay et al. (2019) carried out their first study to investigate the role of teaching mindsets in explaining teaching-related emotions (i.e., enjoyment, anxiety, and

anger) and teaching satisfaction with 413 pre-service teachers with limited teaching practicum experience. The findings of the study showed that a growth teaching mindset accounted for teaching satisfaction through teaching enjoyment. However, like Fives and Buehl's study (2008), these results were not based on data from in-service teachers, and thus real-life instructional behaviors were not considered.

A similar model with a different outcome variable (i.e., work engagement) was later tested with 547 Filipino in-service teachers (Frondozo et al., 2020). The findings of this study confirmed the assumption that holding a growth mindset is linked with positive outcomes, whereas holding a fixed mindset is linked with negative ones. More specifically, a growth teaching mindset was positively related to enjoyment and engagement. In contrast, a fixed teaching mindset was positively correlated with anger and anxiety. Frondozo et al. also reported the mediating role of enjoyment in the relationship between a growth teaching mindset and engagement. This finding indicates that when in-service teachers believe they can change their teaching ability, they are more likely to enjoy their profession, which leads them to reach an optimal engagement level. More recently, Nalipay et al. (2022) conducted another study to explore how Filipino in-service teachers' beliefs regarding the nature of teaching ability are related to several aspects of well-being (i.e., positive emotions, positive relationships, engagement, meaning, and accomplishment). The results of this study revealed that a growth teaching mindset positively predicted all aspects of well-being, pointing to the critical role of teaching mindsets in determining the overall well-being of teachers.

Among this series of studies, the one more closely related to the focus of this dissertation was carried out to explore the mediating role of teachers' self-determined motivation in the relationship between their teaching mindsets and work

engagement (Nalipay et al., 2021). The results of this study provided evidence for the mediating role of autonomous motivation in the relationship between a growth teaching mindset and work engagement. To put it differently, teachers are driven by autonomous motivation when they hold a growth teaching mindset, and this high-quality teaching motivation facilitates higher levels of work engagement. This finding suggests the catalyzing role of autonomous motivation in the relationship between teaching mindsets and a teaching-related outcome (i.e., teachers' work engagement).

A recent study, conducted in an Iranian elementary education context, has introduced a fresh perspective to the aforementioned studies by testing the mediating role of teaching mindsets in the relationship between teachers' quality of work life and innovative instructional practices (Rahimi et al., 2024). The results of the path analysis confirmed the researchers' hypothesis regarding the mediating role of teaching mindsets. More specifically, when teachers are satisfied with their work life, they are more likely to believe they can improve their teaching ability. Such a belief system encourages them to try innovative teaching behaviors. Building on my interpretation of Thadani et al.'s results (2010, 2015), teachers with a growth teaching mindset are more willing to accommodate innovative approaches because they have a better functioning adaptation mechanism that aids them in handling the challenges new approaches may bring.

In another study, Aina et al. (2023) investigated to what extent pre-service teachers' beliefs about the malleability of student abilities and the ones about the malleability of their teaching ability — along with their feelings of preparedness and perceptions of support provided by their mentors — predict the value they place on their teaching practicum experience. Their results showed the mediating role of a

growth teaching mindset in two relationships. First, it mediated the relationship between pre-service teachers' feelings of preparedness and the value they placed on teaching practice. Second, it also mediated the relationship between their beliefs about the malleability of student ability and the value they attach to teaching practice. These findings pointed out the important role of teachers' mindset beliefs regarding both student abilities and their teaching ability.

Within the context of L2 teaching, there are only a few studies examining the role of teaching mindsets in explaining teaching- or learning-related outcomes (Irie et al., 2018; Sadoughi et al., 2024; Zarrinabadi et al., 2023). The paucity of research on mindsets in the L2 domain is surprising in that acquiring a foreign language is generally considered challenging (Lamb et al., 2019) and an ego-threatening experience (Piechurska-Kuciel, 2011), thereby susceptible to developing fixed mindset beliefs. When individuals hold a fixed mindset about language learning and teaching, they perceive exerting effort as a sign of one's lack of natural talent for language learning (Zarrinabadi & Lou, 2022). That being the case, beliefs regarding the malleability of L2 learning and teaching deserve far more scholarly attention.

In an Austrian teacher education setting, Irie et al. (2018) investigated the mindset beliefs of 51 pre-service EFL teachers about their teaching competencies by utilizing the Q-Method (an exploratory method to examine different viewpoints of individuals on a concept). The results of this Q study demonstrated that although pre-service EFL teachers hold a growth mindset about the technical aspects of teaching ability, they are oriented toward a fixed mindset about the interpersonal aspects of teaching ability (e.g., *developing good student-teacher relationships*; *being patient with struggling students*). When interpreted from an SDT perspective, this finding seems to be concerning in that the interpersonal aspect of teaching ability bears

similarities with the interpersonal communication adopted by need-supportive teachers (Zarrinabadi et al., 2021). In other words, holding a fixed mindset about the malleability of the interpersonal side of teaching might manifest itself as less need-supportive or even more controlling teaching behaviors.

Intrigued by and aiming to build on what Irie et al. revealed, Haukås and Mercer (2022) conducted another exploratory qualitative study to investigate the mindsets of 12 pre-service language teachers in Norway and Austria. Similarly, their results showed that although pre-service teachers tend to have a growth mindset regarding the didactic and linguistic areas of the teaching profession, they tend to hold a fixed mindset regarding the malleability of social and interpersonal domains of the profession. This finding could serve as an early indicator of the possible difficulties they might experience such as having poor relationships with their future students.

In a more recent study conducted with 166 in-service EFL instructors in Iran, Zarrinabadi et al. (2023) revealed that a growth teaching mindset predicted instructors' professional identity and personal accomplishment, whereas a fixed teaching mindset predicted two aspects of burnout, namely depersonalization and emotional exhaustion. The findings of this cross-sectional study suggest the pivotal role of teaching mindsets in influencing professional identity development and feelings of burnout, both of which have been reported as closely related to their need-supportive teaching styles (Aelterman et al., 2019; Vermote et al., 2023).

Sadoughi et al. (2024) have recently added to the body of research on Iranian teachers' mindsets by investigating the contribution of teachers' growth mindset beliefs, emotion regulation strategies, and grit to experiencing feelings of burnout.

Corroborating the findings of Zarrinabadi et al. (2023), the researchers found that teachers with a growth mindset are less likely to develop burnout.

To the best of my knowledge, only one unpublished experimental study on how EFL instructors' teaching mindset beliefs influence their need-supportive teaching practices was conducted in Türkiye (Akay, 2023). Although the researcher revealed no significant effect of mindset beliefs on autonomy-supportive teaching style, she reported significant differences in instructors' teaching practices as a function of the institution type which they work for (state vs. private university).

Taken together, prior research on teachers' mindset beliefs regarding their teaching ability has documented their critical role in predicting desirable teaching- or teacher-related outcomes, such as their interest in professional development activities (Thadani, et al., 2015), the value they place on teaching practice (Aiana et al., 2023), adopting innovative teaching approaches (Rahimi et al., 2024), experiencing several aspects of well-being (Nalipay et al., 2022), higher levels of work engagement (Frondozo et al., 2020), professional identity, and personal accomplishment (Zarrinabadi et al., 2023).

Extrapolating from the above findings, I argue that holding a growth mindset regarding the malleability of human capacities—whether about students' intellectual abilities or their own teaching skills— would facilitate the development of autonomous motivation to teach. This type of teaching motivation would adequately empower teachers to invest additional time and effort into creating optimal learning environments in which students could experience a sense of autonomy, competence, and relatedness.

In the next section, I will therefore elaborate on teacher motivation through the lens of self-determination theory (Ryan & Deci, 2017) and present the relevant

research studies documenting its linkages with teaching-related (e.g., need-supportive or need-thwarting teaching) or teacher-related outcomes (e.g., teacher well-being or teacher burn-out) both in L2 and different educational domains.

Teachers' Motivation

Although a considerable amount of research has centered around students' motivation to learn (see Bureau et al., 2022 for a meta-analysis), there is a growing body of research directing the focus toward exploring teacher motivation (Hiver et al., 2018; Pelletier & Rocchi, 2016). This trend in educational research makes sense since teaching and learning processes are considered reciprocal (Bardach & Klassen, 2021), and teachers' motivation to teach has proven to directly or indirectly relate to students' motivation to learn (Ahn et al., 2021; Lam et al., 2009).

Teachers might have different reasons to do their job well, which determines their quality of motivation to teach (Van den Berghe et al., 2014). Teacher motivation, akin to student motivation, can be seen and situated along a continuum from autonomous (high-quality) to controlled (poor-quality) based on the degree of internalization and self-relevance (Vansteenkiste et al., 2018; see Table 1 in the introduction chapter). Correspondingly, on the right hand of the continuum, there is autonomous motivation to teach, which consists of intrinsic motivation to teach (i.e., teaching out of sheer interest and enjoyment) and two well-internalized forms of extrinsic motivation to teach: identified regulation (i.e., teaching out of personal values and beliefs) and integrated regulation (i.e., teaching in congruence with one's core values and sense of self). On the other end of the continuum, there is controlled motivation to teach, which consists of external regulation (i.e., teaching out of external pressures such as attaining rewards) and introjected regulation (i.e., teaching out of internal pressures such as feelings of guilt). Teachers driven by

autonomous forms of motivation tend to invest time and effort into their practices out of intrinsic interest or a sense of personal value attributed to the effort they put into teaching, while those driven by controlled forms of motivation are more likely to do so just to be recognized by their supervisors or to outperform their colleagues (Roth, 2014).

Slemp et al. (2020) conducted a meta-analytical review to explore the antecedents and outcomes of autonomous and controlled motivation to teach. Based on the results drawn from 1117 relationships across 102 independent samples, the researchers concluded that autonomously motivated teachers, compared to those driven by controlled motivation, tend to be more extrovert, feel more committed and engaged, orient towards need-supportive instruction, and experience higher levels of well-being, job satisfaction, and self-efficacy. In brief, Slemp et al. provided robust meta-analytic evidence in favor of promoting teachers' autonomous motivation to ensure optimal teacher functioning (e.g., need-supportive teaching, well-being, and self-efficacy). Considering its direct relevance to this dissertation, I will next present the prior research investigating the relationships between teachers' autonomous (or controlled) forms of motivation and their need-supportive (or need-thwarting) teaching behaviors.

One of the first studies investigating the antecedents and consequences of teachers' quality of motivation was conducted with 254 Canadian teachers by Pelletier and his colleagues in 2002. The researchers demonstrated the role of contextual factors such as perceived pressures from above (e.g., administrative pressures) and perceived pressures from below (e.g., students' poor quality of motivation) in predicting teachers' quality of motivation (i.e., autonomous vs. controlled). Furthermore, their findings also revealed that when teachers are driven

by controlled motivation, they tend to adopt more controlling teaching practices. On the contrary, those driven by autonomous motivation are more likely to adopt autonomy-supportive practices. Taking Pelletier et al.'s findings one step further, Roth et al. (2007) carried out a study with 132 Israeli teachers and their 1255 students. By collecting data from different respondents (i.e., both teachers and students), the researchers showed that teachers who teach out of intrinsic interest or personal values (i.e., autonomously motivated teachers) tend to adopt autonomy-supportive teaching behaviors, which in turn promote autonomous motivation for learning as reported by students. These findings paved the way for future researchers to consider teachers' motivation as a predictor of student motivation through their need-supportive (or need-thwarting) instructional practices. Subsequent studies investigating the same phenomenon across different contexts corroborated these initial findings, suggesting the crucial role of teachers' high-quality motivation in providing need-supportive learning environments (Abós et al., 2018; Ahn et al., 2021; Katz & Shahar, 2015).

Within L2 education, although the major postulations of SDT have been adopted to investigate student motivation or how language teachers foster student motivation to learn an L2 (Haukås et al., 2022; Joe et al., 2017; Noels et al., 2000), research on language teachers' motivation from the perspective of SDT remains rather scarce. To address this gap, Yang (2021) carried out a study in a Chinese higher education context. More precisely, the researcher explored the types of TEFL instructors' motivation to engage in continuing professional development (CPD) through the theoretical lens of SDT. The results of the study yielded a five-factor structure of teacher motivation that aligns well with the SDT's taxonomy of motivation, moving from amotivation to intrinsic motivation. Chinese TEFL

instructors reported the highest scores on identified regulation and intrinsic motivation, indicating the significance of autonomous motivation regarding instructors' willingness to engage in CPD.

Roohani et al. (2018) conducted a mixed-methods study to examine 115 Iranian EFL teachers' motivation to teach. The results demonstrated that Iranian EFL teachers were mainly driven by autonomous forms of motivation to teach, reporting the highest scores on intrinsic motivation and identified regulation. In a relatively more recent study, Sato et al. (2022) investigated the relationships between teacher motivation and perceived burnout among 154 EFL teachers in Chile. Their results demonstrated that when EFL teachers are driven by more autonomous forms of motivation to teach, they are less likely to experience feelings of burnout, highlighting the buffering role of autonomous motivation in preventing teachers from experiencing emotional exhaustion or a lack of personal accomplishment.

Considering the findings of relevant research reviewed in this chapter, what keeps educators committed to their profession are (a) the beliefs they hold about the malleability of human capacities and (b) the quality of motivation to teach. Notably, Vermote et al. (2020) have already revealed that when teachers believe their students' learning abilities can be improved, they are energized with autonomous forms of motivation to adopt need-supportive teaching behaviors. This finding indicates that adherence to beliefs about the malleability of human capacities alone may not be adequate for teachers to engage in effective instructional practices. Correspondingly, it seems reasonable to consider educators' mindset beliefs regarding the malleability of their own teaching abilities as well as their motivation to teach while investigating the reasons behind the variance in their need-supportive teaching behaviors.

Hypotheses for Study 1 and Study 2

Hypotheses for Study 1

Before developing hypotheses to investigate the roles of EFL instructors' mindset beliefs and the quality of motivation in predicting need-supportive teaching practices, I initially conducted a systematic review, which was later transformed into a meta-analytical review (S1) of existing studies that explore the relationship between mindset beliefs and quality of motivation in a broader educational context, including both student and teacher samples. The rationale for choosing a meta-analytic review over a narrative one stemmed from the idea that any hypothesis formed based on the findings of a specific group of studies could inhibit revealing objective and credible results. I formulated the hypotheses of the first study based on the theoretically expected linkages according to Mindset (MT; Dweck, 2006), Self-Determination (SDT; Ryan & Deci, 2017), and Situated Expectancy-Value Theories (SEVT; Eccles & Wigfield, 2020). Internalization is "the process of taking in values, beliefs, or behavioral regulations from external sources and transforming them into one's own" (Ryan & Deci, 2017, p. 180). Once individuals have internalized and self-endorsed a certain behavior, they tend to engage in it with their own volition and become more willing to put effort into it as the behavior is personally meaningful to them. Through the lens of SDT, those individuals tend to do so because they develop autonomous forms of motivation, whereas they find intrinsic, attainment, or utility value in the internalized behavior through the lens of SEVT. From the perspective of MT, when people see their abilities or intelligence as malleable (people with a growth mindset), they are more likely to develop a well-functioning adaptation mechanism according to the situational requirements of their academic environment. Such an adaptation mechanism facilitates the development of interest and enjoyment

in improving academically and professionally, as well as the degree of internalization. Therefore, I argue that embracing a growth mindset facilitates the development of autonomous motivation within SDT and the development of intrinsic, attainment, and utility values within SEVT. On the other hand, people with a fixed mindset are likely to have a lower level of internalization, which leads them to experience controlled forms of motivation (motivated by external rewards, threats, or ego concerns). Given these assumptions, I developed the following hypotheses for Study 1:

Hypothesis 1a: Growth mindset beliefs would positively predict well-internalized types of motivation (intrinsic regulation, intrinsic value, interest value, identified regulation, attainment value, utility value, and autonomous motivation) in educational contexts.

Hypothesis 1b: Growth mindset beliefs would negatively predict poorly internalized types of motivation (introjected regulation, external regulation, controlled motivation, and extrinsic motivation) in educational contexts.

Hypothesis 2a: Fixed mindset beliefs would negatively predict well-internalized types of motivation (intrinsic regulation, intrinsic value, interest value, identified regulation, attainment value, utility value, and autonomous motivation) in educational contexts.

Hypothesis 2b: Fixed mindset beliefs would positively predict poorly internalized types of motivation (introjected regulation, external regulation, controlled motivation, and extrinsic motivation) in educational contexts.

Hypothesis 3: The relationships between mindset beliefs and different types of motivation would be moderated by certain sample, contextual, or study characteristics.

Hypotheses for Study 2

Although previous research on the antecedents of need-supportive teaching styles pointed to teachers' mindset beliefs about learners' capacities (Leroy et al., 2007) and their quality of teaching motivation (Aelterman et al., 2019), only one cross-sectional study (Vermote et al., 2020) has explored their joint roles in predicting need-supportive teaching practices in a university context. Nevertheless, Vermote et al. (2020) considered instructors' mindset beliefs regarding the malleability of students' intellectual abilities, rather than their own teaching ability (i.e., teaching mindsets). Besides, educators' teaching mindsets were also revealed to predict optimal teaching functioning, such as higher work engagement, through their quality of teaching motivation (Nalipay et al., 2021). This finding is comprehensible, as teachers' beliefs about themselves are more likely to influence their teaching practices than their beliefs about students (Daumiller et al., 2022). Considering the MMS framework (Dweck & Molden, 2017), I claim that different teaching mindsets are related to different qualities of teaching motivation, which might account for the variance in need-supportive teaching styles. To test this argument, I opted to conduct the second study of this dissertation to investigate how EFL instructors' fixed teaching mindset beliefs matter for their need-supportive instruction via their quality of teaching motivation. Based on these assumptions as well as the meta-analytical evidence that emerged in the first study, I specified the hypothesized model (Figure 1) and formulated the following hypotheses for Study 2:

Hypothesis 1a: Fixed teaching mindset beliefs would negatively predict the autonomous forms (i.e., intrinsic and identified regulations) of teaching motivation.

Hypothesis 1b: Fixed teaching mindset beliefs would positively predict the controlled forms (i.e., introjected and external regulations) of teaching motivation.

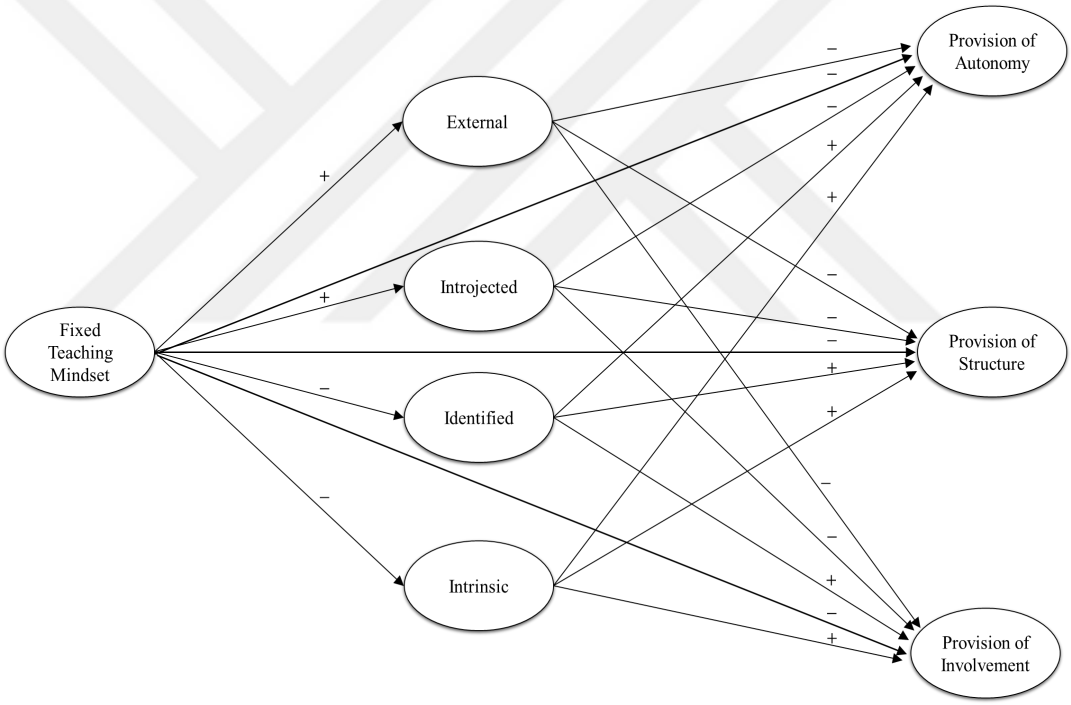
Hypothesis 2a: Instructors' autonomous forms of teaching motivation would positively predict their need-supportive teaching styles.

Hypothesis 2b: Instructors' controlled forms of teaching motivation would negatively predict their need-supportive teaching styles.

Hypothesis 3: The relationships between fixed teaching mindset beliefs and need-supportive teaching styles would be partially mediated by autonomous and controlled forms of teaching motivation.

Figure 1

The Hypothesized Model



Note. Provision of Autonomy = Autonomy-supportive teaching; Provision of Structure = Competence-supportive teaching; Provision of Involvement = Relatedness-supportive teaching

CHAPTER 3: METHOD

Introduction

Instructors' quality of teaching motivation and beliefs about the malleability of teaching ability were assumed to account for their motivating teaching practices, as both could help understand how instructors persevere in challenging learning and teaching situations. In educational contexts, however, it is unclear how mindset beliefs relate to different types of motivation and whether this relationship varies across studies. More surprisingly, much less is known about how educators' teaching mindsets and their quality of teaching motivation contribute to their need-supportive instruction. To address these research gaps, two separate yet complementary studies were undertaken. The aim of the first study (S1) was to quantitatively review prior empirical studies investigating the nature of the relationships between growth (or fixed) mindset beliefs and poorly internalized and well-internalized types of motivation within a broader educational context (i.e., including both teacher and student samples). Meta-analytical evidence yielded from S1 informed the hypotheses that guided the structural model tested in the second study (S2), which helped me explore the relationships among EFL instructors' teaching mindsets, quality of teaching motivation, and their need-supportive teaching practices. This chapter navigates the reader to better understand the methodological approaches adopted for both the meta-analytical review (S1) and the cross-sectional study (S2) separately, and it provides a thorough methodological description of how I conducted each study.

Study 1

Research Design

Lasserson et al. (2019) elucidated the aim of a systematic review as "to collate all the empirical evidence that fits pre-specified eligibility criteria in order to answer a specific research question" (p. 4). Instead of a narrative review, I decided to conduct a systematic review, as the latter is recognized as being more transparent, unbiased, rigorous, and replicable (Borenstein et al., 2021; Zawacki-Richter et al., 2020).

Furthermore, systematic reviews frequently include a statistical procedure called a meta-analysis. Since Gene V. Glass first coined the term meta-analysis as the "analysis of analyses" in 1976, it has grown in popularity as a way of synthesizing the findings of numerous studies quantitatively. Lipsey and Wilson (2001) further extended this initial definition. They described meta-analysis as a technique that involves collecting and analyzing the results of multiple studies to identify patterns and draw conclusions that would not be possible with a single study. As such, meta-analyses significantly contribute to cumulative knowledge by mitigating the risk of bias posed by individual studies and providing more precise evidence (Schmidt, 1992; Suri, 2018). Meta-analyses are specifically useful for resolving discrepancies between several studies reporting contradictory results and developing new hypotheses (Deeks et al., 2022). For instance, Law (2009) revealed a negative relationship between a growth mindset and extrinsic motivation, whereas Cho and Lin (2011) reported the same relationship to be positive. Due to the conflicting research findings regarding the links between individuals' mindset beliefs and types of motivation, conducting a systematic review with a meta-analysis on these relationships seemed to be the most viable option.

To ensure clarity and consistency, this meta-analytical review was designed and reported in line with the guidelines outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Page et al., 2021). The PRISMA 2020 statement, which superseded the PRISMA 2009 statement (Moher et al., 2009), provides updated standards for reporting information, including the title, abstract, introduction, methods for study identification, data extraction process, statistical analyses, effect size estimates, flow diagrams, and so forth. It is crucial for researchers to adhere to these standards so that readers can comprehend how systematic reviews and meta-analyses have been carried out and assess their validity. Considering the PRISMA guidelines, I will outline the methodological approaches employed for the systematic review and meta-analysis in the following sections.

Method of Data Collection

Inclusion and Exclusion Criteria

Inclusion in this systematic review and meta-analysis was limited to primary studies that met the following eligibility criteria. The researcher(s) should have (a) gathered data from teachers or students in educational settings, (b) operationalized and examined the motivational constructs from the perspective of three theories of motivation (i.e., Mindset theory, Self-determination theory, or Situated expectancy-value theory), (c) published in the English language, and (d) analyzed data quantitatively. No restrictions were applied regarding the publication year of the studies included in this review, as this is a relatively new line of research.

Only a few a priori exclusion criteria were applied. For instance, I excluded the studies conducted in the physical education and sports contexts for two reasons. First, I was merely interested in how different forms of motivation link to mindset beliefs in

general academic domains. Second, there exists a systematic review and meta-analysis examining similar relationships in sports and physical education domains (see Vella et al., 2016). Furthermore, any study that measured mindset beliefs and motivation but did not report the correlation coefficient value was excluded if relevant statistics allowing computation could not be obtained from the corresponding author(s) through personal contacts.

Literature Search Strategy and Rater Reliability

Using the search syntax with "AND" and "OR" Boolean operators both published and unpublished research (i.e., dissertations, theses, and proceedings) was reviewed in March 2021 during my research stay at the University of Virginia in the USA. Not to miss out on any grey literature, requests for potential studies were also sent through the newsletters of the Motivation in Education Special Interest Group of AERA (the American Educational Research Association) and SDT's mailing list.

The search syntax with Boolean operators used for the literature search was as follows: "implicit theory" OR "implicit theories" OR "theory of intelligence" OR "theories of intelligence" OR "theory of ability" OR "theories of ability" OR "growth mindset" OR "growth mindsets" OR "fixed mindset" OR "fixed mindsets" OR "incremental theory" OR "incremental theories" OR "incremental beliefs" OR "entity theory" OR "entity theories" OR "entity beliefs" AND "autonomous motivation" OR "controlled motivation" OR "intrinsic motivation" OR "utility value" OR "intrinsic value" OR "interest value" OR "attainment value" OR "identified regulation" OR "introjected motivation" OR "introjected regulation" OR "external motivation" OR "external regulation" OR "self-determined".

The literature search was executed using multiple databases available through the University of Virginia's subscription (namely APA PsycINFO, Web of Science, ProQuest Dissertation and Theses Global Full Text, Educational Resources Information Clearinghouse, Academic Search Complete, Education Full Text, Education Index Retrospective:1929-1983, Education Research Complete, Psychology and Behavioral Sciences Collection, and SPORTDiscus). This comprehensive literature search resulted in a pool of 1,726 potential studies. After removing the duplicate records, 1,459 records were reviewed. Besides, I included 10 additional studies previously retrieved in April 2020 from the SCOPUS database to which the library of Bilkent University subscribed as I did not have access to SCOPUS during my research visit at UVA in March 2021. To complete the initial screening stage, a 3-item screening tool was developed and first used to pilot the coding protocol. The piloting phase involved coding 10 randomly selected studies. Subsequently, we proceeded to use the following three items exclusively developed for the initial screening stage:

(1) Do the title/abstract/keywords indicate that it is an empirical study?

(2) Do the title/abstract/keywords indicate that mindset beliefs from the MT and motivational constructs from the SDT or SEVT perspectives were studied?

(3) Do the title/abstract/keywords indicate that the study has an identifiable educational context?

Using the pre-determined inclusion/exclusion criteria and the above 3-item screening tool, out of 1,736 records yielded from the literature search, a post-doctoral researcher and I independently identified 115 primary studies as codable for full-text screening. The intraclass correlation coefficient (ICC) value was calculated to assess

coder reliability (Shrout & Fleiss, 1979). The ICC value of .89, based on a 95% confidence range, indicated a high level of coder reliability.

All discrepancies were thoroughly discussed and resolved by consulting senior researchers who were not involved in the coding process. The PRISMA flowchart in Figure 2 provides a visual summary of the steps taken for the study inclusion procedure. During this stage, two important issues were taken into consideration to ensure the consistency and robustness of the results. First, only the correlation value recorded at the baseline measurement (also known as the pre-test measurement) was retrieved from the experimental or longitudinal studies to understand the nature of the relationship before any treatment effect. Second, I checked whether the authors of the dissertations later published their work using the same sample in a journal article. In such cases, only the journal article was included in the meta-analysis.

Data Extraction and Coding Process

First, a coding spreadsheet was created and carefully revised based on the suggestions made by three senior researchers with a great deal of experience in Self-determination theory (SDT) and Situated expectancy-value theory (SEVT) research. Once the coding spreadsheet was finalized, the post-doctoral researcher and I independently began coding 115 primary studies. The primary studies selected for full-text coding were coded using the following contextual, sample, and study characteristics: the mindset domain (e.g., math, language, science); type of mindset beliefs (i.e., growth mindset or fixed mindset); motivational theory adopted (i.e., SDT or SEVT), publication status (i.e., published or unpublished); publication type (i.e., journal article, masters' thesis; doctoral dissertation); research design (i.e., cross-sectional, experimental, longitudinal); type of motivation (e.g., identified regulation, utility value,

intrinsic motivation, intrinsic value); country (e.g., Belgium, China); culture (i.e., Eastern or Western); school level (e.g., high school, university) and sample characteristics such as gender, mean age, and all relevant statistics required to perform the meta-analysis (e.g., sample sizes and correlation coefficient values).

When the included studies were missing essential information and/or relevant statistics, I reached out to the corresponding authors and requested the data required to complete the coding process. A maximum of three contacts were made with thirty-one authors between September 2021 and March 2022. Though sixteen authors responded with the necessary information, ten authors did not reply at all. In addition, five of the corresponding authors responded but could not provide the data needed. This was primarily due to their inability to access their data files. After incorporating the data provided by the authors, inconsistent codes were double-checked and resolved through mutual discussion with another senior researcher who had not been involved in the prior coding processes. Before importing the dataset into the statistical program, I prepared the Excel spreadsheet following the recommendations made by Harrer et al. (2021).

The final pool of studies that met the inclusion criteria included 112 effect sizes derived from 45 empirical studies, with a total of 27,895 participants who were comprised of students or teachers. All included studies (peer-reviewed journal articles k= 39; doctoral dissertations k= 5; master's thesis k= 1) were conducted between 2006 and 2021. The descriptive statistics of the studies are provided in Table 3, which presents the number and frequency percentages of the studies. Table 4 provides further information on the coding process utilizing the predetermined sample (e.g., mean age), contextual (e.g., culture), and study characteristics (e.g., research design).

Table 3

Descriptive Statistics of Included Studies

Coding scheme	*k*	%
Publication type		
Peer-reviewed journal article	39	86.67
Doctoral dissertation	5	11.11
Master's thesis	1	2.22
Publication year		
2006-2010	8	17.78
2011-2015	10	22.22
2016-2021	27	60.00
Motivation theory adopted		
SDT	23	51.11
SEVT	17	37.78
Both	1	2.22
Not explicitly stated	4	8.89
Mindset type		
Growth	26	57.80
Fixed	9	20.00
Both	10	22.20
Mindset domain		
Math	11	24.44
Language	2	4.44
Science	2	4.44
General	30	66.67
Design of the study		
Cross-sectional	26	57.78
Experimental	13	28.89
Longitudinal	6	13.33
Country		
the USA	17	37.78
China	5	11.11
Belgium	3	6.67
Germany	3	6.67
France	2	4.44
New Zealand	2	4.44
Taiwan	2	4.44
Other	11	24.40
Culture		
Western	34	75.56
Eastern	11	24.44

Note. Other countries with one sample were Australia, Austria, Brazil, Canada, Greece, Hungary, Israel, Japan, Korea, Singapore, and the Netherlands.

Table 4

Characteristics of Included Studies

Study Reference	Methodological Characteristics						Sample Characteristics					
	Study Design	Publication Type	Mindset Domain(s)	Mindset Type	Motivation Theory	Motivation Type(s)	Sample	Size	% Female	M_{age}	Culture	Country
Heyder et al., 2021	C	JA	Math, Language	Fixed	SEVT	Intrinsic M	Student	870	49*	16.09	Western	Germany
Hodis & Hodis, 2020	C	JA	Math	Fixed	SEVT	Utility V	Student	463	58.8*	NA	Western	New Zealand
Vermote et al., 2020	C	JA	General	Both	SDT	Autonomous, Controlled M	Teacher	357	56.6	43.9	Western	Belgium
Zhao et al., 2018	C	JA	General	Growth	SDT	Intrinsic M, Identified, External, Introjected R	Student	1842	52	11.74	Eastern	China
Garland, 2018	C	D	General	Growth	SDT	Autonomous, Controlled M	Student	106	64.2*	21.23	Western	the USA
Hoang, 2018	E	D	Math	Growth	SEVT	Utility, Attainment V	Student	426	79.1	18.56	Western	the USA
Robinson, 2019	E	D	General	Both	SEVT	Interest, Utility, Attainment V	Student	682	24.9	NA	Western	the USA
Mouratidis et al., 2017	L	JA	General	Fixed	SDT	Autonomous M	Student	179	64.2	16.27	Western	Greece
Priess-Groben & Hyde, 2017	L	JA	Math	Growth	SEVT	Utility V	Student	165	47.3	NA	Western	the USA
Renaud-Dubé et al., 2015	C	JA	General	Growth	SDT	Intrinsic, Identified, Introjected M, External R	Student	650	46	14.86	Western	Canada
Dickhäuser et al., 2016	L	JA	General	Growth	NA	Intrinsic M	Student	288	57.3	17.74	Western	Germany
Mascret et al., 2017	C	JA	General	Both	SDT	Intrinsic M	Teacher	304	60.5	38.25	Western	France
Dinger et al., 2013	C	JA	General	Growth	NA	Intrinsic M	Student	524	53.1	17.43	Western	Germany
Haimovitz et al., 2011	L	JA	General	Fixed	SDT	Intrinsic M	Student	978	54	10.92	Western	the USA

Study Reference	Methodological Characteristics						Sample Characteristics					
	Study Design	Publication Type	Mindset Domain(s)	Mindset Type	Motivation Theory	Motivation Type(s)	Sample	Size	% Female	M_{age}	Culture	Country
Cury et al., 2006 (S2)	E	JA	General	Fixed	SDT	Intrinsic M	Student	96	50	13.65	Western	France
da Silva Marini & Boruchovitch, 2014	C	JA	General	Growth	SDT	Intrinsic, Extrinsic M	Student	107	99.1	NA	Western	Brazil
Law, 2009	C	JA	General	Growth	SDT	Intrinsic, Extrinsic M	Student	120	54.2	12.2	Eastern	China
Villacorta, 2006 (S2)	E	D	General	Growth	SDT	Intrinsic M	Student	169	71	NA	Western	the USA
Cho & Lin 2011 (S1)	C	JA	General	Growth	SDT	Intrinsic, Extrinsic M	Student	733	NA	NA	Eastern	Korea
Butler, 2006	E	JA	Math	Fixed	SDT	Intrinsic M	Student	312	51.3	13.9	Eastern	Israel
Grolnick et al., 2007	E	JA	General	Both	SDT	Intrinsic, Identified, External, Introjected	Student	174	NA	NA	Western	the USA
Boncquet et al., 2020	L	JA	General	Fixed	SDT	Autonomous, Controlled M	Student	2546	50.2	11.52	Western	Belgium
Kakinuma et al., 2020 (S2)	E	JA	General	Growth	NA	Intrinsic M	Student	160	61.3	19.91	Eastern	Japan
Kakinuma et al., 2020 (S3)	E	JA	General	Growth	NA	Intrinsic M	Student	168	81.5	19.69	Eastern	Japan
Jiang et al., 2020	L	JA	Math	Growth	SEVT	Intrinsic V	Student	710	52.4	14.7	Eastern	China
Bai & Wang, 2020	C	JA	Language	Growth	SEVT	Intrinsic V	Student	690	59	9.33	Eastern	China
Carroll et al., 2019	E	JA	Science	Growth	SDT	Intrinsic M	Student	214	39.3	11.5	Western	Australia
Chen et al., 2014	E	JA	Science	Both	SEVT	Interest V	Student	189	NA	NA	Western	the USA
Ferguson, 2017	C	D	General	Both	SDT	Intrinsic, Extrinsic M	Student	210	97.6	NA	Western	the USA
Coley, 2017 (S2)	E	T	Math	Growth	SEVT	Interest, Attainment V	Student	117	75.9	21.53	Western	the USA

Study Reference	Methodological Characteristics						Sample Characteristics					
	Study Design	Publication Type	Mindset Domain(s)	Mindset Type	Motivation Theory	Motivation Type(s)	Sample	Size	% Female	M_{age}	Culture	Country
Degol et al., 2018	C	JA	Math	Growth	SEVT	Intrinsic, Utility, Attainment V	Student	1449	49*	NA	Western	the USA
Tempelaar et al., 2015	C	JA	General	Both	SDT	Intrinsic, Identified, Introjected M, External R	Student	4594	36.7	20.21	Western	the Netherlands
Burnette et al., 2018	E	JA	General	Growth	SEVT	Intrinsic, Utility, Attainment V	Student	104	100	15.24	Western	the USA
Shih, 2009	C	JA	General	Both	SDT	Autonomous, Controlled M	Student	461	49	13.5	Eastern	Taiwan
Wang et al., 2010	C	JA	General	Both	Both	Autonomous M, Utility, Attainment V	Student	1359	9.42*	20.18	Eastern	Singapore
Liu et al., 2014	C	JA	General	Growth	SEVT	Utility, Attainment V	Student	264	75.76	16.5	Eastern	Taiwan
Radmehr et al., 2018	C	JA	General	Growth	Both	Intrinsic M, Utility, Attainment V	Student	1963	NA	NA	Western	New Zealand
Snyder & Adelson, 2017 (S2)	C	JA	General	Fixed	SEVT	Utility, Interest, Attainment V	Student	264-269	50*	26.3*	Western	the USA
Lüftenegger et al., 2015	C	JA	Math	Fixed	SEVT	Interest V	Student	210	50.48	15.1	Western	Austria
Kooken et al., 2016 (S3)	C	JA	Math	Growth	SEVT	Utility, Attainment V	Student	290	57.93	NA	Western	the USA
Nichols et al., 2006	C	JA	General	Both	SDT	Identified, External, Introjected R	Student	418	62.68	NA	Western	the USA
Orosz et al., 2017	E	JA	General	Growth	SDT	Intrinsic, Extrinsic M	Student	100	NA	NA	Western	Hungary
Zhao & Huang, 2019	E	JA	General	Growth	SDT	Intrinsic M	Student	196	34.69	20.22	Western	the USA
Griful-Freixenet et al., 2021	C	JA	General	Growth	SDT	Autonomous M	Pre-service Teacher	1134	51.5	21.5	Western	Belgium

Study Reference	Methodological Characteristics						Sample Characteristics					
	Study Design	Publication Type	Mindset Domain(s)	Mindset Type	Motivation Theory	Motivation Type(s)	Sample	Size	% Female	M_{age}	Culture	Country
Bai & Wang, 2021	C	JA	Language	Growth	SEVT	Interest, Utility V	Student	540	58.1	13.29	Eastern	China
Jones et al., 2012	C	JA	Math	Growth	SEVT	Intrinsic/Interest V	Student	163	54.9*	NA	Western	the USA

Note. C= Cross-sectional; E= Experimental; L= Longitudinal; JA= Journal Article; D= Dissertation; T= Master Thesis. Motivation theory pertains to what the author(s) stated in the theoretical background, whereas motivation types pertain to the construct names used in the included studies. M = Motivation; R= Regulation.; V = Value. If correlation tables were obtained through author queries, the sample size was reported as shown in the table provided by the authors. * = Author(s) reported missing data for this variable or provided an approximate percentage.

Methods of Data Analysis

Calculating Effect Sizes

When conducting a meta-analysis based on correlations, the correlation coefficient value can serve as a measure of effect size. Given that variance depends heavily on the correlation, the correlation coefficients drawn from the samples included in the meta-analysis should first be converted to Fisher's *z-scale.* This conversion allows for a practically normal distribution. Following that, Fisher's values should be reverted to the original metric to ease interpretation (Borenstein et al., 2021). However, addressing the problem of interpretation of the effect sizes in psychological research, Funder and Ozer (2019) questioned the commonly used traditional procedures like squaring the correlation value or adhering to Cohen's standards and they proposed a new set of guidelines to evaluate the effect sizes in a meaningful way. To interpret the findings of the first study, I will use the following benchmarks suggested by Funder and Ozer (2019):

- An effect size *r* of .05 suggests a *very small* effect in explaining single events that might be potentially consequential in the long term.
- An effect size *r* of .10 suggests a *small* effect that might have major long-term consequences.
- An effect size *r* of .20 suggests a *medium* effect that has some explanatory and practical use, particularly in the short term, thereby more significant.
- An effect size *r* of .30 suggests a *large* effect that has more powerful both short-term and long-term consequences.
- An effect size r of .40 or greater suggests a *very large* effect, but it might be an exaggerated estimate seldom observed in replication studies or studies with large sample sizes.

Grouping the Overlapping Constructs of SDT and SEVT

Scholars adopting different theories typically rely on the items of traditionally used scales within their theoretical frameworks to assess a psychological construct, failing to examine whether (or how) they diverge from other closely related constructs (Marsh et al., 2019). This issue, *the jangle fallacy*, occurs when items of scales with different labels are used to measure conceptually similar constructs (Kelley, 1927). Lee, McPartlan et al. (2020) conducted two separate studies to investigate the existence of overlapping constructs from different motivational theories, including SEVT (Eccles & Wigfield, 2020) and SDT (Ryan & Deci, 2017). Their results indicated the prevalence of the jangle fallacy among achievement motivation constructs. Recently, Pekrun (2023, 2024) shared his concerns regarding such a fallacy, arguing that it might even impede the emergence of a cumulative science of motivation by posing a threat to scientific communication between researchers.

Considering these concerns, I decided to examine the items used to measure SEVT and SDT constructs in the studies included in the meta-analysis. This closer investigation revealed semantic similarities in the items meant to assess the *subjective task values* and *autonomous forms of motivation* proposed within the SEVT and SDT frameworks, respectively. This was of no surprise since both theories highlight the functional role of the internalization of values, beliefs, or behavioral regulations in promoting higher engagement, even in the face of challenges. In other words, both SEVT and SDT posit that individuals are more likely to engage in a particular task or behavior when they find personal value, relevance, and meaning in it. More precisely, SEVT's intrinsic value aligns with SDT's intrinsic motivation, as individuals engage in intrinsically valued tasks or

activities simply for the enjoyment it brings. Likewise, survey items used to assess utility and attainment values within SEVT and those used to assess well-internalized forms of motivation within SDT demonstrate conceptual overlaps, as they both gauge the perceived usefulness or importance of a particular behavior or task.

Given these apparent similarities, I grouped the overlapping motivational constructs of SEVT and SDT under one overarching semantic category. Accordingly, intrinsic and interest values, along with intrinsic motivation were grouped under the category "*Intrinsic*", whereas attainment and utility values, along with identified regulation were grouped under the category "*Identified*". Table 5 below presents the groups and their corresponding constructs, as well as the sample items from the scales administered in the included studies.

Table 5

Grouping the Overlapping Constructs of SDT and SEVT

Groups	Constructs	Sample Item (Study Reference)
Intrinsic	Intrinsic Motivation	"I do math because I enjoy it" (Heyder et al., 2021).
	Intrinsic Value	"I enjoy learning new things about math" (Degol et al., 2018).
	Interest Value	"I like math very much" (Jones et al., 2012).
Identified	Identified Regulation	"Education will help me better prepare for the career I have chosen" (Renaud-Dubé et al., 2015).
	Utility Value	"I will need good math grades for finding a good job in the future" (Degol et al., 2018).
	Attainment Value	"It is important to me to be good at math" (Degol et al., 2018).

Note. Sample items provided in this table were chosen from the studies included in the meta-analytical review.

Statistical Tool Chosen for the Analysis

A meta-analysis can be performed using a variety of statistical tools, including Comprehensive Meta-Analysis Version 4 (Borenstein et al., 2022), IBM SPSS Statistics (Version 25.0), and various meta-analysis packages in the R software. Given the open-source nature, accessibility, and reproducibility of coding analysis, all analyses were performed in the R environment (R Core Team, 2022; Version 4.2.3) using the "meta" package (Balduzzi et al., 2019), "metafor" package (Viechtbauer, 2010), the "dmetar" package (Harrer et al., 2019), and the "tidyverse" package (Wickham et al., 2019).

Model Choice, Statistical Independence, and Heterogeneity

When conducting a meta-analysis, researchers opt for either fixed-effect or random-effects models. The choice of a computational model for a meta-analysis depends on the assumption of study homogeneity and the degree to which variance in the true effect sizes can be accounted for (Quintana, 2015). The random-effects model should be used if studies are collected from diverse populations to address study heterogeneity. The fixed-effect model, in contrast, presumes that all studies are from a single population examined under similar conditions (Harrer et al., 2021; Slaney et al., 2018). As the studies included in this meta-analysis were not drawn from the same population, choosing the random-effects model over the fixed-effect model seemed reasonable. However, when multiple effect sizes on the same construct are reported in a single study, a potential concern arises due to the unknown interdependency of effect sizes (Cheung, 2014). In the present meta-analytic review, for instance, some studies reported correlations between mindset beliefs and multiple types of motivation (Tempelaar et al., 2015). In such cases, this issue (i.e., the interdependency of effect sizes) can be resolved by fitting a three-level

meta-analytic model that enables researchers to report the sampling variance at three levels: “sampling variance of the extracted effect sizes at level 1, variance between effect sizes extracted from the same study at level 2, and variance between studies at level 3” (Assink & Wibbelink, 2016, p. 155). This approach also allows researchers to report both within- and between-study heterogeneity. To present heterogeneity statistics, Cochran’s Q (Cochran, 1954) and the multilevel variant of Higgins and Thompson’s I^2 (Higgins & Thompson, 2002) were calculated.

For better estimate precision, weighted average effect sizes were pooled with a three-level random-effects model using the restricted maximum likelihood (REML) estimator (Viechtbauer, 2005). Additionally, the Knapp-Hartung adjustment was preferred to calculate the confidence intervals (Knapp & Hartung, 2003), as it has been proven to particularly work better when there is heterogeneity and the number of studies in the meta-analysis is small (Langan et al., 2019).

Publication Bias

Owing to the strong inclination toward publishing studies with statistically significant results and/or the tendency of meta-analysts to exclude gray literature from their systematic literature search, publication bias poses a threat to the validity of the meta-analytic results. Consequently, several statistical methods have been adopted by researchers to identify and quantify the issue of publication bias in meta-analyses. For the present meta-analysis, after inspecting the funnel plots of the relationship between effect sizes and their corresponding standard errors, Egger’s regression-based (Egger et al., 1997) and Begg’s correlation-based asymmetry tests were performed (Begg & Mazumdar, 1994) when at least 10 effect sizes were available (Van Aert et al., 2019).

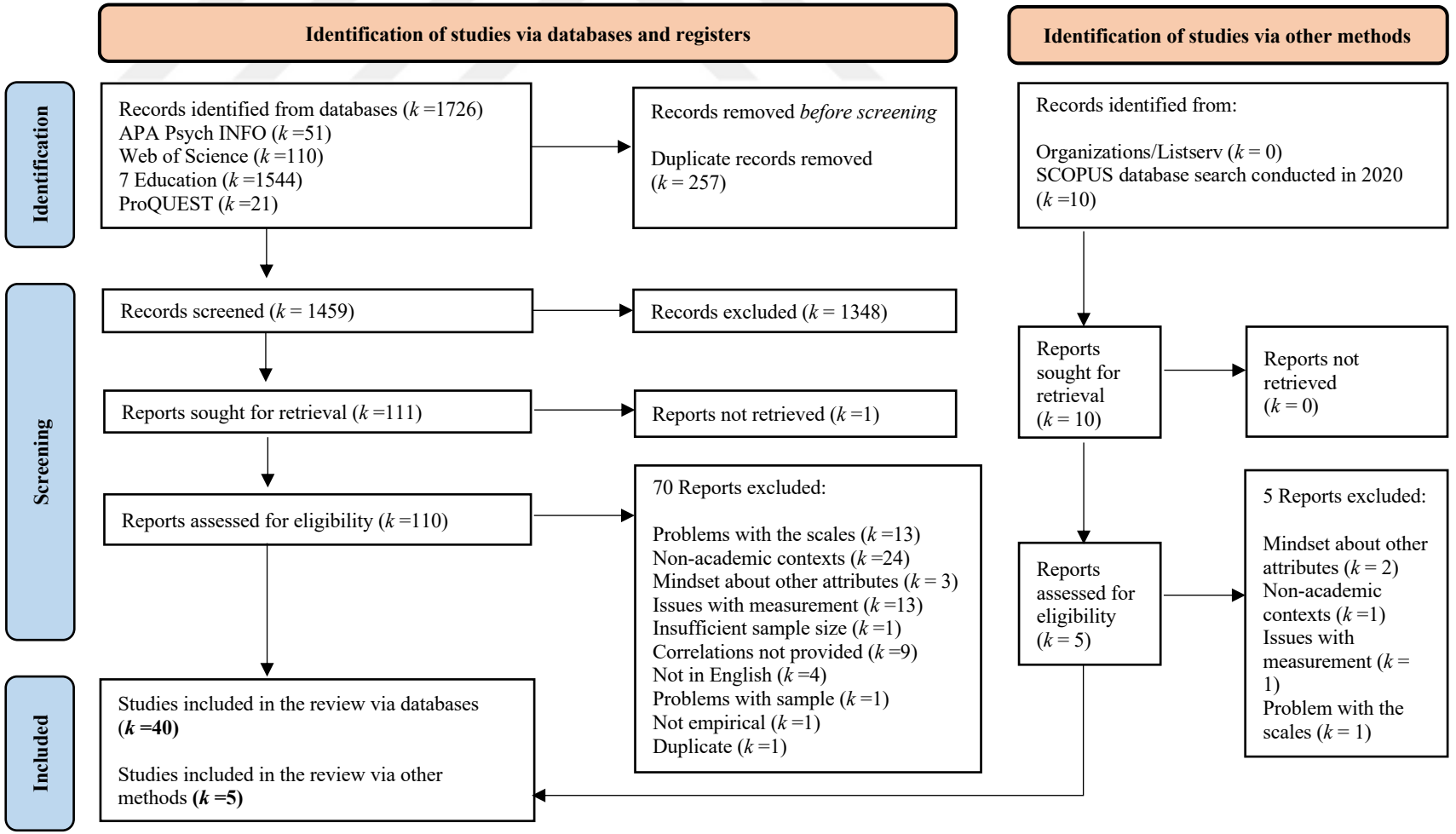
Meta-Regression

In addition to investigating the presence of a meaningful relationship between the variables of interest, a meta-analytical review also enables researchers to further explore whether the strength of this relationship is influenced by the characteristics of the included studies (Viechtbauer, 2008). The I^2 index allows for examining the variance on a relative scale. Only when this index is found to be high, can researchers perform a meta-regression model to make assumptions about the underlying reasons for this heterogeneity (Borenstein et al., 2021). In a meta-regression model, while study-level factors serve as predictor variables, the effect size serves as the criterion variable (Cooper et al., 2009). The strength of the relationships between individuals' mindset beliefs and motivation types may vary depending on certain study-level factors, such as the cultural background of the participants (i.e., whether they belong to Eastern culture or Western culture) and the mindset subject domain (e.g., language, science, or math). Therefore, I sought to explore the potential moderating effects of these study-level factors on the relationship between mindset beliefs and motivation types.

A three-level random-effects meta-regression model was applied using the REML estimation method to explain variability across participants' cultures and the mindset subject domains. Following Deeks et al.'s (2022) recommendation to avoid employing meta-regression models when the number of studies is less than 10, I exclusively used 3-level meta-regression models when there was an adequate number of studies available (i.e., only for the relationships between well-internalized forms of motivation and mindset beliefs).

Figure 2

PRISMA Flow Diagram of the Literature Search



Study 2

Research Design

In the second study of the present dissertation, I aimed to examine the relationships between teaching mindsets, different forms of teaching motivation, and need-supportive teaching practices. As a result, this cross-sectional research was designed as a correlational study using a quantitative method since correlational studies allow researchers to investigate whether two or more variables are related to each other (Fraenkel et al., 2012; Kumar, 2011). To test the hypotheses between observed and latent variables, a structural equation model (SEM) was used (MacCallum & Austin, 2000).

Context of the Study

English is broadly used in a wide range of professions and industries because it is recognized as the language of commerce, academia, diplomacy, media, and technology (British Council, 2018). Due to the surge in worldwide demand for high-level proficiency in the English language, English language education has also become one of the main concerns in Türkiye's tertiary education system. Given the importance of teaching and learning English in the Turkish higher education system, the scope of the current study is restricted to Schools of Foreign Languages (SFLs) based in the Turkish state and private universities.

All English as a Foreign Language (EFL) instructors are recruited in line with the regulations and standards set by the Council of Higher Education (CoHE), which handles Türkiye's tertiary education system. Securing an academic position in SFLs has become quite challenging and competitive due to the legislative change recently enacted regarding the recruitment requirements set by the CoHE (Official Gazette of the Republic of Türkiye, 2018, Vol. 30444). The qualifications required to teach

English in SFLs include a bachelor's degree in English, a master's degree in a related field, high-level language proficiency proven with a valid standardized test such as TOEFL or YÖKDİL (Higher Education Institutions Language Exam), and a high score on the ALES test (Academic Personnel and Postgraduate Education Entrance Examination), which consists of verbal and quantitative sections. According to the 2022–2023 Higher Education Statistics, approximately 5000 language instructors are working at Turkish universities (CoHE, 2023).

Participants

I gathered data from 377 EFL instructors working at both state and private universities in Turkish higher education through a convenience sampling method. 29 cases, however, were excluded from the dataset because they gave incorrect answers to the two attention-check items included in the survey to identify random and/or careless responses (Shamon & Berning, 2020). Eventually, 348 instructors with a mean age of 38.47 (*SD* = 9.22) years constituted the final sample of the study.

A clear majority of the participants identified themselves as female (75 %) and Turkish (87.1 %). Table 6 presents further details of the characteristics of the participants in the second study.

Table 6

Characteristics of the Participants (N= 348)

Variable	*f*	%
Gender		
Female	261	75.0
Male	87	25.0
Nationality		
Turkish	303	87.1
British	11	3.2
American	10	2.9
Iranian	2	0.6
Other	22	6.3

Variable	*f*	%
Degree Obtained		
Bachelor's	114	32.8
Master's	193	55.5
PhD	41	11.8
Years of Teaching Experience		
Less than 5 years	26	7.5
5-9 years	93	26.7
10-14 years	82	23.6
15-19 years	56	16.1
More than 20 years	91	26.1
Institution Type		
State university	144	41.4
Private university	186	53.4
Not stated	18	5.2
Program of Teaching		
English Preparatory Programs	231	66.4
English for Academic Purposes Programs	115	33.0
Other	2	0.6

Instrumentation

As both native and non-native EFL instructors with high proficiency in the English language made up the participants of the second study, the instruments were administered in English. To ensure that the instruments would measure what they intended to measure and were free of any ambiguity, a total of six EFL instructors (2 British, 1 American, and 3 Turkish) were contacted to review the items of the questionnaires and were asked to provide feedback on the clarity of the survey items. Following in-depth discussions with each instructor, the instruments were found to be clear and intelligible, verifying the face validity of the instruments. Data was collected through a survey pack including three instruments with a total of 56 items presented in Appendix B.

Teaching Mindset Beliefs

The Implicit Theories of Intelligence Scale (ITIS; Dweck et al., 1995) was used to measure EFL instructors' teaching mindsets. Due to the risk that respondents would become perplexed if the same thought is repeated in different words, only the fixed mindset items of the scale were provided to the study participants. This decision was made based on the fact that the mindset construct is considered unitary (Dweck et al.,1995). Several subsequent studies (Yeager et al., 2019) have adopted the same practice since its first implementation (Dweck et al.,1995). For the current study, 3 fixed mindset items of the original scale were slightly modified to enable respondents to self-report their mindset beliefs regarding their own teaching ability. For example, rather than using the original item "*You can learn new things, but you can't really change your basic intelligence*.", a slight adaptation was made to better appeal to EFL instructors (e.g., "*You can learn new teaching approaches, but you can't really change your basic teaching ability*"). Items were scored on a 5-point Likert-type scale, with 1 representing strong disagreement and 5 representing strong agreement. The internal consistency of the adapted version indicated by Cronbach alpha was found to be $\alpha = .88$, indicating a satisfactory level.

Motivation for Teaching

The Comprehensive Relative Autonomy Index (C-RAI; Sheldon et al., 2017) was utilized to gauge EFL instructors' quality of motivation for teaching. Following the stem statement "I am trying to teach well," five subscales with a total of 20 items were rated on a 5-point Likert type scale: intrinsic (4 items; e.g., "…*because I enjoy teaching*"), identified (4 items; e.g., "…*because I strongly value teaching*"), positive introjected (4 items; e.g., "…*because I want to be proud of myself*"), negative introjected (4 items; e.g., "…*because I would feel like a failure if I didn't teach*

well"), and external (4 items; e.g., "…because *important people (i.e., directors, students, parents) will like me better if I teach well*") regulations. Inspecting the correlations between these subscales revealed a moderately positive relationship between positive introjected regulation and both intrinsic regulation ($r = .33$, $p < .01$) and identified regulation ($r = .40$, $p < .01$). Negative introjected regulation, on the other hand, was weakly positively related to intrinsic regulation ($r = .12$, $p < .05$) and moderately positively linked to identified regulation ($r = .27$, $p < .01$). Based on these results, I decided to keep the negative introjected regulation subscale in the analysis as it represented controlled motivation more accurately than the positive introjected regulation subscale. The internal consistency values of the four subscales of the C-RAI ranged between $\alpha = .70$ and $\alpha = .89$.

Confirmatory factor analysis (CFA) with four latent factors loaded with the corresponding four items resulted in the following acceptable fit indices: χ^2 (98) = 251.93, $p < .001$, TLI = .98, CFI = .98, RMSEA = .07, 90% CI [.057, .077], and SRMR = .05.

Need-supportive Teaching

The short version of the Teacher as a Social Context Questionnaire (TASC-Q; Belmont et al., 1988) was used to measure the need-supportive teaching practices of EFL instructors. This short version of TASC-Q comprises 33 Likert-type items scored from 1 (*strongly disagree*) to 5 (*strongly agree*) loading on three subscales that measure autonomy-support (e.g., "*I try to give my students a lot of choices about classroom assignments*"); structure (e.g., "*I try to be clear with my students about what I expect of them in class*"); involvement (e.g., "*My students can count on me to be there for them*").

The involvement subscale (α = .81) contained 12 items tapping instructors' *affection* (three items), *attunement* (three items), *dedication of resources* (three items), and *dependability* (three items). The subscale of structure (α = .79) included 12 items measuring instructors' *help and support* (three items), *clarity of expectations* (three items), *contingency* (three items), and *adjustment of teaching strategies* (three items). The autonomy support subscale (α = .62) consisted of 9 items tapping into instructors' *respect for learners' thoughts and feelings* (three items), *providing choice* (three items), and *relevance* (three items).

The results of a second-order CFA model indicated that all goodness-of-fit indices were above the acceptable standards: χ^2 (480) = 1343.78, p < .001, TLI = .89, CFI = .90, RMSEA = .07, 90% CI [.067, .076], SRMR = .07. Following the inspection of item loadings, the third item of dependability and the first item of contingency sub-dimensions were deleted because of low factor loadings (.30 and .32, respectively). The final CFA model yielded the following satisfactory fit indices: χ^2(419) = 1223.85, p < .001, TLI = .89, CFI = .90, RMSEA = .07, 90% CI [.069, .079], SRMR = .07.

Method of Data Collection

Upon securing the ethical approval (see Appendix C) from Bilkent University's Ethics Committee for Research with Human Participants and getting the required permissions from the relevant authorities (i.e., directors or department chairs) of each institution, I collected data from EFL instructors either on-site (n = 101) by visiting the campuses or remotely (n = 276) through the Qualtrics software platform between January 2020 and October 2020. According to the participants' records, the data was collected from 55 universities in Türkiye. Of note, a MANOVA was conducted to investigate whether study variables differed as a function of the

survey completion mode (in-person vs. electronically). Results of MANOVA showed that the multivariate effect of how the participants completed the survey was significant, *Wilks' λ* = .95, *F* (9, 338) = 2.18, *p* = .02, partial *η2* = .06. Inspecting the results of univariate analyses indicated that participants who completed the survey in-person (i.e., on-site data collection), compared to those who completed it online, reported higher fixed mindset beliefs about their own teaching and autonomy-supportive teaching styles. Therefore, the response mode of the participants was included as a covariate in the hypothesized structural model.

All participants were asked to sign a consent form (see Appendix A) informing them of the aims of the study, their anonymous participation, and their right to withdraw at any time. The instruments took approximately 15–20 minutes to complete.

Methods of Data Analysis

The second study aimed to test a model investigating the relationships between EFL instructors' mindset beliefs, motivation to teach, and need-supportive teaching practices. Before model testing, preliminary analyses were performed using the IBM SPSS Statistics software (version 25). For the main analysis, SEM was performed using the Mplus software version 8 (Muthén & Muthén, 2017) to test the hypothesized model (Figure 1). Given that each data collection instrument used a Likert scale, and the data distribution was not normal, the Weighted Least Squares Mean and Variance (WLSMV) estimation method was adopted to accommodate the nature of the ordered-categorical and non-normal data gathered (Finney & DiStefano, 2013; Flora & Curran, 2004). A MANOVA was conducted to determine whether the study variables differed as a function of the survey completion mode.

Based on the MANOVA results, the hypothesized model was tested by including gender and mode of survey completion as covariates.

I examined the model fit indices based on the following criteria recommended by Hu and Bentler (1999) and Kline (2015): Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) values at or above .90 and .95, Root Mean Square Error of Approximation (RMSEA) value at .06 or lower and standardized Root Mean Square Residual (SRMR) value at .08 or lower.

CHAPTER 4: RESULTS

Introduction

The purpose of this dissertation was twofold: (1) to conduct a meta-analysis of previous empirical studies investigating how mindset beliefs relate to different types of motivation; and (2) to test a hypothesized model developed based on the meta-analytical evidence to explore relationships among EFL instructors' teaching mindsets, quality of teaching motivation, and need-supportive teaching practices. This chapter begins by presenting the findings of the first study (S1: the meta-analytic review), including the overall main effects of the relationships between mindset beliefs and types of motivation, the results of the moderator analyses, and evidence for publication bias. The main findings of the meta-analysis are organized by the relationship between each mindset (growth and fixed) and motivation type. Next, I presented the findings of the second study (S2: the cross-sectional study), including the results revealed through the preliminary analysis and model testing.

Results of Study 1

The final pool of studies included 112 effect sizes from 45 empirical studies published between 2006 and 2021, with a total of 27,895 participants. After combining the overlapping SDT and SEVT constructs under two general motivation groups as demonstrated in Table 5, separate meta-analyses were performed for the relationships between seven types of motivation that were reported in each study (i.e., intrinsic group, identified group, autonomous, extrinsic, and controlled motivations, introjected and external regulations) and two mindsets (growth and fixed).

Overall Main Effects

Considering the anticipated heterogeneity across studies included in the meta-analysis, a three-level random effects model with the REML estimator was employed to calculate the overall main effect sizes of the relationships between mindset beliefs and types of motivation. Moreover, the Knapp-Hartung adjustment method (Knapp & Hartung, 2003) was used to account for the uncertainty in the estimate of between-study heterogeneity (Viechtbauer, 2010).

Table 7 displays the overall summary effects for each relationship between mindset beliefs and motivation types. This table contains information regarding the meta-analytic results, such as the number of studies, the number of individual effect sizes, *z*-to-*r* back-transformed values of effect sizes with 95 % confidence intervals, Cochran's *Q* values, and I^2 heterogeneity statistics. I^2 values for within-study variability (Level 2) and between-study variability (Level 3) are also reported if there are studies with multiple effect sizes. Although Cochran's *Q* test value is often used to address effect size heterogeneity, its significance is sensitive to the number of effect sizes in the data and the sample size in each study (Harrer et al., 2021). Therefore, I^2 values were also reported to address the proportion of heterogeneity within effect sizes and interpreted as 25% = small, 50% = moderate, and 75% = high proportions of variance (Higgins & Thompson, 2002; Higgins et al., 2003).

The results for the overall summary effects are discussed separately for each relationship between mindset beliefs and motivation groups, along with the corresponding rainforest plot for visual presentation. It should be noted that the effect size values shown in the rainforest plots are in Fisher's *z* metric. The back-transformed effect size values (Fisher's *z*-to-*r*) for each relationship are shown in Table 7.

Table 7

Results of Three-Level Random Effects Model Examining the Relationships between Mindset Beliefs and Motivation Types

Relationship between	*k*	*n*	I^2 Level 2	I^2 Level 3	I^2 Total	*Q*	*r*	Lower CI 95%	Upper CI 95%
GM and Intrinsic	26	29	0	96.8 %	96.80 %	639.04***	.22***	.14	.29
GM and Identified	16	20	0	95.52 %	95.52 %	306.28***	.25***	.16	.33
GM and Autonomous	5	5	-	-	90.93 %	34.85***	.23*	.06	.39
GM and Introjected	5	5	-	-	92.64 %	39.53***	.06	–.08	.20
GM and External	5	5	-	-	97.95 %	246.54***	–.05	–.31	.21
GM and Extrinsic	6	6	-	-	93.58 %	39.34***	.04	–.19	.25
GM and Controlled	3	3	-	-	0	1.29	.05	–.09	.19
FM and Intrinsic	12	15	49.69 %	0	49.69 %	28.79**	–.07***	–.10	–.04
FM and Identified	7	9	0.76 %	93.8 %	94.56 %	73.22***	–.01	–.14	.13
FM and Autonomous	5	5	-	-	75.72 %	21.68***	–.11*	–.20	–.02
FM and Introjected	3	3	-	-	59.17 %	4.90	–.02	–.18	.15
FM and External	3	3	-	-	92.35%	37.55***	.15	–.24	.50
FM and Extrinsic	1	1	-	-	-	-	–.01	–.15	.13
FM and Controlled	3	3	-	-	36.45 %	3.01	.15*	.03	.26

Note. GM = Growth Mindset and FM = Fixed Mindset; *k* = the number of studies; *n* = the number of individual effect sizes; *Q* = Cochran's Q, I^2 = Thompson's I^2 for within-study (level 2) and between-study (level 3); *r*= back-transformed effect size; CI = Confidence intervals for back-transformed effects sizes.

*$p < .05$; **$p < .01$; ***$p < .001$.

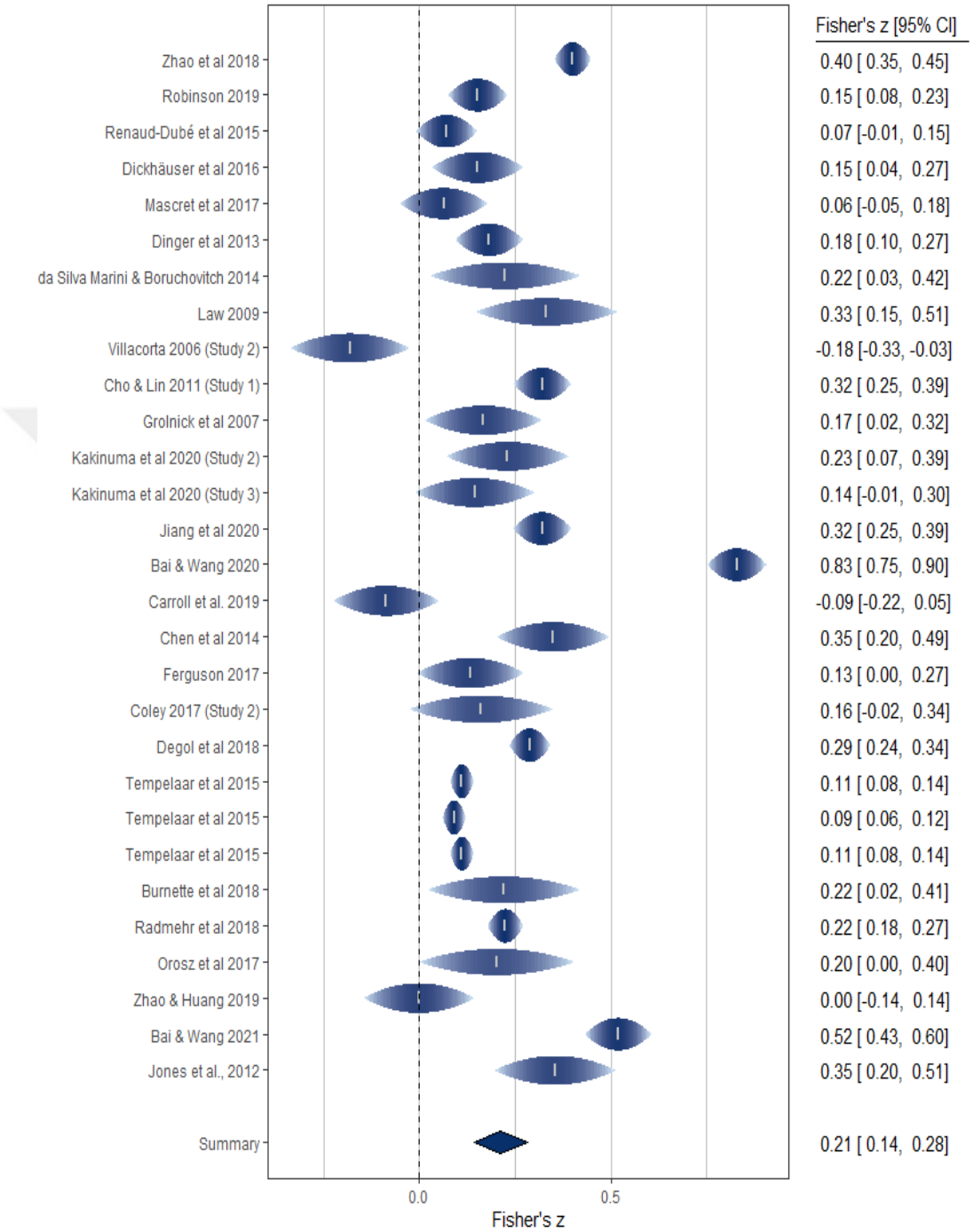
Intrinsic Motivation Group and Mindset Beliefs

The largest number of individual effect sizes (n = 29; 26 positive, 1 zero, and 2 negative correlations) was found in the relationship between growth mindset beliefs and intrinsic motivation group (including intrinsic value, interest value, and intrinsic regulation). These 29 effect sizes were pooled from 26 different studies. The overall effect size based on the three-level random effects model was r = .22 (p < .001, 95% CI [.14, .29]), indicating a statistically significant correlation with a medium effect size (Funder & Ozer, 2019) between individuals' growth mindset beliefs and intrinsic motivation (see Figure 3 for the rainforest plot). As for effect size heterogeneity for the relationship between growth mindset beliefs and intrinsic motivation group, Cochran's Q value was found to be statistically significant, and the values of $I^2_{\text{Level 2}}$ (within-study) and $I^2_{\text{Level 3}}$ (between-studies) were found to be 0% and 96.8%, respectively (see Table 7).

For the relationship between fixed mindset and intrinsic motivation group (k = 12; n = 15; 1 positive, 1 zero, and 13 negative correlations), the average effect size was found to be r = – .07 (p < .001, 95% CI [- .10, - .04]), indicating a significant but weak relationship between individuals' fixed mindset beliefs and intrinsic motivation (see Figure 4 for the rainforest plot). Regarding the variation in the effect sizes for the relationship between fixed mindset beliefs and intrinsic motivation group, though Cochran's Q test value was found statistically significant, the total amount of effect size heterogeneity was only attributed to the variability within-study ($I^2_{\text{Level 2}}$ = 49.69 %, a moderate proportion of I^2), indicating that there was no evidence of heterogeneity between studies ($I^2_{\text{Level 3}}$ = 0 %, see Table 7).

Figure 3

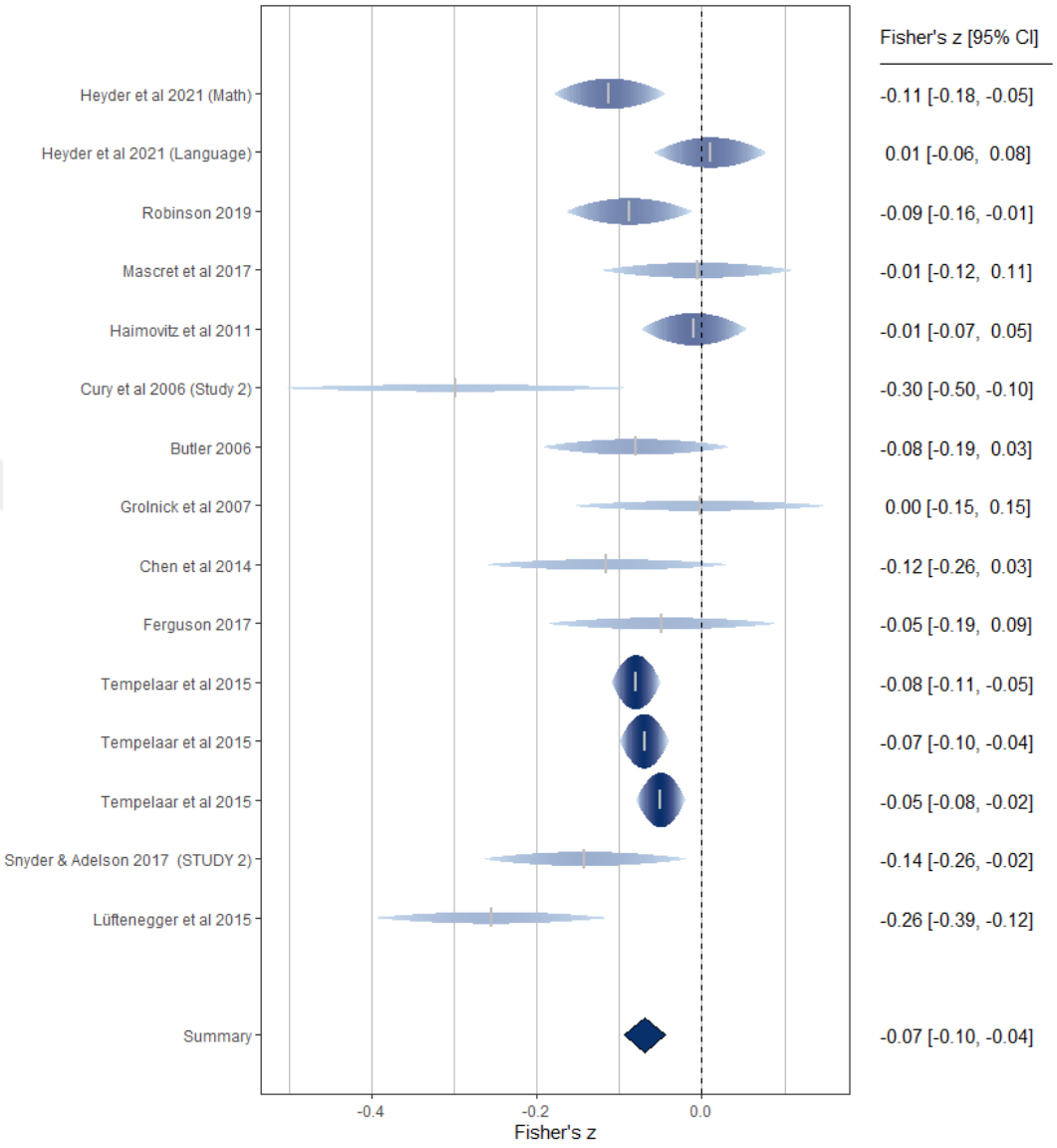
Rainforest Plot for the Relation between Growth Mindset and Intrinsic Motivation



Note. The effect size value shown in the rainforest plot is in *Fisher's z* metric. The back-transformed value is $r = .22$ ($p < .001$, 95% CI [.14, .29]).

Figure 4

Rainforest Plot for the Relation between Fixed Mindset and Intrinsic Motivation



Note. The effect size value shown in the rainforest plot is in *Fisher's z* metric. The back-transformed value is equal to *Fisher's z-value* shown in the plot.

Identified Regulation Group and Mindset Beliefs

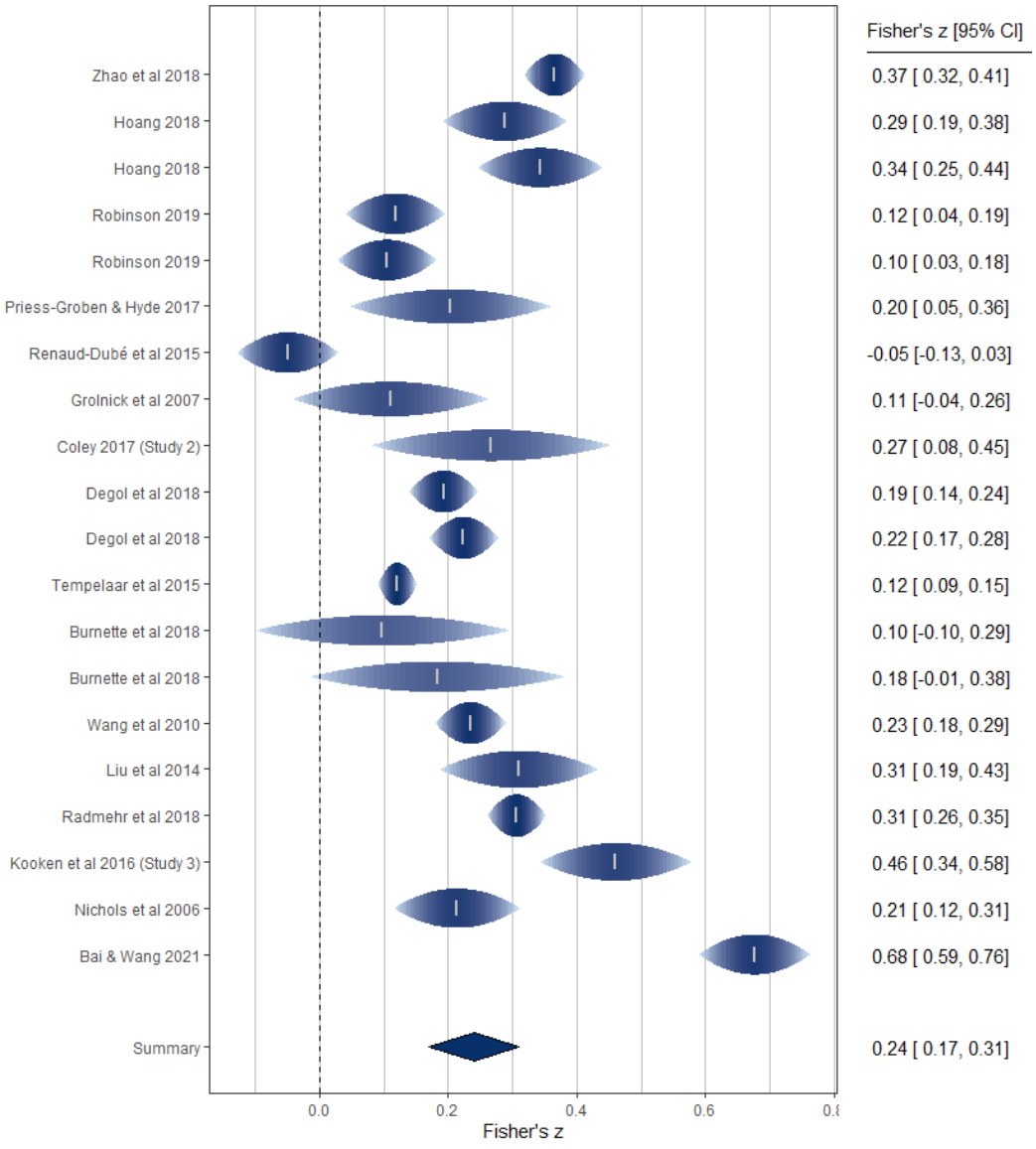
As for the relationship between growth mindset beliefs and the identified regulation group (including utility value, attainment value, and identified regulation), from 16 studies 20 effect sizes were pooled (1 negative and 19 positive correlations). The average effect size was found to be $r = .25$ ($p < .001$, 95% CI [.16, .33]), indicating a significant relationship with a medium effect size between individuals' growth mindset beliefs and identified regulation group (See Figure 5 for the rainforest plot). Cochran's *Q* test for effect size heterogeneity in the relationship between growth mindset beliefs and the identified regulation group revealed a statistically significant value. Moreover, the values of $I^2_{\text{Level 2}}$ (within-study) and $I^2_{\text{Level 3}}$ (between-study) were 0% and 95.52%, respectively (see Table 7).

However, the relationship between fixed mindset beliefs and the identified regulation group ($k = 7$, $n = 9$; two positive and seven negative correlations) was found to be not significant ($r = -.01$, $p = .90$, 95% CI [-.14, .13]), which suggests that there is no evidence of a meaningful relationship between individuals' fixed mindset beliefs and identified regulation group (see Figure 6 for the rainforest plot).

With regard to the effect size heterogeneity for the relationship between fixed mindset beliefs and the identified regulation group, Cochran's *Q* test value was found to be statistically significant, and the amount of heterogeneity between studies ($I^2_{\text{Level 3}} = 93.8$ %) was much higher than within-study heterogeneity ($I^2_{\text{Level 2}} = 0.76$ %), suggesting a high proportion of variability in the effect sizes across studies.

Figure 5

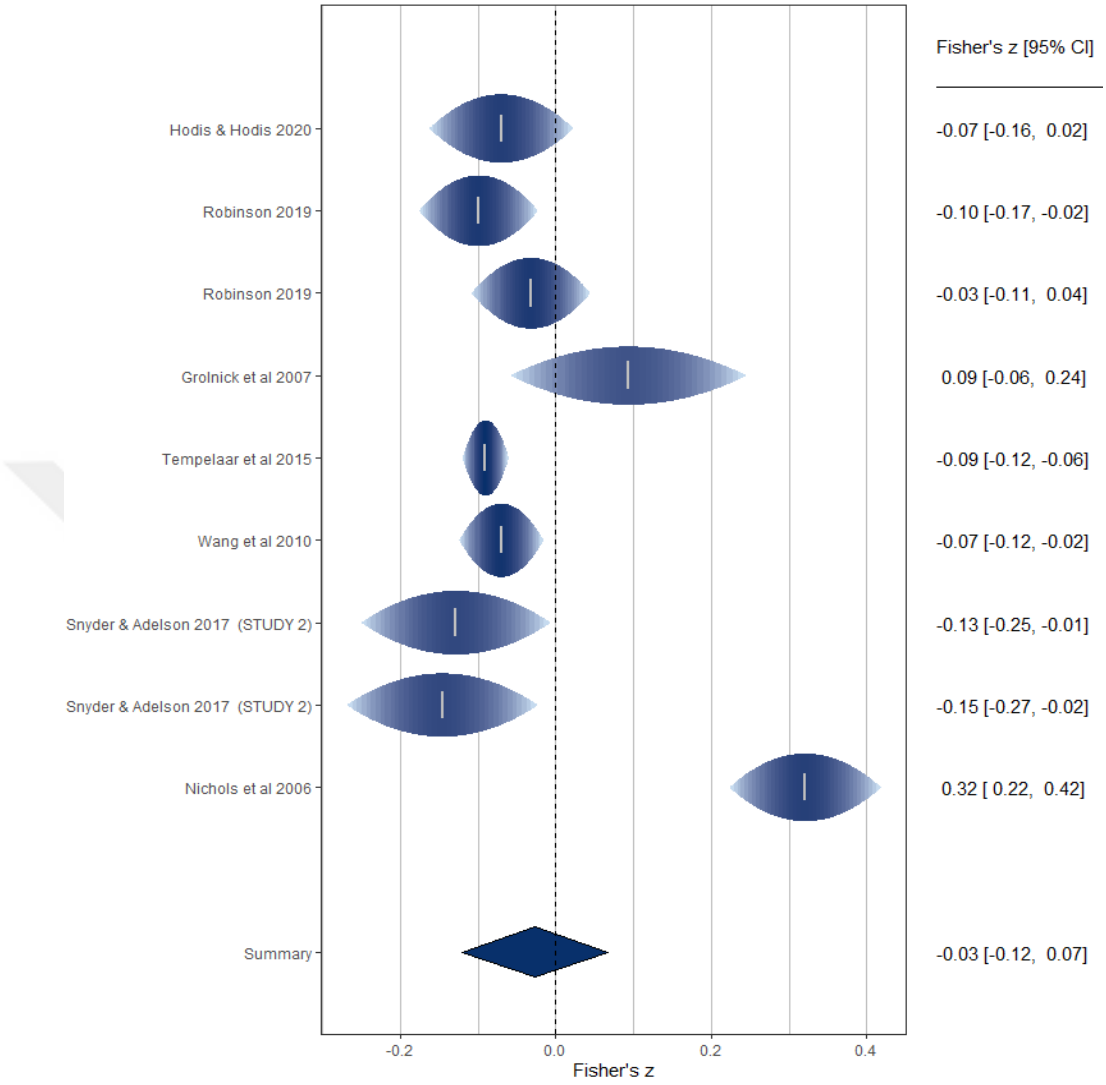
Rainforest Plot for the Relation between Growth Mindset and Identified Regulation



Note. The effect size value shown in the rainforest plot is in *Fisher's z* metric. The back-transformed value is $r = .25$ ($p < .001$, 95% CI [.16, .33]).

Figure 6

Rainforest Plot for the Relation between Fixed Mindset and Identified Regulation



Note. The effect size value shown in the rainforest plot is in *Fisher's z* metric. The back-transformed value is $r = -.01$ ($p = .90$, 95% CI [-.14, .13]).

Considering the subtle distinction regarding the internalization process between utility value and identified motivation (Vansteenkiste & Mouratidis, 2016, p. 320), I further ran a supplementary analysis to investigate whether these relationships would change when the utility value was removed from the identified motivation group. The results did not change drastically. More specifically, the

relationship between the revised identified group and the growth mindset was found to be $r = .22$ ($p < .001$, 95% CI [.15, .30]) while the one with the fixed mindset was found to be $r = .01$ ($p = .89$, 95% CI [-.17, .19]).

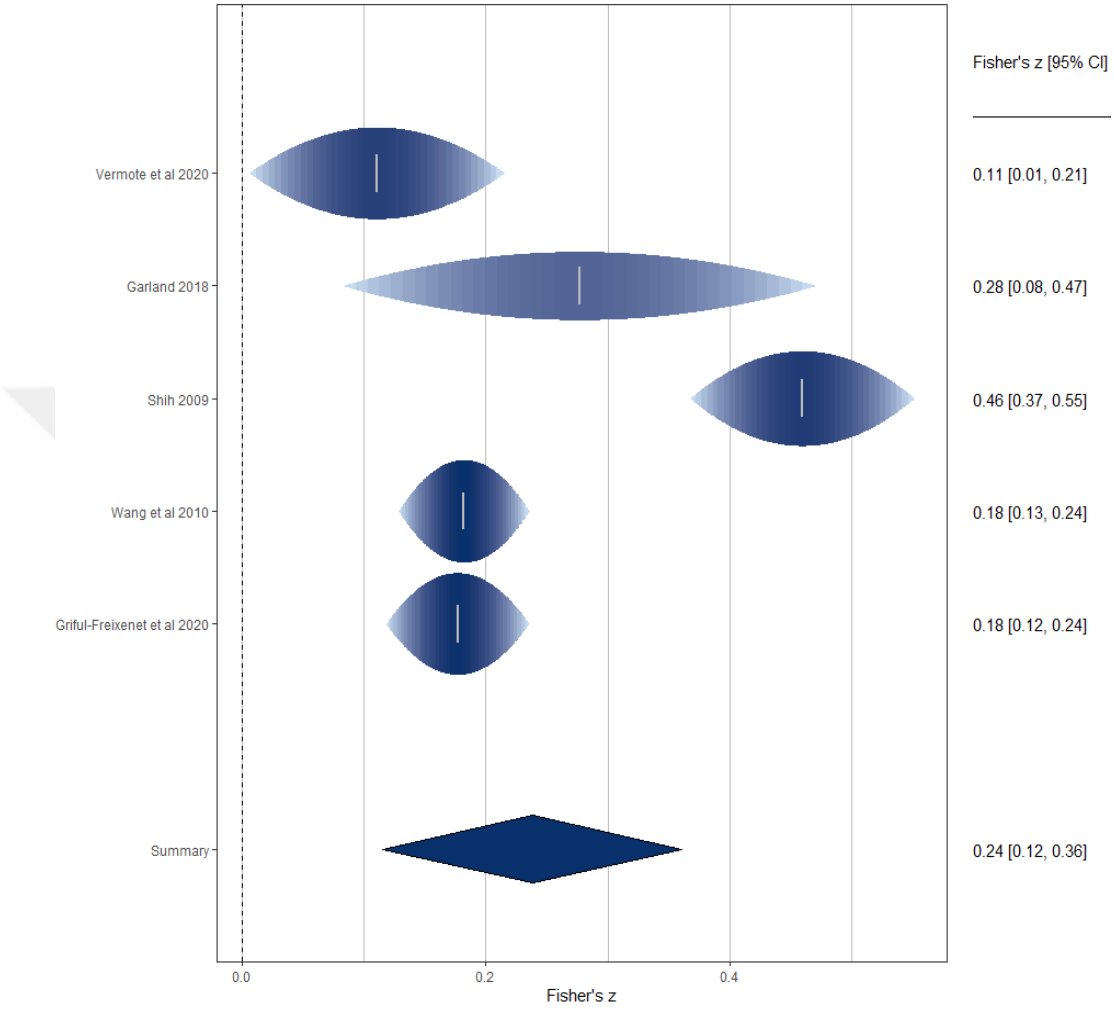
Autonomous Motivation and Mindset Beliefs

The meta-analysis revealed a statistically significant relationship with a medium effect size between growth mindset beliefs and autonomous motivation ($r = .23$, $p < .05$, 95% CI [.06, .39]) based on five individual effect sizes, all of which were positive (see Figure 7 for the regarding rainforest plot). As for the heterogeneity in the effect sizes for the relationship between growth mindset and autonomous motivation, Cochran's Q value was found to be statistically significant, and the value of the total amount of I^2 was 90.93 %, which indicates a high proportion of variability in the effect sizes. For this relationship, the within-study or between-study I^2 values are neither reported nor presented in Table 7 because there were no studies with multiple effect sizes in the data.

Regarding the relationship between fixed mindset beliefs and autonomous motivation, the meta-analytic results revealed a statistically significant negative effect size ($r = -.11$, $p < .05$, 95% CI [-.20, -.02]), based on five individual effect sizes, all of which were negative (see Figure 8 for the rainforest plot). The results of effect size heterogeneity for the relationship between fixed mindset beliefs and autonomous motivation were significant (*Cochran's* $Q = 21.68$, $p < .001$), with a high proportion of effect size heterogeneity ($I^2 = 75.72$). As the data did not include any studies with multiple effect sizes, the $I^2_{\text{Level 2}}$ and $I^2_{\text{Level 3}}$ values are neither reported nor presented in the table.

Figure 7

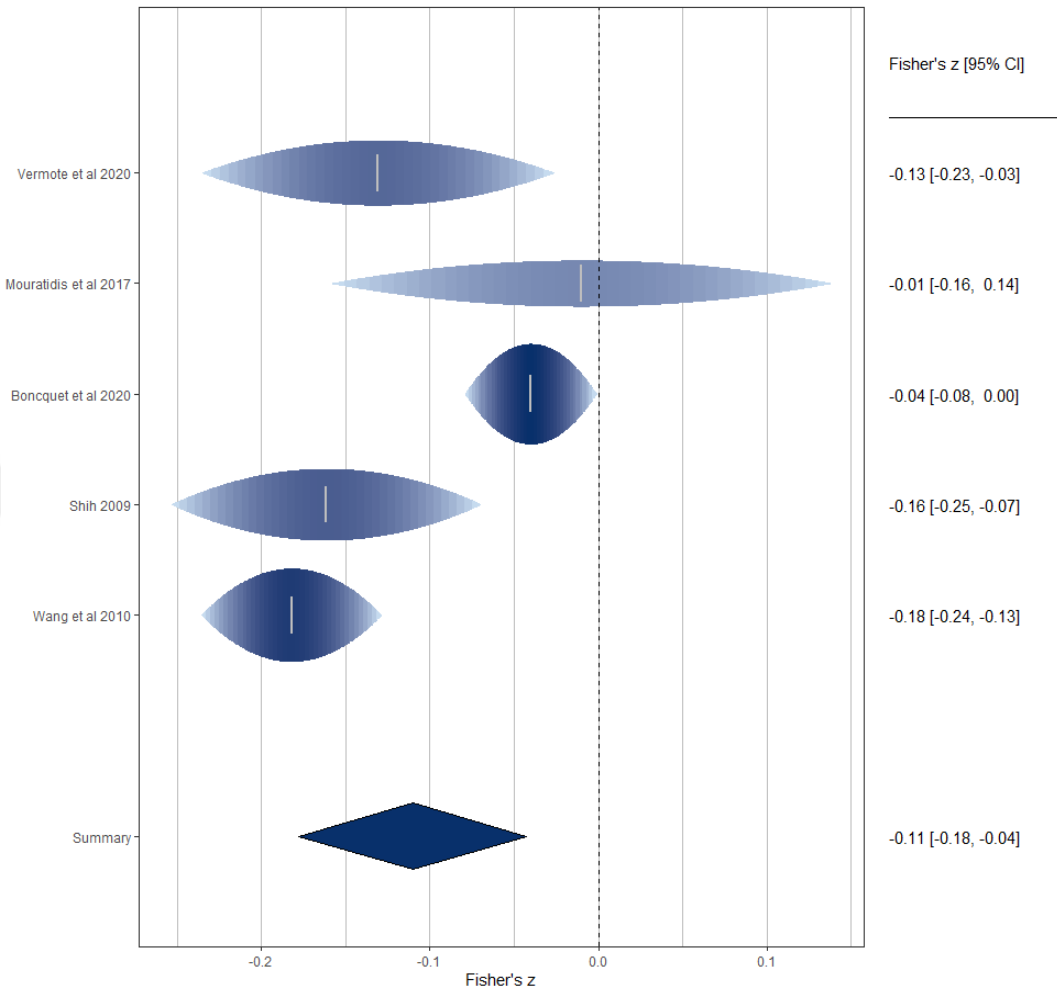
Rainforest Plot for the Relation between Growth Mindset and Autonomous Motivation



Note. The effect size value shown in the rainforest plot is in *Fisher's z* metric. The back-transformed value is $r = .23$ ($p < .05$, 95% CI [.06, .39]).

Figure 8

Rainforest Plot for the Relation between Fixed Mindset and Autonomous Motivation



Note. The effect size value shown in the rainforest plot is in *Fisher's z* metric. The back-transformed value is $r = -.11$ ($p < .05$, 95% CI [-.20, -.02]).

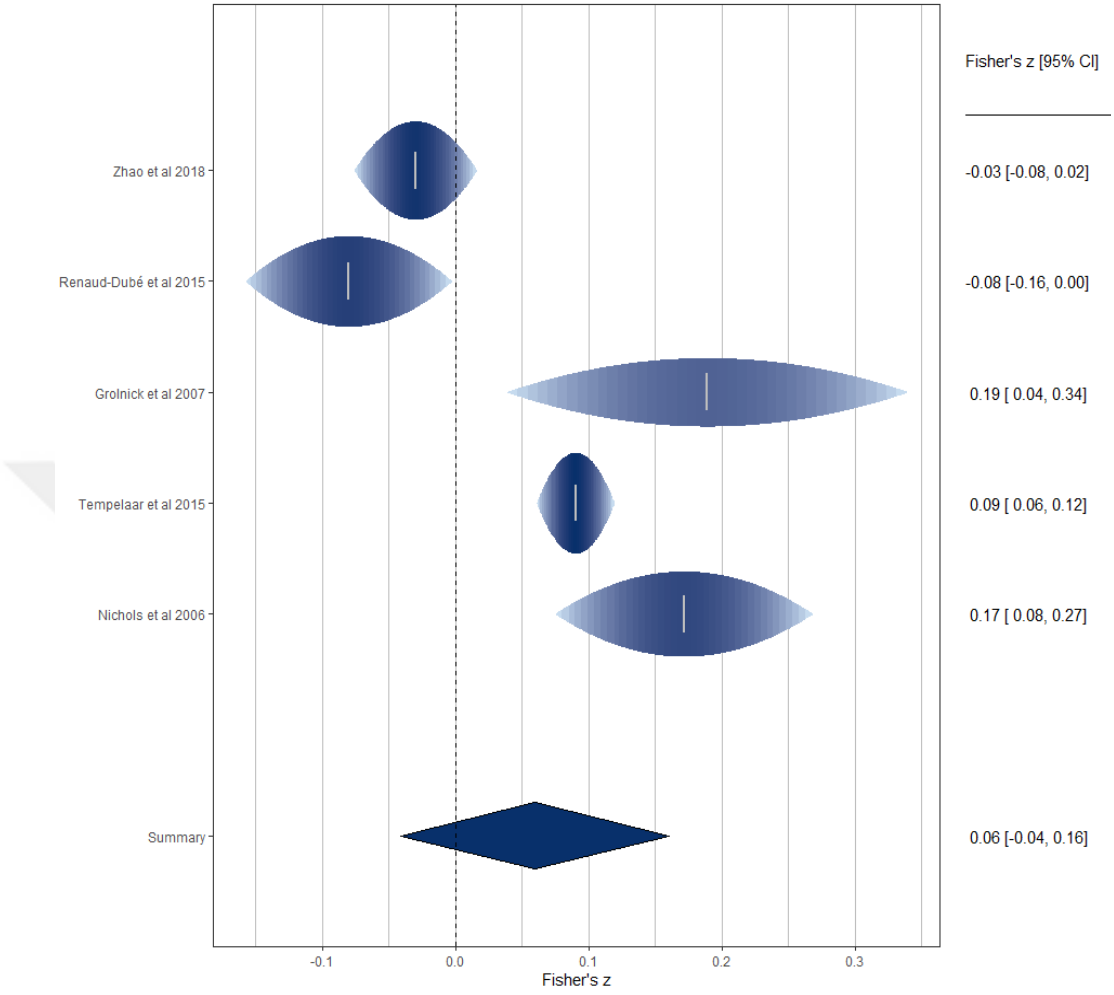
Introjected Regulation and Mindset Beliefs

For the relationship between growth mindset beliefs and introjected regulation, five individual effect sizes were obtained (three positive and two negative correlations). The overall effect size was found to be $r = .06$ ($p = .31$, 95% CI [-.08, .20]), suggesting that there is no significant relationship between individuals' growth mindset beliefs and introjected regulation (see Figure 9 for the rainforest plot). As for the heterogeneity in the effect sizes for the relationship between growth mindset and introjected regulation, Cochran's *Q* value was found to be statistically significant, and the value of the total amount of I^2 was 92.64 %, which suggests a high proportion of variability in the effect sizes.

In a similar vein, the relationship between fixed mindset beliefs and introjected regulation ($n = 3$; one negative and two positive correlations) was found to be not significant ($r = –.02$, $p = .70$, 95% CI [-.18, .15]), indicating that there is no evidence of a meaningful relationship between individuals' fixed mindset beliefs and introjected regulation (see Figure 10 for the rainforest plot). Regarding the variation in the effect sizes for the relationship between fixed mindset beliefs and introjected regulation, Cochran's *Q* test value was not found to be statistically significant, which can be attributed to the small number of effect sizes ($n = 3$). As previously discussed, Cochran's *Q* test's significance directly depends on the number of effect sizes in the data and the sample size (Harrer et al., 2021). Furthermore, the total amount of I^2 value was 59.17 % indicating a moderate proportion of heterogeneity in the effect sizes across studies.

Figure 9

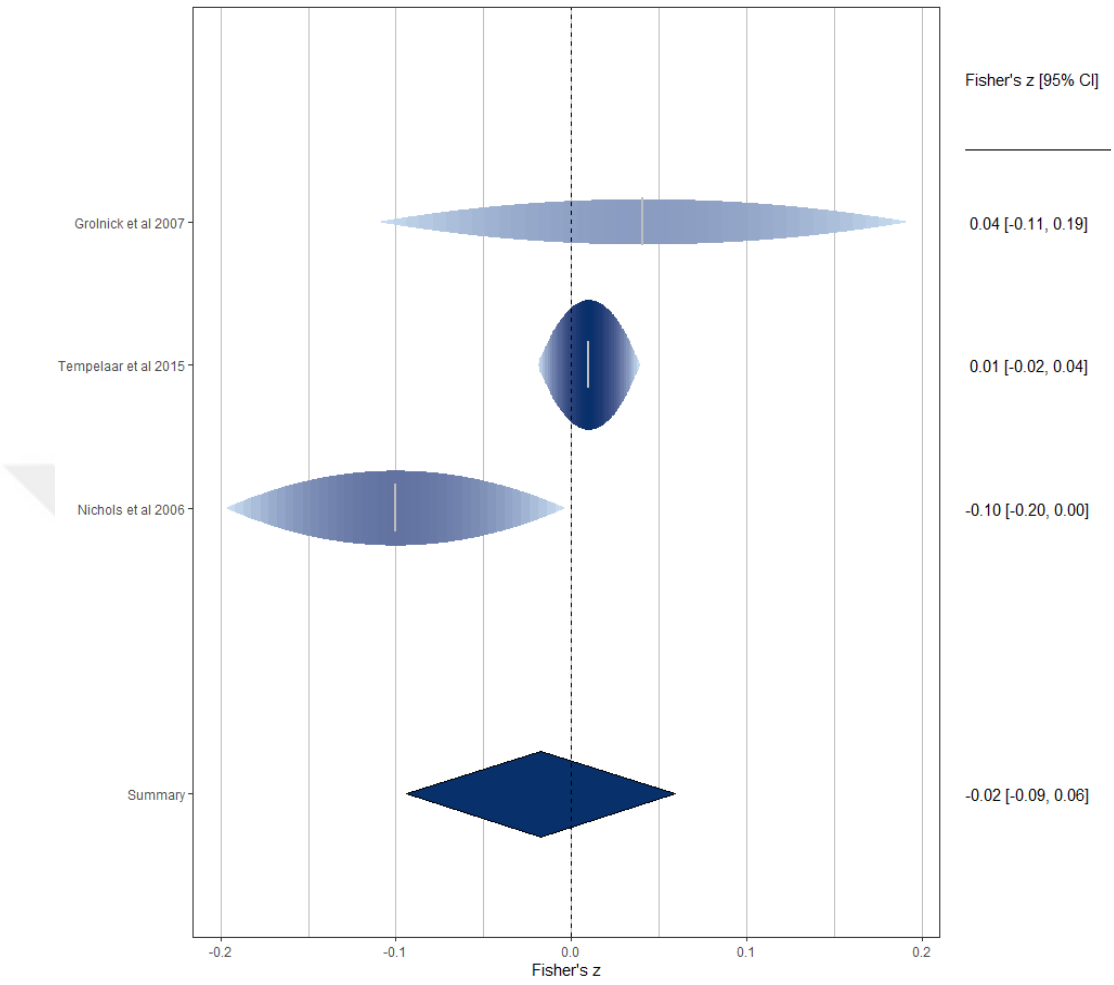
Rainforest Plot for the Relation between Growth Mindset and Introjected Regulation



Note. The effect size value shown in the rainforest plot is in *Fisher's z* metric. The back-transformed value is $r = .06$ ($p = .31$, 95% CI [-.08, .20]).

Figure 10

Rainforest Plot for the Relation between Fixed Mindset and Introjected Regulation



Note. The effect size value shown in the rainforest plot is in *Fisher's z* metric. The back-transformed value is $r = -.02$ ($p = .70$, 95% CI [-.18, .15]).

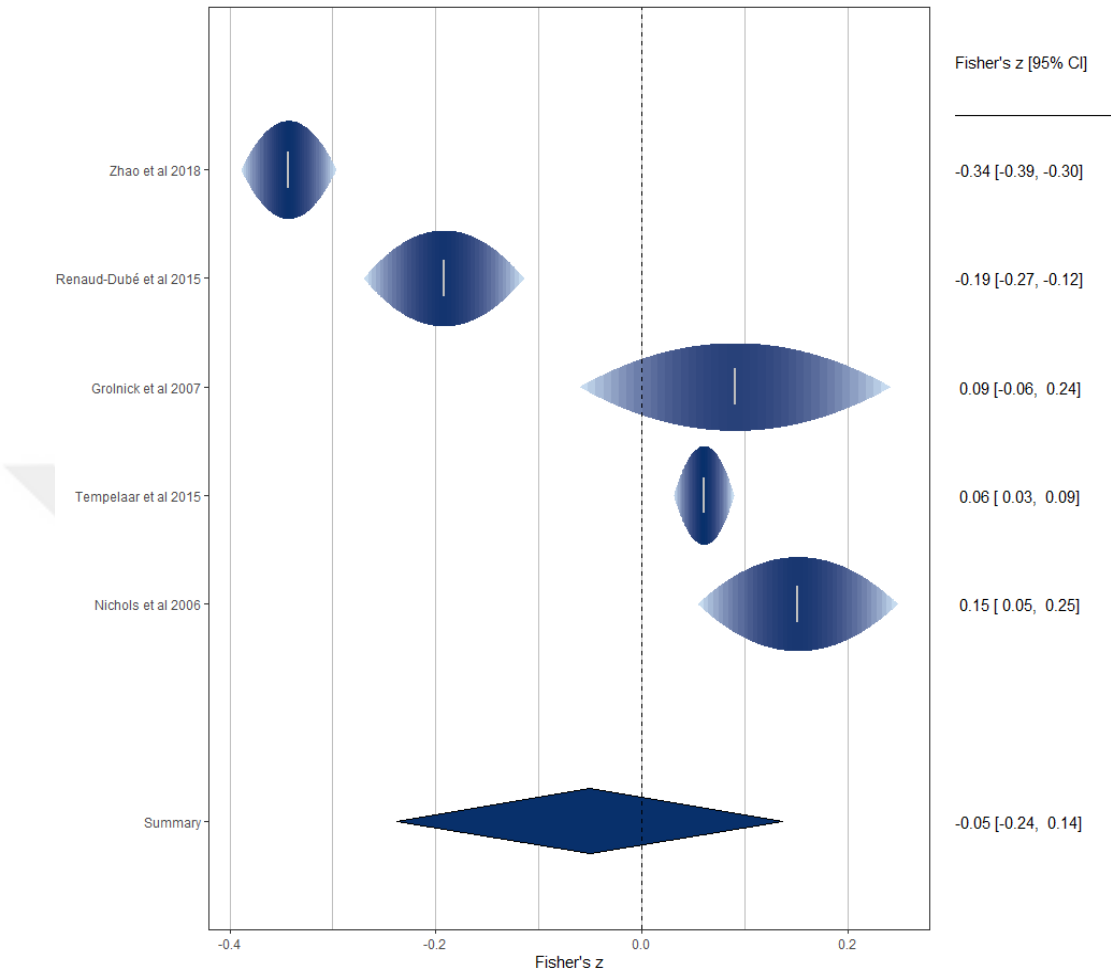
External Regulation and Mindset Beliefs

This meta-analysis revealed a non-significant average effect for the relationship between growth mindset beliefs and external regulation (r = – .05, p = .62, 95% CI [-.31, .21]) based on five individual effect sizes (three positive and two negative correlations) as can be seen in Figure 11. Pertaining to the effect size heterogeneity for the relationship between growth mindset beliefs and external regulation, the result was statistically significant (Cochran's Q = 246.54, p < .001) with a high level of variability (I^2 = 97.95). As the data did not include any studies with multiple effect sizes, the $I^2_{\text{Level 2}}$ and $I^2_{\text{Level 3}}$ values are neither reported nor presented in the table.

Likewise, a non-significant, yet positive, effect size was discovered in the relationship between fixed mindset beliefs and external regulation (r = .15, p = .24, 95% CI [-.24, .50]), based on three effect sizes, which included two positive and one negative correlations (see Figure 12 for the regarding rainforest plot). The result of Cochran's test was significant (Q = 37.55, p < .001) with a high proportion of effect size heterogeneity (I^2 = 92.35). As the data did not include any studies with multiple effect sizes, the $I^2_{\text{Level 2}}$ and $I^2_{\text{Level 3}}$ values are not reported or presented in the table.

Figure 11

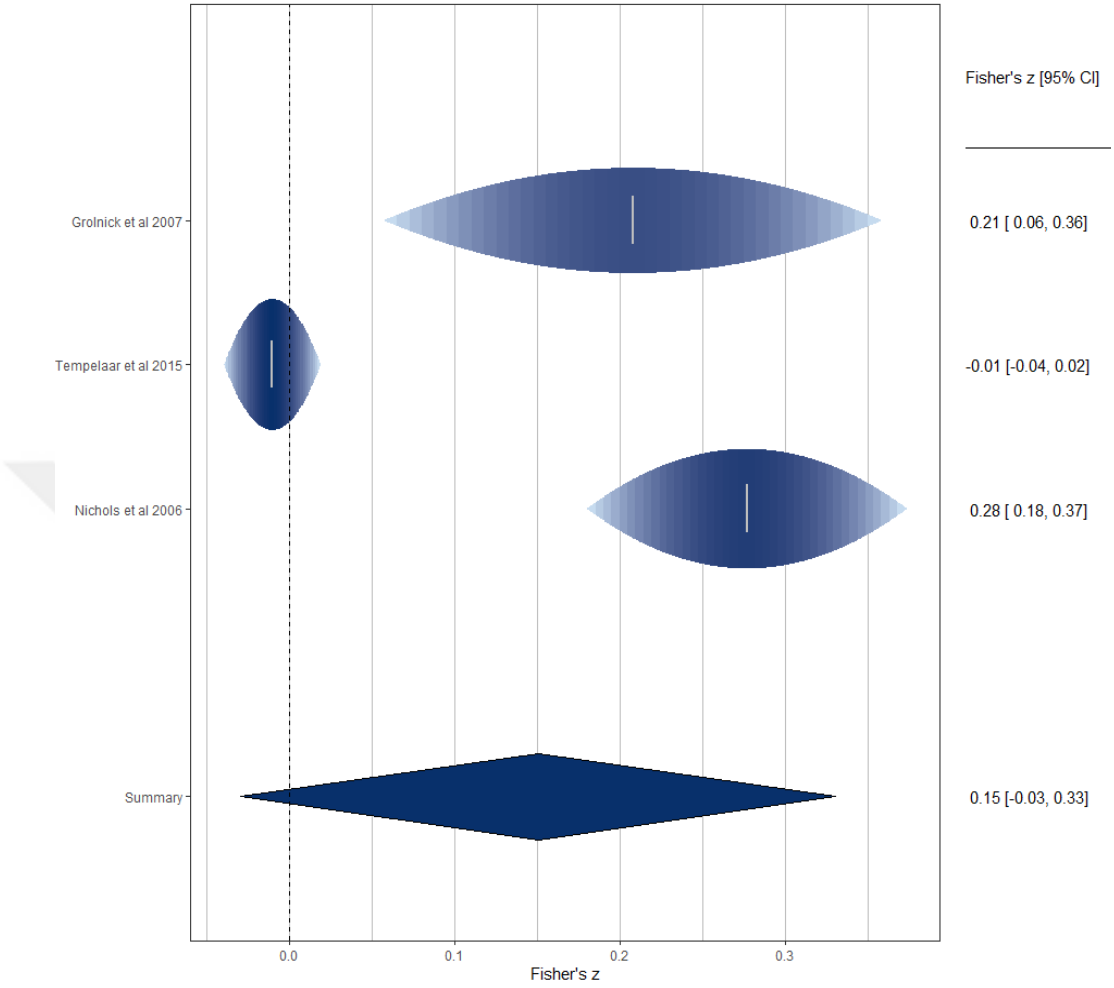
Rainforest Plot for the Relation between Growth Mindset and External Regulation



Note. The effect size value shown in the rainforest plot is in *Fisher's z* metric. The back-transformed value is $r = -.05$ ($p = .62$, 95% CI [-.31, .21]).

Figure 12

Rainforest Plot for the Relation between Fixed Mindset and External Regulation



Note. The effect size value shown in the rainforest plot is in *Fisher's z* metric. The back-transformed value is $r = .15$ ($p = .24$, 95% CI [-.24, .50]).

Extrinsic Motivation and Mindset Beliefs

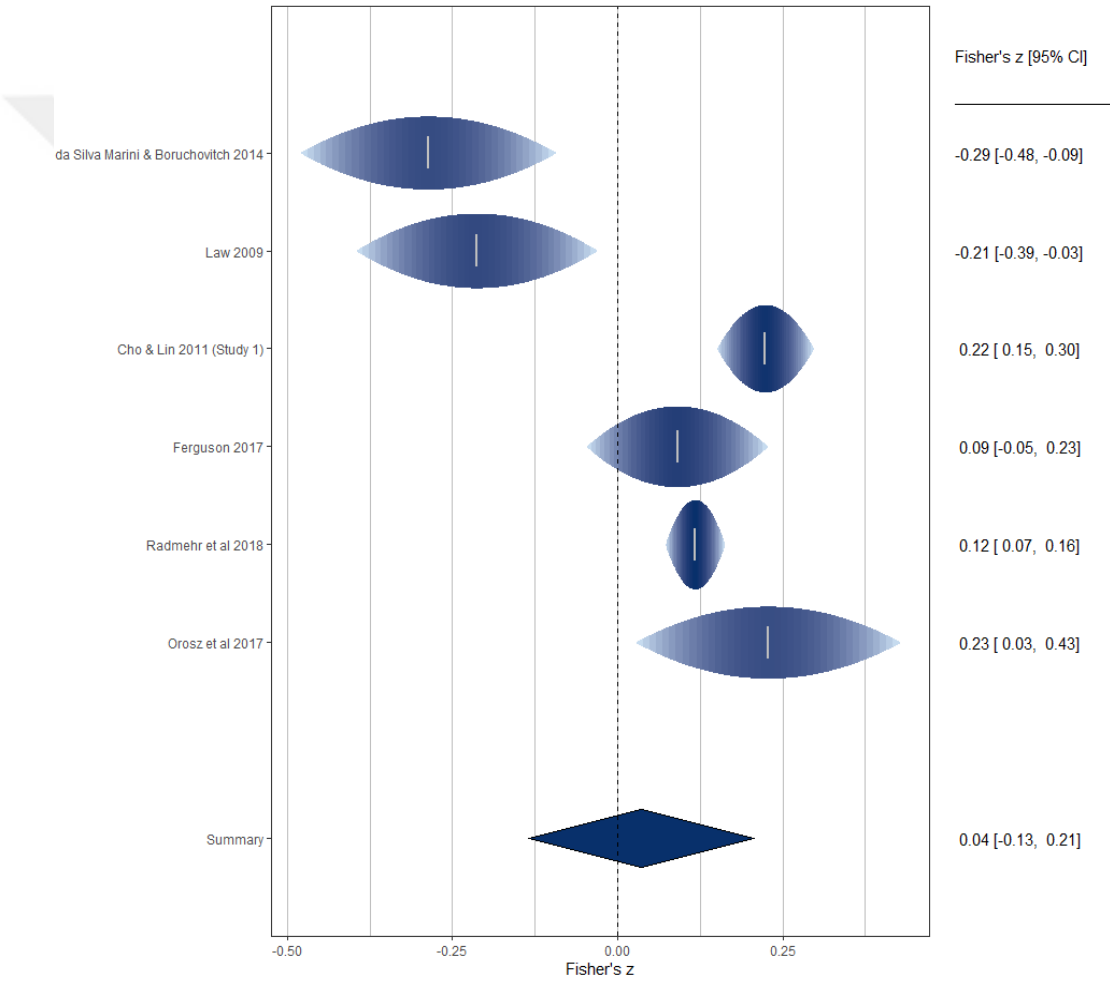
As for the relationship between growth mindset beliefs and extrinsic motivation, six individual effect sizes were obtained, which were pooled from four positive and two negative correlations. The average effect size was found to be $r = .04$ ($p = .70$, 95% CI [-.19, .25]), implying that there is no significant relationship between individuals' growth mindset beliefs and extrinsic motivation (see Figure 13 for the regarding rainforest plot). For this relationship, effect sizes showed a high

proportion of variability ($I^2 = 93.58$) and a statistically significant Cochran's test value ($Q = 39.34$, $p < .001$)

It should be noted that I could not perform a meta-analysis for the relationship between fixed mindset beliefs and extrinsic motivation, as only one individual effect size was extracted for this relationship ($n = 1$).

Figure 13

Rainforest Plot for the Relation between Growth Mindset and Extrinsic Motivation



Note. The effect size value shown in the rainforest plot is in *Fisher's z* metric. The back-transformed value is $r = .04$ ($p = .70$, 95% CI [-.19, .25]).

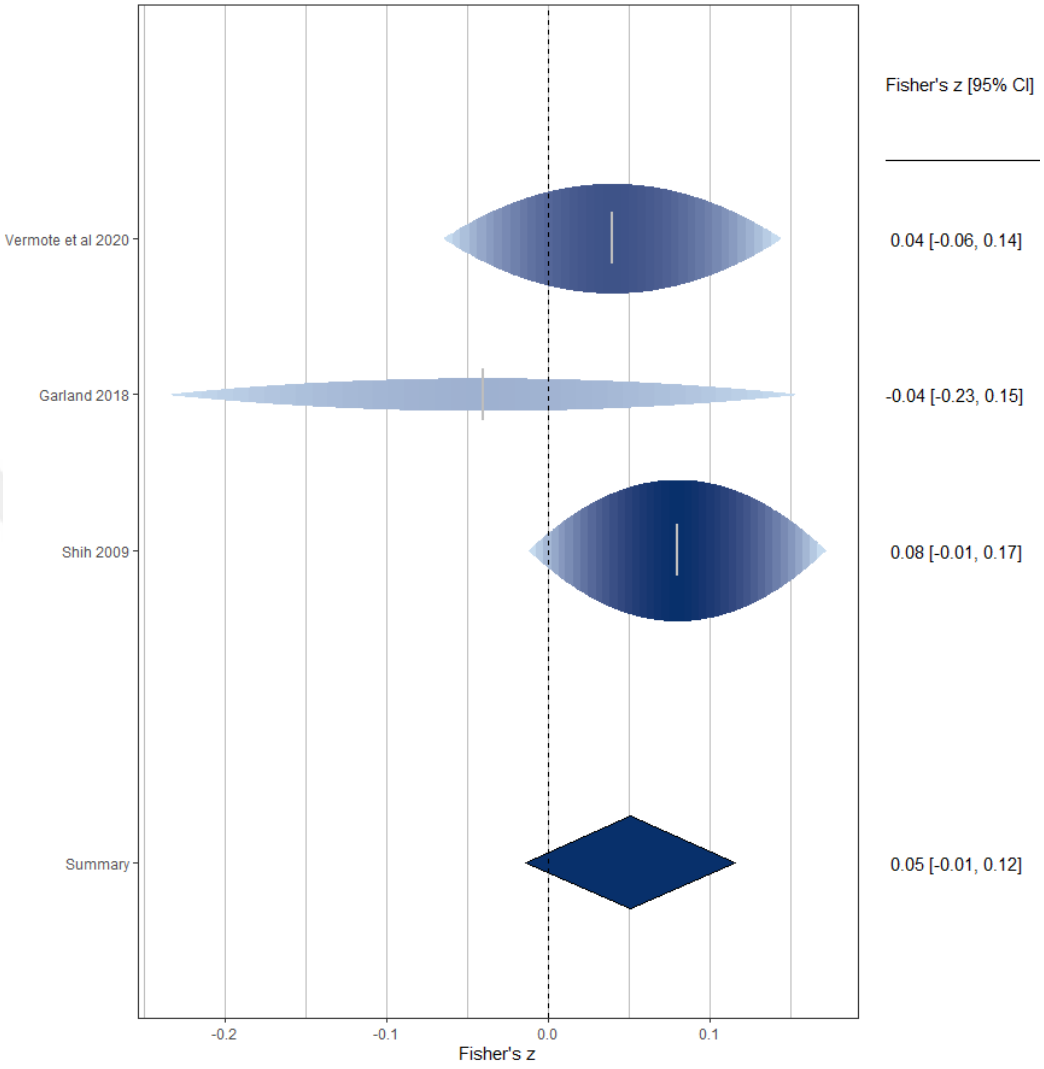
Controlled Motivation and Mindset Beliefs

As for the relationship between growth mindset beliefs and controlled motivation, three individual effect sizes were obtained from one negative and two positive correlations. The overall effect size was found to be $r = .05$ ($p = .26$, 95% CI [-.09, .19]), indicating a non-significant relationship between growth mindset beliefs and controlled motivation (see Figure 14 for the rainforest plot). The total I^2 value was found to be 0 % and Cochran's Q value was found to be non-significant, indicating homogeneity in effect sizes.

The meta-analysis performed for the relationship between fixed mindset beliefs and controlled motivation revealed a statistically significant relationship ($r = .15$, $p < .05$, 95% CI [.03, .26]), based on three effect sizes, all of which were positive (see Figure 15 for the regarding rainforest plot). However, as for the variation in the effect sizes for the relationship between fixed mindset beliefs and controlled motivation, Cochran's Q test value was not found to be statistically significant, which can also be attributed to the small number of effect sizes ($n = 3$). Furthermore, the total amount of I^2 value was found to be 39.45 %, indicating a small proportion of heterogeneity in the effect sizes across studies.

Figure 14

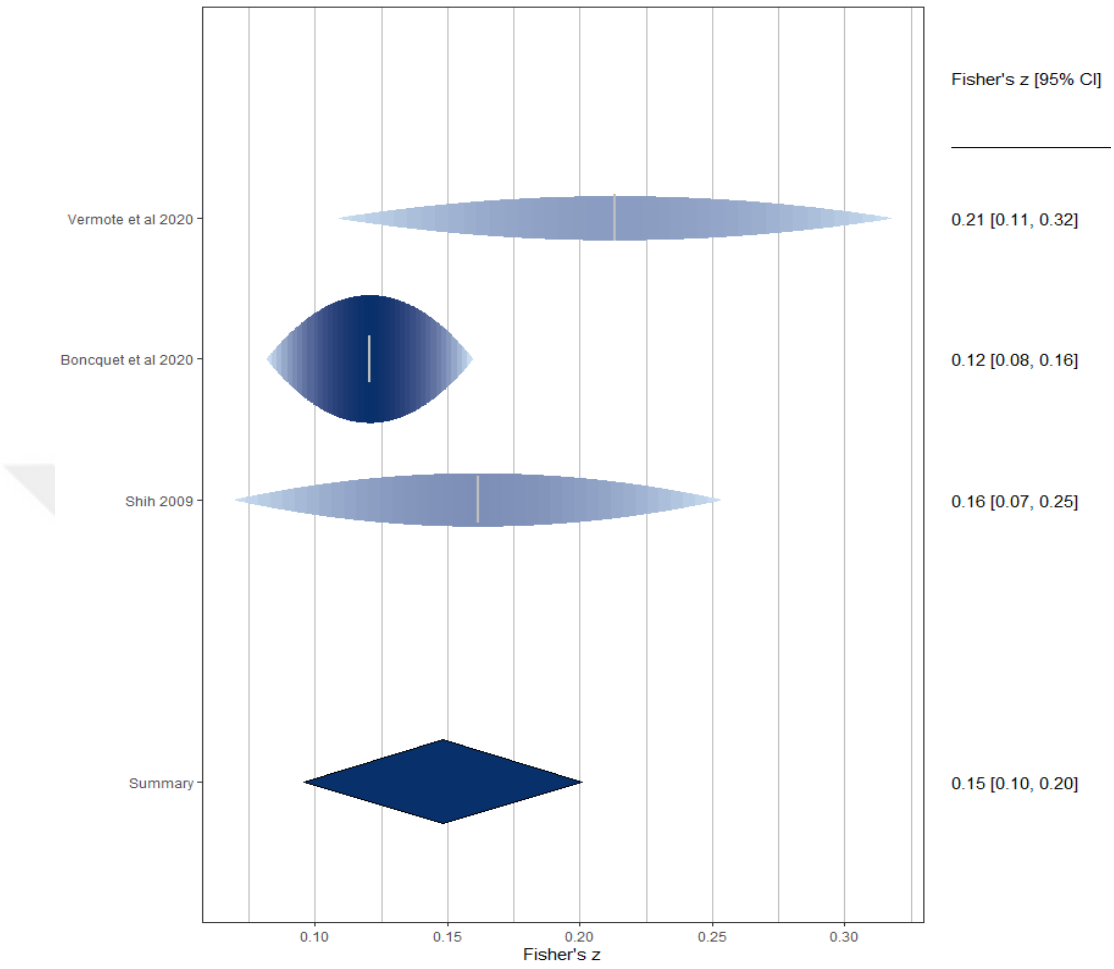
Rainforest Plot for the Relation between Growth Mindset and Controlled Motivation



Note. The effect size value shown in the rainforest plot is in *Fisher's z* metric. The back-transformed value is $r = .05$ ($p = .26$, 95% CI [–.09, .19]).

Figure 15

Rainforest Plot for the Relation between Fixed Mindset and Controlled Motivation



Note. The effect size value shown in the rainforest plot is in *Fisher's z* metric. The back-transformed value is $r = .15$ ($p < .05$, 95% CI [.03, .26]).

Moderator Analyses

When a high proportion of heterogeneity in the effect sizes is uncovered, researchers are recommended to explore the reasons behind this variability through meta-regression analyses (Borenstein et al., 2021). Given that study-level factors and the effect sizes serve as predictors and the criterion variables, respectively, in a meta-regression (Cooper et al., 2009), I investigated whether the strength of the relationships between individuals' mindset beliefs and different types of motivation

differ based on two potential moderators: the culture of the participants (i.e., Eastern or Western) and the mindset subject domain (e.g., language, science, or math). To this end, I performed three-level random-effects meta-regressions using the REML estimation method to make assumptions regarding the variability revealed in the effect sizes across cultures and subject domains. Following Deeks et al.'s (2022) advice to only run meta-regressions when there are at least 10 effect sizes, I only performed meta-regressions for the relationships between mindset beliefs and the identified regulation group, as well as for those between mindset beliefs and the intrinsic motivation group.

Tables 8 and 9 present the results of meta-regressions. While the relationships between well-internalized types of motivation groups (intrinsic and identified groups) and fixed mindset beliefs were not significantly moderated by the mindset domain, those between growth mindset beliefs varied depending on the domain. More specifically, the effect was stronger for language (intrinsic; r = .589, 95% CI = [.445, .703]; identified; r = .589, 95% CI = [.397, .731]) than for general education (intrinsic; r = .164, 95% CI = [.096, .230], identified; r = .186, 95% CI = [.107, .263]), math (intrinsic; r = .279, 95% CI = [.139, .408]; identified; r = .283, 95% CI = [.169, .389]), and science (intrinsic; r = .127, 95% CI = [-.087, .329], identified; k =0). Another statistically significant moderator was the culture of the participants. In the same vein as the moderating effect of the subject domain, culture significantly moderated the relationships between well-internalized motivations and growth mindset beliefs, but not fixed mindset beliefs. The results indicated that there was a larger effect in Eastern cultures (intrinsic; r = .397, 95% CI = [.292, .492]; identified; r = .376, 95% CI = [.237, .507]) compared to Western cultures (intrinsic; r = .144, 95% CI = [.070, .217]; identified; r = .196, 95% CI = [.108, .282]).

Table 8

Results for the Moderating Effect of the Mindset Domain

					95% CI	Moderator test		Residual heterogeneity	
	n	β	*SE*	*r*	Lower	Upper	*F* (*df1*, *df2*)	*p*	*Q* (*df*)	*p*
GM &Intrinsic										
Mindset Domain							9.01(3,25)	.0003	264.46(25)	< .001
General	21	.165	.034	.164	.096	.230				
Language	2	.511	.101	.589	.445	.703				
Math	4	.121	.079	.279	.139	.408				
Science	2	–.038	.109	.127	–.087	.329				
GM & Identified										
Mindset Domain							7.74(2,17)	.004	182.48(17)	< .001
General	12	.188	.038	.186	.107	.263				
Language	1	.488	.127	.589	.397	.731				
Math	7	.103	.069	.283	.169	.389				
FM & Intrinsic										
Mindset Domain							3.36(3,11)	.059	18.19(11)	.08
General	10	–.062	.014	–.062	–.093	–.031				
Language	1	.069	.041	.007	–.077	.091				
Math	3	–.066	.033	–.128	–.191	–.064				
Science	1	–.053	.077	–.115	–.274	.051				
FM & Identified										
Mindset Domain							0.16(1,7)	.7006	73.19(7)	< .001
General	8	.004	.069	.004	–.159	.166				
Math	1	–.074	.184	–.070	–.441	.321				

Note. GM = Growth Mindset and FM = Fixed Mindset

Table 9

Results for the Moderating Effect of Culture

					95% CI	Moderator test		Residual heterogeneity	
	n	β	*SE*	*r*	Lower	Upper	*F* (*df1*, *df2*)	*p*	*Q* (*df*)	*p*
GM &Intrinsic										
Culture							16.03(1,27)	.0004	271.75(27)	< .001
East	8	.420	.058	.397	.292	.492				
West	21	–.275	.069	.144	.070	.217				
GM & Identified										
Culture							5.38(1,18)	.0324	208.52(18)	< .001
East	4	.395	.073	.376	.237	.500				
West	16	–.197	.085	.196	.108	.282				
FM & Intrinsic										
Culture							0.02(1,13)	.8829	28.73(13)	.007
East	1	–.080	.066	–.080	–.219	.063				
West	14	.010	.068	–.070	–.100	–.040				
FM & Identified										
Culture							0.17(1,7)	.6928	73.12(7)	< .001
East	1	–.070	.167	–.070	–.434	.313				
West	8	.074	.181	.004	–.159	.167				

Note. GM = Growth Mindset and FM = Fixed Mindset

Publication Bias and Sensitivity Analyses

Upon inspecting the funnel plot of the relationship between effect size and standard error, Egger's regression intercept test (Egger et al., 1997) and Begg and Mazumdar's (1994) rank correlation test were computed to further explore publication bias when at least 10 effect sizes were available, as suggested by Van Aert et al. (2019). No substantial indications of publication bias were found (see Table 10). The funnel plots are presented in Appendix D.

Table 10

Results of Publication Bias Tests

	Egger's regression test		Begg's rank correlation test		Test of excess significance			
Relationship	*t*(*df*)	*p*	*τ*	*p*	*O* (total)	*E*	*O/E*	*p*
GM and Intrinsic	0.09(24)	.93	–.07	.63	20(26)	19.39	1.03	.49
GM and Identified	0.77(14)	.46	–.02	.96	13(16)	13.17	0.99	.69
FM and Intrinsic	–0.85 (10)	.41	–.23	.30	6(12)	5.02	1.19	.37

Note. GM = Growth Mindset and FM = Fixed Mindset; *τ* = Kendall's tau, *O* = observed number of significant findings (out of total findings), *E* = expected number of significant findings, *O/E* = ratio of observed and expected significant findings.

By performing the leave-one-out analysis, I found no evidence to imply that individual studies influenced the summary effects significantly, pointing to the robustness of the findings.

Summary of the Results of Study 1

The results of the three-level random-effects model revealed small to medium but robust correlations between mindset beliefs and motivation groups. Specifically,

the highest effect sizes appeared in the relationships between growth mindset beliefs and the well-internalized motivation groups (intrinsic, $n = 29$, $r = .22$, $p < .001$; identified, $n = 20$, $r = .25$, $p < .001$). However, the effect sizes were found to be non-significant in the relationships between growth mindset and the less internalized forms of motivation (introjected, $n = 5$, $r = .06$, ns; external, $n = 5$, $r = –.05$, ns).

As for the effect sizes extracted from the correlations between fixed mindset beliefs and well-internalized types of motivation, two relationships were found to be statistically significant (intrinsic, $n = 15$, $r = – .07$, $p < .001$; autonomous, $n = 5$, $r = – .11$, $p < .05$). The only significant effect size emerged in the relationship between fixed mindset and poorly internalized types of motivation was in the relationship between fixed mindset and controlled motivation ($n = 3$, $r = .15$, $p < .05$). These results should be interpreted cautiously considering the small number of effect sizes pooled for certain relationships.

Results of Study 2

Preliminary Results

Table 11 below presents the descriptive statistics computed for the variables under investigation, as well as the manifest and latent correlations between them. Significant correlations ranging from small to high in magnitude were found between instructors' fixed teaching mindsets, three regulatory styles of teaching motivation (i.e., intrinsic, identified, and external regulations), and three need-supportive teaching styles (i.e., autonomy-supportive teaching, competence-supportive teaching, and relatedness-supportive teaching), indicating the presumed relationships among these constructs.

Of note, introjected regulation of teaching motivation was not significantly correlated with either fixed teaching mindsets or need-supportive teaching styles.

Table 11

Descriptive Statistics, Bivariate, and Manifest Correlations

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1. Fixed Teaching Mindset	2.29	0.86	-	.15**	.03	−.25***	−.24***	−.28***	−.28***	−.21***
2. External Regulation	2.45	0.75	.21***	-	.35***	−.12*	−.16**	−.18***	−.21***	−.17***
3. Introjected Regulation	3.74	0.79	.02	.40***	-	.27***	.12*	.07	.009	.09
4. Identified Regulation	4.43	0.49	−.35***	−.21***	.43***	-	.72***	.37***	.42***	.57***
5. Intrinsic Regulation	4.24	0.62	−.30***	−.22***	.20***	.88***	-	.38***	.44***	.59***
6. Autonomy-Supportive Teaching	3.82	0.40	−.41***	−.26***	.15*	.65***	.63***	-	.45***	.55***
7. Competence-Supportive Teaching	3.90	0.43	−.35***	−.31***	.11	.59***	.58***	.81***	-	.54***
8. Relatedness-Supportive Teaching	4.00	0.45	−.26***	−.27***	.21***	.81***	.81***	.88***	.77***	-

Note. N = 348; The upper-diagonal matrix shows the bivariate and the lower-diagonal one shows the manifest correlations. *** p < .001, ** p < .01, * p < .05.

Main Results

I validated the measurement model first, before moving on to the structural model. The results of the measurement model indicated an acceptable fit for the data as follows: $\chi^2(1139) = 2276.82$, $p < .001$, TLI = .93, CFI = .94, RMSEA = .05, 90% CI [.050, .057], SRMR = .07. Afterwards, I tested the hypothesized structural model (see Figure 1) by including gender, the response mode of participants, and the university type they work for as covariates. The fit of the initial structural model was acceptable: $\chi^2 (1269) = 2440.43$, $p < .001$, TLI = .93, CFI = .94, RMSEA = .05, 90% CI [.048, .055], SRMR = .07.

A closer inspection of path coefficients demonstrated that fixed teaching mindset beliefs significantly predicted all regulatory styles of teaching motivation (except for introjected regulation) in the anticipated directions, ranging from medium to large in magnitude. Contrary to my initial assumption, autonomy-supportive teaching style was predicted by none of the regulatory styles of teaching motivation, and no significant path emerged between controlled forms of teaching motivation (i.e., introjected and external regulations) and relatedness-supportive teaching style. Based on these results, I removed the non-significant paths from the model to eliminate free parameters and obtain a better model with a properly specified covariance structure (Kline, 2015).

After removing the non-significant paths, the final model also showed a good fit to the data: $\chi^2(1298) = 2543.61$, $p < .001$, TLI = .92, CFI = .93, RMSEA = .05, 90% CI [.051, .057], SRMR = .08. The standardized model results are depicted in Figure 16, suggesting that EFL instructors' fixed teaching mindset beliefs negatively predicted their intrinsic and identified regulations of teaching motivation ($\beta = –.49$, $p < .001$; $\beta = –.55$, $p < .001$, respectively) and positively predicted their external

regulation of teaching motivation (β = .28, $p < .001$). Though this finding fully supports *Hypothesis 1a*, indicating that instructors with fixed teaching mindset beliefs are less likely to experience autonomous forms of teaching motivation (i.e., intrinsic and identified regulations), it partially supports *Hypothesis 1b* as fixed teaching mindset beliefs positively predicted only external regulation of teaching motivation, but not the introjected regulation of motivation.

In partial support of *Hypothesis 2a* and *Hypothesis 2b*, EFL instructors' competence-supportive teaching was positively predicted by their intrinsic regulation (β = .54, $p < .001$) and negatively predicted by their external regulation (β = –.09, $p = .03$) of teaching motivation. With respect to instructors' relatedness-supportive teaching style, only *Hypothesis 2a* was partially supported. More specifically, although relatedness support was predicted by intrinsic motivation to teach (β = .58, $p < .001$), the path from identified regulation was found to be non-significant (β = .20, $p = .07$). Contrary to my expectation, autonomy-supportive teaching style was predicted by none of the regulatory styles of teaching motivation, but only by fixed teaching mindset beliefs (β = –.68, $p < .001$).

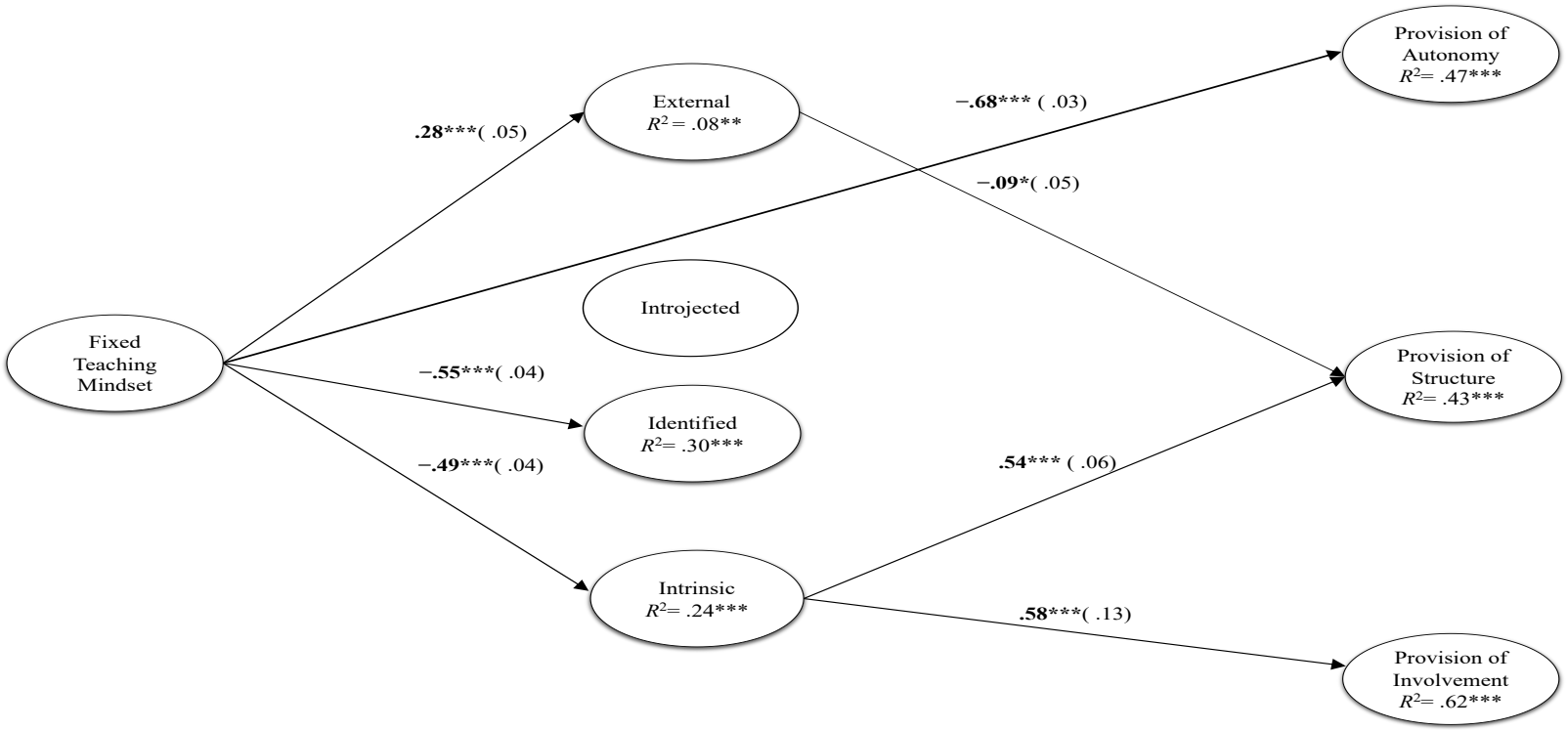
Regarding *Hypothesis 3*, the indirect effects showed that intrinsic teaching motivation mediated the negative relationship between instructors' fixed mindset beliefs and relatedness-supportive teaching style (β = –.29, 95% CI [–.41, –.17], $p < .001$). Furthermore, the results of the mediation analysis also demonstrated that both external (β = −.03, 95% CI [−.05, −.001], $p = .043$) and intrinsic regulations (β = −.27, 95% CI [−.33, −.21], $p < .001$) mediated the negative relationship between fixed teaching mindset beliefs and competence-supportive teaching style.

With regard to the covariates, the model results did not reveal any significant paths between the response mode of the participants and need-supportive teaching

styles. In other words, completing the survey on-site or online yielded no significant differences in instructors' responses. Further and in line with the prior research (Aelterman et al., 2014), female EFL instructors scored significantly higher in relatedness-supportive ($\beta = .15$, $p = .005$) and competence-supportive ($\beta = .13$, $p = .014$) teaching styles compared to their male counterparts. Moreover, EFL instructors teaching at state universities were found to engage in more competence-supportive instructional behaviors ($\beta = -.13$, $p = .015$), vis-à-vis their colleagues teaching at private universities.

Figure 16

Results of the Tested Structural Model



Note. Factor indicators, covariates, and (residual) correlations between regulatory styles of teaching motivation as well as between need-supportive teaching styles were modeled, but not depicted to maintain presentation simplicity; All coefficients are standardized; Standard errors are presented in brackets.
*** $p < .001$, ** $p < .01$, * $p < .05$

CHAPTER 5: DISCUSSION

"The teacher is the heart of the educational system" —Sidney Hook

Introduction

Although teachers are widely acknowledged for being the heart of education systems by fostering student motivation and, in turn, desired learning outcomes (Ahn et al., 2021; Bardach & Klassen, 2021), what factors make their instruction more effective is often neglected. What kind of beliefs keep them committed to teaching? What kind of motivation drives them to adopt a motivational teaching style? Intrigued by these questions, I explored the role of EFL instructors' beliefs about the malleability of teaching ability and quality of teaching motivation in adopting motivating teaching styles to meet students' basic psychological needs (i.e., need-supportive instruction). To this end, two separate yet complementary studies were carried out. In the following sections of this final chapter, I will present the overview of these two studies, discuss their major findings, and offer implications both for practice and future research.

Study 1: Meta-Analytic Review

Overview of Study 1

Along with Mindset Theory (MT; Dweck, 2006), Self-Determination Theory (SDT; Ryan & Deci, 2017) and Situated Expectancy-Value Theory (SEVT; Eccles & Wigfield, 2020) seek ways to explicate how educators and learners exhibit perseverance in the face of challenges and remain committed to what they are striving to accomplish.

By internalizing the reason for performing a certain behavior, individuals show commitment to completing it with a sense of volition. From the perspective of SDT, individuals tend to do so because they develop well-internalized types of motivation, and from the perspective of SEVT, they find intrinsic, attainment, or utility value in the internalized behavior. Despite approaching the motivational processes with different theoretical lenses, SDT's well-internalized types of motivation and SEVT's task values have apparent conceptual overlaps in their operational definitions, as illustrated in Table 5. Moreover, they are all considered indicators of the adaptive process of internalization.

According to Mindset Theory (MT), when people see their capacities as improvable (when they subscribe to a growth mindset), they are more likely to develop a well-functioning adaptation mechanism according to the situational requirements. I argue that such an adaptation mechanism facilitates the development of interest and enjoyment in improving academically or professionally, as well as enhances the degree of internalization. For instance, subscribing to a growth mindset could promote well-internalized types of motivation from the SDT perspective and intrinsic, attainment, or utility value of the task from the SEVT perspective. However, if students and/or teachers see their abilities as fixed entities (when they subscribe to a fixed mindset), they are less likely to develop a well-functioning adaptation mechanism and therefore be more inclined to experience a lower degree of internalization since they don't believe they can improve their learning or teaching abilities. As such, they are often driven by poorly internalized types of motivation (being motivated out of external rewards, threats, or ego concerns).

To explore whether my argument has empirical evidence, I decided to statistically aggregate findings from prior studies investigating the nature of the

relationships between growth (or fixed) mindset beliefs and different types of motivation (i.e., well-internalized types of motivation along with task values, and poorly internalized types of motivation) through the theoretical frameworks of MT, SDT, and SEVT. Considering the conceptual and semantic similarities, I combined the overlapping constructs of SDT and SEVT (i.e., intrinsic and identified regulations and intrinsic, attainment and utility values) under two groups (i.e., intrinsic and identified) of well-internalized motivation to attain theoretical integration, statistical power, and a higher level of parsimony as Pekrun (2024) proposed. To review the relevant literature systematically, I adhered to the guidelines provided in the PRISMA statement (Page et al., 2021) to ensure transparency, consistency, and reproducibility of the methods and findings. This systematic meta-analytical review was conducted to seek answers to the following research questions and corresponding hypotheses:

RQ 1: Do growth mindset beliefs relate to different types of motivation in educational contexts?

H1a: Growth mindset beliefs would positively predict well-internalized types of motivation (intrinsic regulation, intrinsic value, interest value, identified regulation, attainment value, utility value, and autonomous motivation) in educational contexts.

H1b: Growth mindset beliefs would negatively predict poorly internalized types of motivation (introjected regulation, external regulation, controlled motivation, and extrinsic motivation) in educational contexts.

RQ 2: Do fixed mindset beliefs relate to different types of motivation in educational contexts?

H2a: Fixed mindset beliefs would negatively predict well-internalized types of motivation (intrinsic regulation, intrinsic value, interest value, identified regulation, attainment value, utility value, and autonomous motivation) in educational contexts.

H2b: Fixed mindset beliefs would positively predict poorly internalized types of motivation (introjected regulation, external regulation, controlled motivation, and extrinsic motivation) in educational contexts.

RQ 3: Are the relationships between mindset beliefs and different types of motivation moderated by certain sample, contextual, or study characteristics?

H3: The relationships between mindset beliefs and different types of motivation would be moderated by certain sample, contextual, or study characteristics.

The final pool of studies comprised 112 effect sizes from 45 empirical studies (N = 27, 895 participants) in educational contexts, which were published between 2006 and 2021. As some studies reported multiple correlations between mindsets and more than one type of motivation (Tempelaar et al., 2015), I adopted a random-effects model to report the sampling variance at three levels: Level 1 = sampling variance, Level 2 = within-study variance, and Level 3 = between-study variance (Assink & Wibbelink, 2016). All effect sizes were interpreted as proposed by Funder and Ozer (2019). According to their benchmarks, the magnitude of the relationships revealed in the first study was small to medium. In the following section, I will be discussing the major findings of the meta-analytical review corresponding to each hypothesis formulated for the first study.

Discussion of Major Findings of Study 1

The relations between growth mindset beliefs and types of motivation in education (H1a & H1b)

Consistent with my hypothesis (*H1a*), the largest effect sizes were revealed in the positive relationships between growth mindset beliefs and well-internalized types of motivation (i.e., identified and intrinsic groups, and autonomous motivation). More precisely, a medium effect size was found in the positive relationship between growth mindset beliefs and the identified group, encompassing the identified regulation, attainment value, and utility value. This finding suggests that when students and teachers subscribe to a growth mindset, they are more likely to act out of personal importance and conscious valuing. Likewise, a medium-sized weighted average effect was discovered in the positive relationship between growth mindset beliefs and the intrinsic group, including intrinsic motivation, intrinsic value, and interest value, which also confirms my hypothesis (*H1a*). This finding indicates that learners and educators holding growth mindset beliefs tend to act for the sake of the task itself since they find it interesting and enjoyable. Furthermore, some studies included in the present meta-analysis (Vermote et al., 2020) calculated an overall score for autonomous motivation by combining the subscales of intrinsic and identified regulations or calculating the Relative Autonomy Index (RAI) by contrasting the relative amount of autonomous and controlled types of motivation, resulting in a new scale where more positive scores indicate autonomous motivation and more negative scores indicate controlled motivation (Griful-Freixenet et al., 2021). Based on the average correlation pooled from these studies ($k = 5$), the relationship between growth mindset beliefs and autonomous motivation was also

found statistically significant with a medium effect size, which provides additional support to my hypothesis (*H1a*).

Taken together, these findings are in line with those of a previous meta-analysis conducted within the sports and physical education (PE) context (Vella et al., 2016). The results therein revealed a positive relationship between growth mindset beliefs and intrinsic motivation with a large effect size ($r = .40$, $p < .001$; $n = 6$). In a similar vein, the researchers also reported a positive relationship between growth mindset beliefs and the RAI scale ($r = .37$, $p < .001$; $n = 7$), where more positive scores indicated autonomous motivation (Ryan & Connell, 1989). Based on the meta-analytic evidence revealed from the present study focusing on the general academic domain and the evidence revealed in the sports and PE domains (Vella et al., 2016), it can be concluded that regardless of the context when people believe there is room for improvement in their abilities, they tend to experience a higher degree of internalization. Through this internalization, they act out of personal importance, relevance, interest, or enjoyment. In essence, this finding suggests the facilitative role of a growth mindset in the internalization of academic reasons.

On the other hand, contrary to my expectation (*H1b*), no relationship between growth mindset beliefs and poorly internalized types of motivation was found to be statistically significant, indicating that subscribing to a growth mindset may not be related to experiencing poorly internalized types of motivation in educational contexts. Despite being non-significant, it should be noted that the relationship between growth mindset beliefs and external regulation was revealed in the hypothesized direction, which is negative. More importantly, given that the correlations between growth mindset beliefs and poorly internalized types of motivation are based on a limited number of effect sizes ranging from three to six, it

does not seem reasonable to reach definitive conclusions regarding the strength or direction of these relationships.

When considered thoroughly, particularly in academic contexts, students are often externally motivated to put effort into their studies due to certain policies and practices that place a strong emphasis on high-stakes standardized tests (Ryan & Deci, 2020). For example, most people would probably agree that EFL learners with a growth mindset would also believe they can succeed on the Test of English as a Foreign Language (TOEFL) if they invest more effort in improving their language skills. Reasonably, students might link achieving a high score on TOEFL to enabling them to study or work abroad (i.e., the outcome reward). As such, it can be assumed that irrespective of their mindset beliefs, students or instructors can also be motivated through poorly internalized types of motivation due to external requirements of the educational system.

Despite not investigating how mindsets relate to motivation, Yu and McLellan (2020) revealed that British students with growth mindset beliefs performed better on a national high-stakes exam (i.e., the General Certificate of Secondary Education) compared to those with fixed mindset beliefs. Presumably, the growth-minded students therein opted to *somewhat* internalize the importance of exerting effort to get a higher score on such an exam, which can increase their chances of university admission. Therefore, future meta-analytic evidence could yield more robust results about the relationships between growth mindset beliefs and controlled types of motivation with a greater number of effect sizes.

The relations between fixed mindset beliefs and types of motivation in education (H2a & H2b)

My hypothesis regarding the relationships between fixed mindset beliefs and well-internalized types of motivation (*H2a*) was partially supported, as two out of three relationships were found to be statistically significant. To be more precise, while a small effect size emerged in the negative relationship between fixed mindset beliefs and autonomous motivation, a relatively smaller effect size was found in the negative relationship between fixed mindset beliefs and the intrinsic category, which includes intrinsic motivation, intrinsic value, and interest value. These results suggest that when students and/or teachers adopt a fixed mindset, they are less likely to do an activity for its own sake or its importance due to experiencing a lower degree of internalization. Though smaller in magnitude, these findings are also aligned with the results of the prior meta-analysis conducted in the PE domain (Vella et al., 2016; autonomous motivation: $r = -.32$, $p < .001$; $n = 7$; intrinsic motivation: $r = -.12$, $p < .05$; $n = 6$).

Regarding my hypothesis about the relationships between fixed mindset beliefs and poorly internalized types of motivation, only the positive relationship between a fixed mindset and controlled motivation was found statistically significant with a small average effect size, which provided partial support for my hypothesis (*H2b*). This finding indicates that fixed-minded learners or educators are more likely to perform a task to please others (e.g., teachers, supervisors, and parents) or to avoid feelings of guilt or embarrassment. In the absence of such factors, I suppose fixed-minded individuals would probably give up the educational task upon encountering any challenges. Though statistically non-significant, it is also important to mention that the relationship between fixed mindset beliefs and external regulation was in the

hypothesized direction, indicating the need for future meta-analytic reviews incorporating a greater number of effect sizes. For example, I could not compute an average effect size for the relationship between fixed mindset beliefs and extrinsic motivation as there was only one single effect size retrieved from the literature search. Given the very small number of effect sizes ranging from one to three, any interpretation regarding the linkages between fixed mindset beliefs and poorly internalized types of motivation could be misleading.

Moderators of the relationships between mindset beliefs and different types of motivation in education (H3)

As for the moderating roles of study-level characteristics in the relationships between mindset beliefs and types of motivation, my final hypothesis (*H3*) was partially verified by the results obtained for the relationships where an adequate number of samples were available. Adhering to the recommendation made by Deeks et al. (2022) that moderator analyses are most appropriate when analyzing at least 10 effect sizes, I opted to perform meta-regressions solely for the relationships between mindset beliefs and both the identified regulation and intrinsic motivation groups in which the number of effect sizes ranged from 9 to 29. Considering the adequate number of study-level effect sizes, I investigated whether the cultural differences (i.e., Western versus Eastern culture) and the domain-specific differences (e.g., science, language) significantly influenced the strength and direction of these relationships. The results of moderator tests showed that while the relationships between growth mindset beliefs and well-internalized types of motivation (i.e., identified and intrinsic groups) varied depending on the culture and study domain, those with fixed mindset beliefs did not, which partially supports my hypothesis.

As for the moderating role of culture, the effect sizes were found to be stronger in Eastern culture as opposed to Western culture, indicating that students and teachers from Eastern cultures might be more inclined to develop a growth mindset and subsequently well-internalized types of motivation, which could be attributed to factors like collectivism, societal values, or a stronger emphasis on effort and self-improvement (Lou & Noels, 2019).

This finding is in line with prior studies exploring the influence of cultural differences on motivational processes. For instance, Heine et al. (2001) conducted a series of delicately designed experiments and revealed that Japanese students (i.e., those from Eastern culture) adopted more growth mindset beliefs, experienced higher motivation for self-improvement, and showed greater persistence following failure compared to North American students (i.e., those from Western culture). Likewise, in another comprehensive experimental study, Rattan, Savani, et al. (2012) reported that Indian students (i.e., belonging to Eastern culture) believed in the universal potential of improving intelligence more than did European American students (i.e., belonging to Western culture), indicating the greater importance given to self-improvement in East cultures and positive self-image or self-representation in West cultures.

Furthermore, prior research suggests that individuals' mindset beliefs vary according to the academic domain (Dweck et al., 1995; Gunderson et al., 2017; Heyder et al., 2021; Muradoglu et al., 2023). Therefore, I also opted to investigate whether the relationships between mindset beliefs and different types of motivation varied as a function of the mindset domain (i.e., domain-specific beliefs about the malleability of intellectual abilities). The results of meta-regressions revealed notable differences in the relationships between growth mindset beliefs and well-internalized

motivation types across different academic domains (i.e., science, general, language, and math domains). Particularly, the relationship between growth mindset beliefs and the intrinsic motivation group (the combined group including intrinsic motivation, intrinsic value, and interest value) is the strongest in the language domain and the weakest in the science domain compared to general education (i.e., domain-unspecific: studies measuring the constructs not specific to a certain academic discipline) and math domains. This finding is indeed in line with what previous studies have documented. For instance, Gunderson et al. (2017) revealed that students are more likely to believe mathematical ability is a more fixed trait than particular language abilities such as reading and writing. In a recent meta-analytic review, Elahi Shirvan et al. (2024) explored the relations between mindset beliefs in the second language domain and learning outcomes. Based on the results, researchers pointed out the important role of holding growth mindset beliefs in cultivating students' motivation to learn a second language (L2) by reporting an overall medium effect size for the relationships between growth mindset beliefs in the language domain and desirable L2 learning outcomes.

Study 2: Cross-sectional Correlational Study

Overview of Study 2

Following a thorough systematic review of the previous studies investigating the relationships between mindset beliefs and different types of motivation in educational contexts (Study 1), the results of multi-level meta-analyses demonstrated that well-internalized types of motivation relate much stronger to growth mindset beliefs than they do to fixed mindset beliefs. Consistent with my assumptions, the relationships between fixed mindset beliefs and well-internalized motivation types were found to be negative, and poorly internalized motivation types were found to be

positive. Overall, these findings from 45 empirical studies reporting 112 effect sizes pointed to theoretically expected linkages between mindset beliefs and types of motivation and aligned with the findings of a previous meta-analysis conducted in the physical education domain (Vella et al., 2016). The meta-analytical evidence yielded in Study 1 and the findings of previous research examining similar relations (Nalipay et al., 2021; Vermote et al., 2020) enabled me to develop the following research questions and corresponding hypotheses for Study 2, in which I explored the relationships between EFL instructors' fixed teaching mindset beliefs, qualities of teaching motivation, and their need-supportive teaching styles.

RQ 1: Do EFL instructors' fixed teaching mindset beliefs predict different qualities of their teaching motivation?

H1a: Fixed teaching mindset beliefs would negatively predict the autonomous forms (i.e., intrinsic and identified regulations) of teaching motivation.

H1b: Fixed teaching mindset beliefs would positively predict the controlled forms (i.e., introjected and external regulations) of teaching motivation.

RQ 2: Do EFL instructors' different qualities of teaching motivation predict their need-supportive teaching styles (autonomy-supportive, competence-supportive, and relatedness-supportive teaching)?

H2a: Instructors' autonomous forms of teaching motivation would positively predict their need-supportive teaching styles.

H2b: Instructors' controlled forms of teaching motivation would negatively predict their need-supportive teaching styles.

RQ 3: Are the relationships between fixed teaching mindset beliefs and need-supportive teaching styles partially mediated by autonomous and controlled forms of teaching motivation?

H3: The relationships between fixed teaching mindset beliefs and need-supportive teaching styles would be partially mediated by autonomous and controlled forms of teaching motivation.

To investigate whether the hypotheses formulated for the second study would be empirically confirmed, I conducted a correlational cross-sectional study by gathering data from 348 EFL instructors (261 female, 87 male; M_{age} = 38.47, *SD* = 9.22) teaching at the state or private universities in Türkiye through the following self-report data collection instruments: the Implicit Theories of Intelligence Scale (ITIS; Dweck et al., 1995), the Comprehensive Relative Autonomy Index (C-RAI; Sheldon et al., 2017), and the Teacher as a Social Context Questionnaire (TASC-Q; Belmont et al., 1988). To analyze the data, Structural Equation Modeling (SEM) was performed employing the WLSMV estimator due to the ordinal-categorical nature of Likert-type items (Finney & DiStefano, 2013). After revealing a satisfactory fit through the measurement model, I further tested how well the hypothesized structural model fit the data. In the following section, I will be discussing the major findings of the structural model corresponding to each hypothesis formed for the second study.

Discussion of Major Findings of Study 2

Relationships between fixed teaching mindset and qualities of teaching motivation (H1a & H1b)

Fully corroborating *H1a*, the results of the structural model testing showed that EFL instructors' fixed teaching mindset beliefs negatively predicted the autonomous forms (i.e., intrinsic and identified regulations) of teaching motivation. In partial agreement with *H1b*, fixed teaching mindset beliefs positively predicted the external regulation but not the introjected regulation of teaching motivation (i.e.,

teaching out of internal pressures, such as feelings of guilt or pride). This is a notable finding given the less internalized nature of external regulation relative to the more internalized nature of introjected regulation (Zhao et al., 2018). It seems that holding a fixed teaching mindset impedes the internalization process of the reasons for teaching. Taken together, these findings indicate that when EFL instructors do not believe they can improve their teaching ability, they are less likely to teach out of inherent interest and enjoyment (i.e., the intrinsic form of autonomous motivation) or teach out of personal meaning or values (i.e., the identified form of autonomous motivation), but more likely to teach out of external pressures such as administrative constraints or monetary rewards (i.e., the external form of controlled motivation). For externally motivated instructors, teaching could even be considered merely a means to earn their living, leading to a poor internalization of why they should teach optimally.

The positive relationship herein emerged between fixed mindset beliefs and controlled motivation is in line with those revealed in prior research conducted with teacher samples (Nalipay et al., 2021; Vermote et al., 2020) as well as with student samples (Boncquet et al., 2024). One potential explanation for this link is the detrimental role of holding fixed mindset beliefs in dealing with the daily challenges of academic or professional life. To take an example, teachers with a fixed mindset would probably struggle with attuning their instruction to the situational demands, as they lack a well-functioning adaptation system. As such, they would be less likely to enjoy teaching or find value in improving their teaching. Presumably, they would show reluctance to participate in professional development activities (Thadani et al., 2015) or resist adopting innovative instructional approaches (Rahimi et al., 2024) with the fear of losing the respect or approval of their supervisors, colleagues, or

students. Therefore, cultivating a growth mindset culture within pre-service and in-service teacher education programs is critical for ensuring that teachers teach English for intrinsic rather than extrinsic reasons.

Relationships between qualities of teaching motivation and need-supportive teaching styles (H2a & H2b)

The results of the structural model provided partial support for the hypotheses about the relationships between instructors' qualities of teaching motivation and need-supportive teaching styles (*H2a* & *H2b*). More specifically, contrary to my expectations, the results did not yield any significant links between qualities of motivation and autonomy-supportive teaching. In other words, EFL instructors' autonomy-supportive teaching was negatively and directly predicted by their fixed teaching mindset, irrespective of the quality of teaching motivation. This finding can also be read to mean that instructors with fixed teaching mindset beliefs are more likely to exhibit controlling teaching behaviors through which they impose their own demands and aspirations without considering learners' individual needs or perspectives (Aelterman & Vansteenkiste, 2023). Likewise, the negative and direct path from teachers' fixed mindset beliefs to autonomy support was also reported in a previous study investigating the relationships between teachers' mindset beliefs, self-efficacy beliefs, and autonomy-supportive practices (Leroy et al., 2007). Considering these findings together, the role of teachers' beliefs about the malleability of human capacities becomes clearer in adopting an autonomy-supportive teaching style. As such, a growth mindset intervention targeted at teachers seems highly promising, as it would also be instrumental in promoting autonomy-supportive instruction.

As for the presumed relationships between instructors' quality of teaching motivation and competence-supportive teaching, *H2a* and *H2b* were verified to some

extent. The results supported the hypotheses by revealing a negative relationship between external regulation and competence-supportive teaching, as well as a positive one between intrinsic regulation and competence-supportive teaching. Competence support (i.e., providing optimal challenges, scaffolding, and constructive feedback) is of great importance as it helps learners realize their potential (Patall et al., 2022). As assumed, the results herein imply that while EFL instructors teaching out of inherent interest opt to engage in more competence-supportive instruction, those teaching out of external pressures are less likely to support students' need for competence. However, contrary to my assumptions, neither identified nor introjected regulations of teaching motivation predicted EFL instructors' competence-supportive teaching style, indicating that teaching out of internal pressures or personal values does not necessarily shape their provision of structure (i.e., competence-supportive teaching). It should be noted that introjected regulation of teaching motivation showed no significant relationships with any style of need-supportive teaching. This remarkable finding aligns with the results of a previous study conducted with PE teachers in which Van den Berghe et al. (2014) reported no significant relationships between introjected regulation and three dimensions of need-supportive teaching. The consistency between the results of my study conducted with EFL teachers and those of another study conducted with PE teachers might imply a pattern. Nonetheless, further studies with experimental and longitudinal designs are needed to verify this.

With respect to the relationships between quality of teaching motivation and relatedness-supportive teaching, the results partially confirmed *H2a* yet yielded no corroborating support for *H2b*. More specifically, the relatedness-supportive teaching style was only predicted by intrinsic regulation of teaching motivation. The positive

linkage between teachers' intrinsic motivation and relatedness support was also reported in previous studies (Abós et al., 2018; Van den Berghe et al., 2014). This result is of no surprise, as educators driven by intrinsic reasons to teach would be more likely to build rapport with students, show genuine interest in students' concerns, and communicate a sense of unconditional positive regard, all of which facilitate the satisfaction of students' need for relatedness (Ahmadi et al., 2023). Inconsistent with *H2b*, controlled forms of teaching motivation did not predict relatedness support provided by instructors. One potential explanation for this finding is that instructors motivated by external factors might lack interest in developing meaningful relationships with students, as their reasons for teaching lie outside the core values of the teaching profession.

Partial mediating roles of quality of teaching motivation in linking fixed teaching mindset and need-supportive teaching styles (H3)

The results of the mediation test confirmed the last hypothesis of the second study (*H3*), which proposed that the quality of teaching motivation partially mediates the relationship between instructors' fixed teaching mindset beliefs and need-supportive teaching styles. To be more precise, while fixed teaching mindset beliefs had negative indirect relationships with competence-supportive and relatedness-supportive teaching through the intrinsic regulation of teaching motivation, they had a negative indirect relationship with competence-supportive teaching through the external regulation of teaching motivation. These results suggest that holding a fixed teaching mindset weakens an instructor's intrinsic motivation to teach, which in turn negatively influences their inclination toward competence- and relatedness-supportive teaching styles. Moreover, when instructors subscribe to a fixed teaching

mindset, they are more likely to teach due to external pressures, adversely impacting their engagement in competence-supportive teaching practices.

Taken together, EFL instructors with fixed teaching mindset beliefs are less likely to adopt need-supportive teaching practices. This finding is in line with previous research examining the links between teachers' mindset beliefs and need-supportive teaching styles (Leroy et al., 2007; Vermote et al., 2020). It is also important to note that instructors' fixed teaching mindset beliefs negatively and directly predicted their autonomy-supportive teaching style, whereas they had negative indirect relationships with their competence- and relatedness-supportive teaching styles through external and internal regulations of teaching motivation. These make sense, as a teacher with a fixed teaching mindset —one who does not believe in the improvement of their teaching capacity—is unlikely to see the relevance of adopting need-supportive teaching practices to improve students' capacities. One potential explanation for this is that engaging in need-supportive teaching requires extra effort and time in terms of lesson preparation and delivery. As fixed-minded teachers would also be more likely to teach for extrinsic reasons, they would presumably opt to seek ways to put minimum effort into teaching and therefore be more inclined to adopt need-indifferent or need-thwarting teaching practices. Taken together, these findings suggest that fostering a growth mindset among educators could be instrumental in improving overall teaching and, thereby, learning outcomes. To fully leverage these findings, it is essential to consider their implications for both pre-service and in-service teacher education, which will be presented in the following section.

Implications for Practice

Based on the findings of the present dissertation, several practical implications can be drawn for teachers, education researchers, and teacher educators.

The results of the meta-analytic review have demonstrated that individuals' beliefs about the malleability of human capacities can play an essential role in determining the quality of their motivation. The central practical takeaway of the first study is that when people believe they can improve their abilities through effort, they are more likely to experience autonomous forms of motivation, which energize them to persevere in challenging situations. Considering the facilitative role of a growth mindset for the internalization process of extrinsic reasons for mastering a particular subject, both teachers and teacher educators are suggested to communicate growth mindset messages, particularly at times when learners might doubt their potential following challenging and/or unsuccessful academic experiences (Canning et al., 2024). Simply put, receiving growth-minded feedback from educators would help struggling learners rebound from academic difficulties and encourage them to use more effective ways (e.g., '*Mistakes are opportunities to learn*', Kroeper et al., 2022; '*Try thinking about the problem this way instead*…', Kroeper, 2022). In a parallel way, educators should cautiously avoid conveying fixed mindset messages that might undermine learners' intrinsic motivation (e.g., '*It's ok—Not everyone can be good at learning a foreign language*', Rattan et al., 2012; '*Making mistakes is a signal that this topic isn't right for you*', Kroeper et al., 2022). Given the critical impact of their responses to student success or failure, educators are advised to be cognizant of the power of the language they use in their daily oral interactions and written feedback. To this end, establishing researcher-practitioner partnerships (RPPs) would be highly effective (Barron et al., 2024). That is, educational

researchers and teacher educators can collaborate to design comprehensive interventions targeting both students and teachers to create a growth mindset culture in classrooms, which would in turn cultivate autonomous motivation among students and lead to desired learning outcomes. The moderator analysis further revealed that the link between growth mindset beliefs and autonomous motivation varied depending on the subject domain, with significantly larger effects in the language domain compared to the math and science domains. Therefore, domain-tailored interventions would be more successful in equipping teachers to address the issues encountered within that domain. For example, the most common obstacle language instructors should handle is rectifying deep-seated beliefs or misjudgments about learning a foreign language. Many people — some of whom are concerningly language teachers themselves — perceive the effort as an indicator of a lack of natural talent (Lou & Noels, 2019). Given the potential influence of teachers' mindsets on the development of students' mindsets (Mesler et al., 2021; Yeager et al., 2022), it is better to start with raising teachers' awareness of their own beliefs regarding language learning ability to enable them to reflect on them. But what about instructors' mindset beliefs regarding their own teaching ability? How do these beliefs relate to their motivation to teach? The results of the second study might yield valuable implications, shedding light on teaching mindsets and teaching motivation as the antecedents of teachers' motivating teaching styles.

Notably, within the context of EFL education, teachers' motivating instructional practices are of great importance for the following reasons: (a) learning a foreign language is often viewed as a challenging, anxiety-provoking, and ego-threatening experience (Horwitz, 2010; Piechurska-Kuciel, 2011); (b) students — and teachers alike — might hold fixed mindset beliefs about language aptitude (Lou

& Noels, 2019); and (c) compulsory language education where students have no choice but to attend the lessons can hamper student autonomy and motivation (Pigott, 2015). Therefore, satisfying learners' basic psychological needs for autonomy, competence, and relatedness is crucial for EFL teachers to spark and maintain student motivation to learn English.

The results of the second study have demonstrated that fixed teaching mindset beliefs have direct and indirect relationships with EFL instructors' need-supportive instruction through teaching motivation. Specifically, when instructors do not believe in the malleability of their teaching ability, they are less inclined to adopt need-supportive teaching practices due to a significant decrease in their intrinsic regulation as well as an increase in their external regulation of teaching motivation. This finding can offer several valuable implications for teacher education programs. Notably, it is of utmost importance to help both pre-service and in-service teachers recognize dysfunctional (vs. functional) instructional patterns that arise from their own mindset beliefs regarding their teaching abilities' fixedness (vs. malleability) and reflect on how these beliefs impact their own motivation to teach. Particularly in the context of EFL teacher education and development programs, reflection is frequently highlighted as an essential component of effective instruction (Anderson, 2020; Farrell, 2017). In this regard, I would like to refer to the definition of reflective thought provided by Dewey (1910), which reads: "Active, persistent, and careful consideration of any belief or supposed form of knowledge in light of the grounds that support it and the further conclusions to which it tends" (p. 6). Considering Dewey's definition of reflective thought, teacher educators can take the following actions to encourage teachers' reflective thinking on how their *beliefs* influence their *motivation* and, in turn, their *instructional practices*: (a) encouraging teachers to

keep reflective journals in which they record their teaching experiences along with their beliefs and motivations behind their instructional practices (Abednia et al., 2013); (b) supporting teachers in joining or forming teacher reflection groups where they can share their experiences and engage in collaborative reflection on their practices (Farrell & Jacobs, 2016); (c) integrating metaphor analysis in teacher education as a tool for reflective practice (Farrell, 2023); and (d) encouraging teachers to engage in individual or collaborative action research studies to reflect on their teaching (Jensen & Dikilitas, 2023). Adopting a reflective approach is one way to help teachers recognize their mindset beliefs (fixed vs. growth), motivational orientations (controlled vs. autonomous), and how these two personal antecedents jointly contribute to their need-supportive (vs. need-thwarting) instruction.

Additionally, educational researchers are highly recommended to design and implement well-structured, domain-specific, and theory-driven interventions and workshops to provide teachers with the necessary training to adopt a growth mindset pedagogy and to support students' needs for autonomy, competence, and relatedness. Previous systematic and meta-analytic reviews have already proven the effectiveness of teacher-focused need-supportive interventions that are grounded in SDT (see Patall, Yates, et al., 2024; Reeve & Cheon, 2021). Given the current dissertation's findings and the mindset meaning system framework (Dweck & Molden, 2017), education researchers should develop more comprehensive and broader-spectrum need-supportive teaching interventions that also address the importance of embracing a growth mindset pedagogy and internalizing the instrumental reasons for teaching and learning. Furthermore, mindset interventions aimed at student samples have shown promising outcomes (Yeager et al., 2019), indicating that similar future interventions targeting teacher samples could also be effective. Presumably, growth

mindset interventions targeting teachers will yield more far-reaching and long-term effects when a growth mindset culture is prevalent within the entire institution, referred to as "*mindset-plus-supportive-context"* (Yeager et al., 2022). This mindset-plus-supportive-context suggests that if the institution supports instructors with relevant resources to improve their teaching skills and offers a wide range of professional development opportunities addressing their needs, instructors will feel valued, supported, and appreciated. Likewise, SDT research also showed that school leaders such as principals or instructional supervisors are key agents in creating supportive contexts where teachers' needs are addressed and thereby desired teaching and learning outcomes (Haw & King, 2023; Lee, Nie, et al., 2020; Van den Berghe et al., 2014). In other words, when supported within their work context, teachers can develop autonomous motivation, which will energize them to put effort into supporting students' needs. Besides, as the findings of the second study pointed out, interventions aimed at fostering a growth mindset also hold the potential to empower educators to adopt need-supportive practices. By embracing a growth mindset, teachers would become more eager to invest time and energy in creating a motivating learning environment where students feel understood, valued, and capable.

Recognizing the pivotal role of teachers' beliefs and motivations in shaping instructional practices, policymakers need to address the initial training offered to pre-service teachers to lay the groundwork for meaningful improvements. Along with theoretical and practical knowledge, they should also be equipped with interpersonal skills to build rapport with their future students (Haukås & Mercer, 2022). Encouraging the integration of growth mindset and need-supportive pedagogy into the curriculum of teacher education programs could be a valuable initiation to

foster the socio-emotional competencies of future teachers. This could involve embedding the key principles of mindset and self-determination theories into coursework, giving guidance in creating lesson plans aligned with these principles, providing clear guidelines and checklists for self-assessment, creating opportunities for practice through micro-teaching and role-playing, and encouraging reflective practice throughout the practicum experience. More importantly, teacher educators should go above and beyond by leading by example. For instance, they can model motivating teaching styles in their lectures by encouraging struggling learners through growth mindset messages and explaining the value and relevance of lesson planning and reflective practice to their future careers. Through the initial training offered within teacher education programs, we can ensure that pre-service teachers will enter the profession with a growth mindset conducive to need-supportive learning environments.

Enhancing pre-service teacher education programs alone will not suffice to maintain teachers' commitment to practicing motivational teaching methods in real-world classrooms. Their own motivation to teach could also fluctuate due to perceived pressures from above, such as working with controlling supervisors (Collie, 2023), and pressures from below, such as low-quality student motivation (Soenens et al., 2012). Therefore, policymakers operating at various levels should also recognize the importance of fostering a growth mindset culture within the entire institution. It is also crucial for them to support in-service teachers' continuing professional development and provide the relevant resources to assist them in improving their instruction. By enacting supportive institutional policies (Haw & King, 2023; Yeager et al., 2022) or creating researcher-practitioner partnerships

(Barron et al., 2024), a more conducive working environment can be provided for educators, thereby ensuring several desired teaching and learning outcomes.

Implications for Further Research

This section outlines several implications for future research, integrating the limitations identified in the current studies of this dissertation with recommendations for addressing these gaps.

When interpreting the first study's findings (S1), two noteworthy limitations can suggest directions for future research. To begin with, the meta-analytical evidence relies on effect sizes pooled from correlational studies, which restricts the ability to draw definitive conclusions about the directionality of the relationships between the variables under investigation. To put it differently, a correlational meta-analysis cannot establish causality. Therefore, future researchers should consider conducting meta-analyses based on the effect sizes obtained from experimental and interventional studies to better understand causal relationships.

Another issue that merits attention is the scarcity of studies examining how fixed mindset beliefs relate to various types of motivation. This gap in the literature suggests a need for more empirical research to thoroughly explore how fixed mindset beliefs relate to or influence different types of motivation. The limited number of effect sizes pooled from the limited number of studies also hinders the ability to conduct comprehensive moderator analyses of more contextual factors, which are essential for uncovering the complexities of these relationships. Consequently, a future meta-analytic review with a larger number of effect sizes can also allow for more nuanced analyses to provide more robust findings regarding the nature and strength of the relationships between mindsets and different types of motivation.

Future research can also be informed by the limitations of the second study (S2). First, the cross-sectional design of the study restricts the ability to infer cause-and-effect relationships between the variables under investigation. As such, the findings of S2 only allow for discussions about the nature of the relationships among teaching mindsets, teaching motivation, and need-supportive instruction. To this end, future researchers should conduct longitudinal and/or experimental studies to further explore whether fixed or growth teaching mindsets result in specific forms of teaching motivation or different manifestations of need-supportive teaching practices over time.

Additionally, the second study utilized EFL instructors' self-reports to evaluate their need-supportive teaching styles. This monomethod approach may be susceptible to various biases, such as social desirability biases, which could prompt instructors to represent themselves in a more desirable way. Recent research (Daumiller et al., 2022) has emphasized the discrepancies between the self-ratings of educators and the ratings of others, including students and independent observers (e.g., trained teacher educators). To mitigate such monomethod biases, future studies can consider including student reports (Michou et al., 2023) or objective measures, such as lesson observations, providing a more accurate picture of instructors' need-supportive teaching behaviors (Stroet et al., 2015). Through the triangulation of these data sources in future research, it is possible to attain a more thorough and objective understanding of need-supportive teaching behaviors.

Third, I exclusively focused on the links between teaching mindset beliefs and need-supportive teaching practices. Prospective studies should also investigate the relationships between teaching mindsets and need-thwarting or need-indifferent instructional practices. It seems particularly promising to explore need-indifferent

teaching styles, as educators are more likely to adopt a “one size fits all” approach due to a reluctance to exert additional effort (i.e., holding a fixed teaching mindset) or a lack of time to customize their behaviors according to the unique needs of learners (Ntoumanis, 2023a). Future researchers, therefore, should go beyond and explore need-indifferent or need-thwarting teaching styles to examine how teaching mindsets could also account for the dark sides of teaching styles.

In addition, the bulk of the data in S2 was gathered from Turkish EFL instructors working in higher education. To generalize the findings beyond the Turkish context and the TEFL domain, future researchers should gather data from instructors from diverse cultures and different teaching domains. As such, they can also provide valuable insights into cross-cultural and cross-domain differences in instructors’ need-supportive teaching styles (Haw & King, 2022).

Last, future researchers should find ways to collaborate with practitioners to yield more enduring effects from interventions. Such researcher-practitioner partnerships (RPPs; Barron et al., 2024) can lead to more successful professional development programs, which can enhance both teaching and learning experiences. Moreover, researchers can ensure that their findings are indeed translated into practical strategies by working closely with teachers and/or teacher educators.

Taken together, the findings revealed in Study 1 and Study 2 offer promising avenues for future research. Pursuing these avenues, researchers will be able to gain a deeper understanding of the complex relationships between mindset beliefs, different types of motivation, and need-supportive (vs. need-thwarting or need-indifferent) teaching styles.

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APPENDICES

Appendix A

Consent Form

Dear Participant,

This research study has been designed to investigate English language instructors' perceptions about their teaching. The study is being conducted by Bengü Cilalı under the supervision of Dr. Aikaterini-Aliki Michou.

Should you accept to participate in the study, you will anonymously complete a set of relevant questionnaires that will take approximately 10 minutes to complete. Your responses will be kept confidential. Participation is voluntary, and you have the right to quit at any time. The relationship with your institution will not be affected if you do not participate or withdraw your participation. There are no foreseeable risks to your participation in this research.

If you have any questions regarding the research, please contact Bengü Cilalı or Dr. Michou. The results will be published and shared with all participants through email after the study is complete. If you are willing to participate in this study, please sign the consent form below. Thank you for taking part in this research project.

Statement of Consent

I have read the information above and consent to participate in this project.

Name Surname: E-mail:

_____ _____

Signature of the Participant Date

This consent form is obtained by Bengu Cilali.

_____

Signature

Appendix B

Survey Pack

PERSONAL INFORMATION

Age:	
Gender:	
Nationality:	

EDUCATION

Bachelor's degree	☐
Master's degree	☐
PhD degree	☐

TEACHING EXPERIENCE

At which university are you working?

_____

Teaching at Preparatory School (*i.e.*, Basic English) ☐

Teaching at Faculty Academic English Program (*i.e.*, Modern Languages) ☐

Counting this academic year, how many years have you been teaching?

1-4 years ☐ 5-9 years ☐ 10-14 years ☐ 15-19 years ☐ More than 20 years ☐

Following are some statements about you as an English teacher. Please, indicate your degree of agreement with each statement by choosing the most appropriate response. Remember that there are no right or wrong answers, so please answer as honestly as possible.

ITIS; Dweck et al., 1995	**Strongly disagree**	**Disagree**	**Neither agree, nor disagree**	**Agree**	**Strongly agree**
1. You can learn new teaching approaches, but you can't really change your basic teaching ability.	1	2	3	4	5
2. Your teaching ability is something about you that you can't change very much.	1	2	3	4	5
3. You have a certain amount of teaching ability, and you really can't do much to change it.	1	2	3	4	5

Following are some statements about you as an English teacher. Please, indicate your degree of agreement with each statement by choosing the most appropriate response.

TASC-Q; Belmont et al., 1988	Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly agree
1. I spend extra time with my students outside of class time.	1	2	3	4	5
2. I show my students different ways to do a task.	1	2	3	4	5
3. I listen to my students' ideas and take them into consideration for my instructional choices.	1	2	3	4	5
4. My general approach with my students is to give them as few choices as possible.	1	2	3	4	5
5. I like my students.	1	2	3	4	5
6. I talk with my students about my expectations for them.	1	2	3	4	5
7. My students can count on me to be there for them.	1	2	3	4	5
8. I enjoy the time I spend with my students.	1	2	3	4	5
9. I let my students make their own decisions regarding schoolwork.	1	2	3	4	5
10. I talk with my students outside of class time.	1	2	3	4	5
11. I explain to my students why they learn certain things in school.	1	2	3	4	5
12. I know a lot about what goes on for my students outside of school.	1	2	3	4	5
13. It is difficult for me to explain to my students why what we do in school is important.	1	2	3	4	5
14. This is an attention check question, please choose "2" (disagree).	1	2	3	4	5
15. I don't encourage my students to come to my office hours.	1	2	3	4	5
16. I try to give my students a lot of choices about classroom assignments.	1	2	3	4	5
17. I let some of my students get away with things I normally wouldn't allow.	1	2	3	4	5
18. I don't understand my students very well.	1	2	3	4	5
19. When my students do not do as well as they can, I can make time to help them find ways to do better.	1	2	3	4	5
20. I encourage my students to think about how schoolwork can be useful to them.	1	2	3	4	5
21. Teaching my students isn't very enjoyable for me.	1	2	3	4	5
22. It's better not to give too many choices to my students.	1	2	3	4	5

		Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly agree
23.	I can't let my students do things in their own ways.	1	2	3	4	5
24.	I know my students well.	1	2	3	4	5
25.	Sometimes I feel like I can't be there for my students when they need me.	1	2	3	4	5
26.	I can't tell when my students are keeping up with me.	1	2	3	4	5
27.	I find it hard to teach some students in a way they can understand.	1	2	3	4	5
28.	I make sure my students understand before I go on.	1	2	3	4	5
29.	Sometimes I feel I don't make my expectations clear to my students.	1	2	3	4	5
30.	I keep changing how I act towards my students.	1	2	3	4	5
31.	I find it difficult to tell when my students need help.	1	2	3	4	5
32.	It's hard to know when my students are ready to go on to new material.	1	2	3	4	5
33.	I try to be clear with my students about what I expect of them in class.	1	2	3	4	5
34.	I find it hard to act consistently with my students.	1	2	3	4	5

Here are some statements about you as an English teacher. Please, indicate your degree of agreement with each statement by choosing the most appropriate response.

C-RAI; Sheldon et al., 2017 **I try to teach well in my English classes…**		Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly agree
1.	... because I would feel like a failure if I didn't teach well.	1	2	3	4	5
2.	... because teaching is interesting.	1	2	3	4	5
3.	... because I strongly value teaching.	1	2	3	4	5
4.	... because teaching boosts my self-esteem.	1	2	3	4	5
5.	... because teaching is fun.	1	2	3	4	5
6.	... because I don't have any choice but to teach well.	1	2	3	4	5
7.	... because teaching well is personally important to me.	1	2	3	4	5
8.	... because I enjoy teaching.	1	2	3	4	5
9.	... because I'll get in trouble if I don't teach well.	1	2	3	4	5

I try to teach well in my English classes…	Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly agree
10. … because I would feel guilty if I didn't teach well.	1	2	3	4	5
11. … because it is my personal choice to teach well.	1	2	3	4	5
12. … because if I don't teach well, others will get mad.	1	2	3	4	5
13. … because I want to prove to myself that I am capable.	1	2	3	4	5
14. … because teaching is meaningful to me.	1	2	3	4	5
15. … because I don't want to feel bad about myself.	1	2	3	4	5
16. … because I want to feel proud of myself.	1	2	3	4	5
17. …In this attention check question, please choose "1".	1	2	3	4	5
18. … because I would feel ashamed if I didn't teach well.	1	2	3	4	5
19. … because I want to feel good about myself.	1	2	3	4	5
20. … because important people (i.e., directors, students, parents) will like me better if I teach well.	1	2	3	4	5
21. … because it is a pleasure to teach.	1	2	3	4	5

Appendix C

Ethical Approval

Bilkent Üniversitesi
Akademik İşler Rektör Yardımcılığı

Tarih : 6 Aralık 2019

Gönderilen : Bengü Cilalı

Tez Danışmanı : Aikaterini - Aliki Michou

Gönderen : H. Altay Güvenir
İnsan Araştırmaları Etik Kurulu Başkanı

Konu : *"Do instructors' ..."* çalışması etik kurul onayı

Üniversitemiz İnsan Araştırmaları Etik Kurulu, 6 Aralık 2019 tarihli görüşme sonucu, *"Do instructors' growth mindset and autonomous motivation foster their need-supportive teaching style?"* isimli çalışmanız kapsamında yapmayı önerdiğiniz etkinlik için etik onay vermiş bulunmaktadır. Onay, ekte verilmiş olan çalışma önerisi, çalışma yürütücüleri, ve bilgilendirme formu için geçerlidir.

Bu onay, yapmayı önerdiğiniz çalışmanın genel bilim etiği açısından bir değerlendirmedir. Çalışmanızda, kurulumuzun değerlendirmesi dışında kalabilen özel etik ve yasal sınırlamalara uymakla ayrıca yükümlüsünüz.

Etik Kurul Üyeleri:

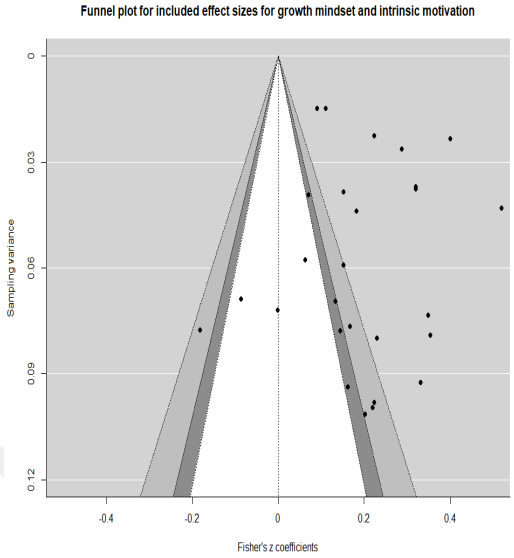
Ünvan / İsim	**Bölüm / Uzmanlık**
1. Prof.Dr. H. Altay Güvenir	Bilgisayar Mühendisliği
2. Prof.Dr. Erdal Onar	Hukuk
3. Prof.Dr. Haldun Özaktaş	Elektrik ve Elektronik Müh.
4. Doç.Dr. Işık Yuluğ	Moleküler Biyoloji ve Genetil
5. Dr. Öğr. Üyesi Burcu Ayşen Ürgen	Psikoloji
Yd.1.Doç.Dr. Çiğdem Gündüz Demir	Bilgisayar Mühendisliği
Yd.2. Dr. Öğr. Üyesi A.Barış Özbilen	Hukuk

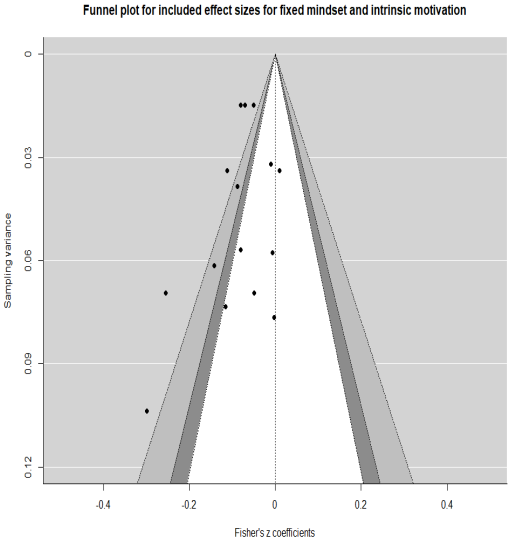
Kurul karar/toplantı No: 2019_12_06_06

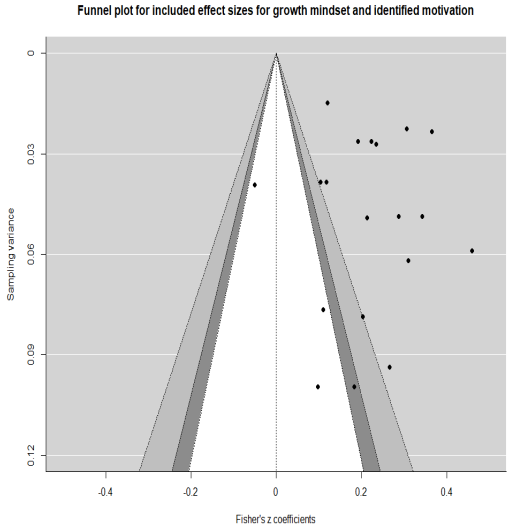
Bilkent Üniversitesi, 06800 Bilkent, Ankara • Telefon: (312) 290 12 13 • (312) 290 12 14 • Faks: (312) 266 41 52

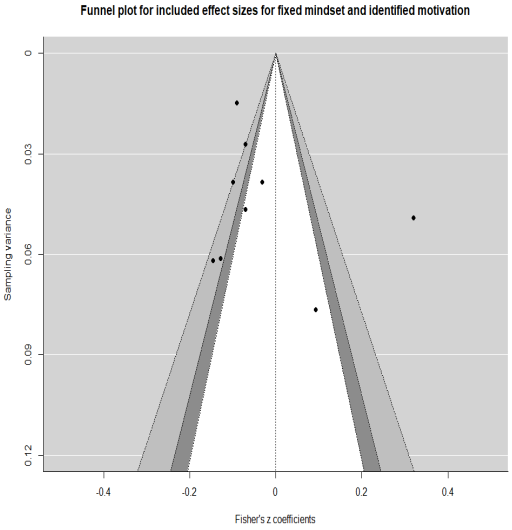
Appendix D

Funnel Plots of Individual Effect Sizes

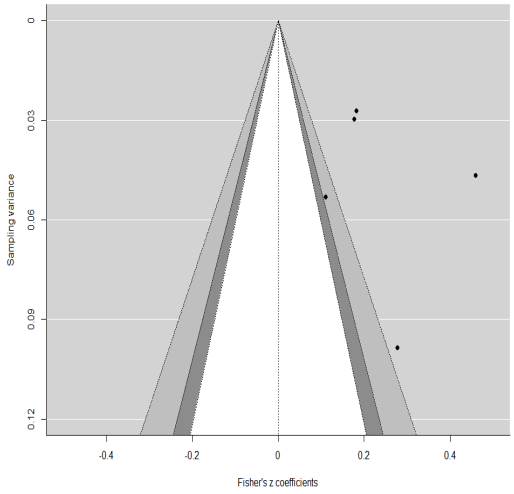




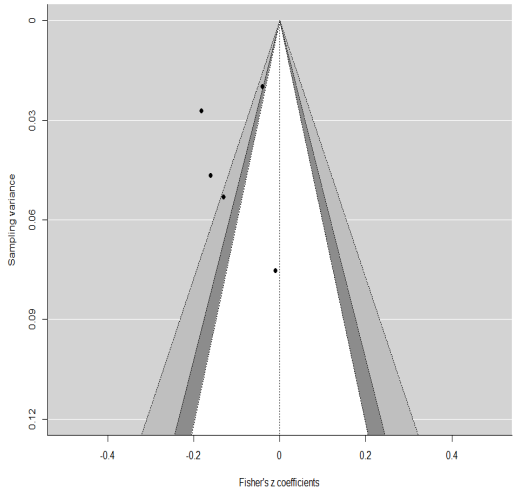




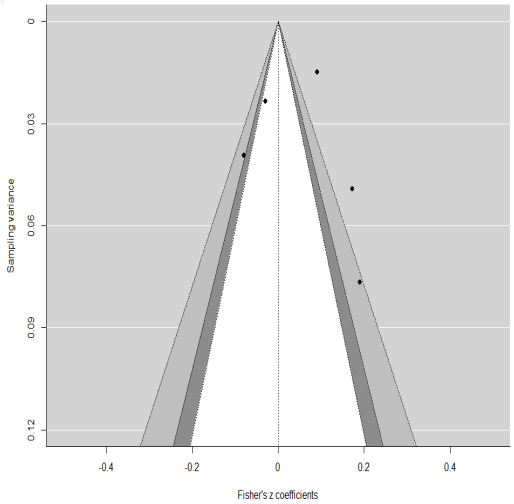
Funnel plot for included effect sizes for growth mindset and autonomous motivation



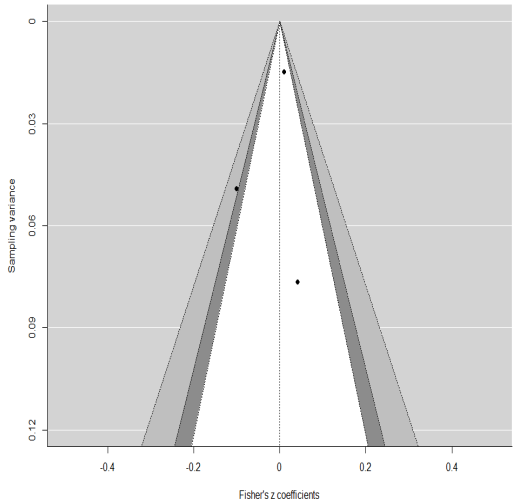
Funnel plot for included effect sizes for fixed mindset and autonomous motivation



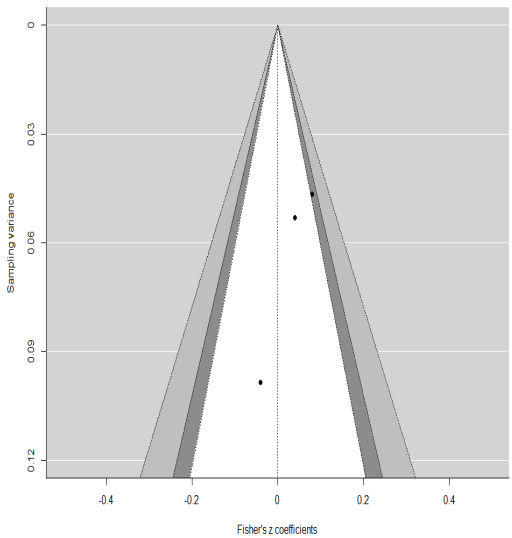
Funnel plot for included effect sizes for growth mindset and introjected motivation



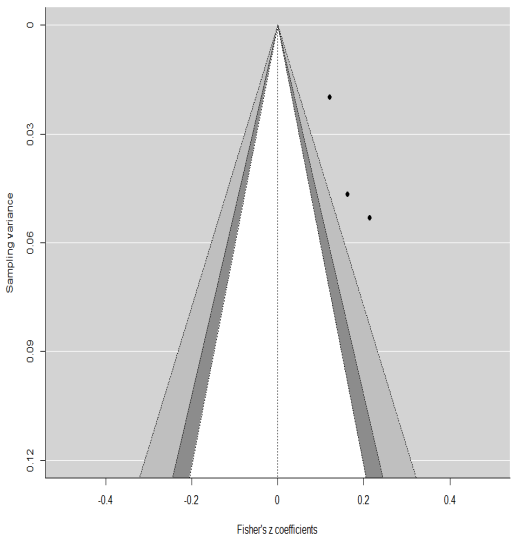
Funnel plot for included effect sizes for fixed mindset and introjected motivation



Funnel plot for included effect sizes for growth mindset and controlled motivation



Funnel plot for included effect sizes for fixed mindset and controlled motivation



VITA

Personal Information

Name: Bengü Cilalı

Current Address: Bilkent University, Department of Foreign Languages, English Language Preparatory Program (ELPP)

Education

Ph.D., Curriculum & Instruction, Bilkent University, 2024

M.S., Educational Sciences, Middle East Technical University, 2015

B.A., English Language Teaching, Başkent University, 2005

Experience

Instructor, Bilkent University, Department of Foreign Languages, ELPP, Present

Professional Development Unit Member, Atılım University, School of Foreign Languages (SFL), 2017-2023

Instructor, Atılım University, SFL, Department of Modern Languages, 2012-2023

Visiting EARLI Researcher, the University of Augsburg, Germany, 2022

Visiting Fulbright Researcher, the University of Virginia, the USA, 2021

English Teacher, Başkent University, Ayseabla Schools, 2010-2012

Professional Training

DELTA-Module 1, Cambridge University, 2023

IRB-SBS Researcher Basic Course, CITI Training, 2021

Advanced Research Methodology in Educational Sciences, TUBITAK 2237-A, 2019

Trainer Training Course, Anatolia Training Institute, 2017

Honors & Awards

EARLI, Mentorship Award, Germany, 2022

Fulbright Scholarship Program, Dissertation Research Award, the USA, 2020-2021

Society of Multivariate Experimental Psychology, Workshop Award, the USA, 2021

Publications

Cilalı, B., Michou, A., & Daumiller, M. (2024). Pathways to need-supportive teaching: Teaching mindsets and motivation to teach. *The Asia-Pacific Education Researcher.* Advance online publication. https://doi.org/10.1007/s40299-024-00885-8

Cilalı, B., Erdur-Baker, Ö., & Bugay, A. (2019). The reliability and validity of the Lifespan Sibling Relationship Scale in a Turkish emerging adult sample. *Studia Psychologica*, *61*(1), 17-30. https://doi.org/10.21909/sp.2019.01.769

Presentations

Cilalı, B. (2024, May). *Integrating AI into writing instruction*, Bilkent University ELPP International Conference, Ankara

Cilalı, B., Michou, A., Daumiller, M., Sutter, C. C., Hulleman, C. S. & Barron, K. (2023, August). *How do mindset beliefs relate to other forms of motivation?* Paper presented at the 20th Biennial Conference of the European Association for Research on Learning and Instruction (EARLI 2023), Thessaloniki

Cilalı, B. & Daumiller, M. (2022, July). *When ability is perceived as a fixed trait: Mindsets matter not only for learning but also for teaching ability*. Psychological Research Colloquium of the University of Augsburg, Bavaria

Cilalı, B., Michou, A., Sutter, C. C., Hulleman, C. S. & Barron, K. (2021, September). *Mindset and motivation: A meta-analytic review*. Poster presented at the Annual Conference of SREE 2021 Conference, Virginia

Cilalı, B. & Balcı, Y. (2018, June). *An appreciative inquiry: Action research.* Poster presented at the Annual International Conference of IATEFL ReSIG, İstanbul

Cilalı, B. & Balcı, Y. (2017, June). *Concept mapping as a pre-writing activity*. Poster presented at the Annual International Conference of IATEFL ReSIG, İstanbul

Cilalı, B., Balcı, Y. & Ünal, B. (2016, June). *The association between foreign language classroom anxiety and students' achievement*. Poster presented at the Annual International Conference of IATEFL ReSIG, İstanbul

Cilalı, B. (2015, June). *Attitudes toward the flipped classroom*. Poster presented at the Annual International Conference of IATEFL ReSIG, İzmir

Cilalı, B., Erdur-Baker, O. & Bugay, A. (2014, September). *The reliability and validity of the Turkish version of the Lifespan Sibling Relationship Scale*. Paper presented at the 14th Biennial Conference of the European Association for Research on Adolescence (EARA, 2014), İzmir