# The role of social and emotional competencies in early-career teachers' occupational well-being

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DOCTORAL DISSERTATION

Supervisor: Irena Burić, PhD

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# ULOGA SOCIO-EMOCIONALNIH KOMPETENCIJA U PROFESIONALNOJ DOBROBITI UČITELJA U RANOJ FAZI KARIJERE

DOKTORSKI RAD

Mentorica: prof. dr. sc. Irena Burić

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**About the supervisor**

Irena Burić received her PhD in psychology in 2010 at the Faculty of Humanities and Social Sciences of University of Zagreb. Currently, she is a Full Professor at the Department of Psychology of University of Zadar. She teaches courses in basic and advanced statistics and educational psychology at the University of Zadar and a course on multilevel modeling on Doctoral degree program in psychology at Faculty of Humanities and Social Sciences of University of Zagreb. She has completed multiple courses and workshops on structural equation modeling, multilevel analysis, and longitudinal data analysis. She was a guest lecturer at University of Florence (Italy) and Ludwig-Maximilian University of Münich (Germany). Until now, she has supervised more than 35 bachelor and master theses and one doctoral thesis that were successfully defended.

Her research interests pertain to teachers' individual characteristics (i.e., personality, emotion, emotion regulation, motivation) in relation to teaching effectiveness and their professional well-being. From 2014 to 2017, she was a principal investigator of an installation research project titled "Teachers' emotion and emotion regulation strategies: Personal and contextual antecedents and effects on motivation, well-being, and relationships with students (UIP-2013-11-5065) funded by Croatian Science Foundation. From 2020, she has been leading a research project titled "Teacher personality, emotion, and performance: A dynamic perspective" (IP-2019-04-5472) also funded by Croatian Science Foundation. Lastly, since 2022, she has been a member of an international research group titled "Health, Effectiveness, And Retention of Teachers (HEART) Research Group" funded by UK Research and Innovation (UKRI World Class Laboratories Fund) and led by Lisa E. Kim from University of York (UK).

Until now, she has published over 50 scientific papers (49 indexed in Scopus and 40 indexed in WoS) and 8 book chapters, edited 5 books, and presented 70 papers at conferences. She was a keynote speaker at 21$^{st}$ Psychology Days in Zadar and 28$^{th}$ Annual Conference of Croatian Psychologists and held an invited symposium at 19$^{th}$ European Conference on Personality. Her research paper was recognized as one of the most cited papers in the field of social sciences that resulted from projects funded by the Croatian Science Foundation. Also, she has been listed as one of the world's top 2% scientists in 2022 at the Stanford's list. For her scientific work, she has been awarded twice by the Department of Psychology of the University of Zadar and received a Rector's Award for exceptional achievements in scientific work.

Currently, she serves an associate editor's role for *Personality and Individual Differences* and *Test Adaptation and Development* journals and is a member of the editorial board of *Journal of Educational Psychology, British Journal of Educational Psychology, Learning and Individual Differences, and Educational Psychology*. She has reviewed over 100 papers for many prestigious journals (e.g., *Educational Psychology Review, Journal of Educational Psychology, Learning and Instruction, Contemporary Educational Psychology, Human Relations, Journal of Happiness Studies, Motivation and Emotion*). She was a member of the scientific panel on multiple calls from Croatian Science Foundation (HRZZ), Slovenian Research Agency (ARRS), and Swiss National Science Foundation (SNSF).

Currently, she is a member of the European Association for Research on Learning and Instruction (EARLI), the International Society for the Study of Individual Differences (ISSID), and European Association of Personality Psychology (EAPP). In addition, from 2023, she is a member of the Accreditation Council of the Croatian Agency for Science and Higher Education and University Council of the University of Zadar.

**ABSTRACT**

Experiencing stress and emotional challenges combined with lack of personal and organizational resources for coping is one of the primary reasons teachers decide to leave the profession. Attrition rates are especially high in early-career teachers, which has important implications for educational systems internationally. Therefore, strengthening teachers' personal resources could prove central for retaining teachers in the profession. The aim of this study was to explore the role of social and emotional competencies (SEC) in early-career teachers' occupational well-being, examine the dynamic relationships between these two constructs, and investigate their role in fostering teacher commitment and preventing attrition. The study utilized a longitudinal, full-panel research design with two time points. In total, 911 teachers with up to 5 years of experience participated in the study.

Regarding the reciprocal effects between teachers' SEC and occupational well-being, only empathy was found to be reciprocally positively related to job satisfaction. It was also the only aspect of SEC which predicted future levels of teacher commitment, which points to the important role of empathy for feeling satisfied with the teaching profession and the decision to stay in it. Job satisfaction predicted future levels of self-awareness, but not vice versa, and none of the aspects of SEC predicted future burnout symptoms. Burnout (specifically, cognitive impairment) did, however, predict all aspects of SEC, which brings into question the established view of SEC as predictors of occupational well-being. The results also confirmed the prominent role of job satisfaction and burnout in predicting teacher commitment. Indirect effects were not found in this study. Overall, these findings present the foundation for the inclusion of SEC in teacher induction programmes, as well as highlight the importance of burnout prevention and fostering job satisfaction in order to keep teachers in the profession.

*Keywords:* early-career teachers, social and emotional competencies, occupational well-being, burnout, job satisfaction, commitment

## PROŠIRENI SAŽETAK

### Uvod

Brojna istraživanja pokazuju da je učiteljska profesija jedna od najstresnijih profesija (Brackett i sur., 2010; Maslach i sur., 2001; Stoeber i Rennert, 2008) te da stres vezan uz posao u kombinaciji s nedostatkom osobnih i organizacijskih resursa za suočavanje predstavlja jedan od primarnih razloga zbog kojeg učitelji odlučuju napustiti profesiju (Montgomery i Rupp, 2005). Napuštanje profesije postaje sve veći izazov na međunarodnoj razini, a aspekti profesionalne dobrobiti pokazuju se ključnima za donošenje odluke o napuštanju učiteljske profesije (Schaufeli i Bakker, 2004; Skaalvik i Skaalvik, 2011). Otprilike trećina hrvatskih učitelja izražava želju napustiti učiteljsku profesiju (Radeka i Sorić, 2006), a Hrvatska se u posljednje vrijeme suočava s problemom privlačenja, zapošljavanja i zadržavanja učitelja (Marušić i sur., 2017). Prema tome, podizanje svijesti o profesionalnoj dobrobiti učitelja može biti korisno ne samo za učitelje i njihove učenike, već i za čitave obrazovne sustave i zajednice.

Budući da učiteljsko napuštanje profesije ima značajne posljedice na makro razini, ključno je identificirati učitelje koji su u najvećem riziku od napuštanja profesije kako bi im se mogla pružiti primjerena podrška. Prema nedavnim analizama učiteljskog napuštanja profesije, gotovo polovica novih učitelja odlučuje napustiti profesiju tijekom prvih 5 godina karijere (Sims i Jerrim, 2020). Ovaj nalaz sugerira da su stope napuštanja profesije posebno visoke kod učitelja na početku karijere, koji često imaju poteškoća u prijelazu sa fakulteta na posao zbog količine stresa i emocionalnih izazova s kojima su suočeni u početnim godinama poučavanja (Friedman, 2000). S druge strane, mentalnom zdravlju učitelja i njihovoj profesionalnoj dobrobiti ne posvećuje se dovoljno pažnje tijekom inicijalnog obrazovanja i početnih godina poučavanja. To ukazuje na važnost utvrđivanja prediktora odluke o napuštanju učiteljske profesije kako bi se učiteljima pružila podrška tijekom tranzicije u profesiju i na taj način pridonijelo prevenciji ranog napuštanja profesije kroz jačanje odanosti profesiji. Jedan od načina da se poveća profesionalna dobrobit učitelja i njihova motivacija za ostanak u profesiji je jačanje njihovih socio-emocionalnih kompetencija (SEK) – svijesti o sebi, regulacije emocija i empatije.

### Cilj i problemi istraživanja

Cilj ovog istraživanja je istražiti kompleksne odnose između socio-emocionalnih kompetencija, profesionalne dobrobiti i odanosti profesiji učitelja u ranoj fazi karijere. Pritom su definirana dva istraživačka problema: (1) istražiti odnos između socio-emocionalnih kompetencija (svijesti o sebi, regulacije emocija i empatije) i profesionalne dobrobiti (sagorijevanja i

zadovoljstva poslom) učitelja u ranoj fazi karijere; te (2) istražiti prirodu izravnih i neizravnih doprinosa socio-emocionalnih kompetencija (svijesti o sebi, regulacije emocija i empatije) i profesionalne dobrobiti (sagorijevanja i zadovoljstva poslom) učitelja u ranoj fazi karijere u predikciji odanosti učiteljskoj profesiji.

## Metoda

Podaci korišteni u ovom radu prikupljeni su u sklopu projekta TeachWell kojeg je financirala Hrvatska zaklada za znanost, a nositelj projekta bio je Institut za društvena istraživanja u Zagrebu. Kako bi se odgovorilo na istraživačka pitanja, istraživanje je provedeno longitudinalno u dvije vremenske točke tijekom školske godine 2022./2023. Ovakav nacrt istraživanja omogućuje testiranje recipročnih učinaka, kao i neizravnih učinaka, što je prednost longitudinalnih nacrta u odnosu na transverzalne (Schaie, 1983; Maxwell i Cole, 2007).

### *Sudionici*

U istraživanju je sudjelovalo ukupno 911 predmetnih učitelja s do 5 godina iskustva ($M$ = 33 mjeseca, $SD$ = 18,39). 530 učitelja sudjelovalo je samo u prvoj točci mjerenja, 183 učitelja sudjelovalo je samo u drugoj točci mjerenja, a 198 učitelja sudjelovalo je u obje vremenske točke. Prosječna dob sudionika bila je 31 godinu ($M$ = 30,72, $SD$ = 5,73), a većinu uzorka činile su žene (80,2%). Ukupno su sudjelovali učitelji iz 370 škola (40% svih škola u Hrvatskoj).

### *Instrumenti*

Svijest o sebi mjerena je subskalom svijesti o sebi iz upitnika *Social and Emotional Competencies Questionnaire* (SEC-Q; Zych i sur., 2018). Empatija je mjerena upitnikom *Basic Empathy Questionnaire* (BES, Jolliffe i Farrington, 2006) koji mjeri dva aspekta empatije: kognitivnu i afektivnu empatiju. Regulacija emocija mjerena je upitnikom *Emotion Regulation Questionnaire* (ERQ; Gross i John, 2003) koji mjeri korištenje dviju strategija regulacije emocija: kognitivnu reprocjenu i emocionalnu supresiju. Zadovoljstvo poslom mjereno je subskalom zadovoljstva profesijom iz Međunarodnog istraživanja o učenju i poučavanju (TALIS; OECD, 2019). Sagorijevanje je mjereno upitnikom *Burnout Assessment Tool* (BAT; Schaufeli i sur., 2020) koji mjeri četiri ključna simptoma sagorijevanja na poslu – iscrpljenost, psihološku distanciranost, narušeno kognitivno funkcioniranje i narušeno emocionalno funkcioniranje. Odanost profesiji mjerena je jednom česticom iz skale planirane ustrajnosti u učiteljskoj profesiji Watt i Richardsona (2008) koja mjeri namjeru ostanka u učiteljskoj profesiji.

*Postupak*

Prije prikupljanja podataka dobivena je suglasnost Ministarstva znanosti i obrazovanja za provedbu projekta TeachWell, a istraživanje je odobreno od strane Etičkog povjerenstva Instituta za društvena istraživanja u Zagrebu. Dio istraživanja koji je proveden u sklopu ove disertacije odobrilo je i Etičko povjerenstvo Odsjeka za psihologiju Filozofskog fakulteta Sveučilišta u Zagrebu. Sudjelovanje u istraživanju bilo je dobrovoljno i anonimno. Učitelji su sudjelovali u istraživanju ispunjavanjem online upitnika koji im je distribuiran putem e-maila.

*Statistička analiza podataka*

Analiza podataka provedena je u nekoliko koraka. Prvo je provedena detaljna analiza podataka koji nedostaju i analiza osipanja, budući da su podaci prikupljeni longitudinalno. Drugo, budući da ovo istraživanje sadrži hijerarhijski organizirane podatke (učitelji su ugniježđeni unutar škola), izračunati su koeficijenti intraklasne korelacije (ICC) kako bi se istražilo objašnjava li hijerarhijska organizacija podataka varijabilitet analiziranih varijabli. Treće, izračunate su deskriptivna statistika i bivarijatne korelacije. Četvrto, kako bi se razlučilo koji mjerni modeli najbolje odgovaraju podacima, testirani su različiti faktorsko analitički modeli (CFA, ESEM) za svaku od ispitivanih varijabli. U petom je koraku bilo potrebno testirati longitudinalnu invarijantnost mjerenja kako bi se utvrdilo mjere li instrumenti iste konstrukte tijekom vremena. Konačno, pretpostavljeni recipročni odnosi između socio-emocionalnih kompetencija učitelja i njihove profesionalne dobrobiti te njihova uloga u predikciji odanosti profesiji analizirani su unutar okvira modeliranja strukturalnim jednadžbama (SEM), korištenjem autoregresijskih križnih modela, analitičke strategije koja se koristi za opisivanje recipročnih odnosa između varijabli tijekom vremena. Podaci su analizirani uz pomoć programa IBM SPSS 20.0 i M*plus* 8.2.

## Rezultati i rasprava

Recipročni odnosi utvrđeni su između empatije i zadovoljstva poslom – afektivna empatija je predviđala buduće zadovoljstvo poslom, dok je zadovoljstvo poslom predviđalo buduće razine kognitivne empatije. Ovaj je nalaz potvrdio hipotezu da će učitelji koji su empatičniji biti zadovoljniji poslom, ali i da zadovoljstvo poslom može povećati kapacitete koje učitelji imaju za empatiju. Istražujući odnos između svijesti o sebi i zadovoljstva poslom, pronađeno je da zadovoljstvo poslom pozitivno predviđa buduće razine svijesti o sebi, ali ne i obrnuto. Suprotno našoj hipotezi, nisu pronađeni recipročni odnosi između regulacije emocija i zadovoljstva poslom. Nadalje, nisu pronađeni recipročni odnosi ni između SEK i sagorijevanja. Umjesto

toga, čini se da doživljavanje nekih simptoma sagorijevanja predviđa SEK učitelja. Naime, utvrđeno je da narušeno kognitivno funkcioniranje negativno predviđa svijest o sebi, ali svijest o sebi ne predviđa nijedan od simptoma sagorijevanja. Kada je u pitanju odnos između regulacije emocija i sagorijevanja, ni reprocjena ni supresija nisu predvidjele nijedan simptom sagorijevanja. Međutim, narušeno kognitivno funkcioniranje negativno je predviđalo buduću upotrebu strategije reprocjene, što podupire našu hipotezu da sagorijevanje negativno predviđa sposobnost emocionalne regulacije. Također, premda ni kognitivna ni afektivna empatija nisu značajno predvidjele nijedan od simptoma sagorijevanja, narušeno kognitivno funkcioniranje je značajno negativno predvidjelo buduće razine afektivne empatije. Ovi rezultati idu u prilog teoriji očuvanja resursa (Hobfoll, 1989), prema kojoj doživljaj sagorijevanja dodatno umanjuje resurse koji su dostupni za suočavanje sa stresom i emocionalnim izazovima. Čini se da nedostatak koncentracije i poteškoće s fokusiranjem na poslu, kao i doživljaj nezadovoljstva na poslu, mogu negativno utjecati na socio-emocionalne kompetencije učitelja, te tako umanjuju osobne resurse koji su učiteljima na raspolaganju. S druge strane, zadovoljstvo poslom ima potencijal jačati resurse učitelja kroz veću svijest o sebi i vlastitim emocijama te povećanje kapaciteta za kognitivnu empatiju, tj. zauzimanje tuđe perspektive i razumijevanje tuđih emocija, što je u skladu s teorijom proširenja i izgradnje (Frederickson, 2004).

Rezultati dijela istraživanja o ulozi SEK i profesionalne dobrobiti u predikciji budućih razina odanosti učiteljskoj profesiji ukazuju da empatija značajno predviđa odanost profesiji, dok svijest o sebi i regulacija emocija ne. Nadalje, čini se da je zadovoljstvo poslom jasan prediktor buduće odanosti profesiji, kao i psihološka distanciranost (jedan od ključnih simptoma sagorijevanja). Ovi rezultati također su u skladu s teorijom očuvanja resursa (Hobfoll, 1989), prema kojoj sagorijevanje vodi prema ponašanjima koja preveniraju daljnji gubitak resursa kako bi se očuvala psihološka dobrobit, u ovom slučaju prema napuštanju profesije. Rezultati također ukazuju da nema medijacijskih efekata – efekti empatije, zadovoljstva poslom, te sagorijevanja na odanost profesiji bili su isključivo izravni, bez posredovanja drugih varijabli uključenih u modele.

Metodološki nedostaci ovog istraživanja u prvome se redu tiču visoke stope osipanja, korištenja metode samoprocjene te istraživačkog nacrta koji ne omogućuje donošenje zaključaka o kauzalnosti. S druge strane, doprinosi ovog istraživanja uključuju korištenje longitudinalnog nacrta, primjenu metodologije eksploratornog strukturalnog modeliranja te provedbu istraživanja na osobito ranjivoj skupini učitelja, onima u ranoj fazi karijere.

## Zaključak

Rezultati ovog istraživanja ukazuju na važnost empatije, zadovoljstva poslom i sagorijevanja u predikciji odanosti profesiji kod učitelja u ranoj fazi karijere. Prema tome, programi za razvoj socio-emocionalnih kompetencija mogu biti koristan alat za osnaživanje učitelja i pomoć pri suočavanju s emocionalno izazovnim situacijama, posebno tijekom inicijalnog obrazovanja i u početnim godinama poučavanja. Nadalje, s obzirom na istaknutu ulogu sagorijevanja i zadovoljstva poslom u odanosti profesiji učitelja u ranoj karijeri, rezultati ovog istraživanja ukazuju na potrebu kontinuiranog i sustavnog praćenja simptoma sagorijevanja i zadovoljstva poslom kod učitelja, te provedbu politika koje pomažu u poticanju njihovog zadovoljstva poslom i u prevenciji sagorijevanja. Ti bi procesi mogli biti ključni za zadržavanje novih učitelja u profesiji, posebno s obzirom na to koliko je izazovno postalo njihovo zapošljavanje.

*Ključne riječi:* učitelji u ranoj fazi karijere, socio-emocionalne kompetencije, profesionalna dobrobit, sagorijevanje, zadovoljstvo poslom, odanost profesiji

**CONTENTS**

# 1. INTRODUCTION

Numerous studies indicate that teaching profession is one of the most stressful professions (Brackett et al., 2010; Maslach et al., 2001; Stoeber & Rennert, 2008) and that work-related stress combined with lack of personal and organizational resources for coping with it is one of the primary reasons teachers decide to leave the profession (Montgomery & Rupp, 2005). Teacher attrition is becoming a growing challenge for educational systems internationally, with aspects of occupational well-being proving central for the decision to leave the teaching profession (Schaufeli & Bakker, 2004; Skaalvik & Skaalvik, 2011). Around a third of Croatian teachers express the desire to leave the teaching profession (Radeka & Sorić, 2006), and Croatia is beginning to face the problem of recruiting, hiring, and retaining teachers (Marušić et al., 2017). Therefore, raising awareness about teachers' occupational well-being and implementing policies to support it can be beneficial not only for teachers and their students, but for entire educational systems and communities.

Since teacher attrition has significant consequences at the system level, research has been dedicated to identifying teachers who are most at risk of leaving the profession. According to recent analyses of teacher attrition, during the first 5 years of their careers, almost half of new teachers decide to leave the teaching profession (Sims & Jerrim, 2020). This suggests that attrition rates are especially high in early-career teachers, who often have difficulties making the transition from university to work due to the amount of stress and emotional challenges they are faced with in their beginning years of teaching (Friedman, 2000). Meanwhile, not much attention is directed to occupational health and well-being of teachers and supporting them in this aspect through pre-service and in-service training. This points to the importance of identifying predictors of the decision to leave the teaching profession in order to provide support to early-career teachers during their transition into the profession and thus contribute to the prevention of early-career teachers' attrition through strengthening their commitment to the profession. One way to foster teachers' occupational well-being and their motivation to stay in the profession is through strengthening their social and emotional competencies (SEC). The aim of this dissertation is to explore the role of social and emotional competencies in early-career teachers' occupational well-being, examine the dynamic relationships between these two constructs, and investigate their role in fostering teacher commitment and preventing attrition.

### 1.1. Early-career teachers

The transition from school or university to work, as any major transition in life, can be found stressful and overwhelming. This holds especially true for beginning teachers, who enter the classroom equipped with subject knowledge and enthusiasm for teaching, but often blissfully unaware of the challenges that come with the profession (Manuel, 2003). Indeed, research on teacher attrition continuously highlights the first five years of teaching as a period that "makes or breaks" a teacher, as around 50% of teachers decide to leave the profession during that time (e.g., Borman & Dowling, 2008; Ingersoll & Merrill, 2013; Sims & Jerrim, 2020). As the teaching profession is becoming less appealing with the development of technology and the burgeoning flexibility of the labour market, educational systems are globally faced with the problem of teacher retention (OECD, 2020). This points to the importance of providing support to beginning teachers during their pre-service education and initial years of teaching, as this can help them overcome the challenges they face and encourage them to stay in the profession. According to Berliner (2004), adequate support and mentorship during the first years of teaching reduce the risk of attrition and increase early-career teachers' satisfaction with the teaching profession. Furthermore, meta-analytic data underline the critical importance of introducing proactive policy measures to support the transition from teacher preparation programs to classroom teaching (Borman & Dowling, 2008). Contextual reasons for early-career teachers' attrition have been extensively researched (e.g., Buchanan et al., 2013; Ewing & Smith, 2003; Ingersoll et al., 2014), and include lack of mentorship and support, high workload, challenges with classroom management and relationships with parents, and lacking pedagogical preparation, to name a few. However, less is known about their individual characteristics which could determine how they cope with these challenges. The key to early-career teachers' retention could lie in their social and emotional competencies.

### 1.2. Social and emotional competencies

During the last couple of decades, SEC have become increasingly important in both research and practice. Often called "skills for the 21st century", "non-cognitive skills", or even "soft skills" (Abrahams et al., 2019), these competencies are thought to present the foundation for personal and social development, and are considered necessary in most workplaces. According to De Fruyt et al. (2015, p. 279), social and emotional skills are "individual characteristics that originate in the reciprocal interaction between biological predispositions and environmental factors; are manifested in consistent patterns of thoughts, feelings, and behaviours; continue to

develop through formal and informal learning experiences; and influence important socioeconomic outcomes throughout the individual's life." This definition stresses the importance of these competencies and emphasizes one of their key characteristics – they can be developed.

While existing models of SEC vary significantly in the number and nature of skills they encompass, there is general agreement among researchers regarding what they should include. In order to successfully navigate through socially and emotionally challenging situations, SEC should include elements such as self-awareness, recognizing one's own emotions and emotion regulation, on the one hand, and awareness about others' emotions and relationship skills, on the other (Aldrup et al., 2020). In the following sections, existing models of SEC will be described in more detail, shedding more light onto what is considered SEC, and what is not.

### 1.2.1. Models of social and emotional competencies

With the aim of developing a comprehensive framework of SEC, the Collaborative for Academic, Social, and Emotional Learning (CASEL; 2003) have taken over the leading role in mapping SEC and conducting research in this expanding field. They have developed a conceptual model of SEC which has since been widely utilized by researchers and practitioners, and which groups these competencies into 5 dimensions: self-awareness, self-management, social awareness, relationship skills, and responsible decision making.

Since self-awareness and self-management focus primarily on the self, they are often viewed as emotional, rather than social competencies. However, some elements of these competencies are indeed social in their nature, which is why SEC are best considered as one, comprehensive set of competencies. *Self-awareness* includes directing awareness to one's own emotions and values, recognizing them and understanding the way in which emotions influence one's behaviour and decision making. *Self-management* can be described as a set of competencies which includes self-awareness, but also requires the regulation of emotions, thoughts, and behaviours. It is considered crucial for managing challenging and stressful situations, as well as maintaining motivation, setting, and achieving goals. The relationship between self-awareness and self-management can be described as a hierarchical one, which implies that self-awareness is a prerequisite for self-management and that emotionally competent people are more successful in emotion regulation because they direct more attention to their emotions and are more aware of their thoughts and feelings (Brown & Ryan, 2003; Mayer et al., 2016).

Social awareness and relationship skills are dimensions from the CASEL model which can be viewed as dominantly social competencies, although they also include important elements of emotional competence. *Social awareness* includes empathy, perspective taking, and awareness about individual differences, including awareness about social constructs such as prejudice, discrimination, and stereotypes. *Relationship skills*, on the other hand, include important interpersonal skills, such as communication skills (e.g., active listening, communicating clearly and respectfully), conflict management, resisting social pressures and avoiding risky or destructive behaviours. *Responsible decision making* encompasses both social and emotional competencies through considering one's own and others' emotions when making important decisions, considering different options, and their consequences (CASEL, 2003). The CASEL model has been used to conceptualize SEC in some of the most fundamental work in the field of social and emotional learning (e.g., Jennings & Greenberg, 2009; Durlak et al., 2011). However, its empirical value is still under consideration, as measures which could be used to test it are still being developed.

More recently, Soto et al. (2021; 2022) have endeavoured to develop a comprehensive framework of social, emotional and behavioural skills (SEB) and thus provide an opportunity for researchers in the field to synthesize their work within a model which is both psychometrically sound and integrative. Soto et al. (2021) argue that existing taxonomies of noncognitive skills such as the CASEL model, the Five C's of Positive Youth Development (Lerner et al., 2005), or the Tripartite Taxonomy of Character (Park et al., 2017) overlap with the Big Five personality traits, thus providing a framework for a more comprehensive model of social, emotional and behavioural skills. They define SEB as capacities to maintain social relationships, regulate emotions, and manage goal- and learning-directed behaviours, and organize them within five domains: social engagement skills, cooperation skills, self-management skills, emotional resilience skills, and innovation skills. These five domains are similar and, to some extent, comparable to the CASEL model. In order to dissolve these relations, we must turn to considering SEC within a wider domain of individual differences, especially when it comes to educational research.

As can be seen from both the CASEL and SEB model, social and emotional competencies as a construct are strongly related to various cognitive and non-cognitive constructs in the domain of individual differences, such as emotional intelligence and personality. These constructs have been extensively researched in the educational context, and have been proven relevant for a

wide variety of positive outcomes at the student, teacher, and school level (Brackett et al., 2006; Kim et al., 2019). Therefore, emotional intelligence and personality can be useful for comprehending individual differences in teachers' social and emotional competencies (Jennings & Greenberg, 2009), as well as deriving hypotheses about their role in occupational well-being. In the following sections, the role of emotional intelligence and personality in educational outcomes and occupational well-being will be discussed, as well as their relation to social and emotional competencies.

### 1.2.2. Distinguishing SEC from related constructs

Emotional intelligence (EI) has been widely researched during the last couple of decades, and has received significant interest from both the academic community and the public. While its appeal lies in its seemingly comprehensive premise that people possess a set of abilities related to emotional information processing, which can contribute to various positive life outcomes (Salovey et al., 2003), the field has developed with significant amount of debate about the conceptualization of emotional intelligence. Accordingly, there are three distinct types of EI theories: trait models, ability models and mixed models. Trait models perceive EI as "emotional self-perceptions located at the lower levels of personality hierarchies" (Petrides, 2010, p. 137), thus taking into account both the stability of EI and the subjectivity of emotional experiences. On the other hand, ability models (e.g., Mayer et al., 2016; Goleman, 2001; 2001b) view emotional intelligence as the ability to perceive and express emotions, understand them, and regulate them in the self and in others. Mixed models (e.g., Bar-On, 2007) describe EI as a compound that includes abilities, dispositions, and traits.

While models of SEC recognize that certain traits can be relevant for their development, by their focus on the malleability of SEC they are closer to ability or mixed models of EI. However, the relationship between EI and SEC remains hazy, and leading researchers in the field of social and emotional learning recognize that certain overlap exists in EI and SEC (Zins et al., 2007), while some researchers even use the terms such as EI and emotional competence interchangeably (Palomera et al., 2008; Rey et al., 2016). Zins et al. (2007) note that one of the key differences between EI and SEC lies in SEC addressing social awareness and interpersonal skills, as well as responsible decision making, while EI theorists place greater focus on the role of emotions in personal functioning. However, since emotional abilities contribute to optimal social functioning (Brackett et al., 2006), they are relevant for functioning in social context as well.

As mentioned, EI has often been researched in education, particularly in relation to teacher outcomes. Thus, findings considering the relationship between EI and teacher outcomes can inform the research on the role of SEC in teachers' occupational well-being. Higher EI has been linked to more job satisfaction, positive affect, as well as lower burnout (Brackett et al., 2010; Mérida-López & Extremera, 2017) and reducing stress in teachers (Montgomery & Rupp, 2005). Higher EI has also been linked to higher perceptions of social support from colleagues and superiors (Ju et al., 2015), which can buffer the consequences of burnout.

Personality is another construct in the domain of individual differences which can be related to SEC. According to broad definitions of personality, it refers to unique personal characteristics which influence individuals' behaviours, thoughts, and feelings across different situations and are relatively stable in time (John et al., 2008). While there are numerous frameworks within personality research, the Big Five is considered the dominant personality framework. The Big Five framework views personality in terms of five dimensions or traits: extraversion, agreeableness, emotional stability, conscientiousness and openness (John et al. 2008). As is the case with EI, significant overlap exists between personality and SEC, to the extent that some researchers have even proposed models of SEC parallel to the Big Five domains (Primi et al., 2016; Soto et al., 2022). Of the five personality traits, the two most closely related to SEC are agreeableness and emotional stability. According to Graziano and Tobin (2009), agreeableness can be viewed as individual differences in how likeable or pleasant a person is in their relations with others, and can therefore be seen as an integral element of social competence. On the other hand, emotional stability can be perceived as an element of emotional competence, as it defines how individuals cope with (particularly negative) emotions. However, although personality traits and competencies are usually related, Soto et al. (2021) argue that they cannot be considered equivalent. They note that traits are consistent over time and across situations, while competencies determine how someone is capable of behaving in certain situations. Consequently, traits are viewed as stable, and competencies have the potential to be altered through training or intervention. Furthermore, they point out that SEC may even be better predictors of favourable outcomes than personality traits, as the capacity to consciously control and adapt one's thoughts, emotions, and actions in response to situational demands seems essential for achieving success and well-being.

Given the similarities between personality and SEC, findings from personality research can also prove useful for considering the role of SEC in teacher related outcomes. In order to summarize

the findings on teacher personality in outcomes related to their productivity and well-being, Kim et al. (2019) conducted a meta-analysis of studies which examined the effects of teacher personality (namely Big Five personality traits) on two job-related outcomes (teacher effectiveness and burnout). They found that Big Five traits (except for agreeableness) are positively related with teacher effectiveness, while emotional stability, extraversion, and conscientiousness are negatively associated with burnout. This points to the role of self-awareness, self-management, and relationship skills in preventing negative outcomes related to teachers' occupational well-being.

Unlike emotional intelligence and personality, research on SEC places strong emphasis on developing these competencies in the educational context, which is why a limited, yet growing body of research has been focused on developing these competencies in teachers under the premise that they serve an important purpose for student outcomes, as well as teacher well-being.

### 1.2.3. Teachers' social and emotional competencies

According to a meta-analysis conducted by Durlak et al. (2011), social and emotional learning programmes have positive effects on students' behaviours and attitudes. Participation in these programmes decreases aggressive and risk behaviour, while also increasing academic performance, grade point average, and prosocial behaviour. Moreover, it has positive effects on students' attitudes toward themselves, others, and about schools. However, these programmes are not enough to foster social and emotional learning and other positive outcomes at the student level, as their implementation is often time-limited and their effects are modest. In order to provide sustainable effects, a whole-school approach to developing these competencies, as well as positive school climate is required. Therefore, it is suggested that greater emphasis should be placed on developing teachers' SEC to empower teachers in providing adequate support to their students and consequently fostering their SEC (Jennings & Greenberg, 2009). However, SEC are often seen as somewhat embedded in the teacher role, and not much attention is directed toward developing these competencies in teachers. In fact, considering these competencies are not included in teachers' pre-service education, research suggests that a lot of teachers, especially beginning teachers, lack these competencies or could use additional support in their pre-service and in-service development (Hadar et al., 2020).

Research on the development of teachers' SEC is still in its inception. There exists a need for thorough empirical research of the role of these competencies in various outcomes at the

student, teacher, and school level. As a framework for the research on teachers' SEC, most authors turn to the prosocial classroom model (Jennings & Greenberg, 2009). This model emphasizes the importance of teachers' SEC, as well as their well-being, for a variety of student outcomes, but also outcomes on the classroom and school level, such as school climate. Although the focus of the model lies on student outcomes, this model also recognizes the importance of teacher well-being which can be influenced by various elements of the school context.

According to Jennings and Greenberg (2009), and in line with the CASEL (2003) model of social and emotional competencies, teachers who are socially and emotionally competent are aware of their emotions and behaviours and their influence on students. Moreover, they are able to manage and regulate their emotions and behaviours in the classroom, which can be especially important in demanding situations which provoke strong emotional reactions. Social awareness is another quality of socially and emotionally competent teachers, making them more sensitive to different backgrounds students may come from and allowing them to show more empathy to students and colleagues. Finally, as a result of their SEC, teachers are able to build better relationships with students, colleagues and parents. In short, teachers' SEC refer to their knowledge, skills, and motivation which are required to master social and emotional situations in the classroom (Elias et al., 1997).

Even though all teachers' SEC can be linked to teachers' occupational well-being, in this study we have decided to focus primarily on aspects of SEC that are considered more emotional – self-awareness, emotion regulation as a form of self-management, and empathy as an aspect of social awareness. The rationale behind investigating these specific competencies lies in the importance of teachers' emotions in outcomes such as burnout and leaving the teaching profession (Chang, 2009). Given the immense emotional challenges teachers are faced with on an everyday basis, emotional aspects of teachers' SEC can provide necessary resources which could help teachers cope with those challenges, as well as find their jobs more enjoyable. However, while research points to precisely these competencies as relevant for teachers' occupational well-being (e.g., Bakker & Schaufeli, 2000; Brackett et al., 2010; Mérida-López et al., 2020), their role in outcomes such as burnout, job satisfaction, or teacher commitment has yet to be explored in depth.

*Self-awareness* refers to directing awareness to one's own emotions, recognizing them and understanding the way in which emotions influence one's behaviour and decision making

(CASEL, 2003). More specifically, emotional self-awareness includes emotion perception (i.e., adequately recognizing emotions) and emotion expression (i.e., being capable of clearly communicating emotions to others). Furthermore, emotional self-awareness includes understanding how emotions are related to cognitions and behaviour, and being able to distinguish one emotion from another. As such, emotional self-awareness is considered a core emotional competence (Cherniss & Goleman, 2001), and can be considered as a prerequisite of emotion regulation, since managing emotions primarily depends on adequately recognizing them and knowing how to express them.

*Emotion regulation* refers to the "processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross, 1998, p. 275). While individuals may be predisposed to a certain amount of emotional reactivity, emotion management skills are relevant for how the individual deals with emotions once they are activated (Aldrup et al., 2020), which is why controlling emotions is especially important for teachers. In order to increase the effectiveness of their teaching and remain professional, teachers adopt strategies for emotion regulation (Wang et al., 2023). Emotion regulation strategies can be grouped into antecedent-focused and response-focused strategies (Gross & John, 2003). Antecedent-focused strategies refer to things that people do before the emotion response is activated, such as selecting situations that are less likely to cause strong emotions, modifying the situation, deploying attention, or changing cognitions. Response-focused strategies, on the other hand, refer to things people do once the emotion response has already been activated and the emotion has already been felt, such as modulation of the experiential, behavioural, or physiological responses. Gross and John (2003) found that individuals differ in their use of cognitive reappraisal (an antecedent-focused strategy) and expressive suppression (a response-focused strategy), and that these strategies can have different consequences for outcomes such as social relationships and well-being. *Cognitive reappraisal* refers to a change of cognitions which involves interpreting a potentially emotional situation, in a way that modifies its emotional effect. As such, reappraisal can reduce the experiential and behavioural aspects of negative emotions, as it occurs before the emotion response has begun. On the other hand, *expressive suppression* refers to a form of changing the response to an emotional situation through inhibiting the expression of emotions. Suppression can therefore decrease the behavioural expression of emotions, whether positive or negative. However, suppression does not alter the experience of (negative) emotions, and requires active management of emotional responses, which can lead to a discrepancy between what is

experienced and what is expressed, leading to feelings of guilt and inauthenticity (Sheldon et al., 1997).

*Empathy*, as an aspect of social awareness, depends heavily on both self-awareness and emotion regulation (Goleman, 2001). According to a definition by Davis (1983), empathy refers to the reactions of one person to the observed experiences of another. This broad definition can be useful in examining empathy as a multidimensional construct, which includes both cognitive and affective responses to another's experiences (Davis et al., 1994; Eisenberg & Sulik, 2012). *Cognitive empathy* refers to the ability to recognize and understand emotions or perspectives of other people (Eisenberg et al., 2010). This also allows for anticipating the behaviour and reactions of others, and therefore facilitates social functioning through building smoother interactions with others. On the other hand, *emotional* or *affective empathy* is reflected in experiencing the same or similar emotions as the other person in the interaction, as well as feelings of sympathy or concern for others (Eisenberg et al., 2006). In other words, an important aspect of affective empathy is emotional reactivity.

The prosocial classroom model (Jennings & Greenberg, 2009) highlights that teachers with developed SEC support the development of these competencies in their students, which is positively related to students' academic achievement (Hamre & Pianta, 2001; Jennings & Greenberg, 2009; Schonert-Reichl, 2017). Teachers' SEC also contribute to effective classroom management and healthy teacher-student relationships, which in turn support the development of healthy classroom climate. However, in case teachers lack resources for coping with social and emotional challenges in the classroom, it can also be reflected on students' performance (Marzano et al., 2003) and worsening of school climate, which can further exhaust teachers and lead to reduced well-being and burnout (Jennings & Greenberg, 2009). With this in mind, we will first turn to examining elements of teachers' occupational well-being, and then discuss their relations with teachers' SEC.

### 1.3. Teachers' occupational well-being and commitment

Occupational well-being is a multidimensional construct which includes subjective and objective indicators of physical, mental, and social well-being in the work context, both positive (e.g., good physical health, job satisfaction) and negative (e.g., ill-health, emotional exhaustion, burnout) (Zacher & Schmitt, 2016). Occupational well-being is especially relevant in demanding and stressful professions, where workers need more resources to cope with their everyday work tasks. Numerous studies indicate that the teaching profession is one of the most

stressful professions (Brackett et al., 2010; Maslach et al., 2001; Schonert-Reichl, 2017) and that work-related stress combined with lack of personal and organizational resources for coping with it is one of the primary reasons teachers decide to leave the profession (Montgomery & Rupp, 2005). Teacher attrition is becoming a growing challenge for educational systems internationally, with aspects of occupational well-being proving central for the decision to leave the teaching profession (Madigan & Kim, 2021; OECD, 2020). Meanwhile, not much attention is directed to occupational health and well-being in teachers and supporting them in this aspect through pre-service and in-service training.

Since teacher attrition has significant consequences on educational systems, research has been dedicated to identifying teachers who are at risk of leaving the profession. According to recent analyses of teacher attrition, during the first 5 years of their careers, almost half of new teachers decide to leave the teaching profession (Sims & Jerrim, 2020). This suggests that attrition rates are high in early-career teachers, who often have difficulties making the transition from university to work (Friedman, 2000). Attrition is also more frequent among math and science teachers, female teachers and those who are married and have children (Borman & Dowling, 2008).

In Croatia, teachers perceive their profession as important but challenging, while also pointing out that the profession is not appreciated in society, which is reflected in their work conditions, salary and overall public perception of their job as non-demanding. They also point out that they are satisfied with their job, but dissatisfied with their work conditions (OECD, 2020; Slišković et al., 2017). Around a third of Croatian teachers express the desire to leave the teaching profession (Radeka & Sorić, 2006; OECD, 2020). As more and more qualified workers migrate to other countries within the European Union and beyond, Croatia is beginning to face the problem of recruiting, hiring, and retaining teachers (Marušić et al., 2017). These findings suggest that raising awareness about teachers' occupational well-being and implementing policies to support it can be beneficial not only for teachers and their students, but for entire educational systems and communities. As a multidimensional construct, occupational well-being in teachers has mostly been researched through burnout and job satisfaction, as well as their intention to stay in the teaching profession, i.e., commitment to the profession.

### 1.3.1. Burnout

Since burnout is considered a major problem among teachers (Bakker & Schaufeli, 2000), a large body of research exists which investigates its predictors, manifestations, and

consequences. Burnout is most often described as a psychological, work-related syndrome characterized by three dimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach et al., 2001). Emotional exhaustion is the "central quality of burnout" (Maslach et al., 2001, p. 402), and one that can be most obviously observed in ourselves and others, reflecting the emotional aspect of burnout. Consequently, exhaustion can lead to emotional and cognitive distancing from work or colleagues, that is, depersonalization, another important dimension of burnout. Depersonalization is characterized by a cynical attitude and withdrawal from one's job or work environment. The third dimension of burnout is reduced personal accomplishment or inefficacy, a feeling of not living up to one's own expectations regarding work performance, which can be a result of exhaustion or depersonalization, but can also develop in parallel to the other two burnout aspects (Leiter, 1993).

However, more recently, Schaufeli et al. (2020) have argued that this conceptualization suffers from several shortcomings. Firstly, they note that it fails to encompass several important symptoms of burnout, such as cognitive deficits and malfunctioning, as well as physical symptoms that go along with the syndrome, such as headaches, sleeping problems and irritability. Secondly, they argue that the Maslach Burnout Inventory (MBI), the instrument which is most often used in publications on burnout, lacks psychometric reliability and factorial validity, which has consequences for its use and interpretation of the results. Finally, their remarks deal with the practical applicability of the MBI for individual burnout assessment, since it was developed primarily as a research instrument rather than a tool to be used for assessment, and does not provide a single score which could be used to distinguish individuals who are experiencing burnout from those who are not. Considering existing conceptualizations of burnout, they noted that there exists general consensus that *exhaustion* (i.e., lack of physical or mental energy) is the most essential symptom of burnout, but that it is not sufficient for burnout to be diagnosed. Accordingly, Schaufeli et al. (2020) have developed a new conceptualization which includes four core dimensions of burnout – exhaustion, cognitive impairment, emotional impairment, and mental distance. *Cognitive impairment* refers to the inability to regulate one's cognitive processes, such as memory or attention, while *emotional impairment* refers to the inability to regulate one's emotional processes. *Mental distance* includes psychological withdrawal and detachment from work, which can be seen as a strategy to cope with feelings of exhaustion. They also included secondary dimensions which often accompany these core symptoms, and have divided them into three categories: depressed mood, psychological

distress, and psychosomatic complaints. This conceptualization does not encompass personal accomplishment, which is considered one of the three dimensions of burnout according to Maslach et al. (2001). Bakker et al. (2004) argue that personal accomplishment does not represent a core dimension of burnout. Some evidence suggests that personal accomplishment can be interpreted as a possible consequence of burnout (Koeske & Koeske, 1989), that it has weakest relationships with the other two dimensions of burnout as well as outcome variables (Schaufeli & Enzmann, 1998), and that it can reflect personality characteristics such as self-efficacy (Cordes & Dougherty, 1993). According to their revised conceptualization of burnout, Schaufeli et al. (2020) have also developed a new instrument for measuring burnout – the Burnout Assessment Tool (BAT). As a new questionnaire, the BAT is yet to be validated in different contexts, although a handful of recent papers on teachers yielded promising results (e.g., Angelini et al., 2021; Pereira et al., 2021). Nevertheless, the majority of what is so far known about teacher burnout stems from research which used the MBI or other burnout measures.

In teachers, burnout is often a result of frequent, challenging, and intense contacts with students, resulting in cynical attitudes toward students and feelings of ineffectiveness and low self-efficacy (Rey et al., 2016). According to Chang's (2009) review of literature on teacher burnout, there are three types of factors contributing to burnout: individual factors, organizational factors, and transactional factors (interactions between individual and organizational factors). Common causes of burnout in teachers therefore include students' behaviour and discipline problems (Skaalvik & Skaalvik, 2007), time pressure (Skaalvik & Skaalvik, 2010), high workload (Chang, 2009), criticism, and lack of recognition and reward (Friedman, 2000), to name a few. In an attempt to synthesize the findings from longitudinal studies on teacher burnout, Mijakoski et al. (2022) found that low job satisfaction, work pressure, teacher self-efficacy, neuroticism, perceived collective exhaustion, and classroom disruption represent most common predictors of burnout in teachers. There also exist significant individual differences among teachers in their reactions to stress and burnout (Bauer et al., 2006), as well as its manifestations (Bakker & Schaufeli, 2000). Burnout is significantly related to outcomes such as job satisfaction and, consequently, teacher attrition, which is why it is worth considering in the educational context, especially when it comes to early-career teachers who are most at risk for attrition (Borman & Dowling, 2008; Madigan & Kim, 2021).

### 1.3.2. Job satisfaction

Job satisfaction is generally regarded as positive or negative evaluative judgements employees develop about their jobs (Weiss, 2002). More broadly, Locke (1976, p. 1304) defined job satisfaction as a "pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences". As one of the most important indicators of occupational well-being, job satisfaction has been extensively researched in teachers (Ferguson et al., 2012).

In their analysis of predictors of teacher job satisfaction, Kim and Loadman (1994) found seven statistically significant predictors: salary, opportunities for advancement, professional challenge, professional autonomy, working conditions, interactions with colleagues, and interactions with students. Stress has been found to significantly impact job satisfaction (Ferguson et al., 2012), as well as increased administration and paperwork which expands their workload (Scott et al., 2001). Teachers also note that their profession has experienced a decline in status and as such has been exposed to significant criticism on behalf of students and their parents, which also results in their lower job satisfaction (Scott et al., 2001).

When it comes to demographic characteristics, Ferguson et al. (2012) found that years of experience in teaching significantly predict job satisfaction, in that more experienced teachers demonstrate higher job satisfaction. This is in line with the findings that younger teachers have lower job satisfaction than older teachers (Sargent & Hannum, 2005), and are more likely to consider leaving the profession (OECD, 2020), which has important implications for preventing attrition in early-career teachers. While teachers' higher job satisfaction leads to increased performance (Judge et al., 2001), greater instructional quality and more support to their students (Klusmann et al., 2008; Kunter et al., 2013), and better overall well-being (Collie et al., 2012), low job satisfaction is related to burnout (Skaalvik & Skaalvik, 2009) and intention of leaving the teaching profession (Skaalvik & Skaalvik, 2011).

### 1.3.3. Commitment to the profession

While teacher attrition can be measured objectively (e.g., Ingersoll, 2003), the interest of researchers and practitioners often lies in preventing it from happening in the first place. To be able to prevent teacher attrition, it is necessary to identify the factors that predict it. However, the predictors of attrition are often not easily identified, which is why research focusing on this issue mostly investigates it through motivational variables such as teacher commitment. Teacher commitment is a multidimensional construct which reflects teachers' psychological

attachment, involvement or identification with their school as an organization, their students, their teaching practices, and the teaching profession (Thien et al., 2014). While all dimensions of teacher commitment are related to important outcomes, commitment to the teaching profession (sometimes explored as its opposite, turnover intentions) is probably the best indicator of future teacher attrition (i.e., leaving the profession) (Griffeth et al., 2000), as research has confirmed the relationship between intention and the implementation of behaviour (Ajzen et al., 2009). In other words, asking teachers whether they intend to stay in or leave the teaching profession is probably the closest we can get to determining which teachers will indeed quit teaching.

There are several factors which contribute to teacher commitment or lack thereof. According to international research on teacher attrition, the main contextual reasons for leaving the profession include the decline in the status of the teaching profession and dissatisfying working environment (Borman & Dowling, 2008; Ingersoll & Smith, 2004). Furthermore, teachers often report that the opportunities for professional development are inadequate, which can leave them feeling stagnant in their careers. They also have to follow rigid curricula and conduct standardized tests, which can limit their sense of autonomy and creativity in the classroom, leaving them frustrated. Finally, it seems that in most countries, teacher salaries do not reflect the level of education, dedication, and effort required for the job (OECD, 2020). Low compensation can discourage individuals from pursuing or staying in the teaching profession. This holds especially true in the Croatian context, where teachers' salaries reach a plateau very early in the career and remain constant later on.

However, apart from the aforementioned contextual predictors of commitment which significantly overlap with predictors of job satisfaction, elements of occupational well-being have been found to be important, if not crucial, predictors of teacher attrition as well (Madigan & Kim, 2021). Teachers often work long hours, manage large classes, and face mounting administrative demands. They also often have to manage disruptive student behaviour and maintain classroom discipline (Räsänen et al, 2020). The emotional demands placed on teachers are therefore substantial and require a great deal of emotion regulation, which includes engaging in emotional labour (Yin et al., 2019). The excessive workload and emotional stress associated with teaching can exhaust teachers and lead to burnout, which can consequently lead to the decision to leave the teaching profession. Indeed, recent meta-analytic findings suggest that

burnout is associated with lower levels of commitment, while job satisfaction is related to higher levels of commitment to the teaching profession (Madigan & Kim, 2021)

## 1.4. Relations between teachers' SEC, their occupational well-being, and commitment

### 1.4.1. Theoretical framework

As mentioned in the chapter on teachers' social and emotional competencies, the prosocial classroom model (Jennings & Greenberg, 2009) describes the interaction between teachers' SEC and their occupational well-being. Teachers with better SEC manage the classroom more effectively and develop better relationships with students, and in turn support the development of a healthy classroom climate and SEC in students, which can lead to higher job satisfaction. However, in case teachers lack resources for coping with social and emotional challenges in the classroom, this can be reflected on students' performance (Marzano et al., 2003) and worsening of school climate, which can further exhaust teachers and lead to reduced well-being and burnout (Jennings & Greenberg, 2009). While emotional competencies have indeed been explored as predictors of occupational well-being, the opposite pattern seems plausible as well – job satisfaction and burnout can play a significant role in predicting teachers' social and emotional competencies. A promising basis for the line of research regarding the reciprocal relations between teachers' SEC and occupational well-being lies in theories which take into account the resources at the disposal of the teacher, such as the conservation of resources theory (COR; Hobfoll, 1989) or the broaden-and-build theory (Frederickson, 2004).

Personal resources have been defined by Hobfoll et al. (2003) as aspects of the self that are linked to resilience and refer to individuals' sense of their ability to control and influence their environment, and as such have been included in the conservation of resources theory (COR; Hobfoll, 1989; Hobfoll, 2001; Hobfoll & Freedy, 2017). According to this theory, people seek to obtain, retain, and protect their existing material, social, personal, or energetic resources and acquire new ones. It also postulates that stress experienced by individuals can be understood in relation to potential or actual loss of valued resources. When individuals lose their resources at work, not only are experiences of strain and burnout likely, but also the future investment of resources becomes more difficult which leads to even further resources loss (Hobfoll & Freedy, 2017). However, since people are motivated to conserve and attain resources, under such circumstances, they will engage in behaviors that avoid further resource loss to preserve their well-being (Halbesleben et al., 2014). More specifically, experiencing negative affective states such as burnout and job dissatisfaction could deplete teachers' social and emotional

competencies (i.e., personal resources) and result in less emotional self-awareness, less control over their emotions, and less empathy, which could ultimately lead to the decision to leave the teaching profession in order to prevent further resource loss.

On the other hand, positive aspects of occupational well-being can serve to promote personal resources such as SEC, which can in turn protect well-being outcomes, as illustrated by the broaden-and-build theory (Frederickson, 2004). According to this theory, positive emotions promote mindsets and actions which build resilience and help strengthen personal resources, which can then be useful in coping with stressful situations. In other words, experiencing positive emotions such as joy and happiness also broadens behaviours ("thought-action repertoires"), which in turn builds enduring personal resources (Fredrickson, 2001). For example, experiencing positive emotions at work widens the array of thoughts and actions that emerge in different situation. This would mean that experiencing positive work-related outcomes such as job satisfaction could strengthen teachers' self-awareness or empathy, as well as increase their capabilities for emotion regulation. These "broadened" competencies could in turn serve as resources when faced with challenging situations at school, thereby preserving their job satisfaction and preventing teachers from considering leaving the teaching profession.

### 1.4.2. Literature review on the relations between SEC, well-being, and commitment

Teaching comes with a great deal of stress and emotional challenges (Kyriacou, 2001; Sutton & Wheatley, 2003). Teachers' emotions have been proven relevant for important outcomes such as well-being, burnout, and leaving the teaching profession (Chang, 2009). While there exists some evidence that SEC are related to occupational well-being in teachers through influencing how teachers cope with emotional challenges in their everyday work (Chan, 2006; Jennings & Greenberg, 2009), which points to SEC as potential psychological resources that can alleviate negative outcomes such as burnout and leaving the profession in early-career teachers, research in this area is still scarce and it is unclear how specific SEC are related to various aspects of occupational well-being. The existing and scant research points to competencies such as emotional self-awareness, emotion regulation, and empathy as of crucial importance for teacher outcomes, including burnout, job satisfaction, and teacher commitment (Bakker & Schaufeli, 2000; Brackett et al., 2010; Mérida-López et al., 2020). However, research in this field has remained fragmented and has examined these competencies and relevant outcomes in isolation. Furthermore, when interpreting the results of previous studies, it has to be noted that the relations between teachers' SEC and their occupational well-being

have predominantly been investigated through cross-sectional research designs. This has important implications since SEC have mostly been considered predictors of occupational well-being, and not their outcome. However, cross-sectional designs do not have the potential to discern between these roles. Scarce longitudinal designs have also mostly examined SEC as predictors of occupational well-being, and these have mostly been limited to evaluations of interventions aimed at developing teachers' SEC. Consequently, while this literature review predominantly describes the role of SEC in occupational well-being, given the theoretical considerations provided above, the opposite direction could be plausible as well.

Though *self-awareness* is considered a core emotional competence (Cherniss & Goleman, 2001) which seems to be relevant for teacher well-being (Kiltz et al., 2020), research examining its role in teacher related outcomes is still scarce. The findings on the role of self-awareness in teacher well-being mostly stem from research on mindfulness. According to Jon Kabat-Zinn (2003, p. 145), one of the pioneers in mindfulness-based stress reduction practice, mindfulness is "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgementally to the unfolding of experience moment by moment". As such, mindfulness includes focusing one's attention to the present moment and activities, as well as non-judgemental awareness of experience (Bishop et al., 2004). Mindfulness can be examined as a trait (i.e. how mindful a teacher generally is), but it can also be developed through mindfulness-based interventions incorporated in teacher training (Brown et al., 2007). Though research on mindfulness in education is still limited, a growing body of evidence suggests that both trait mindfulness and mindfulness supported by interventions can have positive effects on various aspects of occupational well-being. Regarding trait mindfulness, Abenavoli et al. (2013) found that mindfulness in teachers was negatively associated with all three components of burnout: emotional exhaustion, depersonalization, and low personal accomplishment. Similarly, Braun et al. (2019) found that teachers' mindfulness was related to lower levels of burnout, anxiety and depression. When it comes to the effects of mindfulness interventions on teachers' occupational well-being, according to a meta-analysis of the effects of mindfulness training on teacher well-being (Zarate et al., 2019), mindfulness-based interventions were found to have significant positive effects for decreases in stress and anxiety, depression, as well as burnout. In a similar vein, Hwang et al. (2017) conducted a systematic review of mindfulness interventions for in-service teachers, and found that mindfulness-based interventions have been helpful in reducing teacher burnout and stress.

*Emotion regulation*, on the other hand, has been widely examined in relation to teachers' occupational well-being, since teachers are constantly exposed to emotionally challenging situations which often require a great deal of self-regulated behaviour (Jennings & Greenberg, 2009). Furthermore, coping with their own negative emotional responses is considered a major source of stress for teachers (Sutton, 2004) and emotion regulation plays an important role in teacher burnout (Jennings & Greenberg, 2009). When it comes to the role that emotion regulation plays in teacher well-being, emotion regulation is positively related to job satisfaction (Burić et al., 2017), and negatively related to emotional exhaustion, one of the components of burnout (Brackett et al., 2010; Carson et al., 2011). Furthermore, empirical research corroborates the findings of Gross and John (2003) that different strategies can have adverse effects on teacher well-being – problem solving and cognitive reappraisal are associated with higher levels of well-being and job satisfaction, while suppression is related to burnout, lower job satisfaction, and lower well-being (Burić et al., 2017; Burić et al., 2021; Chang, 2020; Taxer & Frenzel, 2015; Tsouloupas et al., 2010; Wang et al, 2023). Moreover, interventions aimed at increasing SEC, including emotion regulation have been proven to also decrease occupational stress and exhaustion in teachers (Oliveira et al., 2022). This suggests that emotion regulation can also play a crucial role in teacher commitment, considering low job satisfaction and burnout are both related to the intention of leaving the teaching profession (Skaalvik & Skaalvik, 2011; O'Brien et al., 2008).

*Empathy* appears to be one of the social and emotional competencies most obviously related to teachers' occupational well-being. Since teachers work with a large number of children who often deal with specific challenges, their empathy skills can be crucial for building relationships with students. However, being empathic and providing continuous emotional support can also be overwhelming and detrimental to teachers' well-being (Jennings & Min, 2023). Teachers who support students dealing with traumatic experiences can experience empathy-based stress (Rauvola et al., 2019), which can be especially detrimental in the early phase of their career and contribute to their experience of burnout (Schmidt et al., 2022). Empathy in teachers is yet to be more extensively explored in relation to their occupational well-being, especially when it comes to discerning whether empathy functions as a buffer against burnout, or contributes to its development. Existing research suggests that empathy is positively related to burnout, that is, the more empathic a teacher is, the more likely he or she is to experience burnout (Wróbel, 2013; Medvedskaya & Sheryagina, 2017). However, certain aspects of empathy seem to be more likely to make the teacher more susceptible to burnout – according to Medvedskaya and

Sheryagina (2017), of the four aspects of empathy (perspective taking, fantasy, empathic concern and personal distress), only personal distress was significantly related to burnout, which emphasizes the importance of experiencing negative emotions by the teacher him/herself. Scarce longitudinal research analysing reciprocal relations between empathy and burnout yielded inconclusive results (Altmann & Roth, 2021), highlighting the need for further research of these relations.

Significant insights into the importance of empathy in teacher burnout stem from the research of Bakker and Schaufeli (2000). Drawing from evidence on emotional contagion (Hatfield et al., 1993), they hypothesized that burnout would be more prevalent among teachers whose colleagues are also burned-out, triggering a process dubbed "burnout contagion" (Bakker & Schaufeli, 2000). Considering symptoms of burnout are often visible to colleagues, they found that burnout was more likely to be "contagious" when teachers had the tendency to talk with their colleagues more often and discuss work- and student-related issues. Furthermore, burnout contagion was more likely in teachers who are highly susceptible to the emotions of others, which points to the role of empathy in experiencing burnout. These findings stress the importance of social context for developing the burnout syndrome and have significant implications for teacher training and strengthening positive organizational climate in schools.

Considering the relationship between burnout and job satisfaction, these findings suggest that empathy could be negatively related to job satisfaction, and consequently could lead to lower teacher commitment. On the other hand, scarce research on the role of empathy in job satisfaction suggests that empathy could be positively related to job satisfaction and not present a risk factor in the intention to leave the profession (Dal Santo et al., 2014; Lamiani et al., 2020). Despite the fact that teacher empathy is yet to be explored in relation to job satisfaction, considering that teachers' interactions with students are one of the most important predictors of their job satisfaction (Kim & Loadman, 1994) and that sympathizing with students and understanding their perspective contributes to the relationships teachers build with their students, it is reasonable to assume that empathy would be positively related to job satisfaction.

#### 1.4.3. Mediating role of occupational well-being in the relationship between SEC and commitment

Theoretical considerations and existing empirical research suggest that teachers' SEC are positively related to teachers' commitment to the profession. However, the mechanisms by which SEC affect commitment are not clear. For example, Jennings & Min (2023) argue that

empathy can lead to empathic distress and contribute to burnout in teachers, which can further lead to withdrawal behaviour (i.e., to the decision to leave the teaching profession). However, empirical research which would examine the combining role of SEC and occupational well-being is scarce.

Based on the literature review provided above, it can be assumed that teachers' social and emotional competencies and occupational well-being are most likely reciprocally related – teachers' social and emotional competencies shape occupational well-being and teacher occupational well-being shapes their social and emotional competencies. Next, it seems that teachers' SEC and occupational well-being both directly and indirectly affect teacher motivation (i.e., commitment to the profession). More specifically, if teachers' SEC affect occupational well-being, it can be expected that teachers' SEC (i.e., self-awareness, emotion regulation, and empathy) predict commitment to the profession indirectly via burnout and job satisfaction. In a similar vein, if teacher occupational well-being affects SEC, it can be expected that burnout and job satisfaction predict commitment to the profession indirectly via teachers' SEC (i.e., self-awareness, emotion regulation, and empathy). In other words, teacher occupational well-being can mediate the relationship between SEC and commitment to the profession, but also, teachers' SEC can mediate the relationship between occupational well-being and commitment to the profession. Investigating these dynamic interrelations between teachers' SEC, well-being, and commitment, could prove useful for identifying early-career teachers who are at risk of leaving the teaching profession and understanding the underlying mechanisms. This can help target pre-service or in-service teachers in need for additional support, as well as create curricula for teacher education aimed at the development of SEC.

## 1.5. Methodological approaches to researching the relationship between teachers' SEC and their occupational well-being

### 1.5.1. Measuring teachers' SEC

When discussing the role of SEC in outcomes such as occupational well-being, it has to be noted that researchers have yet to reach consensus on how to adequately measure them, though significant progress is being made in the development of comprehensive instruments to measure SEC (e.g., Soto et al., 2022). Research in the field has also relied on various methodological approaches in order to explain the role of teachers' SEC in a number of relevant outcomes, such as occupational well-being.

As the research area examining teachers' SEC continues to evolve, the variety of methodological approaches used to measure them is evolving as well. However, while there seems to exist consensus regarding the importance of teachers' SEC for student outcomes, and emerging evidence points to their value for teacher well-being (Jennings & Greenberg, 2009), there is variability in the number and nature of skills included in different models and frameworks of SEC (Abrahams et al., 2019; Primi et al., 2016). This variety of different frameworks and the overlap of skills included in them has had important consequences for their measurement (Abrahams et al., 2019; Arnold & Lindner-Müller, 2012). Some researchers (e.g., Zych et al., 2018) tend to measure SEC as a set of interrelated competencies, basing their instruments on some of the widely used theoretical and conceptual models such as the CASEL model (Collaborative for Academic, Social, and Emotional Learning, 2003). On the other hand, the vast majority of the research within the field investigates these competencies in a more fragmented manner, by focusing on a particular competence within the domain.

Due to the nature of the constructs included within the domain of SEC (for example, self-awareness which includes understanding one's emotions, goals, and values (Weissberg et al., 2015)), SEC have so far been examined mostly through self-reports. According to DeVellis (2003), the main advantage of using self-report measures is the possibility of measuring constructs which are not directly observable or obtained through direct measurement. This approach, while reasonable, and in some cases the only one feasible, has certain drawbacks which need to be acknowledged. However, one of the most prominent drawbacks when using self-report measures is their susceptibility to faking and socially desirable responding (Abrahams et al., 2019; Paulhus, 1991). When faced with instruments measuring, for example, the quality of teacher-student relationships as an indicator of relationship management, it is usually not difficult to differentiate which items describe the relationship as more positive and which as more negative, which makes it easier for teachers to adjust their responses in order to portray themselves more favourably. Furthermore, when examining SEC, it is important to bear in mind that successful responding to self-report measures greatly depends on the variables being measured, such as self-awareness, which may influence self-ratings (Brackett et al., 2006). However, certain aspects of SEC (for example, emotions that are felt when a certain situation arises or self-efficacy beliefs) cannot be accurately measured through methods other than self-report. While physiological measurements of emotions are also possible, they are not specific reactions which can be attributed to certain SEC, and are also difficult to implement

within the classroom setting (Kliś & Kossewska, 2000) which is why self-reports remain the most commonly used method of SEC assessment (Müller et al., 2020), despite their drawbacks.

Another approach to measuring SEC is by using other-reports. As mentioned above, some elements of SEC, mostly within the domain of emotional competence, may not be observable by others and therefore cannot be measured by other-reports. However, most aspects of social competence can be observed by others and are appropriate for the use of other-reports for their measurement. For example, students could assess their teachers' empathy or relationship skills, as well as their capabilities for emotion regulation. However, studies which involve student reports come with an array of ethical considerations, and it is still unclear whether they yield valid results, or reflect something different, for example how much the students generally like their teachers. Indeed, other reports of teachers' SEC have been used in a minority of existing studies and have yet to be incorporated into instruments measuring SEC (Müller et al., 2020).

An alternative to using traditional self- or other-reports involves the use of various performance tests, since they attempt to measure the ability to perform well in certain situations, rather than one's beliefs about potential performance. According to Kunter & Klusmann (2010), competence-related self-perception which is measured by self-report is indeed one of the indicators of social competencies, but it is not identical with actual behaviour. In a similar vein, there exists a gap between beliefs about the importance of certain effective strategies in the domain of SEC and actual knowledge and use of these strategies (Brackett et al., 2006). This points to the importance of encouraging the use of other types of measures in order to advance this field of research. The use of performance tests in the area of SEC stems mostly from the research on emotional intelligence (EI) which defines EI as an ability, rather than a trait (e.g., Salovey et al., 2003). In an attempt to accurately measure EI, Mayer, Salovey and Caruso (2002) have developed the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), a performance test which measures EI abilities through a series of tasks which include solving emotion related problems. The MSCEIT can be used either as a self-report measure or an observer rating scale. As one of the most widely used instruments for the assessment of emotional competence, the MSCEIT provides valuable insight into the usefulness of such measures and their validity in predicting individual and social outcomes. Indeed, accumulating research suggests that scores on the MSCEIT, but not self-report measures, have incremental validity in the prediction of various important outcomes above typically used measures of personality, well-being and general intelligence (Mayer et al., 2008). However, since self-report

and performance measures seem to be unrelated (Brackett et al, 2006), more research is needed to gain information on how to most accurately measure emotional competence.

Newest developments in the use of performance tests for measuring SEC involve the use of situational judgement tests, which offer a more objective take on how teachers use these competencies when faced with challenging situations in the classroom. Situational judgement tests are designed to measure the use of competencies in realistic situations and everyday challenges, such as regulating their emotions when faced with an angry parent or establishing and maintaining a positive teacher-student relationship with a difficult student. The teachers are presented with several potential reactions and are required to rate the effectiveness of different response choices. Initial validation studies found that situational judgement tests measuring SEC can be useful in predicting outcomes such as providing emotional support for students, better teacher-student relationships, less symptoms of burnout and higher job satisfaction (Aldrup et al., 2020). However, their development and implementation are costly and time-consuming, which is why they are only used to a limited extent, despite their validity.

Alternative methods of measuring teachers' SEC, including qualitative measures such as interviews, are used to a limited extent. They could, however, be included to complement quantitative measures and yield more comprehensive results (Müller et al., 2020).

Depending on the chosen theoretical framework and methods to assess SEC, another important methodological decision researchers have to make when doing research on teachers' SEC involves the use of research instruments that accurately measure the constructs of interest. While a plethora of research on teachers' occupational well-being has yielded several valid and widely used instruments, the same cannot be said for the area of teachers' SEC. Indeed, the lack of valid instruments for assessing teachers' SEC presents one of the biggest challenges in this research area (Aldrup et al., 2020). While significant progress is being made in the development of a conceptually and psychometrically sound instrument to measure SEC by Soto et al. (2022), measures based on the CASEL model are still widely utilized, as are measures of separate constructs such as self-awareness, empathy, and emotion regulation.

### 1.5.2. Measuring teachers' occupational well-being

Teachers' occupational well-being can be defined as a positive evaluation of various aspects of the teaching profession, which includes affective, motivational behavioural, cognitive and psychosomatic dimension (Van Horn et al., 2004). As can be seen from the definition, teachers'

occupational well-being is a multidimensional construct, and has so far mostly been researched through concepts such as burnout, job satisfaction and intention to leave the teaching profession (Brackett et al., 2010; Skaalvik & Skaalvik, 2011; Borman & Dowling, 2008).

Methods for evaluating and measuring teachers' occupational well-being depend on the construct being measured, but since occupational well-being isn't easily observed by others and depends on the interaction of personal factors and the individuals' perception of organizational characteristics, it has also been studied mostly through self-report measures (e.g., Aldrup et al., 2018; Bakker et al., 2007; Skaalvik & Skaalvik, 2011). However, it has to be noted that certain aspects of teacher well-being, such as burnout symptoms, can be observed in the classroom by their students and can negatively affect them, which provides rationale for using other-reports to measure outcomes such as teacher burnout as well. Students' reports of teacher burnout have so far been used in a limited number of studies (e.g., Evers et al., 2004; Tatar & Jahav, 1999), offering an alternative to self-report measures which can be particularly valuable in research examining the role of teacher burnout for outcomes such as student well-being and organizational climate.

Unlike instruments measuring burnout, which have a strong base in theory and have to some extent already been described in the chapter on burnout, teacher job satisfaction and intention to leave the teaching profession have so far mostly been measured by context specific measures ranging from one to several items. Instruments which aim to assess teacher job satisfaction typically include several items which enquire about their satisfaction with their job in general (e.g., Caprara et al., 2003; Collie et al., 2012; Klassen & Chiu, 2010; Skaalvik & Skaalvik, 2014; Toropova et al., 2021). However, depending on the particular research question, measures of job satisfaction can also assess satisfaction with various aspects of the job such as satisfaction with co-workers, parents and students' behaviours (Pepe et al., 2017) or satisfaction with working conditions such as salary, co-workers, promotions or supervisors (Vidić, 2009). Similar to measuring job satisfaction, assessing the intentions to leave the teaching profession includes the use of one to several items which enquire about teachers' career plans for the future and whether they intend to continue teaching (e.g., Goddard & O'Brien, 2003; Kelly et al., 2019; Mérida-López et al., 2020). Though the use of measures assessing the intention to leave the teaching profession cannot fully predict actual teacher attrition, DeAngelis et al. (2003) have found significantly higher rates of attrition among those teachers who reported the

intention to leave the profession than among those who did not, pointing to the value of such instruments for assessing teacher commitment.

### 1.5.3. Cross-sectional vs. longitudinal research on teachers' SEC and occupational well-being

As is the case in psychological research in general (Spector, 2019), the majority of studies in this field have used cross-sectional research designs to gain new insights into the relations between SEC and well-being. Due to their lower cost and fewer challenges in terms of data collection, cross-sectional research designs remain widely utilized in various research areas. Furthermore, since the exploration of the importance of teachers' SEC stems from research involving the use of social and emotional learning (SEL) programmes, limited knowledge has also been gained through the use of quasi-experimental studies aimed at assessing the impact of such programmes (e.g., Jennings et al., 2019; Kim et al., 2021) as well as a recent meta-analysis investigating the effect of SEL interventions on teachers' burnout (Oliveira et al., 2021). However, longitudinal research which would allow researchers to discern causal relations between teachers' SEC and their occupational well-being is still scarce.

Indeed, while both cross-sectional and (rare) quasi-experimental research designs have informed researchers on the importance of teachers' SEC for their occupational well-being, the reciprocal relations between the two constructs remain unclear due to the prevalence of cross-sectional research. While some cross-sectional research can provide the opportunity to detect changes in constructs over time (for example, through comparing different cohorts of teachers), it does not detect intraindividual changes due to using independent samples. Furthermore, cross-sectional designs cannot be used to infer conclusions of prediction, as they only imply relations which can go both ways. One of the advantages of using longitudinal research designs is that they take into account temporal relations between variables (Schaie, 1983). Utilizing longitudinal research designs, particularly full panel designs, could help shed more light on the relations between teachers' SEC and aspects of their occupational well-being, especially when it comes to reciprocal relations between these two constructs.

### 1.6. The present study

Taken together, theoretical considerations and empirical findings on the role of teachers' social and emotional competencies and occupational well-being in their commitment to the profession demonstrate the complex and dynamic nature of their mutual relationships. This study aims to contribute to the body of knowledge on the relations between teachers' SEC and occupational well-being by examining their role in the commitment of an especially vulnerable sample of teachers – those at the very beginning of their career, who are most at risk for leaving the profession. In light of the review of existing methodological approaches to studying the relations between early-career teachers' SEC and occupational well-being, it was decided that this study would utilize a longitudinal full-panel design with two time points. Longitudinal designs can provide insight into previously unexplored reciprocal relations between SEC and occupational well-being. Furthermore, this research design will also allow for testing indirect effects from SEC to commitment via occupational well-being, as well as from occupational well-being to commitment via SEC, depending on the established relations between SEC and well-being. The results of this study hold the potential to disentangle the complex relationships between SEC and occupational well-being, as well as identify individual characteristics of early-career teachers which can contribute to their job satisfaction, burnout, and commitment to the profession. The findings could inform policy makers in developing induction programmes for new teachers as well as supporting those already in-service as they navigate through the transition from university to work.

## 2. RESEARCH QUESTIONS AND HYPOTHESES

To investigate the proposed complex and dynamic relationships between early-career teachers' social and emotional competencies (i.e., self-awareness, emotion regulation, and empathy), their occupational well-being (i.e., burnout and job satisfaction), and commitment to the profession, as depicted in Figure 1, we will aim to answer the following research questions:

1) What is the nature of the relationships between early-career teachers' self-awareness, emotion regulation (i.e., reappraisal and suppression) and empathy (i.e., cognitive and affective) and their burnout (i.e., exhaustion, mental distance, cognitive and emotional impairment) and job satisfaction?

   **H1**. Teachers' social and emotional competencies and their occupational well-being will be reciprocally related – teacher's social and emotional competencies will predict occupational well-being over time, and vice versa.

   **H1a**: Teachers' self-awareness and reappraisal will negatively predict burnout and positively predict job satisfaction, and vice versa.

   **H1b**: Teachers' suppression will positively predict burnout and negatively predict job satisfaction, and vice versa.

   **H1b**: Teachers' empathy will positively predict job satisfaction, and vice versa. Teachers' empathy will also positively predict burnout, whereas burnout will negatively predict empathy.

2) What is the nature of direct and indirect contributions of early-career teachers' self-awareness, emotion regulation (i.e., reappraisal and suppression) and empathy (i.e., cognitive and affective) and their burnout (i.e., exhaustion, mental distance, cognitive and emotional impairment) and job satisfaction to the prediction of teachers' commitment to the profession?

   **H2:** Teachers' self-awareness, emotion regulation, and empathy will predict commitment to the profession directly and indirectly via burnout and job satisfaction (i.e., burnout and job satisfaction will mediate the relationship between social and emotional competencies and commitment to the profession).

   **H2a**: Teachers' self-awareness, reappraisal, and empathy will directly and positively predict commitment to the profession.

**H2b**: Teachers' self-awareness and reappraisal will negatively predict burnout, and teachers' empathy will positively predict burnout, which will, in turn, negatively predict commitment to the profession.

**H2c**: Teachers' self-awareness, reappraisal, and empathy will positively predict job satisfaction, which will, in turn, positively predict commitment to the profession.

**H2d**: Teachers' suppression will positively predict burnout, which will, in turn, negatively predict commitment to the profession.

**H2e**: Teachers' suppression will negatively predict job satisfaction, which will, in turn, negatively predict commitment to the profession.

**H3:** Teachers' burnout and job satisfaction will predict commitment to the profession directly and indirectly via self-awareness, emotion regulation, and empathy (i.e., social and emotional competencies will mediate the relationship between occupational well-being and commitment to the profession).

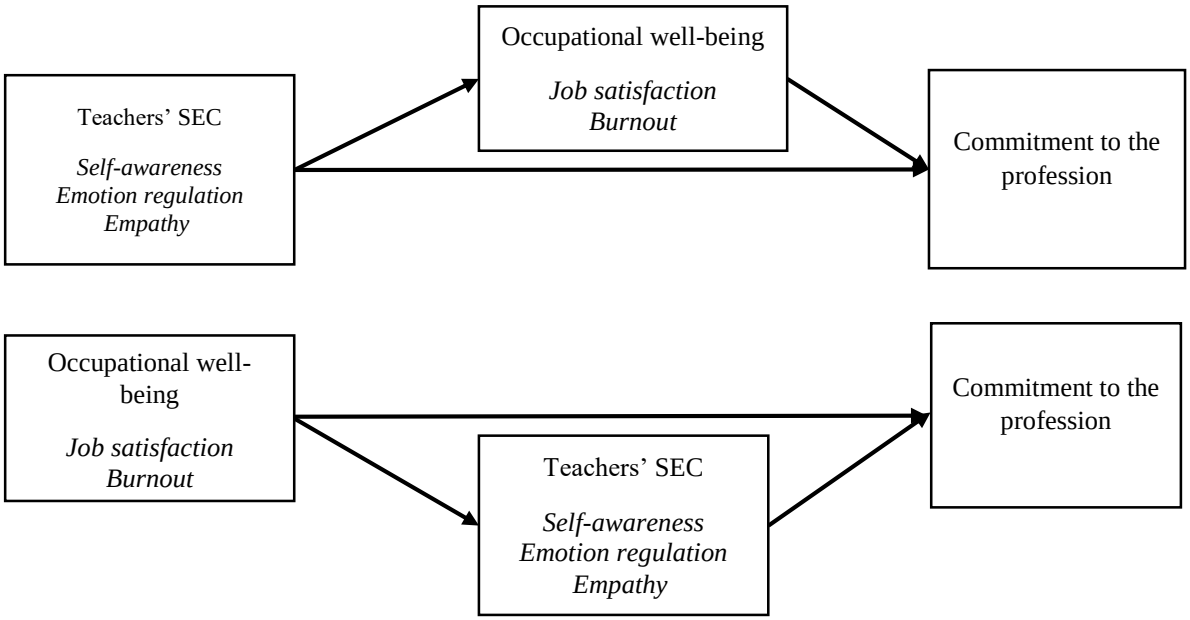
**H3a**: Teachers' job satisfaction will positively predict self-awareness, reappraisal, and empathy, which will, in turn, positively predict commitment to the profession.

**H3b**: Teachers' job satisfaction will negatively predict suppression, which will, in turn, negatively predict commitment to the profession.

**H3c:** Teachers' burnout will negatively predict self-awareness, reappraisal, and empathy, which will, in turn, negatively predict commitment to the profession.

**H3d:** Teachers' burnout will positively predict suppression, which will, in turn, negatively predict commitment to the profession.

*Figure 1.* Hypothesized relationships between teachers' social and emotional competencies, occupational well-being, and commitment to the profession



## 3. METHOD

The data used in this dissertation were collected as part of the TeachWell[1] project, which was funded by the Croatian Science Foundation, and the project holder institution was the Institute for Social Research in Zagreb. In order to answer the proposed research questions, the research was conducted through a longitudinal, full-panel research design with two time points (T1 and T2) in October/November 2022, and May/June 2023. This type of research design is appropriate for testing reciprocal effects, as well as indirect effects, since the longitudinal nature of the data provide an advantage over models using cross-sectional data in establishing prediction (Schaie, 1983; Maxwell & Cole, 2007).

### 3.1. Sampling and participants

The recruitment of participants for the TeachWell project was conducted using two strategies, resulting in two samples which varied in the amount of anonymity due to the nature of their participation in the research. Firstly, an online questionnaire was distributed to all middle schools in Croatia, in order to ensure a nationally representative sample and reach as many early-career teachers as possible. The condition for participation was that the teachers have up to 5 years of experience and that they teach lower-secondary grades ($5^{th}$ to $8^{th}$). Participants in this sample were recruited with the help of school principals and counsellors, who distributed coded questionnaires to teachers who satisfied the criteria. Therefore, these participants were not required to provide personal information and remained anonymous. In total, 731 participants were recruited in this fashion. The second strategy included a more direct approach to early-career teachers, as their participation also included being assessed by their students. These 180 participants (situated in schools in the City of Zagreb and Zagreb County for convenience) provided their personal information and e-mail addresses. However, their data were also coded in order to ensure anonymity regarding the data handling.

Both samples were included in the analyses for this thesis. Except for geographical differences between the samples, the samples did not differ in any of the demographics or variables relevant for this study, expect for marginal differences in emotion regulation which were not consistent between time points. In total, 911 subject teachers with up to 5 years of experience ($M$ = 33 months, $SD$ = 18.39) participated in the research. 530 teachers participated only at T1, 183

[1] The full title of the project was „*The role of personality, motivation and socio-emotional competences in early-career teachers' occupational well-being"* (principal investigator: Iris Marušić, PhD). The project was implemented in the period from February 1st, 2021 until January 31st 2025 and was fully financed by the Croatian Science Foundation (IP-2020-02-6039).

teachers participated only at T2, and 198 teachers participated at both time points. The average age of the participants was 31 years (M = 30.72, SD = 5.73), and the majority of the sample is made up of women (80.2%). In total, teachers from 370 schools participated (40% of all schools in Croatia).

### 3.2. Procedure

Prior to data collection, the approval from the Ministry of Science and Education was obtained for the TeachWell project, and the whole research project was approved by the Ethics Committee of the Institute for Social Research in Zagreb. The part of the research pertaining to this dissertation was also approved by the Ethics Committee of the Department of Psychology at the Faculty of Humanities and Social Sciences. Participation in the research was voluntary and anonymous, albeit by using personalized codes to match the questionnaires from T1 and T2. Teachers participated in the study by filling out an online questionnaire which was distributed to them via e-mail.

### 3.3. Instruments

Self-awareness was measured by the self-awareness subscale from the *Social and Emotional Competencies Questionnaire* (SEC-Q; Zych et al., 2018). The scale consists of four items (e.g., *I know how my emotions affect what I do*), and participants are asked to rate how much each statement applies to them on a Likert-type scale (1 = strongly disagree, 5 = strongly agree). The Cronbach's alpha reliability for the scale was .86 at T1, and .83 at T2.

Empathy was measured by the *Basic Empathy Questionnaire* (BES, Jolliffe & Farrington, 2006). The questionnaire consists of 20 items that measure cognitive (e.g., *I am usually able to recognize others' emotions before they tell me how they feel*) and affective (e.g., *I usually get sad while watching sad TV programmes or movies*) aspects of empathy, and the answers are marked on a five-point Likert-type scale (1 = do not agree at all, 5 = completely agree). The Cronbach's alpha reliability for the subscale affective empathy was .77 at T1 and .76 at T2. The reliability for the subscale cognitive empathy was .81 at T1 and .81 at T2.

Emotion regulation was measured by the *Emotion Regulation Questionnaire* (ERQ; Gross & John, 2003). The questionnaire contains 10 items that measure the use of two emotion regulation strategies: reappraisal (e.g., *When I want to feel more positive emotions (such as joy or amusement), I change what I'm thinking about*) and suppression (e.g., *When I am feeling negative emotions, I make sure not to express them*). Answers are marked on a seven-point

Likert scale (1 = do not agree at all, 7 = completely agree). The Cronbach's alpha reliability for the subscale reappraisal was .86 at T1 and .87 at T2. The reliability of the subscale suppression was .75 at T1 and .74 at T2.

Job satisfaction was measured by the *Job satisfaction with profession* subscale from the Teaching and Learning International Survey 2018 (TALIS; OECD, 2019). The scale consists of 4 items (e.g., *If I could decide again, I would still choose to work as a teacher*). Answers are given on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). The Cronbach's alpha reliability for the scale was .86 at T1, and .84 at T2.

Burnout was measured by the *Burnout Assessment Tool – BAT 23* (Schaufeli et al., 2020). The questionnaire consists of 23 items that measure four core symptoms of the burnout syndrome at work – exhaustion (e.g., *At work, I feel mentally exhausted*), mental distance (*I struggle to find any enthusiasm for my work*), cognitive impairment (e.g., *At work I struggle to think clearly*) and emotional impairment (e.g., *During my work I become irritable when things don't go my way*). Answers are marked on a 5-point frequency scale (1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always), with a higher score suggesting a greater risk of burnout at work. The Cronbach's alpha reliability for the subscales were as follows: exhaustion - .89 at T1, .87 at T2; mental distance - .77 at T1, .72 at T2; cognitive impairment - .85 at T1, .84 at T1; emotional impairment - .79 at T1, .78 at T2.

Commitment to the profession was measured by one item from the *Planned persistence in the teaching profession scale* by Watt and Richardson (2008): *How sure are you that you will stay in the teaching profession?* and responses ranged from 1 (Not at all) to 7 (Extremely).

### 3.4. Statistical data analysis

The data analysis was conducted in several steps. First, since data were collected longitudinally, a detailed analysis of missing data was conducted. Within a single measurement occasion, missing data can occur on some variables due to participants not responding to certain items or scales. Therefore, we first analysed missing data at the item level in order to determine the overall amount of missing data. However, in longitudinal research, the main cause of missing data is attrition across time, which results in data missing on all variables across entire measurement occasions (Nicholson et al., 2017). Large amounts of missing data can result in inflated or suppressed population parameters, depending on whether the data are missing at random or systematically, and can lead to misleading conclusions (Newman, 2014). It is

therefore essential to attempt to disentangle the reasons for data missingness. According to Little and Rubin (2019), there are three missing data mechanisms: missing completely at random (MCAR), missing at random (MAR), and missing not at random (MNAR). If data are MCAR, this means that the missingness is a result of completely random processes which are unrelated to variables used in the analysis. However, according to Newman (2014), MCAR is hardly ever a realistic assumption in social sciences. MAR and MNAR, on the other hand, present systematic missing data mechanisms, where MAR describes missing data which depend on other data observed in the dataset, whereas MNAR describes missing data which depend on the values of missing data themselves. While it is often difficult to discern the reasons for data missingness, there are statistical procedures which can be used to characterize attrition mechanisms.

One of the procedures used to test whether missing data are MCAR or dependent on other variables is the Little's MCAR test (Little, 1988). This test simultaneously tests for mean differences across all used variables and results in either accepting or rejecting the null hypothesis that the data are MCAR. In order to test whether data in this study were MCAR, we conducted the Little's MCAR test on the item level and on the construct level. We further compared teachers who participated in both time points to those who participated in only one time point by a series of t-tests for independent samples, to see whether attrition was related to teacher demographics (gender, age, work experience) and/or substantive variables (social and emotional competencies, job satisfaction, burnout, teacher commitment), and determine which method of missing data treatment is appropriate.

Second, since this study contains hierarchical (clustered) data (teachers are nested within schools), we calculated intraclass correlation coefficients (ICC) to explore whether the hierarchical organisation of the data explains variability in analysed variables. According to Hox (2010), when the data obtained by measurement are hierarchically organized, that is, when it is possible to study the interaction between variables that describe individuals and variables that describe groups, it is necessary to conduct multilevel analyses. The basic assumption underlying multilevel modelling is that members of one cluster share some common characteristics precisely because they belong to that cluster (e.g., the results of teachers from one school will be more similar to each other than the results of teachers from different schools, because they teach the same students, work in the same school, and share the same or similar experiences). From a statistical perspective, one of the fundamental assumptions for performing

regression analysis and analysis of variance is that errors related to individual results within clusters are distributed independently of each other. In the case of hierarchically organized data, the common characteristics of cluster members will result in significant variability at a higher level of analysis, and this variability should not be ignored in the analysis, as it may lead to incorrect conclusions. More precisely, the application of single-level analyses to hierarchically organized data will lead to incorrect estimates of standard errors, which leads to incorrect conclusions regarding the statistical significance of the estimated parameters. Thus, to examine whether a significant amount of variability in analysed variables occurs at the school level of analysis, we calculated intraclass correlation coefficients (ICCs). ICC shows the proportion of the total variance in the estimates that appears at a higher level of analysis and if the ICC value is greater than 0.10, it is necessary to introduce a higher level into the analysis because the assumption of independence of error distributions related to individual results within the cluster is not satisfied (Lüdtke, 2011).

Third, descriptive statistics and bivariate (Pearson's) correlations were calculated. These analyses provide valuable insight into the characteristics of the sample and serve as a basis for further analyses.

Fourth, in order to discern which measurement model fits the data best, we tested various factor analytic models for each of the latent variables measured. Since self-awareness and job satisfaction were both measured by short scales containing one factor, only CFA models were tested for these variables. CFA is driven by theory and serves to compare the observed data set (covariance matrix) to the hypothesized model based on the theoretical relationships between variables (Schreiber et al., 2006). As such, CFA is a useful technique which allows the researcher to investigate the construct validity of used instruments and consequently analyse data within the framework of structural equation modelling (SEM), which corrects the structural relations among latent constructs for measurement error. Since its development in 1969 by Karl Jöreskog, CFA has been widely used as one of the first steps in the analyses of relations between latent variables. However, in recent years, Marsh et al. (2005) found evidence that CFA may not be the most appropriate method of assessing construct validity for multidimensional measures, especially those which contain multiple factors and/or a large number of items. Marsh et al. (2009) noted that the assumption underlying CFA, that indicators load only on one factor, is too restrictive for instruments used in psychology which are usually multidimensional, and leads to poor goodness of fit indices and biased parameter estimates, most prominently

inflated correlations between factors. Morin et al. (2020) suggested that, when using multidimensional measures, researchers turn to exploratory structural equation modelling (ESEM, Asparouhov & Muthén, 2009). ESEM allows for using exploratory factor analysis (EFA) within the SEM framework. This means that EFA measurement models can be tested for longitudinal measurement invariance, analysed for goodness of fit, and can include various modifications such as correlated uniquenesses or the inclusion of method factors. The main advantage of ESEM over CFA models is that they freely estimate cross-loadings between items and related constructs, which is a more realistic assumption in psychological research. In this study, since emotion regulation and empathy were measured by two factors, and burnout was measured by four factors, we tested CFA and ESEM models for these variables.

According to Schreiber et al. (2006), prior to examining structural models which analyse the relationships between latent variables, conceptual soundness of latent variables used in the final structural model should be established through CFA or alternative procedures for testing measurement models, such as ESEM. In other words, upon testing measurement models for each construct separately, it was necessary to test measurement models for each combination of predictors and mediators. In Chapter 2, we hypothesized two models which attribute different statistical roles to SEC and aspects of occupational well-being: one considered SEC as the predictor of commitment and occupational well-being as the mediator, while the other considered occupational well-being as the predictor and SEC as the mediator. However, considering sample characteristics and statistical assumptions, we aspired to keep the models as simple as possible, as well as to avoid potential issues with multicollinearity. We therefore tested 6 separate models, each including one aspect of SEC and one aspect of occupational well-being: self-awareness and job satisfaction; self-awareness and burnout; emotion regulation and job satisfaction; emotion regulation and burnout; empathy and job satisfaction; empathy and burnout. Testing these measurement models also served as basis for the fourth step, testing longitudinal measurement invariance.

In the fifth step, it was necessary to test for longitudinal measurement invariance to determine whether the instruments measure the same constructs over time. If this is not the case, comparisons of parameters across time are likely to be invalid. Essentially, upon fitting the data to CFA or ESEM models, some of the parameters are constrained to be equal across time, and the restricted model is compared to the model with no (or fewer) restrictions. In case the restricted model fits the data equally well, it can be concluded that measurement invariance has

been established, and that therefore any change in observed scores over time can be attributed to actual changes in the constructs.

Testing longitudinal measurement invariance is usually conducted using the ladder-approach which consists of several steps (Widaman & Reise, 1997). First, we test for *configural* measurement invariance. This step tests for the invariance of model form, i.e., whether the constructs demonstrate the same number of factors and the same pattern of free and fixed loadings in both time points. The next step involves testing for *metric* invariance, the equivalence of item loadings on the latent variables over time. In case metric (also called *weak*) invariance is supported, this implies that each item is saturated by the factor to a similar degree in both time points. Testing for metric invariance is done by constraining factor loadings to be equal in both time points. The metric model is then compared to the configural model and in case the fit of the metric model does not significantly differ from the configural model, metric invariance is supported. Metric invariance allows the comparisons of unstandardized regression coefficients and covariances across time, but not the comparisons of latent means. In case the researcher is interested in comparing latent means across time, the next step is to test for *scalar* invariance. Scalar invariance (also called *strong invariance*) implies that the differences in the means of the observed items at different time points are a result of differences in the means of latent factors. In order to test for scalar invariance, the item intercepts need to be constrained to be equal in both time points, while retaining the constraints from the metric model (equality of factor loadings). The model is then compared to the metric invariance model. If the scalar model demonstrates a fit that is significantly worse than the metric model, this implies that some of the intercepts differ across time. However, in case the fit of the model does not differ significantly, scalar invariance is supported. This means that scores from different time points have the same unit of measurement and the same starting point, and that latent means can be compared across time. Further and stricter levels of invariance can be tested, such as residual invariance (equivalence of residuals or measurement errors), or variance/covariance invariance. However, these are difficult to achieve empirically and are not required for answering the majority of research questions (Mackinnon et al., 2022, Wang et al., 2018). More restricted (also called *nested*) models are compared to previously tested models (i.e., metric to configural, scalar to metric, and so on) by using either the $\chi^2$ difference test in case the *maximum likelihood* (ML) estimator was used, or the Satorra-Bentler $\chi^2$ difference test (Satorra & Bentler, 2001) if the estimator is *maximum likelihood robust* (MLR). As this study required the comparison of regression coefficients and covariances over time, it was necessary to establish metric

invariance. However, in line with best practice, scalar invariance was also tested and scalar models were used for further analyses, where applicable, as it indicates that participants remained relatively consistent in their interpretation and responses to questions over time (Mackinnon et al., 2022).

Finally, the hypothesized reciprocal relationships between teachers' social and emotional competencies and their occupational well-being were analysed within the structural equation modelling (SEM) framework by using autoregressive cross-lagged analysis, an analytical strategy used to describe reciprocal relationships between variables over time (Selig & Little, 2012). Since ESEM models are still not entirely suited for testing structural models, we used the ESEM-within-CFA (EwC) approach to establish measurement models within structural models (Marsh et al., 2014). This implies fixing the factor loadings from longitudinal measurement invariance models in confirmatory factor analysis. EwC yields the same model fit results as ESEM, providing the basis for further analysis within the SEM framework.

Testing structural relations was done by testing and comparing stability and reciprocal models, which included the measurement models from the previous step, depending on the level of measurement invariance established, along with autoregressive and/or cross-lagged paths. Stability models included only autoregressive paths (paths from a variable at T1 to the same variable at T2) and correlations between latent variables within the same time point. In order to control for method variance, item residuals were also allowed to correlate between time points. Reciprocal models, on the other hand, included the same paths as the stability models, with the addition of cross-lagged paths (paths from a variable at T1 to another variable at T2). Reciprocal models were then compared to stability models.

The indirect effects of teachers' social and emotional competencies and their occupational well-being in the prediction of their commitment to the profession were examined within the SEM framework as well, following recommendations by Cole and Maxwell (2003) for two-wave research designs. In case direct effects were established between the predictor at T1 and the mediator at T2 while controlling for the mediator at T1 (path a), and between the mediator at T1 and the outcome at T2 while controlling for the outcome at T1(path b), their product (a x b) provided an estimate of the mediational effect of the predictor on the outcome through the mediator.

The data were analysed using IBM SPSS 20.0 and Mplus 8.2 (Muthén i Muthén, 2017). When it comes to evaluating goodness of fit, we used the root mean error of approximation (RMSEA), comparative fit index (CFI), Tucker-Lewis index (TLI), and the standardised root mean square residual (SRMR) as indicators of model fit. According to guidelines provided by Hu and Bentler (1999) and Browne and Cudeck (1992), RMSEA < .06, TLI > .95, CFI > .95, and SRMR < .08 represent excellent fit, whereas RMSEA < .08, TLI > .90, and CFI > .90 are deemed indices of adequate fit. Nested models were compared by using the Satorra-Bentler $\chi^2$ difference test as the estimator used was maximum likelihood robust (MLR).

# 4. RESULTS

## 4.1. Preliminary analyses

### 4.1.1. Analyses and treatment of missing data

In order to provide unbiased estimates of population parameters and ensure accurate hypothesis testing, a detailed analysis of missing data was conducted. Within a single measurement occasion, missing data can occur on some variables due to participants not responding to certain items or scales. When observed within single measurement occasions, the amount of missing data per item at T1 was reasonably low, ranging from zero to 11.2%, and averaging at 4.78%. When it comes to particular scales, the amount of missing data was 0.82% for SEC-Q, 1.41% for ERQ, 1.25% for BES, 10.76% for BAT and 10.85% for job satisfaction. The percentage of missing data for age and gender was 11.2% and 2.4%, respectively. All participants provided an answer to the item measuring commitment to the profession, as well as information about their work experience. It should be noted that the questionnaire at T1 was quite lengthy as it was measuring variables related to the entire TeachWell project, and consequently resulted in substantial attrition, as can be seen from the amount of missing data on scales which were located at the end of the questionnaire (e.g., BAT, job satisfaction, age). The questionnaire was significantly reduced at T2, resulting in lower amounts of missing data, ranging from zero to 5.2%, and averaging at 1.86%. When it comes to particular scales, the amount of missing data was 0.39% for SEC-Q, 0.69% for ERQ, 0.60% for BES, 4.36% for BAT and 3.48% for job satisfaction. All participants provided information about their age and work experience, while the percentage of missing data for gender was 0.5%. In T2, 3.7% percent of teachers failed to answer the item measuring their commitment to the profession.

However, as is the case in all longitudinal research, the main cause of missing data in this study was attrition across time - the attrition rate from T1 to T2 was almost 73%. We therefore conducted the Little's MCAR test to test whether missing data are MCAR or dependent on other variables. When conducted across all items used in this study, the Little's MCAR test yielded significant results ($\chi^2$ = 4649.976 (4426), $p$ = .009), which indicates that data missing on these items cannot be considered missing at random. However, when conducted across scales, the results were non-significant ($\chi^2$ = 76.582 (66), $p$ = .175). In order to further discern whether teachers who participated in both time points differ from teachers who participated in just one time point, we conducted a series of t-tests comparing the results of these two groups across demographic variables and relevant variables used. The results of these tests are shown

in Appendix 1 and Appendix 2. As can be seen from the results, the teachers who participated in both time points differ from those who participated just in T1 in age ($t$ = 2.02; $p$ = .044), and reappraisal, an aspect of emotion regulation ($t$ = 2.53; $p$ = .012), and from those who participated just in T2 in cognitive empathy ($t$ = -2.05; $p$ = .041), and suppression, another aspect of emotion regulation ($t$ = 2.01; $p$ = .045). However, the effect sizes of these differences are low, with Cohen's *d* (1988) ranging from .18 to .21.

In conclusion, the analysis of missing data indicates that data were missing at random – Little's MCAR test was non-significant across scales and effect sizes for existing differences were small and marginally significant. It was therefore decided that missing data in this study will be treated by implementing *full information maximum likelihood* (FIML), based on recommendations for the treatment of missing data in longitudinal research provided by Jeličić et al. (2009). FIML operates by analysing the incomplete data set and thus makes use of all available data for each participant, in order to yield unbiased parameter estimates and accurate standard errors (Newman, 2014). As such, this method takes advantage over other, more traditional missing data treatments, such as listwise or pairwise deletion, which only result in unbiased parameter estimates and accurate standard errors under the assumption that data are MCAR. FIML is easily implemented in M*plus*, the primary software used for statistical analysis in this study. Preliminary analyses, descriptive statistics, and correlation analyses conducted in SPSS will make use of the pairwise deletion technique, which only omits cases based on the variables included in the analysis.

### 4.1.2. Intraclass correlations

This study contains hierarchical (clustered) data, since teachers are nested within a particular school they work in. In order to analyse whether a significant amount of variability occurs at the school level of analysis, we calculated intraclass correlation coefficients (ICCs) for tested variables. Intraclass correlation coefficients in this study are shown in Table 1.

*Table 1.* Intraclass correlations of measured variables

| Variable | ICC – T1 | ICC – T2 |
|---|---|---|
| Self-awareness | .016 | .079 |
| Cognitive empathy | .054 | **.134** |
| Affective empathy | **.129** | .015 |
| Emotion regulation - reappraisal | .042 | .059 |
| Emotion regulation - suppression | .059 | **.117** |
| Job satisfaction | .034 | .040 |
| Exhaustion | .061 | **.115** |
| Mental distance | **.113** | .066 |
| Cognitive impairment | .026 | .035 |
| Emotional impairment | .031 | .049 |
| Commitment | .042 | .065 |
| **Average cluster size** | 2.1 | 1.8 |
| **Number of clusters** | 306 | 214 |

As can be seen in Table 1, self-awareness, job satisfaction, cognitive and emotional impairment, and commitment at T1, and affective empathy, job satisfaction, and cognitive and emotional impairment at T2 demonstrated low ICCs, while some of the variables demonstrated significant ICCs, ranging from 0.113 for mental distance at T1 to 0.134 for cognitive empathy at T2. This indicates the need for multilevel data analyses, in order to attain unbiased estimates of standard errors. However, a closer look into the ICC values reveals that none of the variables demonstrated a high ICC at both time points. This inconsistency could interfere with estimating autoregressive and cross-lagged coefficients in CLPM models. Considering inconsistent ICC values, small cluster size (approximately 2 teachers per school), and the complexity of the structural models to be tested, it was decided that the hierarchical nature of the data will be taken into account by using alternative models for clustered data, that is, cluster-robust standard errors models. According to McNeish et al. (2017), cluster-robust standard errors (CR-SEs) presents a valid alternative to multilevel models, because it offers parameter estimates that are adjusted in order to reflect the clustered nature of data, while requiring less assumptions than multilevel models and modelling only fixed effects. CR-SEs are easily implemented in M*plus* by using the command TYPE=COMPLEX, which adequately corrects the miscalculations of standard errors, especially when there is a large enough number of clusters (Muthén & Satorra, 1995).

#### 4.1.3. Descriptive statistics and correlations between study variables

Descriptive statistics (number of items, mean, standard deviation, and indicators of distribution normality) are shown in Table 2 and Table 3. Descriptive statistics and correlations within time points were calculated using SPSS and handling missing data by pairwise deletion, while

correlations between time points were calculated in M*plus* by implementing full information maximum likelihood (FIML), given the significantly smaller sample at T2.

*Table 2.* Descriptive statistics of measured variables at T1

***Social and emotional competencies***

| Variable | *N* | Items | *M* | *SD* | Skewness (S.E.) | Kurtosis (S.E.) | K-S z |
|---|---|---|---|---|---|---|---|
| Self-awareness | 654 | 4 | 4.43 | 0.53 | -1.15 (.096) | 3.13 (.191) | 4.23** |
| Cognitive empathy | 655 | 9 | 4.22 | 0.47 | -0.32 (.095) | -0.13 (.191) | 1.69* |
| Affective empathy | 655 | 11 | 3.75 | 0.53 | -0.33 (.095) | 0.23 (.191) | 1.29 |
| Reappraisal | 653 | 6 | 5.09 | 1.06 | -0.56 (.096) | 0.55 (.191) | 1.63* |
| Suppression | 652 | 4 | 3.73 | 1.26 | 0.08 (.096) | -0.35 (.191) | 1.29 |

***Occupational well-being***

| Variable | *N* | Items | *M* | *SD* | Skewness (S.E.) | Kurtosis(S.E.) | K-S z |
|---|---|---|---|---|---|---|---|
| Job satisfaction | 589 | 4 | 3.83 | 0.94 | -0.66 (.101) | -0.26 (.201) | 2.99** |
| Exhaustion | 589 | 8 | 2.22 | 0.67 | 0.36 (.101) | 0.03 (.201) | 1.31 |
| Mental distance | 589 | 5 | 1.81 | 0.59 | 1.04 (.101) | 1.65 (.201) | 3.12** |
| Cognitive impairment | 589 | 5 | 1.70 | 0.55 | 0.67 (.101) | 0.25 (.201) | 3.04** |
| Emotional impairment | 589 | 5 | 1.61 | 0.53 | 1.14 (.101) | 2.35 (.201) | 3.71** |
| Commitment to the profession | 728 | 1 | 5.31 | 1.58 | -0.85 (.091) | 0.17 (.181) | 5.47** |

*Notes: Theoretical range for Self-awareness, Empathy, Burnout, and Job satisfaction was 1-5, for Emotion regulation and Commitment 1-7;*
*K-S z = Kolmogorov-Smirnov Z;*
** p<0.01; ** p<0.001*

*Table 3.* Descriptive statistics of measured variables at T2

***Social and emotional competencies***

| Variable | N | Items | M | SD | Skewness (S.E.) | Kurtosis (S.E.) | K-S z |
|---|---|---|---|---|---|---|---|
| Self-awareness | 380 | 4 | 4.38 | 0.46 | -0.12 (.125) | -0.83 (.250) | 3.39** |
| Cognitive empathy | 381 | 9 | 4.12 | 0.47 | -0.50 (.125) | 0.48 (.249) | 2.26** |
| Affective empathy | 381 | 11 | 3.72 | 0.50 | -0.35 (.125) | 0.60 (.249) | 1.03 |
| Reappraisal | 380 | 6 | 4.99 | 1.03 | -0.23 (.125) | -0.80 (.250) | 1.29 |
| Suppression | 380 | 4 | 3.82 | 1.19 | 0.10 (.125) | -0.53 (.250) | 1.05 |

***Occupational well-being***

| Variable | N | Items | M | SD | Skewness | Kurtosis | K-S z |
|---|---|---|---|---|---|---|---|
| Job satisfaction | 367 | 4 | 3.55 | 0.91 | -0.61 (.127) | -0.57 (.254) | 2.41** |
| Exhaustion | 365 | 8 | 2.38 | 0.65 | 0.24 (.128) | -0.19 (.255) | 1.21 |
| Mental distance | 365 | 5 | 1.95 | 0.58 | 0.68 (.125) | 0.30 (.255) | 2.31** |
| Cognitive impairment | 365 | 5 | 1.83 | 0.55 | 0.61 (.125) | 0.61 (.255) | 1.97** |
| Emotional impairment | 365 | 5 | 1.67 | 0.54 | 0.94 (.125) | 1.28 (.255) | 2.29** |
| Commitment to the profession | 367 | 1 | 5.34 | 1.38 | -0.70 (.127) | 0.06 (.254) | 3.75** |

*Notes: Theoretical range for Self-awareness, Empathy, Burnout, and Job satisfaction was 1-5, for Emotion regulation and Commitment 1-7;*
*K-S z= Kolmogorov-Smirnov Z;*
** p<0.01; ** p<0.001*

As can be seen from Table 2 and Table 3, results on affective empathy, suppression and exhaustion were normally distributed at both time points. However, results on some of the measured variables were not normally distributed. Distributions of the results pertaining to self-awareness, cognitive empathy, job satisfaction, and commitment to the profession seem to be negatively asymmetrical at both T1 and T2. At T1, distribution of the results concerning reappraisal was also negatively asymmetrical. On the other hand, distribution of the results on majority burnout indicators (i.e., mental distance, cognitive impairment, and emotional impairment) seem to be positively asymmetrical at both T1 and T2. Given these rather small but significant departures from normal distribution, it was decided that *maximum likelihood robust* (MLR) will be used as a method of estimating parameters within the SEM framework. MLR corrects the bias of standard errors which can occur as a result of violating the assumption of normally distributed data and should therefore be preferred over maximum likelihood when the data are not normally distributed (Brown, 2015).

Table 4, Table 5, and Table 6 show Pearson's correlation coefficients between study variables and teachers' demographic characteristics (i.e., gender and teaching experience). In T1, we found significant gender differences in self-awareness ($r$ = .12, $p$ < 0.01), cognitive ($r$ = .23, $p$ < 0.01), and affective empathy ($r$ = .33, $p$ < 0.01), and suppression ($r$ = -.20, $p$ < 0.01) – female teachers demonstrated more self-awareness and empathy, and reported that they use less suppression to regulate emotions than their male colleagues. In T2, we found similar correlations for cognitive ($r$ = .24, $p$ < 0.01) and affective empathy ($r$ = .37, $p$ < 0.01), and suppression ($r$ = -.21, $p$ < 0.01), while the correlation between gender and self-awareness was not significant. In T2, female teachers also demonstrated more exhaustion as a symptom of burnout ($r$ = .11, $p$ < 0.05). In T1, we found no significant correlations between measured variables and teaching experience, whereas in T2 we found that early-career teachers with more teaching experience reported slightly lower self-awareness ($r$ = -.15, $p$ < 0.01) and less cognitive empathy ($r$ = -.16, $p$ < 0.01).

Apart from the correlations between variables within one time point, we also calculated correlations between variables at T1 and those same variables at T2, as these correlations can provide some insight about whether it is possible to predict values at T2 based on T1. Between time points, significant correlations were found between gender at T1 and cognitive and affective empathy ($r_{T1T2}$ = .20, $p$ < 0.01; $r_{T1T2}$ = .34, $p$ < 0.01, respectively), and suppression ($r_{T1T2}$ = -.21, $p$ < 0.01;) at T2. Work experience at T1 was significantly correlated with self-awareness and cognitive empathy at T2 ($r_{T1T2}$ = -.16, $p$ < 0.01; $r_{T1T2}$ = -.15, $p$ < 0.01, respectively).

*Table 4.* Correlations of measured variables at T1

| Variable | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Gender | *r* | 1 | | | | | | | | | | | | |
| | *N* | 709 | | | | | | | | | | | | |
| 2 Work experience | *r* | -.02 | 1 | | | | | | | | | | | |
| | *N* | 709 | 728 | | | | | | | | | | | |
| 3 Self-awareness | *r* | .12** | -.05 | 1 | | | | | | | | | | |
| | *N* | 638 | 654 | 654 | | | | | | | | | | |
| 4 Cognitive empathy | *r* | .23** | -.05 | .45** | 1 | | | | | | | | | |
| | *N* | 639 | 655 | 653 | 655 | | | | | | | | | |
| 5 Affective empathy | *r* | .33** | -.01 | .12** | .44** | 1 | | | | | | | | |
| | *N* | 639 | 655 | 653 | 655 | 655 | | | | | | | | |
| 6 Reappraisal | *r* | .07 | .00 | .33** | .19** | .11** | 1 | | | | | | | |
| | *N* | 637 | 653 | 651 | 653 | 653 | 653 | | | | | | | |
| 7 Suppression | *r* | -.20** | -.06 | -.03 | -.20** | -.15** | .17** | 1 | | | | | | |
| | *N* | 636 | 652 | 650 | 652 | 652 | 652 | 652 | | | | | | |
| 8 Job satisfaction | *r* | -.02 | -.02 | .18** | .17** | .11* | .29** | -.10* | 1 | | | | | |
| | *N* | 575 | 589 | 587 | 589 | 589 | 587 | 587 | 589 | | | | | |
| 9 Exhaustion | *r* | .03 | .04 | -.22** | -.16** | .01 | -.31** | .08* | -.57** | 1 | | | | |
| | *N* | 575 | 589 | 587 | 589 | 589 | 587 | 587 | 587 | 589 | | | | |
| 10 Mental distance | *r* | -.06 | -.01 | -.26** | -.26** | -.16** | -.31** | .14** | -.66** | .72** | 1 | | | |
| | *N* | 575 | 589 | 587 | 589 | 589 | 587 | 587 | 587 | 589 | 589 | | | |
| 11 Cognitive impairment | *r* | -.02 | .02 | -.33** | -.31** | -.10* | -.26** | .07 | -.45** | .69** | .70** | 1 | | |
| | *N* | 575 | 589 | 587 | 589 | 589 | 587 | 587 | 587 | 589 | 589 | 589 | | |
| 12 Emotional impairment | *r* | -.01 | .07 | -.30** | -.28** | -.05 | -.27** | -.00 | -.35** | .62** | .58** | .70** | 1 | |
| | *N* | 575 | 589 | 587 | 589 | 589 | 587 | 587 | 587 | 589 | 589 | 589 | 589 | |
| 13 Commitment to the profession | *r* | -.01 | .05 | .14** | .04 | .09* | .23** | -.05 | .68** | -.46** | -.54** | -.36** | -.27** | 1 |
| | *N* | 709 | 728 | 654 | 655 | 655 | 653 | 652 | 589 | 589 | 589 | 589 | 589 | 728 |

*$p<0.05$; **$p<0.01$

*Table 5.* Correlations of measured variables at T2

| Variable | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Gender | *r* | 1 | | | | | | | | | | | | |
| | *N* | 379 | | | | | | | | | | | | |
| 2 Work experience | *r* | ,00 | 1 | | | | | | | | | | | |
| | *N* | 379 | 381 | | | | | | | | | | | |
| 3 Self-awareness | *r* | ,08 | -,15** | 1 | | | | | | | | | | |
| | *N* | 378 | 380 | 380 | | | | | | | | | | |
| 4 Cognitive empathy | *r* | ,24** | -,16** | ,37** | 1 | | | | | | | | | |
| | *N* | 379 | 381 | 380 | 381 | | | | | | | | | |
| 5 Affective empathy | *r* | ,37** | -,06 | ,03 | ,48** | 1 | | | | | | | | |
| | *N* | 379 | 381 | 380 | 381 | 381 | | | | | | | | |
| 6 Reappraisal | *r* | ,06 | -,06 | ,29** | ,16** | ,05 | 1 | | | | | | | |
| | *N* | 378 | 380 | 379 | 380 | 380 | 380 | | | | | | | |
| 7 Suppression | *r* | -,21** | ,01 | -,12* | -,27** | -,22** | ,11* | 1 | | | | | | |
| | *N* | 378 | 380 | 379 | 380 | 380 | 380 | 380 | | | | | | |
| 8 Job satisfaction | *r* | ,01 | -,10 | ,21** | ,14** | ,07 | ,24** | -,12* | 1 | | | | | |
| | *N* | 365 | 367 | 366 | 367 | 367 | 366 | 366 | 368 | | | | | |
| 9 Exhaustion | *r* | ,11* | ,06 | -,28** | -,10 | ,08 | -,32** | ,09 | -,50** | 1 | | | | |
| | *N* | 363 | 365 | 364 | 365 | 365 | 364 | 364 | 364 | 365 | | | | |
| 10 Mental distance | *r* | -,04 | -,03 | -,29** | -,26** | -,10 | -,28** | ,18** | -,60** | ,68** | 1 | | | |
| | *N* | 363 | 365 | 364 | 365 | 365 | 364 | 364 | 364 | 365 | 365 | | | |
| 11 Cognitive impairment | *r* | -,05 | -,01 | -,35** | -,31** | -,06 | -,33** | ,08 | -,33** | ,60** | ,64** | 1 | | |
| | *N* | 363 | 365 | 364 | 365 | 365 | 364 | 364 | 364 | 365 | 365 | 365 | | |
| 12 Emotional impairment | *r* | -,01 | ,02 | -,36** | -,25** | ,06 | -,33** | -,03 | -,28** | ,53** | ,57** | ,66** | 1 | |
| | *N* | 363 | 365 | 364 | 365 | 365 | 364 | 364 | 364 | 365 | 365 | 365 | 365 | |
| 13 Commitment to the profession | *r* | ,01 | -,01 | ,20** | ,11* | ,09 | ,17** | -,07 | ,65** | -,45** | -,52** | -,32** | -,25** | 1 |
| | *N* | 365 | 367 | 366 | 367 | 367 | 366 | 366 | 364 | 362 | 362 | 362 | 362 | 367 |

*$p<0.05$; **$p<0.01$

*Table 6.* Correlations of measured variables between time points (T1-T2)

| | | | | T2 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Variable** | **N** | | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
| **T1** | 1 Gender | 897 | *r* | **.95**$^{**}$ | -.01 | .07 | .20$^{**}$ | .34$^{**}$ | .03 | -.21$^{**}$ | .01 | .08 | -.06 | -.07 | -.01 | .01 |
| | 2 Work experience | 911 | *r* | .02 | **.94**$^{**}$ | -.16$^{**}$ | -.15$^{**}$ | -.01 | -.06 | .05 | -.10 | .09 | -.01 | .02 | .07 | -.03 |
| | 3 Self-awareness | 841 | *r* | .15$^{*}$ | -.12 | **.58**$^{**}$ | .23 | .05 | .14$^{*}$ | -.15$^{*}$ | .06 | -.08 | -.08 | -.18$^{**}$ | -.23$^{**}$ | .10 |
| | 4 Cognitive empathy | 841 | *r* | .32$^{**}$ | -.07 | .28$^{**}$ | **.68**$^{**}$ | .44$^{**}$ | .03 | -.32$^{**}$ | .06 | .03 | -.11 | -.19$^{**}$ | -.13$^{*}$ | .00 |
| | 5 Affective empathy | 841 | *r* | .37$^{**}$ | -.01 | .04 | .38$^{**}$ | **.77**$^{**}$ | -.03 | -.19$^{**}$ | .08 | .08 | -.09 | -.03 | .02 | .16$^{**}$ |
| | 6 Reappraisal | 839 | *r* | .02 | -.12 | .19$^{**}$ | .05 | -.03 | **.58**$^{**}$ | .04 | .26$^{**}$ | -.21$^{**}$ | -.23$^{**}$ | -.19$^{**}$ | -.24$^{**}$ | .06 |
| | 7 Suppression | 838 | *r* | -.25$^{**}$ | -.05 | -.02 | -.22$^{**}$ | -.26$^{**}$ | .07 | **.64**$^{**}$ | -.08 | .01 | .08 | .02 | -.09 | .04 |
| | 8 Job satisfaction | 779 | *r* | .04 | -.15$^{*}$ | .26$^{**}$ | .22$^{**}$ | .01 | .12$^{*}$ | -.11 | **.71**$^{**}$ | -.41$^{**}$ | -.56$^{**}$ | -.33$^{**}$ | -.30$^{**}$ | .56$^{**}$ |
| | 9 Exhaustion | 780 | *r* | .10 | .08 | -.24$^{**}$ | -.16$^{*}$ | .10 | -.14$^{*}$ | .17$^{**}$ | -.44$^{**}$ | **.70**$^{**}$ | .51$^{**}$ | .54$^{**}$ | .46$^{**}$ | -.38$^{**}$ |
| | 10 Mental distance | 780 | *r* | -.07 | .04 | -.25$^{**}$ | -.27$^{**}$ | -.14$^{*}$ | -.11 | .27$^{**}$ | -.58$^{**}$ | .51$^{**}$ | **.70**$^{**}$ | .46$^{**}$ | .39$^{**}$ | -.50$^{**}$ |
| | 11 Cognitive impairment | 780 | *r* | -.01 | -.05 | -.37$^{**}$ | -.31$^{**}$ | -.10 | -.15$^{*}$ | .18$^{**}$ | -.34$^{**}$ | .42$^{**}$ | .48$^{**}$ | **.64**$^{**}$ | .43$^{**}$ | -.34$^{**}$ |
| | 12 Emotional impairment | 780 | *r* | .09 | .08 | -.28$^{**}$ | -.22$^{**}$ | .01 | -.09 | .16$^{*}$ | -.27$^{**}$ | .33$^{**}$ | .34$^{**}$ | .43$^{**}$ | **.54**$^{**}$ | -.19$^{**}$ |
| | 13 Commitment to the profession | 911 | *r* | .03 | -.14$^{*}$ | .26$^{**}$ | .16$^{*}$ | .08 | .06 | -.09 | .45$^{**}$ | -.36$^{**}$ | -.46$^{**}$ | -.33$^{**}$ | -.26$^{**}$ | **.66**$^{**}$ |

$^{*}p<0.05$; $^{**}p<0.01$

In the following sections, correlations between study variables will be described. When it comes to correlations between SEC and occupational well-being, self-awareness was positively correlated with job satisfaction ($r_{T1}$ = .18, $p$ < 0.01; $r_{T2}$ = .21, $p$ < 0.01) and commitment to the profession ($r_{T1}$ = .14, $p$ < 0.01; $r_{T2}$ = .20, $p$ < 0.01) at both time points, and was negatively correlated with all indicators of burnout at both time points: exhaustion ($r_{T1}$ = -.22, $p$ < 0.01; $r_{T2}$ = -.28, $p$ < 0.01), mental distance ($r_{T1}$ = -.26, $p$ < 0.01; $r_{T2}$ = -.29, $p$ < 0.01), cognitive impairment ($r_{T1}$ = -.33, $p$ < 0.01; $r_{T2}$ = -.35, $p$ < 0.01), and emotional impairment ($r_{T1}$ = -.30, $p$ < 0.01; $r_{T2}$ = -.36, $p$ < 0.01). Between time points, self-awareness at T1 was negatively correlated with cognitive and emotional impairment at T2 ($r_{T1T2}$ = -.18, $p$ < 0.01; $r_{T1T2}$ = -.23, $p$ < 0.01, respectively).

Reappraisal was positively correlated with job satisfaction ($r_{T1}$ = .29, $p$ < 0.01; $r_{T2}$ = .24, $p$ < 0.01), and commitment to the profession ($r_{T1}$ = .23, $p$ < 0.01; $r_{T2}$ = .17, $p$ < 0.01) at both time points. It was negatively correlated with all indicators of burnout at both time points: exhaustion ($r_{T1}$ = -.31, $p$ < 0.01; $r_{T2}$ = -.32, $p$ < 0.01), mental distance ($r_{T1}$ = -.31, $p$ < 0.01; $r_{T2}$ = -.28, $p$ < 0.01), cognitive impairment ($r_{T1}$ = -.26, $p$ < 0.01; $r_{T2}$ = -.33, $p$ < 0.01), and emotional impairment ($r_{T1}$ = -.27, $p$ < 0.01; $r_{T2}$ = -.33, $p$ < 0.01). Between time points, reappraisal at T1 was positively correlated with job satisfaction at T2 ($r_{T1T2}$ = .26, $p$ < 0.01), and negatively correlated with all burnout symptoms at T2: exhaustion ($r_{T1T2}$ = -.21, $p$ < 0.01), mental distance ($r_{T1T2}$ = -.23, $p$ < 0.01), cognitive impairment ($r_{T1T2}$ = -.19, $p$ < 0.01), and emotional impairment ($r_{T1T2}$ = -.24, $p$ < 0.01). Suppression was negatively correlated with job satisfaction ($r_{T1}$ = -.10, $p$ < 0.05; $r_{T2}$ = -.12, $p$ < 0.05), and unrelated to commitment to the profession, and most indicators of burnout. It was positively correlated with mental distance at both time points ($r_{T1}$ = .14, $p$ < 0.01; $r_{T2}$ = .18, $p$ < 0.01), and with exhaustion at T1 ($r$ = .08, $p$ < 0.05). Unlike reappraisal, suppression at T1 was unrelated to all burnout indicators, as well as job satisfaction, at T2.

Cognitive empathy was positively correlated with job satisfaction at both time points ($r_{T1}$ = .17, $p$ < 0.01; $r_{T2}$ = .14, $p$ < 0.01). It was negatively correlated with most indicators of burnout at both time points: exhaustion ($r_{T1}$ = -.16, $p$ < 0.01; $r_{T2}$ = -.10, $p$ > 0.05), mental distance ($r_{T1}$ = -.26, $p$ < 0.01; $r_{T2}$ = -.26, $p$ < 0.01), cognitive impairment ($r_{T1}$ = -.31, $p$ < 0.01; $r_{T2}$ = -.31, $p$ < 0.01), and emotional impairment ($r_{T1}$ = -.28, $p$ < 0.01; $r_{T2}$ = -.25, $p$ < 0.01). Between time points, cognitive empathy at T1 was negatively correlated with cognitive and emotional impairment at T2 ($r_{T1T2}$ = -.19, $p$ < 0.01; $r_{T1T2}$ = -.13, $p$ < 0.05, respectively). The correlations between affective empathy and indicators of occupational well-being, on the other hand, were insignificant, with

the exception of job satisfaction ($r_{T1}$ = -.11, $p$ < 0.05), mental distance ($r_{T1}$ = -.16, $p$ < 0.01), and cognitive impairment ($r_{T1}$ = -.10, $p$ < 0.05) at T1. Affective empathy was also positively correlated with commitment to the profession at T1, but the correlation was small ($r_{T1}$ = .09, $p$ < 0.05). However, the correlation between affective empathy at T1 and commitment at T2 was higher ($r_{T1T2}$ = .16, $p$ < 0.01).

When it comes to correlations between SEC, self-awareness was positively correlated with cognitive empathy ($r_{T1}$ = .45, $p$ < 0.01; $r_{T2}$ = .37, $p$ < 0.01), and reappraisal ($r_{T1}$ = .33, $p$ < 0.01; $r_{T2}$ = .29, $p$ < 0.01) at both time points. Reappraisal was positively correlated with emotion suppression ($r_{T1}$ = .17, $p$ < 0.01; $r_{T2}$ = .11, $p$ < 0.05) and cognitive empathy ($r_{T1}$ = .19, $p$ < 0.01; $r_{T2}$ = .16, $p$ < 0.01), at both time points. Suppression was negatively correlated with cognitive empathy ($r_{T1}$ = -.27, $p$ < 0.01; $r_{T2}$ = -.20, $p$ < 0.01) and affective empathy ($r_{T1}$ = -.15, $p$ < 0.01; $r_{T2}$ = -.22, $p$ < 0.01) at both time points. Cognitive empathy was positively correlated with affective empathy ($r_{T1}$ = .44, $p$ < 0.01; $r_{T2}$ = .48, $p$ < 0.01) at both time points.

When it comes to the correlations between aspects of occupational well-being, job satisfaction was negatively correlated to all indicators of burnout at both time points: exhaustion ($r_{T1}$ = -.57, $p$ < 0.01; $r_{T2}$ = -.50, $p$ < 0.01), mental distance ($r_{T1}$ = -.66, $p$ < 0.01; $r_{T2}$ = -.60, $p$ < 0.01), cognitive impairment ($r_{T1}$ = -.45, $p$ < 0.01; $r_{T2}$ = -.33, $p$ < 0.01), and emotional impairment ($r_{T1}$ = -.35, $p$ < 0.01; $r_{T2}$ = -.28, $p$ < 0.01), and positively correlated with commitment to the profession at both time points ($r_{T2}$ = .68, p < 0.01; $r_{T2}$ = .65, p < 0.01). All burnout indicators were highly positively correlated to each other at both time points ($r$ ranging from .53 to .72), and moderately negatively correlated with commitment to the profession ($r$ ranging from -.25 to -.54).

### 4.2. Testing assumptions for structural equation modelling

#### 4.2.1. Measurement models of teachers' SEC, burnout and job satisfaction

In order to discern which measurement model fits the data best, we tested various factor analytic models for each of the latent variables measured. As mentioned previously, since self-awareness and job satisfaction were both measured by short scales containing one factor, only CFA models were tested for these variables. Since emotion regulation and empathy were measured by two factors, and burnout by four factors, CFA and ESEM models were tested for these variables. Fit indices for CFA and ESEM models are presented in Table 7.

*Table 7.* Fit indices of CFA and ESEM models for self-awareness, emotion regulation, empathy, job satisfaction, and burnout

| Model | $\chi^2$ | df | RMSEA (90% C.I.) | CFI | TLI | SRMR |
|---|---|---|---|---|---|---|
| *Self-awareness* | | | | | | |
| CFA | 42.886 | 15 | 0.049 (.032-.066) | 0.976 | 0.956 | 0.031 |
| *Emotion regulation* | | | | | | |
| CFA | 388.130 | 154 | 0.044 (.039-.050) | 0.931 | 0.915 | 0.067 |
| ESEM | 336.202 | 138 | 0.043 (.037-.049) | 0.942 | 0.920 | 0.049 |
| *Empathy* | | | | | | |
| CFA | 2100.904 | 714 | 0.050 (.047-.052) | 0.737 | 0.713 | 0.083 |
| ESEM | 1727.665 | 678 | 0.045 (.042-.047) | 0.801 | 0.771 | 0.065 |
| Modified ESEM | 888.273 | 546 | 0.028 (.025-.032) | 0.935 | 0.907 | 0.066 |
| *Job satisfaction* | | | | | | |
| CFA | 19.574 | 15 | 0.021 (.000-.043) | 0.997 | 0.994 | 0.019 |
| *Burnout* | | | | | | |
| CFA | 2031.610 | 938 | 0.040 (.038-.043) | 0.886 | 0.874 | 0.067 |
| ESEM | 1500.453 | 824 | 0.034 (.031-.037) | 0.929 | 0.911 | 0.043 |

The CFA models for self-awareness and job satisfaction demonstrated good to excellent fit (self-awareness: $\chi^2(15) = 42.886$, $p < .001$; CFI = .98; TLI = .96; RMSEA = .049, 90% CI [.032, .066]; SRMR = .031; job satisfaction: $\chi^2(15) = 16.385$, $p > .05$; CFI = .99; TLI = .99; RMSEA = .011, 90% CI [.000, .038]; SRMR = .025). All standardized factor loadings were statistically significant ($p < .001$), and ranged from .685 to .816 for self-awareness, and .667 to .935 for job satisfaction (Appendix 3).

As for emotion regulation, empathy, and burnout, CFA models demonstrated poor fit (CFI and TLI ranging from .713 to .886), which significantly improved (Table 8) with the introduction of cross-loadings which are available in ESEM models (emotion regulation: $\chi^2(138) = 336.202$, $p < .001$; CFI = .94; TLI = .92; RMSEA = .043, 90% CI [.037, .049]; SRMR = .049; burnout: $\chi^2(824) = 1500.453$, $p < .001$; CFI = .93; TLI = .91; RMSEA = .034, 90% CI [.031, .037]; SRMR = .043). However, the fit indices for empathy remained unsatisfactory ($\chi^2(678) = 1727.665$, $p < .001$; CFI = .80; TLI = .77; RMSEA = .045, 90% CI [.042, .047]; SRMR = .065).

Upon further inspection of the Basic Empathy Scale, it was evident that some of the items were negatively worded (e.g., *It is hard for me to understand when my friends are sad*). In their review of the sources of psychometric multidimensionality, Morin et al. (2020) noted that item wording effects tend to be the most common construct-irrelevant source of psychometric multidimensionality and should be especially considered in longitudinal studies when the same items are administered over time. They recommended the inclusion of correlated uniquenesses between the items of the same wording (i.e., positively or negatively worded) in order to control for the construct-irrelevant psychometric multidimensionality. We therefore decided to allow for correlated uniquenesses between similarly worded items and included them in the ESEM model. This modification significantly improved model fit ($\chi^2(546) = 888.273$, $p < .001$; CFI = .94.; TLI = .91.; RMSEA = .028, 90% CI [.025, .032]; SRMR = .066). Based on the comparison of fit indices between CFA and ESEM (and modified ESEM, in the case of empathy) (Table 8), it was decided that ESEM models will be used in further analyses of emotion regulation and burnout, and that the modified ESEM model would be used in further analyses of empathy. The comparison between factor loadings for CFA and ESEM models of emotion regulation and empathy is shown in Appendix 4, and the comparison between factor loadings for CFA and ESEM models of burnout is shown in Appendix 5.

*Table 8.* Comparison of CFA, ESEM and modified ESEM models

| Model | CD | TRd | Δdf | *p* |
|---|---|---|---|---|
| *Emotion regulation* | | | | |
| ESEM vs. CFA | 1.242 | 50.858 | 16 | *0.0001* |
| *Burnout* | | | | |
| ESEM vs. CFA | 1.855 | 402.069 | 114 | *0.0001* |
| *Empathy* | | | | |
| ESEM vs. CFA | 1.566 | 289.595 | 36 | *0.0001* |
| Modified ESEM vs. ESEM | 1.142 | 803.402 | 132 | *0.0001* |

*Notes: CD = difference test scaling correction;*
*TRd = Satorra-Bentler scaled chi-square difference;*
*Δdf = difference in degrees of freedom*

The ESEM factor loadings for reappraisal were all significant and ranged from .54 to .87. In the case of suppression, the loadings ranged from .53 to .92, and all were significant. The modified ESEM model of empathy yielded significant factor loadings as well, ranging from .24 to .70 for cognitive empathy, and from .29 to .73 for affective empathy. As for burnout, the factor loadings ranged as follows: exhaustion from .14 to .80, all significant at T1, at T2 the loading for item 6 was .02 and insignificant; mental distance: from .26 to .80, all significant at T1, at T2 the loading for item 10 was .15 and insignificant; cognitive impairment: .39 to .77,

the loadings for item 18 were insignificant at both time points (.22 and .23, respectively), as well as the loading for item 16 at T2 (.31); emotional impairment: .31 to .72, all significant at both time points. Since the model demonstrated good fit to the data, it was decided that the items would not be excluded from the model and that no modifications would be performed.

#### 4.2.2. Longitudinal measurement invariance of latent variables

After defining which measurement models fit the data best, it was necessary to test for longitudinal measurement invariance to determine whether the instruments measure the same constructs over time. We tested models of longitudinal measurement invariance separately for each of the 6 combinations of constructs (self-awareness and job satisfaction; self-awareness and burnout; emotion regulation and job satisfaction; emotion regulation and burnout; empathy and job satisfaction; empathy and burnout). These models included the best fitting measurement models from the previous step, which were determined for each construct separately (i.e., CFA for self-awareness and job satisfaction, ESEM for emotion regulation and burnout, modified ESEM for empathy). For each combination of constructs, configural, metric, and scalar models of measurement invariance were tested and compared. The results of the analyses are presented in Table 9.

*Table 9.* Fit indices of longitudinal measurement invariance of models including various combinations of constructs

| Model | $\chi^2$ | df | RMSEA (90% C.I.) | CFI | TLI | SRMR |
|---|---|---|---|---|---|---|
| *Self-awareness and job satisfaction* | | | | | | |
| Configural invariance | 121.383 | 90 | 0.021 (.010-.030) | 0.990 | 0.987 | 0.029 |
| Metric invariance | 124.286 | 96 | 0.019 (.007-.029) | 0.991 | 0.989 | 0.036 |
| Scalar invariance | 149.978 | 102 | 0.025 (.016-.033) | 0.985 | 0.982 | 0.039 |
| *Self-awareness and burnout* | | | | | | |
| Configural invariance | 2012.341 | 1191 | 0.030 (.027-.032) | 0.929 | 0.915 | 0.043 |
| Metric invariance | 1976.500 | 1270 | 0.027 (.024-.029) | 0.939 | 0.931 | 0.046 |
| Scalar invariance | 2007.260 | 1292 | 0.027 (.024-.029) | 0.938 | 0.931 | 0.046 |
| *Emotion regulation and job satisfaction* | | | | | | |
| Configural invariance | 555.971 | 305 | 0.032 (.028-.037) | 0.953 | 0.942 | 0.052 |
| Metric invariance | 572.546 | 324 | 0.031 (.027-.036) | 0.953 | 0.945 | 0.056 |
| Scalar invariance | 594.511 | 335 | 0.032 (.027-.036) | 0.951 | 0.945 | 0.056 |
| *Emotion regulation and burnout* | | | | | | |
| Configural invariance | 3321.314 | 1850 | 0.032 (.030-.034) | 0.900 | 0.884 | 0.056 |
| Metric invariance | 3273.167 | 1942 | 0.030 (.028-.031) | 0.909 | 0.900 | 0.058 |
| Scalar invariance | 3297.023 | 1969 | 0.029 (.028-.031) | 0.909 | 0.901 | 0.058 |
| *Empathy and job satisfaction* | | | | | | |
| Configural invariance | 1353.410 | 873 | 0.027 (.024-.029) | 0.934 | 0.915 | 0.064 |
| Metric invariance | 1402.142 | 912 | 0.026 (.024-.029) | 0.933 | 0.917 | 0.069 |
| Scalar invariance | 1433.354 | 933 | 0.026 (.024-.029) | 0.932 | 0.917 | 0.069 |
| *Empathy and burnout* | | | | | | |
| Configural invariance | 5106.165 | 3178 | 0.028 (.026-.029) | 0.887 | 0.870 | 0.060 |
| Metric invariance | 5150.268 | 3290 | 0.027 (.026-.028) | 0.891 | 0.878 | 0.063 |

As can be seen from Table 9 in most cases, more restrictive models seemed to improve the fit of the model by most fit indicators. The only exception is the model which includes self-awareness and job satisfaction, where the scalar model fit the data visibly worse. However, to assure that there are no significant differences between the models of various levels of invariance, we compared the models using the Satorra-Bentler $\chi^2$ difference test. The results are presented in Table 10.

*Table 10.* Comparison of longitudinal measurement invariance models

| Model | CD | TRd | Δdf | *p* |
|---|---|---|---|---|
| *Self-awareness and job satisfaction* | | | | |
| Metric - configural | 1.155 | 3.510 | 6 | 0.7427 |
| Scalar - metric | 1.105 | 24.394 | 6 | *0.0004* |
| *Self-awareness and burnout* | | | | |
| Metric - configural | 1.887 | 39.364 | 79 | 0.9999 |
| Scalar - metric | 1.343 | 31.508 | 22 | 0.0862 |
| *Emotion regulation and job satisfaction* | | | | |
| Metric - configural | 1.179 | 17.804 | 19 | 0.5356 |
| Scalar - metric | 1.038 | 22.108 | 11 | *0.0235* |
| *Emotion regulation and burnout* | | | | |
| Metric - configural | 1.900 | 50.074 | 92 | 0.9999 |
| Scalar - metric | 1.317 | 28.587 | 27 | 0.3812 |
| *Empathy and job satisfaction* | | | | |
| Metric - configural | 1.177 | 50.070 | 39 | 0.1102 |
| Scalar - metric | 0.999 | 31.165 | 21 | 0.0710 |
| *Empathy and burnout* | | | | |
| Metric - configural | 6.583 | 155.355 | 112 | *0.0042* |

*Notes: CD = difference test scaling correction;*
*TRd = Satorra-Bentler scaled chi-square difference;*
*Δdf = difference in degrees of freedom*

As can be seen from Table 10, for most combinations of constructs, scalar models provided adequate fit indices which did not significantly differ from more complex models, therefore these combinations of constructs demonstrated equivalent factor loadings and intercepts across time points. As for the model including self-awareness and job satisfaction, the difference in model fit was significant between the metric and the scalar model, which is why the model including these constructs demonstrated only metric invariance. However, this does not present an obstacle for further analyses, as metric invariance still allows the comparisons of unstandardized regression coefficients and covariances over time (Mackinnon et al, 2022).

In addition, the metric model including empathy and burnout fit the data significantly worse than the configural. The next step in this situation would be to test for partial metric invariance by removing the constraints from some factor loadings. However, this is currently not a

possibility for ESEM models (Marsh et al., 2020). Since the configural model itself demonstrated unsatisfactory fit and the model did not demonstrate measurement invariance, it was decided to conduct the analyses with dimensions of empathy as separate variables. The fit indices and the Satorra-Bentler $\chi^2$ difference test results are presented in Table 11.

*Table 11*. Fit indices and comparisons of longitudinal measurement invariance models for affective and cognitive empathy, and burnout

| Model | $\chi^2$ | df | RMSEA (90% C.I.) | CFI | TLI | SRMR |
|---|---|---|---|---|---|---|
| *Affective empathy and burnout* | | | | | | |
| Configural invariance | 3218.231 | 1967 | 0.029 (.027-.030) | 0.905 | 0.890 | 0.065 |
| Metric invariance | 3218.643 | 2053 | 0.027 (.025-.029) | 0.912 | 0.902 | 0.067 |
| Scalar invariance | 3249.290 | 2082 | 0.027 (.025-.029) | 0.911 | 0.903 | 0.067 |
| *Cognitive empathy and burnout* | | | | | | |
| Configural invariance | 2788.210 | 1725 | 0.028 (.026-.030) | 0.917 | 0.903 | 0.049 |
| Metric invariance | 2795.664 | 1809 | 0.026 (.025-.028) | 0.923 | 0.914 | 0.052 |
| Scalar invariance | 2831.381 | 1836 | 0.026 (.024-.028) | 0.922 | 0.915 | 0.052 |

| Model | CD | TRd | Δdf | *p* |
|---|---|---|---|---|
| *Affective empathy and burnout* | | | | |
| Metric - configural | 1.6365 | 52.1757 | 86 | 0.9985 |
| Scalar - metric | 1.1476 | 32.1096 | 29 | 0.3151 |
| *Cognitive empathy and burnout* | | | | |
| Metric - configural | 1.6200 | 54.9503 | 84 | 0.9941 |
| Scalar - metric | 1.2244 | 36.7035 | 27 | 0.1007 |

As can be seen from Table 11, the models including burnout and separate dimensions of empathy demonstrated good fit and scalar invariance.

### 4.3. Reciprocal relations between teachers' SEC and their occupational well-being

In order to answer the first research question about the nature of the relationships between early-career teachers' SEC and their occupational well-being, we tested cross-lagged panel models with various combinations of SEC and aspects of occupational well-being, based on the results of testing for longitudinal measurement invariance. In total, 7 models were tested: self-awareness and job satisfaction, self-awareness and burnout, emotion regulation and job satisfaction, emotion regulation and burnout, empathy and job satisfaction, affective empathy and burnout, and cognitive empathy and burnout. For each model, we first estimated a stability

model, which only included autoregressive paths (the same variables predicting themselves over time). We then added reciprocal effects and compared these models to those including only stability coefficients to see whether they improve model fit. Model fit indices and results of comparisons between stability and reciprocal models are presented in Table 12.

*Table 12.* Fit indices and comparisons of stability and reciprocal models including self-awareness, emotion regulation, empathy, job satisfaction and burnout

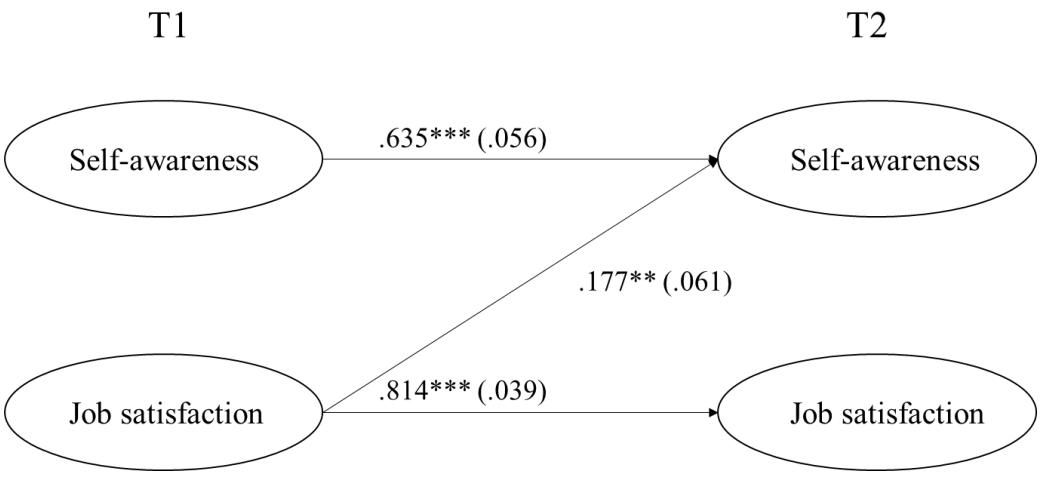
| ***Self-awareness and job satisfaction*** | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 133.316 | 98 | 0.021 (.011-.030) | 0.989 | 0.986 | 0.050 |
| Reciprocal | 124.286 | 96 | 0.019 (.007-.029) | 0.991 | 0.989 | 0.036 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 0.8284 | 10.486 | 2 | *0.005* |
| ***Self-awareness and burnout*** | | | | | | |
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 2038.145 | 1312 | 0.027 (.024-.029) | 0.937 | 0.931 | 0.054 |
| Reciprocal | 2015.493 | 1304 | 0.026 (.024-.029) | 0.938 | 0.932 | 0.049 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 0.8448 | 25.232 | 8 | *0.001* |
| ***Emotion regulation and job satisfaction*** | | | | | | |
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 596.266 | 341 | 0.031 (.027-.035) | 0.952 | 0.947 | 0.058 |
| Reciprocal | 594.509 | 337 | 0.031 (.027-.035) | 0.952 | 0.946 | 0.056 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 1.1152 | 1.837 | 4 | 0.766 |
| ***Emotion regulation and burnout*** | | | | | | |
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 3328.078 | 1999 | 0.029 (.027-.031) | 0.909 | 0.903 | 0.062 |
| Reciprocal | 3302.028 | 1983 | 0.029 (.027-.031) | 0.910 | 0.903 | 0.058 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 1.0444 | 26.057 | 16 | 0.053 |

| ***Empathy and job satisfaction*** | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 1442.825 | 939 | 0.026 (.024-.029) | 0.931 | 0.917 | 0.070 |
| Reciprocal | 1432.812 | 935 | 0.026 (.023-.029) | 0.932 | 0.918 | 0.069 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 0.9959 | 10.195 | 4 | *0.037* |
| ***Affective empathy and burnout*** | | | | | | |
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 3282.823 | 2102 | 0.027 (.025-.028) | 0.910 | 0.903 | 0.069 |
| Reciprocal | 3255.258 | 2094 | 0.027 (.025-.028) | 0.912 | 0.904 | 0.068 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 0.6685 | 35.857 | 8 | *0.0001* |
| ***Cognitive empathy and burnout*** | | | | | | |
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 2844.622 | 1856 | 0.026 (.024-.028) | 0.923 | 0.916 | 0.056 |
| Reciprocal | 2832.037 | 1848 | 0.026 (.024-.028) | 0.923 | 0.916 | 0.052 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 1.1657 | 12.546 | 8 | 0.1284 |

As can be seen from Table 12, reciprocal models performed better than stability models for the following combinations of constructs: self-awareness and job satisfaction, self-awareness and burnout, emotion regulation and burnout, empathy and job satisfaction, and affective empathy and burnout. This indicates that causal relationships between these constructs need to be taken into account, as these models fit the data better than those including only autoregressive paths. A detailed look into reciprocal models and their regression coefficients is provided in the Appendix, as only significant paths will be depicted in the model figures. All autoregressive paths in all models were statistically significant, ranging from .594 to .983, which indicates that previous levels of measured variables are best predictors of future levels of the same variables.

When it comes to models including self-awareness, both models demonstrated some significant cross-lagged paths which indicate causal relationships between self-awareness and job satisfaction, and self-awareness and burnout. In the model including **self-awareness and job satisfaction** (*Figure 2*), job satisfaction at T1 significantly predicted self-awareness at T2 (β = .177, $p$ = .004), but self-awareness at T1 did not significantly predict job satisfaction at T2 (β = -.073, $p$ = .138). This indicates that job satisfaction is a better predictor of self-awareness, than vice versa. Higher levels of job satisfaction at T1 lead to higher levels of self-awareness at T2.

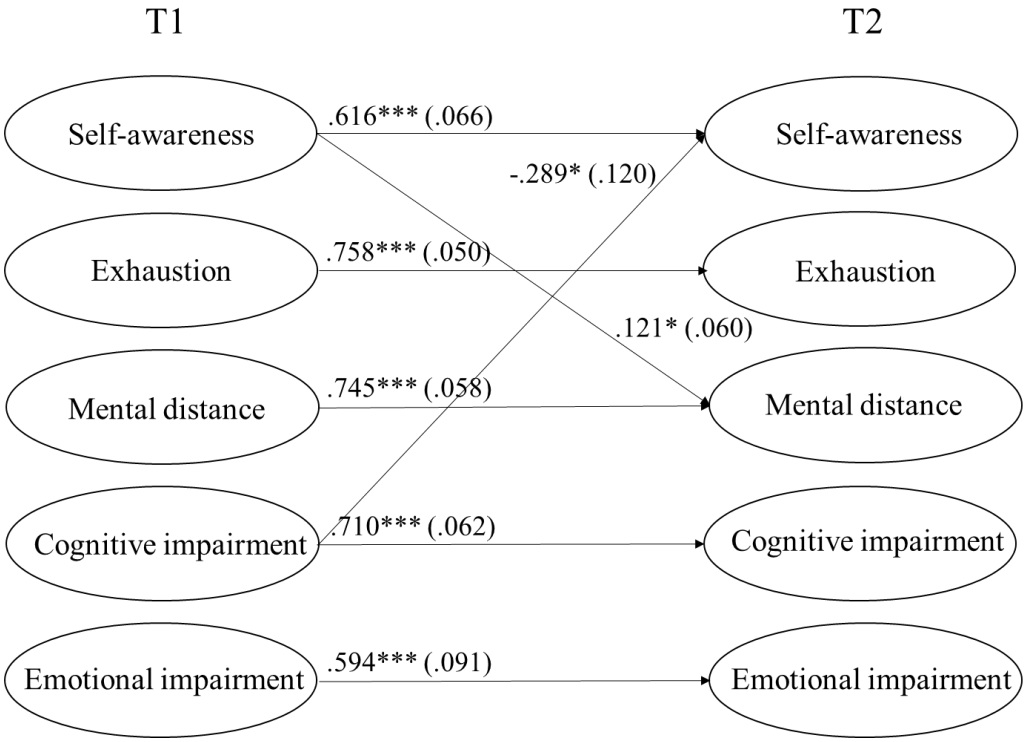
*Figure 2.* Results of the reciprocal model including self-awareness and job satisfaction




*Notes:* *$p$ < .05, **$p$ < .01, ***$p$ < .001; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 6.

In the model including **self-awareness and burnout** (Figure 3), self-awareness at T1 positively predicted mental distance at T2 (β = .121, $p$ = .044), whereas cognitive impairment at T1 negatively predicted self-awareness at T2 (β = -.289, $p$ = .016), which indicates that there is a reciprocal relationship between self-awareness and burnout. However, it has to be noted that the bivariate correlation between self-awareness and mental distance at both time points was negative ($r_{T1}$ = -.26, $p$ < 0.01; $r_{T2}$ = -.29, $p$ <0.01), which would lead us to conclude that higher levels of self-awareness are connected to lower levels of mental distance. The change in direction probably occurred due to suppression, as dimensions of burnout are moderately correlated with one another, and not all of them are related to self-awareness.

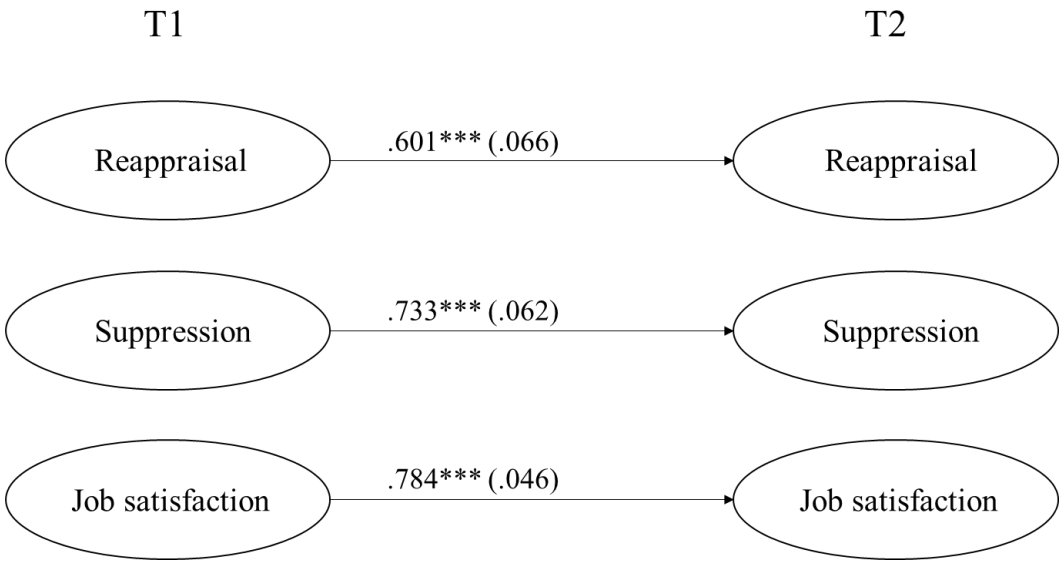
*Figure 3.* Results of the reciprocal model including self-awareness and burnout




*Notes:* *$p$ < .05, **$p$ < .01, ***$p$ < .001; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 7 and Appendix 8.

The stability model including **emotion regulation and job satisfaction** performed as well as the reciprocal model, which is further corroborated by the fact that none of the cross-lagged paths from the reciprocal model were statistically significant (Figure 4). Neither did reappraisal ($\beta = .048$, $p = .373$) or suppression ($\beta = -.002$, $p = .975$) at T1 predict job satisfaction at T2, nor did job satisfaction at T1 predict reappraisal ($\beta = -.025$, $p = .711$) or suppression ($\beta = -.067$, $p = .316$) at T2. These results indicate that, contrary to our hypothesis, no causal relationships exist between these variables.

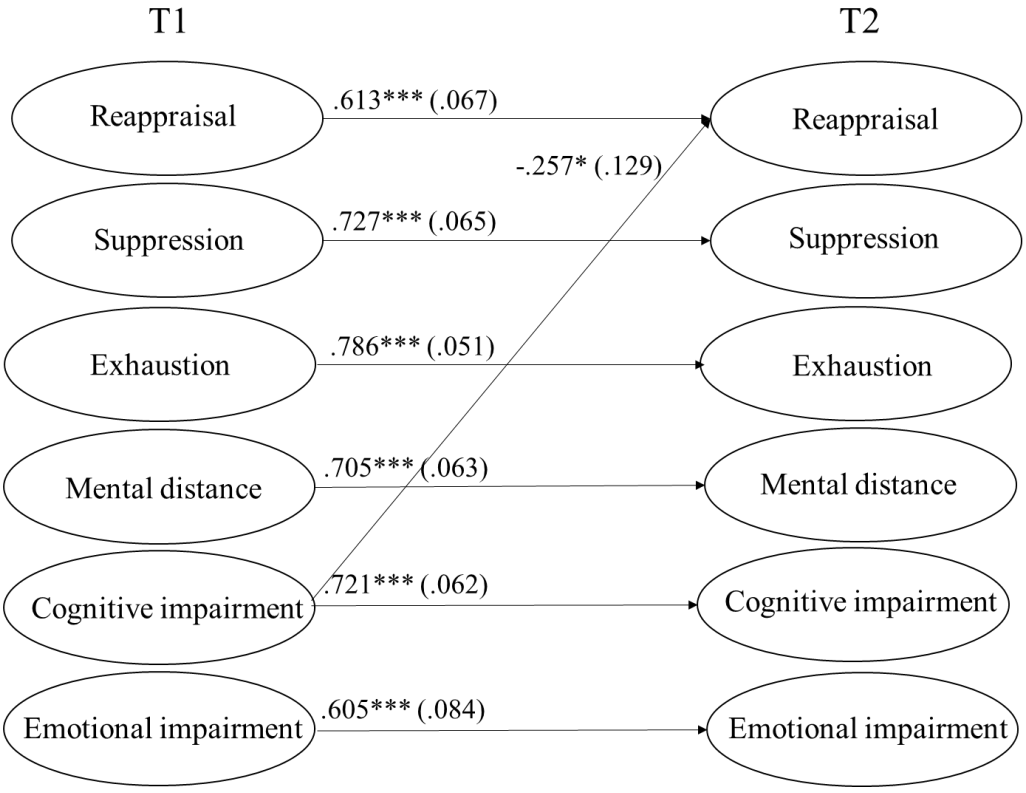
*Figure 4.* Results of the reciprocal model including emotion regulation and job satisfaction




*Notes:* *$p < .05$, **$p < .01$, ***$p < .001$; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 9 and Appendix 10.

The reciprocal model including **emotion regulation and burnout** had a marginally better fit than the stability model (CD = 1.044, $p$ = 0.053). This model (Figure 5) included only one statistically significant cross-lagged path, the one from cognitive impairment to reappraisal (β = -.257, $p$ = .047). This indicates that experiencing cognitive impairment as a symptom of burnout hinders the use of reappraisal as a strategy of emotion regulation.

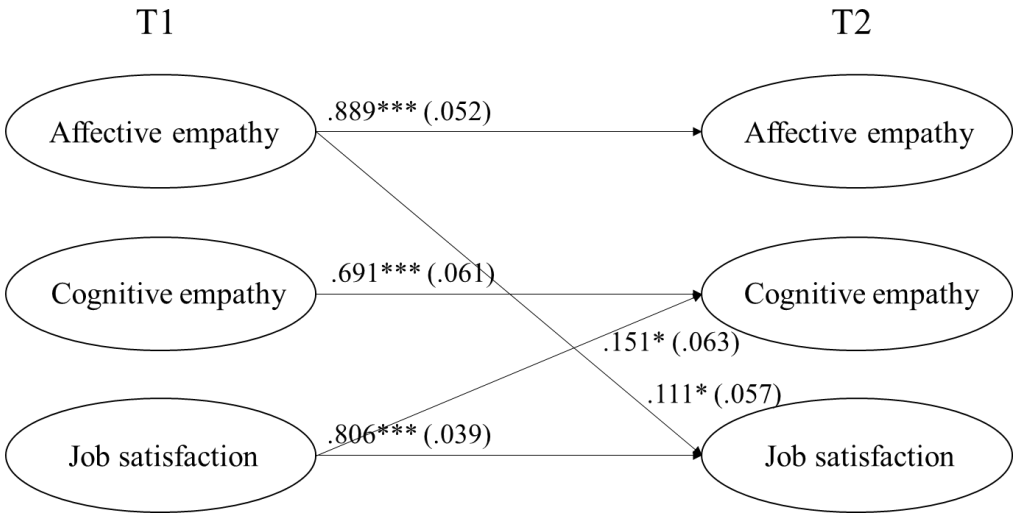
*Figure 5.* Results of the reciprocal model including emotion regulation and burnout




*Notes:* *$p$ < .05, **$p$ < .01, ***$p$ < .001; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 11 and Appendix 12.

When it comes to the model including **empathy and job satisfaction,** some significant cross-lagged paths which indicate causal relationships between empathy and job satisfaction were established. As can be seen from Figure 6, job satisfaction at T1 significantly predicted cognitive empathy at T2 (β = .151, *p* = .016), whereas affective empathy at T1 seemed to marginally predict job satisfaction at T2 (β = .111, *p* = .052). This indicates reciprocal effects between empathy and job satisfaction – higher job satisfaction leads to higher levels of cognitive empathy, and higher levels of affective empathy lead to higher job satisfaction.

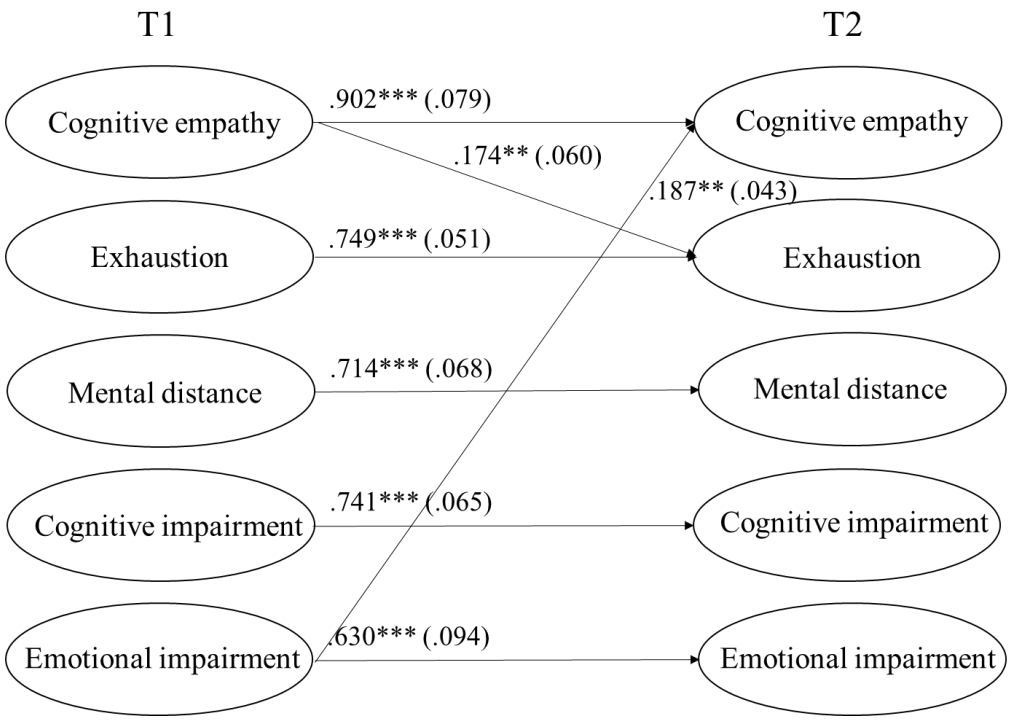
*Figure 6.* Results of the reciprocal model including empathy and job satisfaction




*Notes:* *$p < .05$, **$p < .01$, ***$p < .001$; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 13 and Appendix 14.

Although it has to be noted that the reciprocal model including **cognitive empathy and burnout** did not significantly improve model fit over the stability model (CD = 1.166, $p$ = 0.128), it did reveal some significant paths (Figure 7): cognitive empathy at T1 significantly predicted exhaustion at T2 (β = .174, $p$ = .004), and emotional impairment at T1 significantly predicted cognitive empathy at T2 (β = .187, $p$ = .043). However, it should be stressed that the bivariate correlation between cognitive empathy and exhaustion was negative at T1 ($r_{T1}$ = -.16, $p$ < 0.01), and insignificant at T2 and between time points ($r_{T2}$ = -.10, $p$ > 0.05; $r_{T1T2}$ = .03, $p$ > 0.05). The bivariate correlations between emotional impairment and cognitive empathy were also negative at both time points ($r_{T1}$ = -.28, $p$ < 0.01; $r_{T2}$ = -.25, $p$ < 0.01), as well as between time points ($r_{T1T2}$ = -.22, $p$ > 0.05). This indicates that suppression occurred due to correlations between variables.

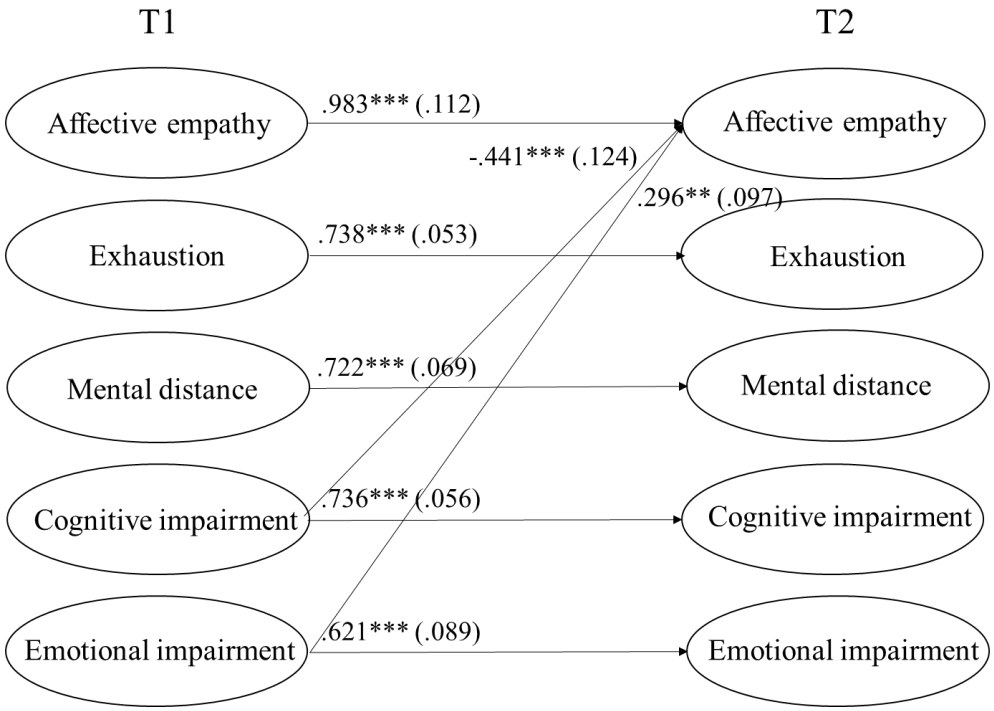
*Figure 7.* Results of the reciprocal model including cognitive empathy and burnout




*Notes:* *$p$ < .05, **$p$ < .01, ***$p$ < .001; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 15 and Appendix 16.

When it comes to the relations between **affective empathy and burnout** (Figure 8), cognitive impairment at T1 seemed to negatively predict affective empathy at T2 (β = -.441, $p < .001$), whereas emotional impairment at T1 seemed to positively predict affective empathy at T2 (β = .296, $p = .002$). However, the bivariate correlation between emotional impairment and affective empathy was insignificant at both time points, as well as between time points ($r_{T1} = -.05$, $p > 0.05$; $r_{T2} = .06$, $p > 0.05$; $r_{T1T2} = .01$, $p > 0.05$). The change in direction probably occurred due to suppression. These results indicate that burnout is a better predictor of affective empathy than empathy is of burnout - cognitive impairment leads to lower levels of affective empathy.

*Figure 8.* Results of the reciprocal model including affective empathy and burnout




*Notes:* *$p < .05$, **$p < .01$, ***$p < .001$; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 17 and Appendix 18.

## 4.4. Direct and indirect contributions of early-career teachers' SEC and occupational well-being in the prediction of their commitment to the profession

### 4.4.1. Direct effects of early-career teachers' SEC and occupational well-being in the prediction of their commitment to the profession

In order to answer the first part of the second research question about the nature of direct contributions of early-career teachers' SEC and their occupational well-being in the prediction of teachers' commitment to the profession, we tested the same 7 cross-lagged panel models, this time by adding commitment to the profession. As was the case with the models exploring reciprocal relations between variables, we first tested stability models, and then added reciprocal effects to see whether they improve model fit. Model fit indices and results of comparisons between stability and reciprocal models are presented in Table 13. Since including commitment can alter some of the paths found in previous models, the significance of these paths was also compared between models with and without commitment.

Reciprocal models also allowed us to test for hypothesized mediation effects. Mediation models were tested in case both the path from the predictor to the mediator, and the path from the mediator to the outcome were significant, to explore indirect effects.

*Table 13.* Fit indices and comparisons of stability and reciprocal models including self-awareness, emotion regulation, empathy, job satisfaction, burnout, and commitment

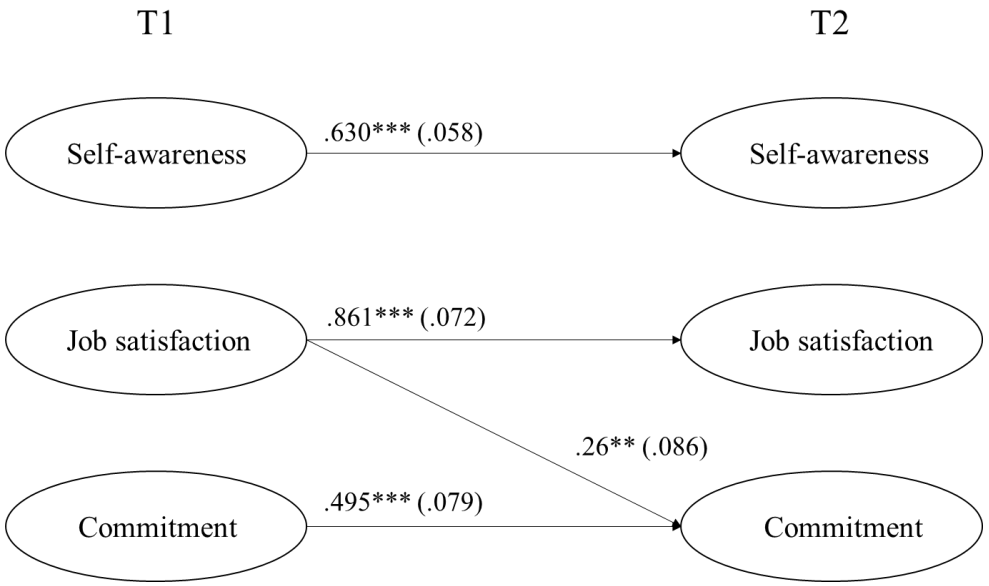
| ***Self-awareness, job satisfaction, and commitment*** | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 169.928 | 126 | 0.020 (.011-.028) | 0.988 | 0.986 | 0.055 |
| Reciprocal | 151.721 | 120 | 0.018 (.006-.026) | 0.991 | 0.989 | 0.035 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 0.9709 | 18.535 | 6 | *0.005* |
| ***Self-awareness, burnout, and commitment*** | | | | | | |
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 2191.917 | 1410 | 0.026 (.024-.028) | 0.935 | 0.929 | 0.054 |
| Reciprocal | 2144.605 | 1392 | 0.025 (.023-.027) | 0.938 | 0.931 | 0.048 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 0.9109 | 50.304 | 18 | *0.0001* |

| ***Emotion regulation, job satisfaction, and commitment*** | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 674.912 | 391 | 0.029 (.026-.033) | 0.952 | 0.946 | 0.059 |
| Reciprocal | 654.554 | 381 | 0.029 (.025-.033) | 0.953 | 0.947 | 0.054 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 1.0874 | 20.380 | 10 | *0.0259* |
| ***Emotion regulation, burnout, and commitment*** | | | | | | |
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 3542.594 | 2119 | 0.028 (.027-.030) | 0.906 | 0.899 | 0.062 |
| Reciprocal | 3490.647 | 2091 | 0.028 (.027-.030) | 0.908 | 0.900 | 0.057 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 1.0508 | 51.836 | 28 | *0.004* |
| ***Empathy, job satisfaction, and commitment*** | | | | | | |
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 1560.053 | 1029 | 0.025 (.022-.027) | 0.933 | 0.920 | 0.070 |
| Reciprocal | 1531.413 | 1019 | 0.024 (.022-.027) | 0.935 | 0.922 | 0.067 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 0.9949 | 29.337 | 10 | *0.0011* |
| ***Affective empathy, burnout, and commitment*** | | | | | | |
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 3509.696 | 2228 | 0.026 (.025-.028) | 0.906 | 0.899 | 0.068 |
| Reciprocal | 3455.225 | 2210 | 0.026 (.024-.028) | 0.909 | 0.901 | 0.067 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 0.8482 | 60.188 | 18 | *0.0000* |
| ***Cognitive empathy, burnout, and commitment*** | | | | | | |
| **Model** | **$\chi^2$** | **df** | **RMSEA (90% C.I.)** | **CFI** | **TLI** | **SRMR** |
| Stability | 3051.427 | 1974 | 0.026 (.024-.027) | 0.919 | 0.912 | 0.057 |
| Reciprocal | 3006.315 | 1956 | 0.025 (.024-.027) | 0.921 | 0.914 | 0.053 |
| | | | **CD** | **TRd** | **Δdf** | ***p*** |
| Satorra-Bentler $\chi^2$ difference test | | | 1.0003 | 45.491 | 18 | *0.0004* |

As can be seen from Table 13, reciprocal models performed better than stability models for all combinations of constructs. A detailed look into reciprocal models and their regression coefficients is provided in the Appendix, only significant paths will be depicted in the model figures. All autoregressive paths in all models were statistically significant, ranging from .442 to .971. Even though commitment was hypothesized only as the outcome in all models, we controlled for its predictive power and included the paths from commitment in T1 to SEC and occupational well-being in T2. None of those paths were significant, which indicates that commitment can indeed be viewed as the outcome of these variables, and not their predictor. This also indicates that, depending on significant cross-lagged paths from SEC and occupational well-being to commitment, these constructs play an important role in the prediction of commitment to the profession.

In the reciprocal model including **self-awareness, job satisfaction, and commitment** (Figure 9), the only significant cross-lagged path was the one from job satisfaction at T1 to commitment at T2 (β = .26, *p* = .003). Self-awareness did not significantly predict neither job satisfaction (β = -.066, *p* = .183), nor commitment (β = -.082, *p* = .103). It also has to be noted that by adding commitment to the model, the effect of job satisfaction on self-awareness was no longer significant (β = .143, *p* = .096).

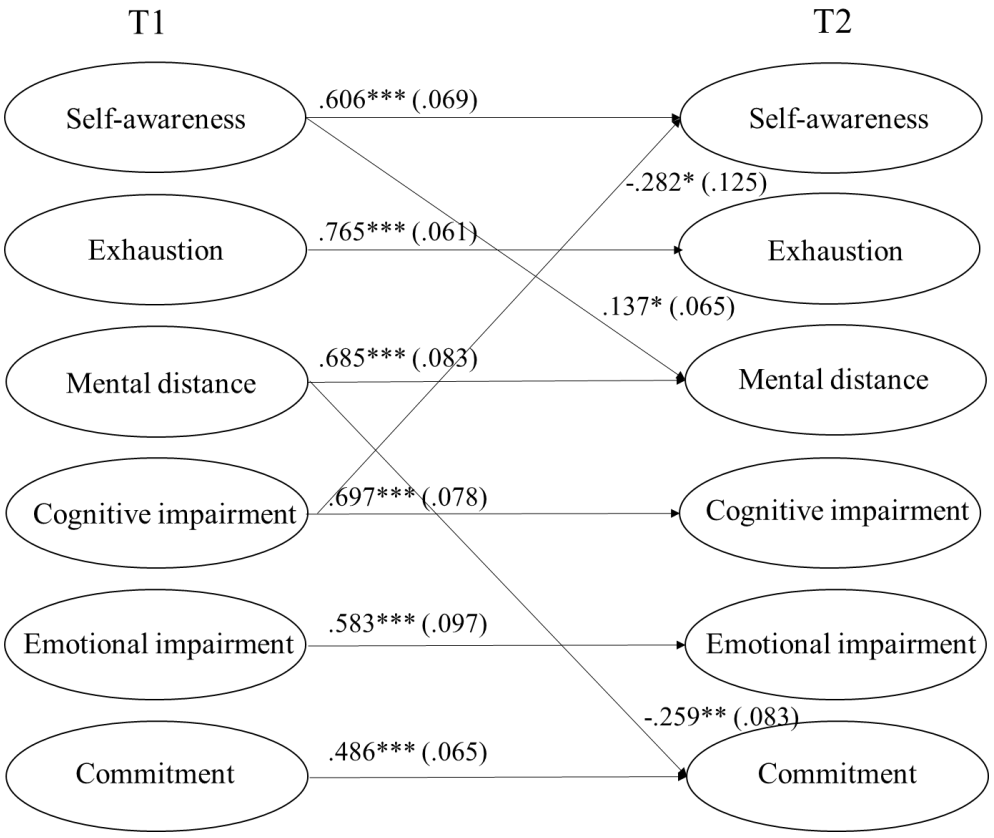
*Figure 9.* Results of the reciprocal model including self-awareness, job satisfaction, and commitment




*Notes:* *$p < .05$, **$p < .01$, ***$p < .001$; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 19 and Appendix 20.

The reciprocal model including **self-awareness, burnout, and commitment** (Figure 10) has maintained the reciprocal effects between self-awareness and burnout and has revealed the role of mental distance in predicting commitment to the profession. Mental distance at T1 significantly predicted commitment at T2 (β = -.259, $p$ = .002). Cognitive impairment at T1 significantly predicted self-awareness at T2 (β = -.282, $p$ = .024). Self-awareness at T1 significantly predicted mental distance at T2 (β = .137, $p$ = .023). Since the bivariate correlation between self-awareness and mental distance was negative at both time points ($r_{T1}$ = -.26, $p$ < 0.01; $r_{T2}$ = -.29, $p$ < 0.01), and insignificant between time points ($r_{T1T2}$ = -.08, $p$ > 0.05), this effect is likely due to suppression

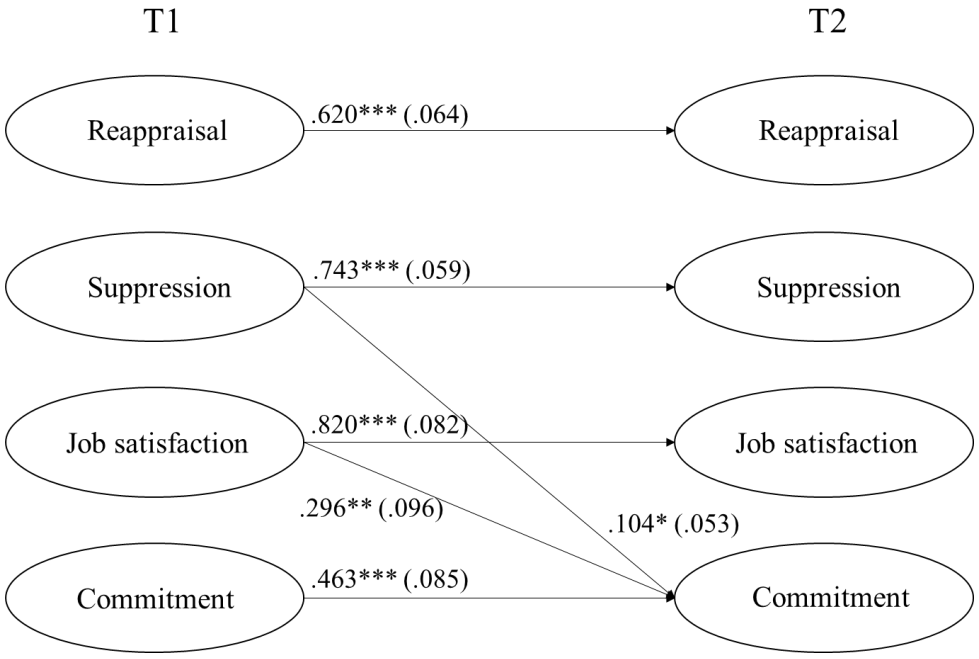
*Figure 10.* Results of the reciprocal model including self-awareness, burnout, and commitment




*Notes:* *$p$ < .05, **$p$ < .01, ***$p$ < .001; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 21 and Appendix 22.

Adding **commitment** to the reciprocal model including **emotion regulation and job satisfaction** (Figure 11) revealed an important role of job satisfaction in predicting commitment to the profession. Both suppression (β = .104, $p$ = .050) and job satisfaction (β = .296, $p$ = .002) at T1 positively predicted commitment at T2. However, the bivariate correlations between suppression and commitment were insignificant at both time points and between points ($r_{T1}$ = -.05, $p$ > 0.05; $r_{T2}$ = -.07, $p$ > 0.05; $r_{T1T2}$ = .04, $p$ > 0.05). Therefore, the effect of suppression on commitment is probably due to suppressor effect caused by correlations between variables included in the model.

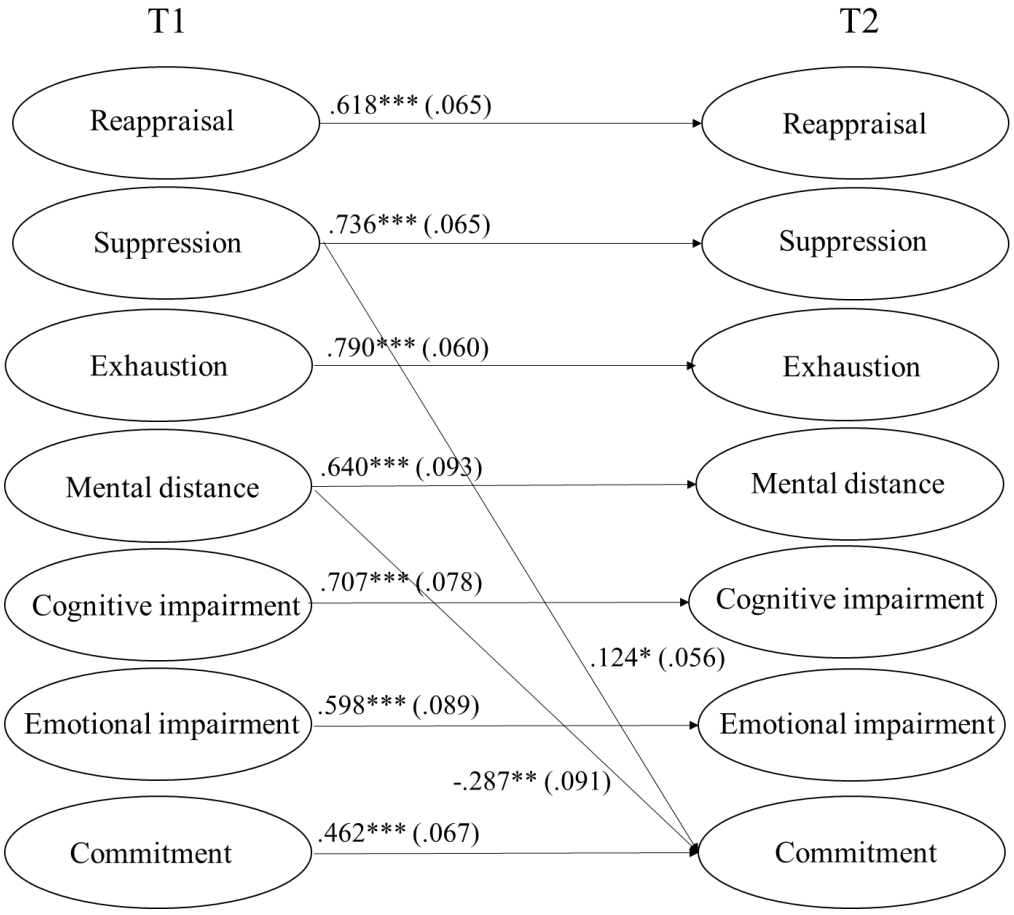
*Figure 11.* Results of the reciprocal model including emotion regulation, job satisfaction, and commitment




*Notes:* *$p$ < .05, **$p$ < .01, ***$p$ < .001; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 23 and Appendix 24.

The reciprocal model including **emotion regulation, burnout and commitment** (Figure 12) no longer contained a significant path from cognitive impairment to reappraisal (β = -.248, *p* = .072). However, the paths from mental distance at T1 to reappraisal at T2 (β = .196, *p* = .056), and from emotional impairment at T1 to suppression at T2 (β = .169, *p* = .065) were marginally significant, which implies that burnout can indeed be considered a predictor of emotion regulation. Furthermore, both emotion regulation (suppression) and mental distance at T1 significantly predicted commitment at T2 (β = .124, *p* = .027; β = -.287, *p* = .002, respectively). However, as was the case in the model including emotion regulation and job satisfaction, the effect of suppression on commitment is most likely due to suppressor effect.

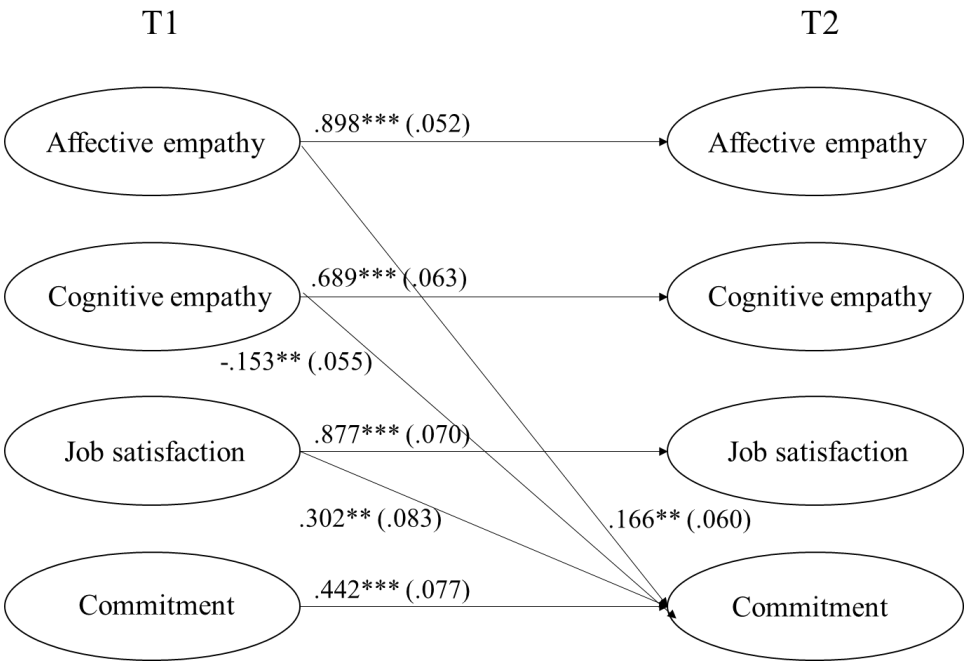
*Figure 12.* Results of the reciprocal model including emotion regulation, burnout, and commitment




*Notes:* *$p$ < .05, **$p$ < .01, ***$p$ < .001; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 25 and Appendix 26.

The reciprocal model including **empathy, job satisfaction, and commitment** (Figure 13) no longer contained reciprocal effects between empathy and job satisfaction which were found when examining the relations between these variables without including commitment. However, as can be seen from Figure 13, both aspects of empathy, as well as job satisfaction, positively predicted commitment to the profession. Surprisingly, affective empathy at T1 positively predicted commitment at T2 (β = .166, $p$ = .006), while cognitive empathy at T1 negatively predicted commitment at T2 (β = -.153, $p$ = .006). However, the bivariate correlation between cognitive empathy and commitment was positive at T2 ($r_{T2}$ = .11, $p$ < 0.05) and insignificant at T1 and between time points ($r_{T1}$ = .04, $p$ < 0.05; $r_{T1T2}$ = .00, $p$ > 0.05). This indicates that suppression effect most likely changed the direction of the effect of cognitive empathy on commitment. Expectedly, job satisfaction at T1 positively predicted commitment at T2 (β = .302, $p$ < .001).

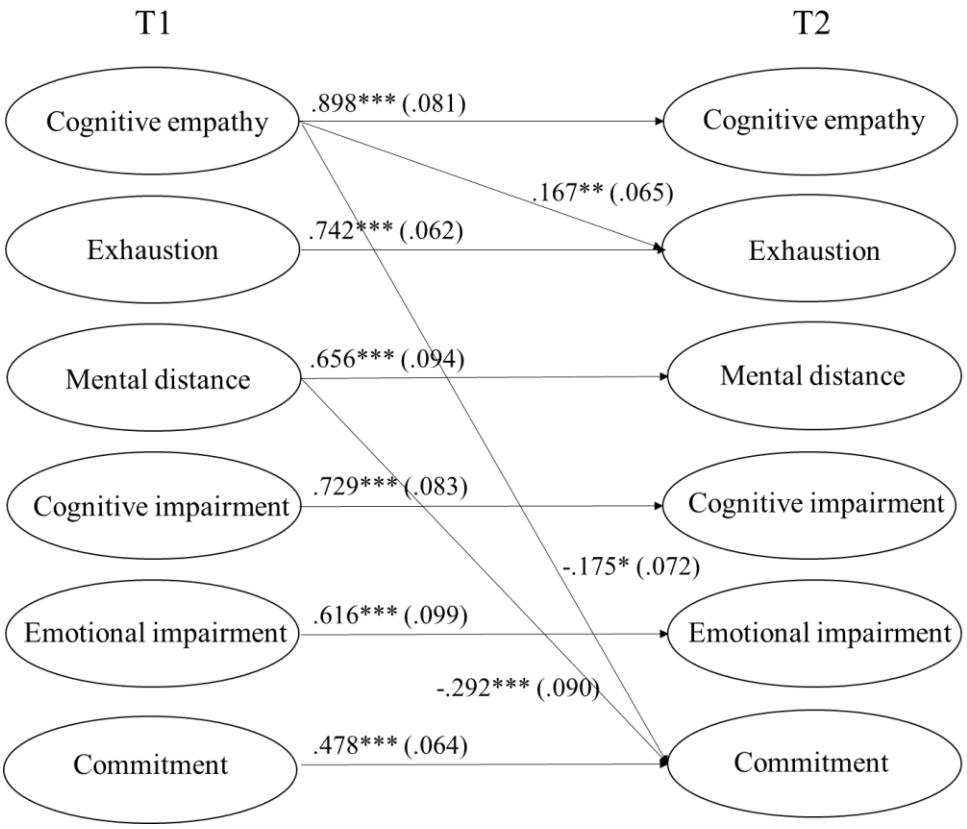
*Figure 13.* Results of the reciprocal model including empathy, job satisfaction, and commitment




*Notes:* *$p$ < .05, **$p$ < .01, ***$p$ < .001; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 27 and Appendix 28.

In the reciprocal model including **cognitive empathy, burnout, and commitment** to the profession (Figure 14), the path from cognitive empathy at T1 to exhaustion at T2 remained significant (β = .167, $p$ = .010). Furthermore, cognitive empathy and mental distance at T1 negatively predicted commitment at T2 (β = -.175, $p$ = .015; β = -.292, $p$ = .001, respectively). However, the effects of cognitive empathy on exhaustion and commitment were most likely due to suppressor effects. The bivariate correlations between cognitive empathy and exhaustion were already presented in the model without commitment ($r_{T1}$ = -.16, $p$ < 0.01; $r_{T2}$ = -.10, $p$ > 0.05; $r_{T1T2}$ = .03, $p$ > 0.05). The bivariate correlations between cognitive empathy and commitment were insignificant at T1 and between time points ($r_{T1}$ = .04, $p$ > 0.05; $r_{T1T2}$ = .00, $p$ > 0.05) and positive at T2 ($r_{T2}$ = .11, $p$ < 0.05).

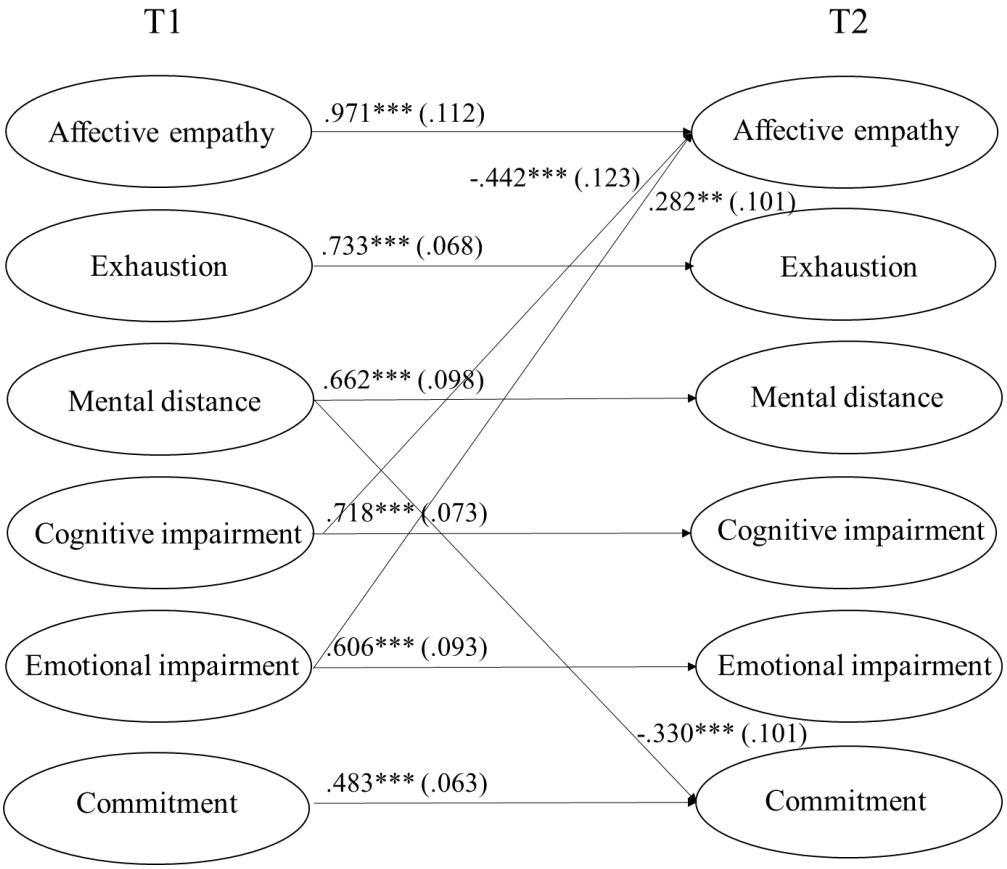
*Figure 14.* Results of the reciprocal model including cognitive empathy, burnout, and commitment




*Notes:* *$p$ < .05, **$p$ < .01, ***$p$ < .001; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 29 and Appendix 30.

The effects of cognitive and emotional impairment on affective empathy found from the reciprocal model including **affective empathy and burnout** remained significant after adding **commitment** to the model (Figure 15). Cognitive impairment at T1 negatively predicted affective empathy at T2 (β = -.442, $p$ < .001), while emotional impairment at T1 positively predicted affective empathy at T2 (β = .282, $p$ = .005). However, as was the case in the model without commitment, the effect of emotional impairment on affective empathy was most likely due to suppressor effect. Mental distance at T1 negatively predicted commitment at T2 (β = -.330, $p$ = .001).

*Figure 15.* Results of the reciprocal model including affective empathy, burnout, and commitment




*Notes:* *$p$ < .05, **$p$ < .01, ***$p$ < .001; For the sake of clarity, only statistically significant paths were shown; Standard errors are shown in parentheses; All paths and correlations are shown in Appendix 31 and Appendix 32.

### 4.4.2. Indirect effects of early-career teachers' SEC and occupational well-being in the prediction of their commitment to the profession

The second part of the second research question considered the nature of indirect contributions of early-career teachers' SEC and their occupational well-being in the prediction of teachers' commitment to the profession. In line with recommendations by Maxwell and Cole (2003), indirect effects were intended to be tested in case direct effects were established between the predictor at T1 and the mediator at T2 while controlling for the mediator at T1, and between the mediator at T1 and the outcome at T2 while controlling for the outcome at T1. However, since none of the models demonstrated both significant paths, indirect effects were not tested in this study. These results indicate that neither does occupational well-being mediate the relationship between SEC and commitment, nor do SEC mediate the relationship between occupational well-being and commitment.

# 5. DISCUSSION

Based on recent analyses of teacher attrition, it has been found that nearly half of newly qualified teachers decide to leave the teaching profession within their first five years of service (Sims & Jerrim, 2020). This indicates that challenges that teachers face when transitioning from university to the workplace can be crucial for the decision to leave the profession during the first years of teaching. Since the challenges teachers face tend to be emotional, strengthening their social and emotional competencies, as well as their occupational well-being could be beneficial for the retention of early-career teachers. However, there seems to be limited focus on the occupational well-being of teachers and the support provided to them in this context, both during their pre-service and in-service training.

In order to contribute to the body of knowledge about the determinants of early-career teachers' attrition, the aim of this research was to investigate the role of social and emotional competencies in the occupational well-being of early-career teachers, explore the dynamic interplay between these two constructs, and examine how they explain teacher commitment. Given that both SEC and occupational well-being tend to play a role in teacher commitment, it was first necessary to disentangle the relationship between those two constructs, explore potential reciprocal effects and determine which construct precedes the other in time. Upon that, we further explored their role in teachers' commitment to the profession, to see how they can interact in predicting whether teachers will leave the profession.

## 5.1. Reciprocal relations between early-career teachers' SEC and their occupational well-being

According to our first hypothesis, it was expected that teachers' SEC and their occupational well-being would be reciprocally related to each other over time. This hypothesis was tested by analysing reciprocal relations between one aspect of SEC (self-awareness, emotion regulation, and empathy), and one aspect of occupational well-being at a time. When it comes to the relationship between SEC and job satisfaction, reciprocal effects were found only between empathy and job satisfaction – affective empathy predicted future job satisfaction, while job satisfaction predicted cognitive empathy. This finding was in line with our hypothesis that teachers who are more empathic tend to have higher job satisfaction, but also that higher job satisfaction can increase the capacities teachers have for empathy. When exploring the relationship between self-awareness and job satisfaction, we found that job satisfaction

positively predicted self-awareness, but not the other way around. Contrary to our hypothesis, we found no causal effects between emotion regulation and job satisfaction.

In general, our results seem to indicate that job satisfaction is a better predictor of teachers' social and emotional competencies than vice versa. This is somewhat surprising, as teachers' SEC have so far been explored mostly as predictors of job satisfaction. However, it has to be noted that causal relations between SEC and job satisfaction have rarely been established due to the lack of longitudinal research in the field, so the predictive role of SEC in job satisfaction has been mostly conceptual. In line with the finding that job satisfaction predicts self-awareness, but not vice versa, in a longitudinal study examining the relationship between job satisfaction and teacher self-efficacy, Burić and Kim (2021) found that job satisfaction predicts future teacher self-efficacy, but not the other way around. This points to the important role of job satisfaction in framing teachers' self-concept – teachers with greater job satisfaction believe that they are more capable of doing their job, and are more aware of their emotions. This can, in turn, help them in further developing their competencies.

Furthermore, the part of our hypothesis pertaining to the relationship between emotion regulation and job satisfaction was not confirmed. Previous research has found a significant relationship between emotion regulation and job satisfaction, as emotion regulation skills help teachers cope with the stressors of their profession (Brackett et al., 2010; Burić et al., 2017). Since teaching can be emotionally demanding, teachers who are skilled in managing stress and emotional challenges are more likely to experience higher job satisfaction. However, teachers who are more satisfied with their jobs can also be equipped with more capacities for regulating their emotions. More longitudinal research is needed to understand the reciprocal relations between emotion regulation and job satisfaction.

When it comes to the relationship between empathy and job satisfaction, our results confirmed the hypothesis about their reciprocal relationship. These results are in line with theoretical considerations regarding the dynamic interplay between SEC and job satisfaction. Teachers who reported being more affectively emphatic reported higher job satisfaction, which points to the role of empathy in occupational well-being, as expected based on the prosocial classroom model (Jennings & Greenberg, 2009). It seems that teachers who are particularly responsive to the emotions of others, including emotions of their students, find that it contributes to their satisfaction with their profession, rather than hinders it. This is an important finding, since recent research on the role of empathy in well-being highlights its possible adverse effects

(Altmann & Roth, 2021; Jennings & Min, 2023). From a theoretical perspective, empathy is one of the aspects of teachers' SEC which are especially relevant for the quality of their relations with students, as it enhances prosocial behaviour demonstrated by providing assistance and support to students in need (Aldrup, 2022). In addition, in contrast to self-awareness and emotion regulation, empathy is explicitly directed towards others rather than focused on oneself (Zins et al., 2004). Considering that teachers' relationships with students are one of the most important predictors of job satisfaction (Kim & Loadman, 1994; Lavy & Bocker, 2017), it is no wonder that empathy appears to be one an aspect of SEC most prominently related to job satisfaction. Furthermore, according to the broaden-and-build theory (Fredrickson, 2004), we also expected that experiencing job satisfaction would lead to more developed SEC. This was found true for the relationship between job satisfaction and cognitive empathy – higher job satisfaction predicted future levels of cognitive empathy. This result points to the important role of experiencing positive emotions at work for the development of SEC related to perspective taking and understanding the emotions of others. In other words, teachers who feel satisfied with their job as a teacher broaden their cognitive capacities and are more capable of taking the perspective of others such as their students or colleagues, which leaves more room for the interpretation and understanding of their emotions.

Regarding the relationship between SEC and burnout, no reciprocal effects were found. Rather, experiencing some burnout symptoms seemed to predict teachers' SEC. Namely, cognitive impairment was found to negatively predict self-awareness, but self-awareness did not predict any of the burnout symptoms. When it comes to the relationship between emotion regulation and burnout, neither reappraisal nor suppression predicted any of the burnout dimensions. However, cognitive impairment negatively predicted future use of the reappraisal strategy, which supports our hypothesis that burnout would negatively predict reappraisal. This implies that having difficulties with concentration and focus at work also has an effect on the cognitive processes necessary to reframe the emotional experiences teachers are faced with. Surprisingly, emotional impairment, which includes elements of emotion regulation, was neither predicted by nor did it predict emotion regulation. This points to the important role of cognitive processes necessary for implementing strategies for emotion regulation.

The analyses of the relations between empathy and burnout presented similar results. While neither cognitive nor affective empathy significantly predicted any of the burnout symptoms, cognitive impairment significantly negatively predicted future levels of affective empathy.

These results are in line with the hypothesis that burnout would negatively predict empathy. It seems that lacking concentration and having difficulty focusing at work can negatively influence the capacity for experiencing affective empathy, which includes being able to actually relate to the feelings of others and be emotionally involved in their experiences. These results also imply that experiencing cognitive impairment has a negative effect on affective, but not on cognitive empathy, which can mean that experiencing difficulties with being cognitively involved at work has a bigger effect on experiencing emotions of others than it does on recognizing them. While these findings highlight the role of cognitive impairment in future levels of SEC, it is also possible that negative emotions themselves are the reasons that teachers experience cognitive impairment in the first place, which leaves little room for self-awareness, emotion regulation, and experiencing emotions of others. Taken together, the findings on the role of cognitive impairment in reducing early-career teachers' SEC support the notion that experiencing burnout symptoms significantly reduces their existing resources, which is in line with the propositions of conservation of resources theory (Hobfoll, 1989).

In general, our results on the role of teachers' SEC in the occupational well-being of early-career teachers revealed only affective empathy as a predictor of job satisfaction. Neither self-awareness nor emotion regulation predicted any of the aspects of occupational well-being in this study. These findings are not in line with previous research which found that developing teachers' SEC can be useful in reducing burnout symptoms and boosting job satisfaction. For example, a study by Jennings and Greenberg (2009) found that teachers who participated in a mindfulness-based SEC program reported lower burnout levels and improved well-being. Similarly, Brackett and Rivers (2014) demonstrated that a social and emotional learning program for teachers led to significant reductions in emotional exhaustion and depersonalization. However, it has to be noted that these studies were focused on studying the effects of programmes aimed at developing SEC, and are therefore not fully comparable to the results of this study. Furthermore, given the prominent role relational aspects of the profession play in both job satisfaction and burnout, more attention should be given to exploring the role of empathy in these outcomes.

It also has to be noted that the conceptualization of burnout by Schaufeli et al. (2020) is still very new, and so far, to the best of our knowledge, no studies explored it in relation to either self-awareness, emotion regulation, or empathy. The difference in the conceptualization of burnout could have contributed to unexpected results of this study, as it is yet unknown whether

and how they are related to SEC. Nevertheless, especially considering the similarities between some of the burnout symptoms and reflections of SEC, relations between SEC and burnout are still to be expected. We would argue that perhaps SEC should be explored within the framework of the job demands - resources model (JD-R; Bakker & Demerouti, 2014), as moderators of the relationship between job demands and burnout.

The JD-R theory supposes that all work environments or job characteristics can be modelled using two categories, that is, job demands and job resources, which trigger two independent processes – a health impairment process and a motivational process (Bakker & Demerouti, 2014). Job demands refer to physical, psychological, social or organizational aspects of the job which require continuous effort and are consequently associated with psychological or physiological costs (Demerouti et al., 2001). Typical job demands associated with the teaching profession include work overload and time pressure, student misconduct and lack of autonomy, and have often been associated with job stress, exhaustion, burnout and health complaints (Montgomery & Rupp, 2005; Skaalvik & Skaalvik, 2007, 2010). While job demands are not always considered negative, problems occur when the employee lacks resources to cope with the demands. Job resources therefore refer to physical, psychological, social or organizational aspects of the job that serve the employee in achieving work-related goals, reduce job demands and related psychological and physiological costs, foster personal growth and fulfil basic psychological needs (Bakker & Demerouti, 2014; Demerouti et al., 2001). Examples of job resources include social support, autonomy, feedback and opportunities for development (Bakker & Demerouti, 2014), and have been associated with work enjoyment, motivation, engagement and job satisfaction (Bakker et al., 2007; Bakker & Demerouti, 2014). More recently, the model has been extended to include personal resources (e.g., self-efficacy, resilience, optimism, self-esteem) which can supplement job resources.

An important proposition presented by the JD-R theory is that job demands and resources interact in predicting occupational well-being and that their interaction can consequently influence work performance. The interaction between job demands and resources involves resources buffering the impact of job demands on exhaustion. Through the proposed buffering process, resources are expected to reduce the detrimental effects of job demands on negative outcomes. That being said, research which would regard SEC as personal resources which could moderate the relationship between job demands and burnout has yet to be conducted. As such,

this presents a promising line of research with important implications for teacher pre-service education, as well as providing them with necessary in-service support and training.

### 5.2. Early-career teachers' SEC and their occupational well-being as predictors of teachers' commitment to the profession

In our second and third hypothesis, it was expected that both teachers' SEC and their occupational well-being would predict teachers' commitment to the profession – both directly and indirectly. In line with the findings on the reciprocity of the relationships between SEC and occupational well-being, indirect effects were only tested in case we found direct effects between SEC and occupational well-being (or vice versa), and between SEC or occupational well-being and commitment.

In general, the results indicate that empathy significantly predicts commitment to the profession, while self-awareness and emotion regulation do not. Furthermore, job satisfaction seems to be a clear predictor of future commitment to the profession while controlling for all SEC included in this study. Of all core symptoms of burnout, the one that consistently predicted future commitment to the profession was mental distance. In the following sections, we will discuss these findings in more detail. Since none of the indirect effects were found to be significant, we will primarily focus on the direct contributions of SEC, job satisfaction, and burnout in the prediction of commitment.

Self-awareness did not directly predict future levels of commitment to the profession, neither while controlling for job satisfaction, nor while controlling for burnout. Taking into account the hierarchical nature of SEC, which implies that self-awareness is a prerequisite of emotion regulation (Brown & Ryan, 2003; Mayer et al., 2016), it can be argued that self-awareness itself is not enough to influence outcomes such as occupational well-being or commitment. In other words, simply being aware of emotions, recognizing them and acknowledging how they influence behaviour can be relevant for coping with emotions and managing them, but it is not enough to protect from experiencing burnout symptoms or influence the decision to stay in the teaching profession.

When it comes to the effects of emotion regulation on commitment, neither reappraisal nor suppression were found to significantly predict commitment while controlling for job satisfaction or burnout. As suppression is generally considered a maladaptive strategy of emotion regulation (Gross & John, 2003), it was expected to negatively predict commitment,

while reappraisal as an adaptive strategy was expected to positively predict whether teachers stay in or leave the profession. The finding that neither of the strategies of emotion regulation predicted teacher commitment is not in line with previous research which consistently found that emotion regulation predicts aspects of occupational well-being (Wang et al., 2023). However, previous research has scarcely explored the role of emotion regulation explicitly in teachers' commitment to the profession. Furthermore, none of the previous studies controlled for job satisfaction or burnout symptoms when exploring the relations between emotion regulation and commitment. Since both job satisfaction and burnout consistently and strongly predicted commitment in all models, it could be that their effects suppressed the effect of emotion regulation on commitment.

Analyses of the role of empathy in commitment presented some interesting findings. Affective empathy positively predicted commitment, but only while controlling for job satisfaction, and not burnout. We hypothesized that empathy would be positively related to commitment, since the teaching profession requires teachers to relate to their students and help them cope with emotional challenges they are faced with. It was expected that higher levels of empathy would thus be predictive of commitment through higher job satisfaction, as teachers who are more empathic also perceive their job as more aligned with their skills and are therefore more satisfied at work. However, the results offer a more nuanced view of the role of empathy in commitment. It seems that involving cognition in emotional experiences is not related to the decision to leave the teaching profession, while experiencing those emotions actually promotes staying in the profession. This points to the role of emotional reactivity of teachers in their decision to stay in the profession. Furthermore, it has to be acknowledged that affective empathy predicted job satisfaction in the reciprocal model without commitment, but this effect was no longer significant with the addition of commitment, which was a necessary prerequisite to test for indirect effects. An additional wave of data collection would have proven useful in discerning these relations, as three waves of data are ideally necessary to test for mediation (Cole & Maxwell, 2003).

As mentioned above, job satisfaction was found to be a clear predictor of the intention to stay in the teaching profession. This finding is in line with numerous research on the role of job satisfaction in turnover intentions, as well as meta-analytic findings which highlight job (dis)satisfaction as one of the key predictors of teachers' intentions to leave the teaching profession (Madigan & Kim, 2021). Not only does job satisfaction protect teachers from leaving

the profession, it also boosts their self-efficacy (Burić & Kim, 2021) and enthusiasm for teaching (Burić & Moè, 2020). According to some definitions of self-awareness, self-efficacy is considered one of its key indicators (Zins et al., 2004). Since teacher self-efficacy is closely linked to self-awareness, it is not surprising that job satisfaction predicted self-awareness as well. These results indicate that, in order to preserve and develop teachers' SEC and keep them in the profession, we should turn to enhancing their satisfaction with the teaching profession and their jobs in general. Considering that the main sources of dissatisfaction of Croatian teachers can be attributed to the overall perception and status of the profession, working conditions, and high administrative workload (OECD, 2020), improving these aspects of teachers' jobs could prove useful for the retention of early-career teachers.

When it comes to the role of burnout in teacher commitment, it was expected that experiencing burnout symptoms would negatively predict commitment. In this study, of the four burnout symptoms, mental distance was the one that negatively predicted commitment while controlling for all SEC. This is in line with the finding by Tomas et al. (2023), who found that mental distance was the core symptom of burnout which was most related to turnover intentions among a representative sample of Croatian workers. This finding implies that experiencing feelings of ambivalence, cynicism, and even repulsion towards their jobs is a key predictor of leaving the profession in early-career teachers. While other symptoms of burnout did not significantly predict commitment, it has to be noted that temporal relations between core burnout symptoms were not analysed in this study. It could be that exhaustion, cognitive impairment, and emotional impairment precede mental distancing, and therefore exhibit their effects on commitment through it. Further research is needed in order to better understand the relations between these core burnout symptoms.

According to meta-analytic findings (Madigan & Kim, 2021), burnout and job satisfaction jointly explained 27% of the variance in teachers' intentions to leave the profession. They also noted that burnout can be more of a risk for teachers' decision to leave the profession than job satisfaction can contribute to them staying in the profession, which implies that focusing on preventing teacher burnout can be crucial for keeping them in the profession. Another indicator of the strength of burnout and job satisfaction in predicting commitment in this study were the fairly low stability coefficients of commitment. Previous levels of variables are expected to be the best predictors of future levels of the same variables. While this was also true for commitment, the stability coefficients for commitment were significantly lower than those of

other variables included in the model, which can indicate that a large proportion of the variance of commitment is explained by other variables in the model. However, this can also indicate that teachers' intentions to stay in the profession differ significantly over the course of the study, which has important implications for studying commitment, as it can mean that early-career teachers can make the decision to leave the profession fairly quickly.

According to our second and third hypothesis, we also expected that SEC would indirectly predict commitment to the profession via occupational well-being, as well as that occupational well-being would indirectly predict commitment via SEC. However, indirect effects were not tested in this study since none of the models demonstrated significant paths both from the predictor to the mediator and from the mediator to the outcome. Furthermore, many of the models demonstrated suppressor effects, which rendered the results inconclusive. Part of the explanation for these results probably lies in statistical characteristics of the sample and the variables, rather than the absence of expected effects. Firstly, teachers in our sample generally reported high levels of SEC, low levels of burnout, high levels of job satisfaction, as well as high levels of commitment. As a result, the variability of measured variables was low. Combined with a relatively small sample (especially the sample of teachers who participated at both time points), this can make it difficult to detect present effects. It could also be that SEC contributes to teachers' occupational well-being through some other variable, such as self-efficacy or emotional resilience. Nevertheless, despite not detecting indirect effects in this study, its results point to important interplay between early-career teachers' SEC and their occupational well-being which ought to be explored further.

### 5.3. Methodological limitations and recommendations for future research

Several limitations of this study should be considered in order to understand and accurately interpret the presented results. One of the biggest drawbacks of this study most certainly has to do with its sample. Even though attrition is a natural part of longitudinal research and was therefore expected, it has to be noted that the attrition in this study was substantial. To understand the reasons for this attrition, a brief overview of the population of early-career teachers in Croatia is in order. To date, the exact number of teachers who are in the early stage of their career (up to five years) remains unknown. What we found through this study was that, on average, every school has around two early-career teachers, which would make the total number of early-career teachers in Croatia approximately 1800. In total, 911 teachers participated in this study, which makes 50% of the approximated population. However,

turnover rates in this population are high and working conditions of the teachers widely differ depending on their work context. A large percentage of the teachers are working on short term contracts, sometimes as short as 1 or 2 months, which makes their jobs extremely insecure and contributes to their decision to leave the teaching profession. As can be illustrated by the relatively low stability coefficients of teacher commitment, it is plausible to assume that part of the attrition from the research was accounted for by teachers actually leaving the profession. Furthermore, the teachers were recruited and approached through principals and school counsellors, which meant that their participation in the study was school-based. Consequently, if they were to switch schools between time points, it wouldn't have been possible for them to participate in the second wave of the study. Moreover, while we aimed to include a representative sample of teachers from the whole country, most of the teachers who participated were from urban areas, where turnover is probably more prominent, which also could have had an effect on the sizeable attrition rates. All of this implies that another approach is necessary to ensure the participation of this highly sensitive population – teachers should be approached directly and perhaps even given incentives for participation. While the teachers who participated were given the opportunity to participate in workshops related to the development of social and emotional competencies after the research was over, this perhaps wasn't incentive enough, especially if they were not planning to persist in teaching or were forced to switch schools.

When considering methodological limitations of this study, one also has to consider the instruments that were used. One of the main issues related to the measuring of SEC is that valid and reliable measures of SEC which could be universally used are still being developed. For example, the Social and Emotional Competencies Questionnaire used in this study (SEC-Q; Zych et al., 2018) is intended to measure four dimensions of SEC aligned with the CASEL model: self-awareness, self-management and motivation, social awareness and prosocial behaviour, and decision making. However, while the scale that measures self-management and motivation is theoretically supposed to measure the management of emotions as well as behaviour, this is not the case as it measures solely the management of goal-oriented behaviour. It was therefore decided to use the instrument to assess self-awareness only, as we turned to other measures of emotional regulation and empathy. However, a comprehensive measure of SEC should include and be able to assess all dimensions of SEC. Progress has been made in this regard by a group of researchers lead by Christopher Soto (2022) and their development of

the Behavioural, Emotional, and Social Skills Inventory (BESSI), but at 192 items, its practical use for research purposes is still in its inception.

Furthermore, as is the case with most research on SEC, all of the instruments which were used in this study were self-report measures. Firstly, this can contribute to shared method bias. Shared method bias refers to a common methodological issue in research that arises when data collected in a study is influenced by the same method, typically self-report measures, which can result in artificially inflated correlations among variables (Podsakoff et al., 2003). This bias can undermine the validity and generalizability of findings. While it is possible to control for shared method bias through statistical techniques and by using longitudinal designs, the best strategy to mitigate shared method bias is to use diverse data collection methods. Furthermore, self-report measures are less than ideal when measuring constructs that have to do with individual characteristics, as they are also prone to bias. Most prominently, self-report measures have been proven to be susceptible to faking and socially desirable responding (Abrahams et al., 2019; Paulhus, 1991). Furthermore, when measuring SEC, it is important to bear in mind that successful responding to self-report measures depends on the variables being measured, such as self-awareness, which may influence self-ratings (Brackett et al., 2006). This is evident from the results obtained on SEC measures – teachers described themselves as highly self-aware, empathic and emotionally regulated. While having higher SEC is expected from people entering the teaching profession, these results were probably also skewed from using self-reports. However, certain aspects of SEC (for example, emotions that are felt when a certain situation arises or self-efficacy beliefs) cannot be accurately measured through methods other than self-report, which is why they remain the most commonly used method of SEC assessment (Müller et al., 2020), despite their drawbacks. This is why researchers are dedicating their time to developing context specific measures and situational judgement tests which would directly measure the use of competencies in realistic situations and everyday challenges. Despite the fact that the development of such measures is demanding and time-consuming, as is their implementation, the use of situational judgement tests for measuring teachers' SEC provides many advantages in comparison to standard self-report measures (Aldrup et al., 2020; Klassen et al., 2020), which makes them a useful tool for advancing research in this area. Another approach to measuring SEC is by using other-reports. As mentioned above, some elements of SEC, mostly within the domain of emotional competence, may not be observable by others and therefore cannot be measured by other-reports. However, others such as most aspects of social competence can be observed by others and are appropriate for the use of other-reports for their

measurement. Still, other reports of teachers' SEC have been used in a minority of existing studies and have yet to be incorporated into instruments measuring SEC (Müller et al., 2020).

One should also be careful when drawing inferences of causality from this type of research design. Ideally, a three variable causal chain should include a three-wave design (Cole and Maxwell, 2003). While Cole and Maxwell (2003) note that relations between variables can be examined longitudinally by using two waves of data as well, more waves of data collection can shed better light on the relationships between variables, especially in a complex context such as schools. The timing of data collection and time period that elapses between waves should also be taken into consideration. In this study, the data were collected at the beginning of the school year and at the end of it. It would be expected that levels of teachers' occupational well-being would differ depending on their workload, which depends heavily on the dynamic of the school year. Indeed, Singer and Willett (2003) noted that relying on data from two waves of measurement limits the possibility of making causal inferences, as true change may be confounded with measurement error. To ensure that the relations between variables indeed portray their causal effects and not the effects of other, unmeasured variables or measurement error, more waves and differing lags could be considered, as well as using experimental research designs.

Utilizing a person-based approach and examining individual trajectories of burnout could also be relevant for examining the development of burnout in early-career teachers. In this study, early-career teachers reported that they experienced low levels of core burnout symptoms. Notably, studies on burnout suggest that burnout levels are stable over time (Hakanen et al., 2008, Taris et al., 2005). While this may be true on the group level, person-based studies which examine individual trajectories point to changes in burnout trajectories over time (Hultell et al., 2013), which points to the opportunity to understand the development of the burnout syndrome in early-career teachers better through more waves of data collection and longer study duration. However, as mentioned, ensuring participation and minimizing attrition remain a key challenge in research on this small, but extremely important population of teachers.

### 5.4. Contributions

Some of the key contributions of this study need to be acknowledged as well. Firstly, it has to be noted that this study utilized a longitudinal, full-panel research design. These designs, while standard for developmental psychology, are still not utilized enough in educational psychology, especially when it comes to research conducted on teachers. While their conduction comes with

its fair share of challenges and methodological limitations, their potential is invaluable when it comes to establishing prediction or testing for reciprocal effects. Furthermore, reciprocal effects between teachers' SEC and their occupational well-being have so far been researched only to a limited extent, as teachers' SEC have mostly been explored as predictors of occupational well-being. However, the results of this study provide support to the notion that occupational well-being could be more useful for shaping teachers' SEC. These findings shed a new light on existing cross-sectional research in the field, which established the relations between these constructs, but not their predictive direction.

Secondly, this study is one of rare studies in the field which applied the novel exploratory structural equation modelling approach to data analysis. According to Marsh et al. (2014) and Morin et al. (2020), this approach is more robust and more flexible than traditional confirmatory or exploratory factor analyses, as it allows for cross-loadings, reduces the bias in factor correlations, and is more in line with theoretical considerations behind measurement instruments. With its further development and rising popularity, this approach could help surpass existing challenges that researchers face when using CFA for establishing measurement models of multidimensional instruments which contain many items, and thus contribute to the exploration of multidimensional constructs.

Thirdly, this study contributes to research on a population of teachers who are considered most at risk for leaving the profession, but who nevertheless receive limited support during the sensitive period of pre-service and in-service training, as well as the transition from university to work. The results of this study point to the role of teacher empathy in their occupational well-being and commitment, which provides important practical implications. These results can help target pre-service or in-service teachers in need for additional support and more tailor-made training programmes. First of all, measurements of empathy could be included during teacher selection when entering university programmes and starting their jobs at school, in order to identify those teachers at risk for having lower job satisfaction due to the discrepancy between their level of empathy and that which is required in the teaching profession. This can help in managing their expectations and developing their capacities for empathy, which can boost their job satisfaction. Furthermore, since all teachers (not just those at risk) can benefit from programmes aimed at developing social and emotional competencies, they can be included in pre-service and in-service teacher education programmes, which can help empower them and give them tools they can use when faced with emotionally challenging situations. Additionally,

including teachers in these programmes could help them facilitate SEC in their students as well, which can in turn also contribute to their occupational well-being.

Finally, given the prominent role of burnout and job satisfaction in early-career teachers' commitment to the profession, the results of this study point to the need for continuous and systematic screening of burnout symptoms and job satisfaction in early-career teachers, and implementing policies which help in fostering their satisfaction with their jobs and preventing burnout. These processes could be central in the attempt to retain early-career teachers in the profession, especially considering how challenging it has become to recruit them in the first place.

## 6. CONCLUSION

The results of this study highlight the role of early-career teachers' empathy in shaping their job satisfaction and ensuring their commitment to the teaching profession. Since previous research indicates that teachers' relations with students and their parents, as well as their colleagues, can be crucial for their job satisfaction, teachers' empathy can help foster those relations and therefore improve job satisfaction. Moreover, since empathy has been found to play a role in commitment, interventions and programmes for developing teachers' empathy skills could also prove fruitful in the attempts to retain teachers in the profession. Furthermore, teachers' job satisfaction and one of the core symptoms of burnout, cognitive impairment, were found to predict teachers SEC. This finding raises important questions about the causal relations between these constructs and provides a foundation for further research, as it seems that teachers who are dissatisfied with their profession and/or who experience issues with cognitive functioning at work have less resources at their disposal for effective emotion regulation, emotional awareness and empathy. This also points to the dynamic interplay between cognition and emotion which defines teachers' occupational well-being. Finally, the robust finding that job satisfaction and burnout play a critical role in teachers' commitment to the profession was confirmed in this study. However, this study suggests that not all symptoms of burnout are equally important for early-career teachers' decision to stay in the profession, as it seems that mental distance, i.e. cynicism and/or ambivalence towards their job, and withdrawal from their work life, is the only significant predictor of commitment. Further research should explore temporal relations between core burnout symptoms and examine whether other symptoms of burnout precede mental distance and thus predict commitment.

In conclusion, the recruitment of novice teachers and retention of those who have already entered the profession is becoming increasingly challenging for educational systems worldwide. In Croatia, with the steady decline in the status of the teaching profession, aging of the teaching staff, and the globalization and versatility of the labour market, these issues may soon leave irreversible consequences on education as a whole. Policies and targeted strategies aimed at improving teachers' work lives and their occupational well-being should therefore be considered essential for the prevention of teacher attrition, especially when it comes to the most vulnerable groups of teachers, thereby ensuring a stable and skilled teaching workforce.

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## 8. APPENDIX

*Appendix 1.* Results of independent t-tests for teachers who participated in both time points and those who participated only in T1

| **Variable (T1)** | **Participants in both time points** | | | **Participants in only in T1** | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Demographics* | *M* | *SD* | *n* | *M* | *SD* | *n* | *t* | *p* | Cohen's d |
| Age | 29.89 | 4.95 | 190 | 30.91 | 6.08 | 395 | 2.02 | .044 | -0.18 |
| Work experience | 33.12 | 17.68 | 198 | 31.08 | 17.85 | 530 | -1.38 | .169 | |
| *Social and emotional competencies* | *M* | *SD* | *n* | *M* | *SD* | *n* | *t* | *p* | Cohen's d |
| Self-awareness | 4.43 | 0.51 | 194 | 4.43 | 0.54 | 460 | -0.03 | .977 | |
| Cognitive empathy | 4.24 | 0.44 | 195 | 4.22 | 0.48 | 460 | -0.64 | .522 | |
| Affective empathy | 3.73 | 0.54 | 195 | 3.76 | 0.53 | 460 | 0.57 | .567 | |
| Emotion regulation - reappraisal | 4.93 | 1.05 | 195 | 5.15 | 1.05 | 458 | 2.53 | .012 | -0.21 |
| Emotion regulation - suppression | 3.69 | 1.33 | 195 | 3.75 | 1.23 | 457 | 0.54 | .593 | |
| *Occupational well-being* | *M* | *SD* | *n* | *M* | *SD* | *n* | *t* | *p* | Cohen's d |
| Job satisfaction | 3.83 | 0.93 | 191 | 3.82 | 0.94 | 398 | -0.77 | .939 | |
| Exhaustion | 2.22 | 0.64 | 190 | 2.22 | 0.69 | 399 | -0.08 | .934 | |
| Mental distance | 1.82 | 0.62 | 190 | 1.80 | 0.58 | 399 | -0.43 | .666 | |
| Cognitive impairment | 1.71 | 0.56 | 190 | 1.70 | 0.55 | 399 | -0.14 | .887 | |
| Emotional impairment | 1.60 | 0.51 | 190 | 1.61 | 0.54 | 399 | 0.32 | .751 | |
| Commitment to the profession | 5.38 | 1.54 | 198 | 5.28 | 1.60 | 530 | -0.75 | .453 | |

*Appendix 2.* Results of independent t-tests for teachers who participated in both time points and those who participated only in T2

| **Variable (T2)** | **Participants in both time points** | | | **Participants in only T2** | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Demographics* | *M* | *SD* | *n* | *M* | *SD* | *n* | *t* | *p* | Cohen's d |
| Age | 30.38 | 4.90 | 198 | 31.15 | 5.64 | 183 | 1.43 | .153 | |
| Work experience | 38.50 | 17.83 | 198 | 38.99 | 19.49 | 183 | 0.26 | .798 | |
| *Social and emotional competencies* | *M* | *SD* | *n* | *M* | *SD* | *n* | *t* | *p* | Cohen's d |
| Self-awareness | 4.38 | 0.47 | 198 | 4.39 | 0.46 | 182 | 0.15 | .880 | |
| Cognitive empathy | 4.16 | 0.44 | 198 | 4.07 | 0.49 | 183 | -2.05 | .041 | 0.19 |
| Affective empathy | 3.72 | 0.48 | 198 | 3.71 | 0.51 | 183 | -0.40 | .686 | |
| Emotion regulation - reappraisal | 4.96 | 1.01 | 197 | 5.03 | 1.05 | 183 | 0.61 | .544 | |
| Emotion regulation - suppression | 3.70 | 1.25 | 197 | 3.95 | 1.11 | 183 | 2.01 | .045 | -0.21 |
| *Occupational well-being* | *M* | *SD* | *n* | *M* | *SD* | *n* | *t* | *p* | Cohen's d |
| Job satisfaction | 3.51 | 0.95 | 196 | 3.61 | 0.86 | 171 | 0.98 | .330 | |
| Exhaustion | 2.40 | 0.70 | 195 | 2.36 | 0.58 | 170 | -0.50 | .618 | |
| Mental distance | 1.98 | 0.62 | 195 | 1.91 | 0.53 | 170 | -1.25 | .213 | |
| Cognitive impairment | 1.81 | 0.57 | 195 | 1.85 | 0.53 | 170 | 0.66 | .509 | |
| Emotional impairment | 1.67 | 0.55 | 195 | 1.66 | 0.53 | 170 | -0.25 | .807 | |
| Commitment to the profession | 5.24 | 1.49 | 195 | 5.45 | 1.24 | 172 | 1.47 | .142 | |

*Appendix 3.* Factor loadings for self-awareness and job satisfaction

| | CFA | | | |
|---|---|---|---|---|
| | **Factor loading** | | **$R^2$** | |
| Factor/indicator | T1 | T2 | T1 | T2 |
| *Self-awareness* | | | | |
| SA-1 | **.81** | **.75** | .65 | .57 |
| SA-2 | **.78** | **.77** | .61 | .59 |
| SA-3 | **.82** | **.77** | .67 | .59 |
| SA-4 | **.70** | **.69** | .49 | .47 |
| *Job satisfaction* | | | | |
| JS-1 | **.66** | **.59** | .43 | .35 |
| JS-2 | **.91** | **.86** | .82 | .75 |
| JS-3 | **.83** | **.81** | .68 | .65 |
| JS-4 | **.77** | **.78** | .60 | .61 |

*Note: SA – self-awareness; JS – job satisfaction*

*Appendix 4.* Comparison between factor loadings for CFA and ESEM models of emotion regulation and empathy

| | CFA | | | | ESEM | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Factor loading | | $R^2$ | | Factor loading | | | | $R^2$ | |
| | | | | | ER-R | | ER-S | | | |
| Factor/indicator | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 |
| *Emotion regulation - reappraisal* | | | | | | | | | | |
| ER-R1 | **.57** | **.61** | .33 | .38 | **.59** | **.62** | -.09 | -.09 | .34 | .39 |
| ER-R2 | **.55** | **.61** | .30 | .37 | **.54** | **.61** | .06 | .03 | .31 | .37 |
| ER-R3 | **.55** | **.57** | .30 | .32 | **.54** | **.57** | .09 | .02 | .31 | .33 |
| ER-R4 | **.88** | **.86** | .77 | .74 | **.87** | **.86** | .02 | -.00 | .77 | .74 |
| ER-R5 | **.87** | **.87** | .75 | .76 | **.86** | **.86** | .04 | .06 | .75 | .76 |
| ER-R6 | **.86** | **.81** | .74 | .66 | **.86** | **.80** | .06 | .08 | .75 | .66 |
| *Emotion regulation - suppression* | | | | | | | | | | |
| ER-S1 | **.62** | **.55** | .38 | .30 | -.02 | -.04 | **.62** | **.56** | .39 | .31 |
| ER-S2 | **.59** | **.58** | .34 | .33 | -.05 | -.02 | **.60** | **.59** | .35 | .34 |
| ER-S3 | **.85** | **.93** | .72 | .87 | -.01 | -.01 | **.85** | **.92** | .72 | .84 |
| ER-S4 | **.57** | **.54** | .33 | .29 | .17 | .15 | **.55** | **.53** | .36 | .32 |
| | **CFA** | | | | **ESEM** | | | | | |
| | **Factor loading** | | **$R^2$** | | **Factor loading** | | | | **$R^2$** | |
| | | | | | **EMP-A** | | **EMP-C** | | | |
| Factor/indicator | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 |
| *Empathy - affective* | | | | | | | | | | |
| EMP-A1 | **.33** | **.35** | .11 | .12 | **.24** | **.26** | .09 | .16 | .08 | .12 |
| EMP-A2 | **.46** | **.39** | .21 | .15 | **.30** | **.36** | .22 | .02 | .17 | .13 |
| EMP-A3 | **.47** | **.43** | .22 | .18 | **.61** | **.56** | -.14 | -.16 | .35 | .28 |
| EMP-A4 | **.67** | **.63** | .45 | .40 | **.50** | **.50** | .35 | .28 | .46 | .42 |
| EMP-A5 | **.48** | **.43** | .23 | .19 | **.37** | **.40** | .19 | .09 | .20 | .19 |
| EMP-A6 | **.44** | **.48** | .20 | .24 | **.30** | **.40** | .31 | .22 | .23 | .26 |
| EMP-A7 | **.65** | **.62** | .42 | .38 | **.70** | **.59** | .02 | .07 | .50 | .38 |
| EMP-A8 | **.36** | **.33** | .13 | .11 | **.39** | **.40** | -.04 | -.03 | .14 | .15 |
| EMP-A9 | **.41** | **.45** | .17 | .21 | **.49** | **.47** | -.40 | -.22 | .29 | .21 |
| EMP-A10 | **.65** | **.57** | .42 | .32 | **.61** | **.56** | -.01 | -.00 | .36 | .31 |
| EMP-A11 | **.41** | **.43** | .17 | .18 | **.27** | **.31** | .28 | .38 | .19 | .31 |
| *Empathy - cognitive* | | | | | | | | | | |
| EMP-C1 | **.49** | **.51** | .24 | .26 | .25 | .19 | **.41** | **.44** | .28 | .29 |
| EMP-C2 | **.59** | **.52** | .25 | .28 | -.06 | -.07 | **.55** | **.58** | .29 | .31 |
| EMP-C3 | **.61** | **.57** | .37 | .32 | .18 | .04 | **.59** | **.64** | .43 | .43 |
| EMP-C4 | **.69** | **.69** | .48 | .47 | .02 | .03 | **.72** | **.73** | .53 | .54 |
| EMP-C5 | **.60** | **.58** | .36 | .33 | .14 | .11 | **.55** | **.48** | .35 | .28 |
| EMP-C6 | **.62** | **.65** | .38 | .43 | .17 | .12 | **.61** | **.60** | .45 | .42 |
| EMP-C7 | **.67** | **.69** | .45 | .47 | .06 | .11 | **.64** | **.59** | .44 | .40 |
| EMP-C8 | **.35** | **.32** | .12 | .10 | .00 | .20 | **.40** | **.29** | .16 | .16 |
| EMP-C9 | **.52** | **.62** | .27 | .38 | .03 | .16 | **.54** | **.60** | .30 | .45 |

*Note: ER-R = emotion regulation – reappraisal; ER-S = emotion regulation – suppression; EMP-A = affective empathy; EMP-C = cognitive empathy*

*Appendix 5.* Comparison between factor loadings for CFA and ESEM models of burnout

| | **CFA** | | | | **ESEM** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Factor loading** | | **$R^2$** | | **Factor loading** | | | | | | | | **$R^2$** | |
| | | | | | **EXH** | | **MD** | | **CI** | | **EI** | | | |
| Factor/ indicator | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 |
| EXH-1 | **.71** | **.73** | .50 | .53 | **.60** | **.63** | .08 | .08 | .19 | .30 | -.01 | -.11 | .55 | .63 |
| EXH-2 | **.70** | **.70** | .49 | .49 | **.29** | **.34** | .28 | .27 | .22 | .28 | .12 | .07 | .50 | .52 |
| EXH-3 | **.74** | **.74** | .55 | .55 | **.62** | **.67** | .09 | .03 | .16 | .19 | .03 | .02 | .58 | .60 |
| EXH-4 | **.74** | **.72** | .54 | .51 | **.57** | **.63** | .06 | .06 | .15 | .13 | .13 | .05 | .55 | .52 |
| EXH-5 | **.69** | **.67** | .47 | .46 | **.39** | **.46** | .41 | .26 | -.00 | .02 | .08 | .14 | .51 | .46 |
| EXH-6 | **.55** | **.48** | .30 | .23 | **.14** | **.02** | .19 | .32 | .09 | .16 | .39 | .29 | .39 | .39 |
| EXH-7 | **.72** | **.68** | .51 | .47 | **.45** | **.45** | .10 | .18 | .07 | -.05 | .32 | .39 | .53 | .53 |
| EXH-8 | **.80** | **.82** | .64 | .67 | **.71** | **.80** | .07 | .10 | .11 | .02 | .09 | .09 | .71 | .76 |
| MD-1 | **.78** | **.79** | .61 | .62 | .25 | .27 | **.44** | **.44** | .32 | .40 | -.07 | -.14 | .61 | .65 |
| MD-2 | **.43** | **.34** | .19 | .11 | -.03 | -.12 | **.26** | **.15** | .21 | .33 | .09 | .09 | .20 | .19 |
| MD-3 | **.78** | **.79** | .60 | .62 | .13 | .14 | **.69** | **.73** | .08 | .04 | .07 | .01 | .66 | .66 |
| MD-4 | **.65** | **.65** | .42 | .42 | -.13 | -.15 | **.77** | **.80** | .06 | .02 | .06 | .05 | .60 | .62 |
| MD-5 | **.61** | **.55** | .38 | .31 | .35 | .33 | **.27** | **.30** | .02 | -.00 | .18 | .13 | .39 | .34 |
| CI-1 | **.73** | **.69** | .54 | .47 | .16 | .11 | .15 | .02 | **.59** | **.77** | .01 | -.03 | .59 | .66 |
| CI-2 | **.72** | **.73** | .51 | .53 | .02 | .00 | .04 | .06 | **.72** | **.55** | .05 | .26 | .60 | .55 |
| CI-3 | **.74** | **.72** | .54 | .51 | .02 | -.00 | .19 | .14 | **.43** | **.31** | .24 | .41 | .52 | .48 |
| CI-4 | **.77** | **.78** | .59 | .61 | .00 | -.06 | .30 | .19 | **.39** | **.49** | .23 | .28 | .57 | .58 |
| CI-5 | **.70** | **.70** | .48 | .49 | .02 | -.04 | .22 | .21 | **.22** | **.23** | .42 | .47 | .50 | .53 |
| EI-1 | **.72** | **.71** | .52 | .50 | .08 | .02 | -.08 | .04 | .39 | .28 | **.42** | **.44** | .50 | .42 |
| EI-2 | **.59** | **.65** | .35 | .42 | -.08 | .04 | .11 | -.03 | .22 | .18 | **.41** | **.53** | .35 | .40 |
| EI-3 | **.68** | **.64** | .47 | .41 | .17 | .14 | .01 | .14 | .26 | .08 | **.38** | **.46** | .44 | .40 |
| EI-4 | **.66** | **.61** | .44 | .37 | .09 | .04 | .19 | .30 | .04 | .13 | **.52** | **.31** | .46 | .38 |
| EI-5 | **.63** | **.69** | .40 | .47 | -.01 | .02 | -.02 | .14 | .02 | -.02 | **.72** | **.60** | .51 | .46 |

*Note: EXH = exhaustion; MD = mental distance; CI = cognitive impairment; EI = emotional impairment*

*Appendix 6.* Results from the reciprocal model including self-awareness and job satisfaction

| **Model/path** | **β** | ***S.E.*** | ***p*** |
|---|---|---|---|
| Autoregressive paths | | | |
| Self-awareness (T1) → Self-awareness (T2) | .635 | .056 | < .001 |
| Job satisfaction (T1) → Job satisfaction (T2) | .814 | .039 | < .001 |
| Cross-lagged paths | | | |
| Self-awareness (T1) → Job satisfaction (T2) | -.073 | .049 | .138 |
| Job satisfaction (T1) → Self-awareness (T2) | .177 | .061 | .004 |
| Factor correlations | ***r*** | ***S.E.*** | ***p*** |
| T1 | .244 | .055 | < .001 |
| T2 | .130 | .099 | .188 |

*Appendix 7.* Results from the reciprocal model including self-awareness and burnout

| **Model/path** | **β** | ***S.E.*** | ***p*** |
|---|---|---|---|
| Autoregressive paths | | | |
| Self-awareness (T1) → Self-awareness (T2) | .616 | .066 | < .001 |
| Exhaustion (T1) → Exhaustion (T2) | .758 | .050 | < .001 |
| Mental distance (T1) → Mental distance (T2) | .745 | .058 | < .001 |
| Cognitive impairment (T1) → Cognitive impairment (T2) | .710 | .062 | < .001 |
| Emotional impairment (T1) → Emotional impairment (T2) | .594 | .091 | < .001 |
| Cross-lagged paths | | | |
| Self-awareness (T1) → Exhaustion (T2) | .024 | .059 | .683 |
| Self-awareness (T1) → Mental distance (T2) | .121 | .060 | .044 |
| Self-awareness (T1) → Cognitive impairment (T2) | -.018 | .065 | .780 |
| Self-awareness (T1) → Emotional impairment (T2) | -.055 | .078 | .478 |
| Exhaustion (T1) → Self-awareness (T2) | .047 | .083 | .567 |
| Mental distance (T1) → Self-awareness (T2) | .048 | .113 | .668 |
| Cognitive impairment (T1) → Self-awareness (T2) | -.289 | .120 | .016 |
| Emotional impairment (T1) → Self-awareness (T2) | -.024 | .103 | .815 |

*Appendix 8.* Factor correlations from the reciprocal model including self-awareness and burnout

| **Factor** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| 1 Self-awareness | . | -.18 (10) | -.32** (09) | -.11 (.13) | -.32** (.10) |
| 2 Exhaustion | -.10 (.06) | . | .34** (.11) | .05 (.12) | .01 (.11) |
| 3 Mental distance | -.31** (.07) | .40** (.06) | . | .19 (.16) | .65** (.11) |
| 4 Cognitive impairment | -.30** (.06) | .44** (.09) | .58** (.10) | . | .34* (.14) |
| 5 Emotional impairment | -.40** (.07) | .27** (.11) | .40** (.11) | .50** (.10) | . |

*Notes:* Factor correlations at T1 are shown below the diagonal, and factor correlations at T2 are shown above the diagonal; Standard errors are shown in parentheses; * $p < 0.05$; ** $p < 0.01$

*Appendix 9.* Results from the reciprocal model including emotion regulation and job satisfaction

| **Model/path** | **β** | ***S.E.*** | ***p*** |
|---|---|---|---|
| Autoregressive paths | | | |
| Reappraisal (T1) → Reappraisal (T2) | .601 | .066 | < .001 |
| Suppression (T1) → Suppression (T2) | .733 | .062 | < .001 |
| Job satisfaction (T1) → Job satisfaction (T2) | .784 | .046 | < .001 |
| Cross-lagged paths | | | |
| Reappraisal (T1) → Job satisfaction (T2) | .048 | .054 | .373 |
| Suppression(T1) → Job satisfaction (T2) | -.002 | .050 | .975 |
| Job satisfaction (T1) → Reappraisal (T2) | -.025 | .068 | .711 |
| Job satisfaction (T1) → Suppression(T2) | -.067 | .067 | .316 |

*Appendix 10.* Factor correlations from the reciprocal model including emotion regulation and job satisfaction

| **Factor** | **1** | **2** | **3** |
|---|---|---|---|
| 1 Reappraisal | . | .12 (.11) | .18 (.10) |
| 2 Suppression | .15 (.09) | . | -.10 (.12) |
| 3 Job satisfaction | .28** (.05) | -.11* (.05) | . |

*Notes:* Factor correlations at T1 are shown below the diagonal, and factor correlations at T2 are shown above the diagonal; Standard errors are shown in parentheses; * $p < 0.05$; ** $p < 0.01$

*Appendix 11.* Results from the reciprocal model including emotion regulation and burnout

| Model/path | β | *S.E.* | *p* |
|---|---|---|---|
| Autoregressive paths | | | |
| Reappraisal (T1) → Reappraisal (T2) | .613 | .067 | < .001 |
| Suppression (T1) → Suppression (T2) | .727 | .065 | < .001 |
| Exhaustion (T1) → Exhaustion (T2) | .786 | .051 | < .001 |
| Mental distance (T1) → Mental distance (T2) | .705 | .063 | < .001 |
| Cognitive impairment (T1) → Cognitive impairment (T2) | .721 | .062 | < .001 |
| Emotional impairment (T1) → Emotional impairment (T2) | .605 | .084 | < .001 |
| Cross-lagged paths | | | |
| Reappraisal (T1) → Exhaustion (T2) | .086 | .065 | .182 |
| Reappraisal (T1) → Mental distance (T2) | -.055 | .070 | .426 |
| Reappraisal (T1) → Cognitive impairment (T2) | -.016 | .073 | .828 |
| Reappraisal (T1) → Emotional impairment (T2) | -.154 | .084 | .068 |
| Suppression (T1) → Exhaustion (T2) | -.084 | .052 | .106 |
| Suppression (T1) → Mental distance (T2) | -.073 | .058 | .204 |
| Suppression (T1) → Cognitive impairment (T2) | -.026 | .075 | .726 |
| Suppression (T1) → Emotional impairment (T2) | -.106 | .072 | .141 |
| Exhaustion (T1) → Reappraisal (T2) | .146 | .085 | .085 |
| Mental distance (T1) → Reappraisal (T2) | .134 | .084 | .111 |
| Cognitive impairment (T1) → Reappraisal (T2) | -.257 | .129 | .047 |
| Emotional impairment (T1) → Reappraisal (T2) | .047 | .099 | .634 |
| Exhaustion (T1) → Suppression (T2) | .036 | .085 | .673 |
| Mental distance (T1) → Suppression (T2) | .080 | .090 | .376 |
| Cognitive impairment (T1) → Suppression T2) | -.061 | .117 | .601 |
| Emotional impairment (T1) → Suppression (T2) | .151 | .086 | .080 |

*Appendix 12.* Factor correlations from the reciprocal model including emotion regulation and burnout

| Factor | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 Reappraisal | . | .08 (.10) | -.34** (.12) | -.24* (.11) | -.21 (.13) | -.37** (.10) |
| 2 Suppression | .11 (.06) | . | .18 (.12) | .15 (.11) | ..12 (.16) | -.06 (.11) |
| 3 Exhaustion | -.27** (.05) | .02 (.06) | . | .35** (.12) | .04 (.13) | -.03 (.11) |
| 4 Mental distance | -.28** (.06) | .18** (.05) | .41** (.06) | . | .17 (.18) | .61** (.12) |
| 5 Cognitive impairment | -.21** (.06) | .12 (.07) | .44** (.10) | .58** (.11) | . | .36** (.13) |
| 6 Emotional impairment | -.19** (.06) | -.00 (.07) | .27** (.07) | .39** (.11) | .49** (.09) | . |

*Notes:* Factor correlations at T1 are shown below the diagonal, and factor correlations at T2 are shown above the diagonal; Standard errors are shown in parentheses; * $p < 0.05$; ** $p < 0.01$

*Appendix 13.* Results from the reciprocal model including empathy and job satisfaction

| **Model/path** | **β** | ***S.E.*** | ***p*** |
|---|---|---|---|
| Autoregressive paths | | | |
| Cognitive empathy (T1) → Cognitive empathy (T2) | .691 | .061 | < .001 |
| Affective empathy (T1) → Affective empathy (T2) | .889 | .052 | < .001 |
| Job satisfaction (T1) → Job satisfaction (T2) | .806 | .039 | < .001 |
| Cross-lagged paths | | | |
| Cognitive empathy (T1) → Job satisfaction (T2) | -.062 | .063 | .323 |
| Affective empathy (T1) → Job satisfaction (T2) | .111 | .057 | .052 |
| Job satisfaction (T1) → Cognitive empathy (T2) | .151 | .063 | .016 |
| Job satisfaction (T1) → Affective empathy (T2) | -.035 | .063 | .574 |

*Appendix 14.* Factor correlations from the reciprocal model including empathy and job satisfaction

| **Factor** | **1** | **2** | **3** |
|---|---|---|---|
| 1 Cognitive empathy | . | .24 (.21) | .05 (.11) |
| 2 Affective empathy | .22** (.08) | . | .04 (.17) |
| 3 Job satisfaction | .21** (.06) | .08 (.06) | . |

*Notes:* Factor correlations at T1 are shown below the diagonal, and factor correlations at T2 are shown above the diagonal; Standard errors are shown in parentheses; * $p < 0.05$; ** $p < 0.01$

*Appendix 15.* Results from the reciprocal model including cognitive empathy and burnout

| **Model/path** | **β** | ***S.E.*** | ***p*** |
|---|---|---|---|
| Autoregressive paths | | | |
| Cognitive empathy (T1) → Cognitive empathy (T2) | .902 | .079 | < .001 |
| Exhaustion (T1) → Exhaustion (T2) | .749 | .051 | < .001 |
| Mental distance (T1) → Mental distance (T2) | .714 | .068 | < .001 |
| Cognitive impairment (T1) → Cognitive impairment (T2) | .741 | .065 | < .001 |
| Emotional impairment (T1) → Emotional impairment (T2) | .630 | .094 | < .001 |
| Cross-lagged paths | | | |
| Cognitive empathy (T1) → Exhaustion (T2) | .174 | .060 | .004 |
| Cognitive empathy (T1) → Mental distance (T2) | .014 | .076 | .852 |
| Cognitive empathy (T1) → Cognitive impairment (T2) | .038 | .085 | .653 |
| Cognitive empathy (T1) → Emotional impairment (T2) | .015 | .087 | .865 |
| Exhaustion (T1) → Cognitive empathy (T2) | .023 | .086 | .792 |
| Mental distance (T1) → Cognitive empathy (T2) | .022 | .129 | .866 |
| Cognitive impairment (T1) → Cognitive empathy (T2) | -.221 | .130 | .088 |
| Emotional impairment (T1) → Cognitive empathy (T2) | .187 | .092 | .043 |

*Appendix 16.* Factor correlations from the reciprocal model including cognitive empathy and burnout

| **Factor** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| 1 Cognitive empathy | . | -.19 (.21) | -.35 (.23) | -.25 (.26) | -.58$^{*}$ (.26) |
| 2 Exhaustion | .01 (.06) | . | .38$^{**}$ (.10) | .05 (.13) | .03 (.10) |
| 3 Mental distance | -.36$^{**}$ (.07) | .41$^{**}$ (.06) | . | .14 (.14) | .62$^{**}$ (.11) |
| 4 Cognitive impairment | -.37$^{**}$ (.06) | .44$^{**}$ (.08) | .58$^{**}$ (.08) | . | .35$^{*}$ (.14) |
| 5 Emotional impairment | -.39$^{**}$ (.07) | .29$^{**}$ (.07) | .39$^{**}$ (.10) | .50 (.10) | . |

*Notes:* Factor correlations at T1 are shown below the diagonal, and factor correlations at T2 are shown above the diagonal; Standard errors are shown in parentheses; $^{*}$ $p < 0.05$; $^{**}$ $p < 0.01$

*Appendix 17.* Results from the reciprocal model including affective empathy and burnout

| Model/path | β | *S.E.* | *p* |
|---|---|---|---|
| Autoregressive paths | | | |
| Affective empathy (T1) → Affective empathy (T2) | .983 | .112 | < .001 |
| Exhaustion (T1) → Exhaustion (T2) | .738 | .053 | < .001 |
| Mental distance (T1) → Mental distance (T2) | .722 | .069 | < .001 |
| Cognitive impairment (T1) → Cognitive impairment (T2) | .736 | .056 | < .001 |
| Emotional impairment (T1) → Emotional impairment (T2) | .621 | .089 | < .001 |
| Cross-lagged paths | | | |
| Affective empathy (T1) → Exhaustion (T2) | .082 | .053 | .125 |
| Affective empathy (T1) → Mental distance (T2) | .011 | .070 | .874 |
| Affective empathy (T1) → Cognitive impairment (T2) | .115 | .086 | .178 |
| Affective empathy (T1) → Emotional impairment (T2) | .001 | .089 | .992 |
| Exhaustion (T1) → Affective empathy (T2) | .113 | .097 | .245 |
| Mental distance (T1) → Affective empathy (T2) | .131 | .130 | .312 |
| Cognitive impairment (T1) → Affective empathy (T2) | -.441 | .124 | < .001 |
| Emotional impairment (T1) → Affective empathy (T2) | .296 | .097 | .002 |

*Appendix 18.* Factor correlations from the reciprocal model including affective empathy and burnout

| Factor | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 Affective empathy | . | -.01 (.05) | -.08 (.05) | -.01 (.05) | -.09 (.05) |
| 2 Exhaustion | .11$^{*}$ (.06) | . | .34$^{**}$ (.10) | .03 (.12) | .02 (.11) |
| 3 Mental distance | -.44$^{**}$(.07) | .40$^{**}$ (.06) | . | .18 (.14) | .62$^{**}$ (.11) |
| 4 Cognitive impairment | -.17$^{*}$ (.08) | .44$^{**}$ (.08) | .58$^{**}$ (.07) | . | .36$^{**}$ (.13) |
| 5 Emotional impairment | -.23$^{*}$ (.11) | .28$^{**}$ (.07) | .39$^{**}$ (.10) | .49$^{**}$ (.09) | . |

*Notes:* Factor correlations at T1 are shown below the diagonal, and factor correlations at T2 are shown above the diagonal; Standard errors are shown in parentheses; $^{*}$ $p < 0.05$; $^{**}$ $p < 0.01$

*Appendix 19.* Results from the reciprocal model including self-awareness, job satisfaction, and commitment to the profession

| **Model/path** | **β** | ***S.E.*** | ***p*** |
|---|---|---|---|
| Autoregressive paths | | | |
| Self-awareness (T1) → Self-awareness (T2) | .630 | .058 | < .001 |
| Job satisfaction (T1) → Job satisfaction (T2) | .861 | .072 | < .001 |
| Commitment (T1) → Commitment (T2) | .495 | .079 | < .001 |
| Cross-lagged paths | | | |
| Self-awareness (T1) → Job satisfaction (T2) | -.066 | .050 | .189 |
| Self-awareness (T1) → Commitment (T2) | -.082 | .051 | .103 |
| Job satisfaction (T1) → Self-awareness (T2) | .143 | .086 | .096 |
| Job satisfaction (T1) → Commitment (T2) | .260 | .086 | .003 |
| Commitment (T1) → Self-awareness (T2) | .044 | .094 | .637 |
| Commitment (T1) → Job satisfaction (T2) | -.081 | .079 | .306 |

*Appendix 20.* Factor correlations from the reciprocal model including self-awareness, job satisfaction, and commitment to the profession

| **Factor** | **1** | **2** | **3** |
|---|---|---|---|
| 1 Self-awareness | . | .142 (.099) | .132 (.088) |
| 2 Job satisfaction | .239** (.051) | . | .589** (.076) |
| 3 Commitment | .165** (.043) | .707** (.033) | . |

*Notes:* Factor correlations at T1 are shown below the diagonal, and factor correlations at T2 are shown above the diagonal; Standard errors are shown in parentheses; * $p < 0.05$; ** $p < 0.01$

*Appendix 21*. Results from the reciprocal model including self-awareness, burnout, and commitment to the profession

| Model/path | β | *S.E.* | *p* |
|---|---|---|---|
| Autoregressive paths | | | |
| Self-awareness (T1) → Self-awareness (T2) | .606 | .069 | < .001 |
| Exhaustion (T1) → Exhaustion (T2) | .765 | .061 | < .001 |
| Mental distance (T1) → Mental distance (T2) | .685 | .083 | < .001 |
| Cognitive impairment (T1) → Cognitive impairment (T2) | .697 | .078 | < .001 |
| Emotional impairment (T1) → Emotional impairment (T2) | .583 | .097 | < .001 |
| Commitment (T1) → Commitment (T2) | .486 | .065 | < .001 |
| Cross-lagged paths | | | |
| Self-awareness (T1) → Exhaustion (T2) | .017 | .063 | .789 |
| Self-awareness (T1) → Mental distance (T2) | .137 | .060 | .023 |
| Self-awareness (T1) → Cognitive impairment (T2) | -.006 | .065 | .932 |
| Self-awareness (T1) → Emotional impairment (T2) | -.049 | .078 | .534 |
| Self-awareness (T1) → Commitment (T2) | -.063 | .052 | .225 |
| Exhaustion (T1) → Self-awareness (T2) | .061 | .083 | .463 |
| Exhaustion (T1) → Commitment (T2) | .010 | .073 | .888 |
| Mental distance (T1) → Self-awareness (T2) | .088 | .120 | .463 |
| Mental distance (T1) → Commitment (T2) | -.259 | .083 | .002 |
| Cognitive impairment (T1) → Self-awareness (T2) | -.282 | .125 | .024 |
| Cognitive impairment (T1) → Commitment (T2) | -.130 | .091 | .152 |
| Emotional impairment (T1) → Self-awareness (T2) | -.034 | .109 | .753 |
| Emotional impairment (T1) → Commitment (T2) | .118 | .075 | .115 |
| Commitment (T1) → Self-awareness (T2) | .093 | .083 | .266 |
| Commitment (T1) → Exhaustion (T2) | .025 | .069 | .717 |
| Commitment (T1) → Mental distance (T2) | -.108 | .080 | .179 |
| Commitment (T1) → Cognitive impairment (T2) | -.050 | .085 | .553 |
| Commitment (T1) → Emotional impairment (T2) | -.045 | .078 | .566 |

*Appendix 22.* Factor correlations from the reciprocal model including self-awareness, burnout, and commitment to the profession

| Factor | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 Self-awareness | . | -.18(.10) | -.31$^{**}$(.09) | -.12(.13) | -.32$^{**}$(.11) | .13(.10) |
| 2 Exhaustion | -.09(.06) | . | .33$^{**}$(.11) | .07(.14) | .01(.11) | -.34$^{**}$(.08) |
| 3 Mental distance | -.30$^{**}$(.07) | .36$^{**}$(.06) | . | .16(.16) | .62$^{**}$(.11) | -.33$^{**}$(.10) |
| 4 Cognitive impairment | -.30$^{**}$(.06) | .43$^{**}$(.10) | .57$^{**}$(.11) | . | .32$^{**}$(.14) | .00(.10) |
| 5 Emotional impairment | -.40$^{**}$(.07) | .28$^{**}$(.07) | .40$^{**}$ (.11) | .50$^{**}$(.10) | . | -.16(.12) |
| 6 Commitment | .17$^{**}$(.04) | -.37$^{**}$(.05) | -.60$^{**}$(.04) | -.37$^{**}$(.05) | -.16$^{**}$(.06) | . |

*Notes:* Factor correlations at T1 are shown below the diagonal, and factor correlations at T2 are shown above the diagonal; Standard errors are shown in parentheses; $^{*}$ $p < 0.05$; $^{**}$ $p < 0.01$

*Appendix 23.* Results from the reciprocal model including emotion regulation, job satisfaction, and commitme

| **Model/path** | **β** | ***S.E.*** | ***p*** |
|---|---|---|---|
| Autoregressive paths | | | |
| Reappraisal (T1) → Reappraisal (T2) | .620 | .064 | < .001 |
| Suppression (T1) → Suppression (T2) | .743 | .059 | < .001 |
| Job satisfaction (T1) → Job satisfaction (T2) | .820 | .082 | < .001 |
| Commitment (T1) → Commitment (T2) | .463 | .085 | < .001 |
| Cross-lagged paths | | | |
| Reappraisal (T1) → Job satisfaction (T2) | .059 | .056 | .299 |
| Reappraisal (T1) → Commitment (T2) | -.071 | .053 | .181 |
| Suppression (T1) → Job satisfaction (T2) | -.009 | .053 | .870 |
| Suppression (T1) → Commitment (T2) | .104 | .053 | .050 |
| Job satisfaction (T1) → Reappraisal (T2) | -.116 | .119 | .330 |
| Job satisfaction (T1) → Suppression (T2) | .044 | .085 | .601 |
| Job satisfaction (T1) → Commitment (T2) | .296 | .096 | .002 |
| Commitment (T1) → Reappraisal (T2) | .097 | .111 | .382 |
| Commitment (T1) → Suppression (T2) | -.137 | .079 | .084 |
| Commitment (T1) → Job satisfaction (T2) | -.069 | .080 | .391 |

*Appendix 24.* Factor correlations from the reciprocal model including emotion regulation, job satisfaction, and commitment

| **Factor** | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| 1 Reappraisal | . | .14 (.10) | .18 (.10) | .18$^{*}$ (.08) |
| 2 Suppression | .14$^{*}$ (.06) | . | -.12 (.13) | -.17$^{*}$ (.08) |
| 3 Job satisfaction | .28$^{**}$ (.05) | -.13$^{**}$ (.05) | . | .60$^{**}$ (.08) |
| 4 Commitment | .19$^{**}$ (.04) | -.07 (.05) | .71$^{**}$ (.03) | . |

*Notes:* Factor correlations at T1 are shown below the diagonal, and factor correlations at T2 are shown above the diagonal; Standard errors are shown in parentheses; $^{*}$ $p < 0.05$; $^{**}$ $p < 0.01$

*Appendix 25.* Results from the reciprocal model including emotion regulation, burnout, and commitment

| **Model/path** | **β** | ***S.E.*** | ***p*** |
|---|---|---|---|
| Autoregressive paths | | | |
| Reappraisal (T1) → Reappraisal (T2) | .618 | .065 | < .001 |
| Suppression (T1) → Suppression (T2) | .736 | .065 | < .001 |
| Exhaustion (T1) → Exhaustion (T2) | .790 | .060 | < .001 |
| Mental distance (T1) → Mental distance (T2) | .640 | .093 | < .001 |
| Cognitive impairment (T1) → Cognitive impairment (T2) | .707 | .078 | < .001 |
| Emotional impairment (T1) → Emotional impairment (T2) | .598 | .089 | < .001 |
| Commitment (T1) → Commitment (T2) | .462 | .067 | < .001 |
| Cross-lagged paths | | | |
| Reappraisal (T1) → Exhaustion (T2) | .081 | .067 | .225 |
| Reappraisal (T1) → Mental distance (T2) | -.069 | .070 | .323 |
| Reappraisal (T1) → Cognitive impairment (T2) | -.016 | .073 | .822 |
| Reappraisal (T1) → Emotional impairment (T2) | -.143 | .085 | .095 |
| Reappraisal (T1) → Commitment (T2) | -.046 | .050 | .355 |
| Suppression (T1) → Exhaustion (T2) | -.080 | .054 | .135 |
| Suppression (T1) → Mental distance (T2) | -.060 | .058 | .301 |
| Suppression (T1) → Cognitive impairment (T2) | -.028 | .073 | .707 |
| Suppression (T1) → Emotional impairment (T2) | -.115 | .072 | .111 |
| Suppression (T1) → Commitment (T2) | .124 | .056 | .027 |
| Exhaustion (T1) → Reappraisal (T2) | .159 | .089 | .074 |
| Exhaustion (T1) → Suppression (T2) | .022 | .088 | .800 |
| Exhaustion (T1) → Commitment (T2) | -.010 | .072 | .884 |
| Mental distance (T1) → Reappraisal (T2) | .196 | .103 | .056 |
| Mental distance (T1) → Suppression (T2) | .025 | .103 | .805 |
| Mental distance (T1) → Commitment (T2) | -.287 | .091 | .002 |
| Cognitive impairment (T1) → Reappraisal (T2) | -.248 | .137 | .072 |
| Cognitive impairment (T1) → Suppression T2) | -.069 | .121 | .566 |
| Cognitive impairment (T1) → Commitment T2) | -.132 | .096 | .170 |
| Emotional impairment (T1) → Reappraisal (T2) | .024 | .105 | .818 |
| Emotional impairment (T1) → Suppression (T2) | .169 | .092 | .065 |
| Emotional impairment (T1) → Commitment (T2) | .125 | .071 | .079 |
| Commitment (T1) → Reappraisal (T2) | .082 | .097 | .398 |
| Commitment (T1) → Suppression (T2) | -.079 | .086 | .361 |
| Commitment (T1) → Exhaustion (T2) | .025 | .067 | .712 |
| Commitment (T1) → Mental distance (T2) | -.094 | .082 | .253 |
| Commitment (T1) → Cognitive impairment (T2) | -.044 | .084 | .598 |
| Commitment (T1) → Cognitive impairment (T2) | -.039 | .071 | .580 |

*Appendix 26.* Factor correlations from the reciprocal model including emotion regulation, burnout, and commitment to the profession

| Factor | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1 Reappraisal | . | .08 (.11) | -.35** (.12) | -.23* (.11) | -.22 (.14) | -.37** (.10) | .18*(.09) |
| 2 Suppression | .11(.06) | . | .18 (.12) | .15 (.11) | .13 (.16) | -.05 (.11) | -.15 (.09) |
| 3 Exhaustion | -.27**(.05) | .02(.06) | . | -.35** (.12) | .07(.15) | -.03(.11) | -.32** (.08) |
| 4 Mental distance | -.27**(.06) | .19**(.05) | .37** (.06) | . | -15(.18) | .57**(.12) | -.35** (.10) |
| 5 Cognitive impairment | -.21**(.05) | .13*(.06) | .44** (.11) | .57** (.13) | . | .34** (.13) | .03 (.10) |
| 6 Emotional impairment | -.19**(.04) | .00(.07) | .28** (.08) | .39** (.12) | .49** (.10) | . | -.14 (.12) |
| 7 Commitment | .19**(.04) | -.07(.05) | -.37** (.05) | -.61** (.04) | -.37** (.05) | -.17** (.06) | . |

*Notes:* Factor correlations at T1 are shown below the diagonal, and factor correlations at T2 are shown above the diagonal; Standard errors are shown in parentheses; * $p < 0.05$; ** $p < 0.01$

*Appendix 27.* Results from reciprocal models including empathy, job satisfaction, and commitment; and empathy, burnout, and commitment

| **Model/path** | **β** | ***S.E.*** | ***p*** |
|---|---|---|---|
| Autoregressive paths | | | |
| Cognitive empathy (T1) → Cognitive empathy (T2) | .689 | .063 | < .001 |
| Affective empathy (T1) → Affective empathy (T2) | .898 | .052 | < .001 |
| Job satisfaction (T1) → Job satisfaction (T2) | .877 | .070 | < .001 |
| Commitment (T1) → Commitment (T2) | .442 | .077 | < .001 |
| Cross-lagged paths | | | |
| Cognitive empathy (T1) → Job satisfaction (T2) | -.050 | .063 | .431 |
| Cognitive empathy (T1) → Commitment (T2) | -.153 | .055 | .006 |
| Affective empathy (T1) → Job satisfaction (T2) | .100 | .057 | .081 |
| Affective empathy (T1) → Commitment (T2) | .166 | .060 | .006 |
| Job satisfaction (T1) → Cognitive empathy (T2) | .100 | .094 | .287 |
| Job satisfaction (T1) → Affective empathy (T2) | .081 | .100 | .415 |
| Job satisfaction (T1) → Commitment (T2) | .302 | .083 | < .001 |
| Commitment (T1) → Cognitive empathy (T2) | .060 | .089 | .499 |
| Commitment (T1) → Affective empathy (T2) | -.160 | .086 | .062 |
| Commitment (T1) → Job satisfaction (T2) | -.115 | .075 | .125 |

*Appendix 28.* Factor correlations from the reciprocal model including empathy, job satisfaction, and commitment

| **Factor** | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| 1 Cognitive empathy | . | .23 (.22) | .04 (.11) | .08 (.08) |
| 2 Affective empathy | .22** (.08) | . | .08 (.16) | -.08 (.15) |
| 3 Job satisfaction | .20** (.05) | .06 (.06) | . | .58** (.08) |
| 4 Commitment | .09 (.05) | .13** (.05) | .71** (.03) | . |

*Notes:* Factor correlations at T1 are shown below the diagonal, and factor correlations at T2 are shown above the diagonal; Standard errors are shown in parentheses; * $p < 0.05$; ** $p < 0.01$

*Appendix 29.* Results from the reciprocal model including cognitive empathy, burnout, and commitment

| Model/path | β | *S.E.* | *p* |
|---|---|---|---|
| Autoregressive paths | | | |
| Cognitive empathy (T1) → Cognitive empathy (T2) | .898 | .081 | < .001 |
| Exhaustion (T1) → Exhaustion (T2) | .742 | .062 | < .001 |
| Mental distance (T1) → Mental distance (T2) | .656 | .094 | < .001 |
| Cognitive impairment (T1) → Cognitive impairment (T2) | .729 | .083 | < .001 |
| Emotional impairment (T1) → Emotional impairment (T2) | .616 | .099 | < .001 |
| Commitment (T1) → Commitment (T2) | .478 | .064 | < .001 |
| Cross-lagged paths | | | |
| Cognitive empathy (T1) → Exhaustion (T2) | .167 | .065 | .010 |
| Cognitive empathy (T1) → Mental distance (T2) | .013 | .075 | .860 |
| Cognitive empathy (T1) → Cognitive impairment (T2) | .043 | .085 | .613 |
| Cognitive empathy (T1) → Emotional impairment (T2) | .021 | .086 | .805 |
| Cognitive empathy (T1) → Commitment (T2) | -.175 | .072 | .015 |
| Exhaustion (T1) → Cognitive empathy (T2) | .043 | .086 | .615 |
| Exhaustion (T1) → Commitment (T2) | .068 | .080 | .395 |
| Mental distance (T1) → Cognitive empathy (T2) | .079 | .145 | .588 |
| Mental distance (T1) → Commitment (T2) | -.292 | .090 | .001 |
| Cognitive impairment (T1) → Cognitive empathy (T2) | -.216 | .127 | .087 |
| Cognitive impairment (T1) → Commitment (T2) | -.166 | .095 | .082 |
| Emotional impairment (T1) → Cognitive empathy (T2) | .177 | .095 | .062 |
| Emotional impairment (T1) → Commitment (T2) | .101 | .072 | .159 |
| Commitment (T1) → Cognitive empathy (T2) | .135 | .078 | .083 |
| Commitment (T1) → Exhaustion (T2) | -.006 | .068 | .935 |
| Commitment (T1) → Mental distance (T2) | -.099 | .081 | .221 |
| Commitment (T1) → Cognitive impairment (T2) | -.038 | .083 | .641 |
| Commitment (T1) → Emotional impairment (T2) | -.046 | .074 | .534 |

*Appendix 30.* Factor correlations from the reciprocal model including cognitive empathy, burnout, and commitment to the profession

| Factor | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 Cognitive empathy | . | -.17 (.21) | -.32 (.22) | -.24 (.26) | -.58$^{*}$ (.26) | .13 (.16) |
| 2 Exhaustion | .03 (.06) | . | .38$^{**}$ (.10) | .06 (.14) | .03 (.10) | -.33$^{**}$ (.08) |
| 3 Mental distance | -.35$^{**}$ (.07) | .41$^{**}$ (.06) | . | .16 (.15) | .61$^{**}$ (.11) | -.35$^{**}$ (.08) |
| 4 Cognitive impairment | -.37$^{**}$ (.06) | .43$^{**}$ (.09) | .60$^{**}$ (.09) | . | .34$^{*}$ (.14) | .04 (.10) |
| 5 Emotional impairment | -.39$^{**}$ (.07) | .29 $^{**}$ (.07) | .43$^{**}$ (.11) | .49$^{**}$ (.10) | . | -.16 (.11) |
| 6 Commitment | .10 (.05) | -.38$^{**}$ (.05) | -.60$^{**}$ (.04) | -.37$^{**}$ (.05) | -.16$^{**}$ (.06) | . |

*Notes:* Factor correlations at T1 are shown below the diagonal, and factor correlations at T2 are shown above the diagonal; Standard errors are shown in parentheses; $^{*}$ $p < 0.05$; $^{**}$ $p < 0.01$

*Appendix 31.* Results from the reciprocal model including affective empathy, burnout, and commitment

| Model/path | β | *S.E.* | *p* |
|---|---|---|---|
| Autoregressive paths | | | |
| Affective empathy (T1) → Affective empathy (T2) | .971 | .112 | < .001 |
| Exhaustion (T1) → Exhaustion (T2) | .733 | .068 | < .001 |
| Mental distance (T1) → Mental distance (T2) | .662 | .098 | < .001 |
| Cognitive impairment (T1) → Cognitive impairment (T2) | .718 | .073 | < .001 |
| Emotional impairment (T1) → Emotional impairment (T2) | .606 | .093 | < .001 |
| Commitment (T1) → Commitment (T2) | .483 | .063 | < .001 |
| Cross-lagged paths | | | |
| Affective empathy (T1) → Exhaustion (T2) | .079 | .059 | .178 |
| Affective empathy (T1) → Mental distance (T2) | -.001 | .073 | .991 |
| Affective empathy (T1) → Cognitive impairment (T2) | .127 | .086 | .138 |
| Affective empathy (T1) → Emotional impairment (T2) | .004 | .088 | .962 |
| Affective empathy (T1) → Commitment (T2) | -.145 | .089 | .103 |
| Exhaustion (T1) → Affective empathy (T2) | .130 | .103 | .205 |
| Exhaustion (T1) → Commitment (T2) | .077 | .084 | .364 |
| Mental distance (T1) → Affective empathy (T2) | .178 | .140 | .204 |
| Mental distance (T1) → Commitment (T2) | -.330 | .101 | .001 |
| Cognitive impairment (T1) → Affective empathy (T2) | -.442 | .123 | < .001 |
| Cognitive impairment (T1) → Commitment (T2) | -.122 | .088 | .165 |
| Emotional impairment (T1) → Affective empathy (T2) | .282 | .101 | .005 |
| Emotional impairment (T1) → Commitment (T2) | .121 | .066 | .069 |
| Commitment (T1) → Affective empathy (T2) | .101 | .104 | .332 |
| Commitment (T1) → Exhaustion (T2) | -.003 | .072 | .966 |
| Commitment (T1) → Mental distance (T2) | -.098 | .082 | .232 |
| Commitment (T1) → Cognitive impairment (T2) | -.058 | .081 | .477 |
| Commitment (T1) → Emotional impairment (T2) | -.052 | .074 | .484 |

*Appendix 32.* Factor correlations from the reciprocal model including affective empathy, burnout, and commitment to the profession

| Factor | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 Affective empathy | . | -.02 (.05) | -.08 (.05) | -.00 (.05) | -.09 (.05) | -.06 (.04) |
| 2 Exhaustion | .12* (.06) | . | .35** (.10) | .04 (.13) | .02 (.11) | -.35** (.08) |
| 3 Mental distance | -.42** (.07) | .40** (.06) | . | .20 (.14) | .61** (.11) | -.34** (.09) |
| 4 Cognitive impairment | -.17* (.08) | .44** (.09) | .60** (.08) | . | .34* (.13) | .02 (.10) |
| 5 Emotional impairment | -.23* (.11) | .29** (.07) | .43** (.11) | .49** (.09) | . | -.16 (.12) |
| 6 Commitment | .15** (06) | -.38** (.05) | -.60** (.04) | -.38** (.05) | -.16** (.06) | . |

*Notes:* Factor correlations at T1 are shown below the diagonal, and factor correlations at T2 are shown above the diagonal; Standard errors are shown in parentheses; * $p < 0.05$; ** $p < 0.01$

## 9. CURRICULUM VITAE

Mirta Mornar was born in Zagreb in 1991. She obtained her Master's degree in Psychology from the Faculty of Humanities and Social Sciences, University of Zagreb in 2016. During her studies, she has been awarded the University of Zagreb Rector's award for her research, and received scholarships for excellence awarded by the University of Zagreb and the City of Zagreb. Since 2018, she has been employed at the Institute for Social Research in Zagreb within the Centre for Educational Research and Development.

She has participated in several research projects, and has actively participated in multiple local and international scientific conferences where she presented her research. As one of the members of the programme and organizational committee, she participated in the organization of the scientific conference *Days of Educational Sciences*. During her engagement in the Erasmus+ project *Hand in Hand*, she participated in the development and implementation of programmes for fostering social and emotional competencies in students, teachers, and other school staff.

Her main research interests include the development of social and emotional competencies within the educational context and well-being of teachers and students. She has co-authored six scientific articles and one book chapter.

As an external associate, she is involved in the course Practicum in psychology III at the Faculty of Humanities and Social Sciences, and in the evaluation of Erasmus+ projects in education at the Agency for mobility and EU programmes. She lectures at Algebra University and is a member of the Croatian Psychological Chamber.

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