Promoting Professional Growth: A Developmental and Motivational Approach to Teachers' Professional Learning

by

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Abstract

Teachers, with an inherent commitment to life-long learning, sow the seeds for their students to become life-long learners. Using motivational theories, I conducted a three-study dissertation that provides a developmental description of the connections between teachers' efficacy beliefs, engagement, and professional learning across two major professional life phases: pre-service teachers and practicing teachers. The overarching research question that guided my dissertation was: What patterns exist within and across professional life phases, in relation to the influences of efficacy and engagement on teachers' professional learning?

I argue that university coursework during initial teacher education is the first and foundational professional learning experience for teachers. To enhance understanding of motivation and emerging beliefs about professional learning, I examined 153 second-year education students' questionnaire responses in **Study 1** to answer the question: How do personal characteristics, teachers' self-efficacy, and current course engagement influence the professional learning beliefs of students at the beginning of their teacher education program? Participants responded to questionnaire items on professional learning, career choice satisfaction, teachers' self-efficacy, and engagement as a teacher education student. Program level and motivation to pursue an education degree contributed to a hypothesized structural equation model for motivation and professional learning. Study 1 concludes with implications for teacher educators.

The final practicum placement is considered the most intensive professional learning experience for pre-service teachers. Therefore, **Study 2** was set in the context of pre-service teachers' final practicum placements and aimed to answer the research question: How does a 9-week professional learning experience influence pre-service teachers' motivation, and in particular, commitment and engagement to the profession? Quantitative analyses of weekly

questionnaire data collected from 150 participants during a final 9-week practicum revealed significant and non-linear patterns for commitment and engagement, while a multiple-case qualitative design with two contrasting cases highlighted the variability of pre-service teachers' experiences in the practicum. Results revealed themes akin to three basic psychological needs (autonomy, competence, and relatedness) and underscored the critical influence of a mentor teacher on a pre-service teachers' professional commitment and engagement. Study 2 concludes with practical implications for educational psychologists.

Practicing teachers' professional learning beliefs and associated experiences not only impact their practice and influence their students but also play a key role in the professional lives of their colleagues. For **Study 3**, data were collected from 296 practicing teachers in order to answer the research question: How do practicing teachers' self- and collective efficacy beliefs and teacher engagement influence reasons and preferences for professional learning? Results include a model of practicing teachers' self-reported efficacy beliefs and teacher engagement in relation to professional learning. Teaching level and professional life phase predicted efficacy beliefs with teachers revealing collaboration as the most influential type of professional learning on efficacy beliefs. Conclusions highlight the role of collaboration in professional learning and outline practical implications and future research.

Taken together, the three studies provide a descriptive and developmental (cohort-based) perspective of motivation and professional learning across two general professional life phases. In the concluding chapter, I synthesize the three studies by providing comparative results. For example, Chapter Five includes a comparison of the importance ratings provided by teacher education students (Study 1) and practicing teachers (Study 3) on reasons for professional learning. An integrative and theoretical model for teachers' motivation and professional learning

is presented, along with overall recommendations for professional learning practices and future research.

Preface

In the dissertation, I report on three studies, each of which was approved by the Ethics Review Board at the University of Alberta. Study 1 was part of the project entitled, “Pre-service teachers' perspectives on motivation, emotions, and life in general” (Pro00031624, August 13, 2012), Study 2 was part of the project entitled, “The development of early career teacher motivation” (Pro00004438, February 14, 2010), and Study 3 was part of the project entitled, “Exploring the development of teacher efficacy through professional learning experiences” (Pro00023786, July 2, 2011).

The data source for Study 1 was shared with members of the Alberta Consortium of Motivation and Emotion (ACME) at the University of Alberta, under the supervision of Dr. Lia Daniels. As a member of ACME, I was involved with writing the ethics application, compiling and creating scale items, recruiting participants (through the Faculty of Education participant pool), administering the questionnaire, and collecting the responses. I set the hypotheses for Study 1 and carried out the analyses reported in Chapter Two.

In Chapter Three I present an investigation of pre-service teachers’ commitment and engagement during a 9-week practicum. Ethical approval for Study 2 was given to Professor Robert Klassen who managed the collection of weekly questionnaire data from practicum students. I was responsible for formulating the research questions, data analysis, and writing the manuscript. I published Study 2 with Professor Klassen as the supervisory author who provided secondary authorship: Durksen, T. L., & Klassen, R. M. (2012). Pre-service teachers’ weekly commitment and engagement during a final training placement: A longitudinal mixed methods study. *Educational and Child Psychology*, Vol. 29, 32-46. Retrieved from http://www.bps.org.uk

In addition, I co-authored a short paper that was published as: Durksen, T. L. & Klassen, R. M. (2012). Professional relationships impact pre-service teachers' success. *ASCD Express*, *7*(10). Retrieved from http://www.ascd.org.

Preliminary findings associated with Study 2 were also shared through the following four research conference presentations:

- Durksen, T. L., & Klassen, R. M. (2013, April). *Exploring teachers' emotions and meta-emotions in relation to efficacy and professional learning.* Poster presented at the British Psychological Society conference, Harrogate, UK.
- Durksen, T. L., & Klassen, R. M. (2012, September). *Teacher emotion and meta-emotions during a critical formative period.* Paper symposium at the European Association for Research on Learning and Instruction (SIG 16 Metacognition) Conference, Milano, Italy.
- Durksen, T. L., & Klassen, R. M. (2012, May). *A qualitative longitudinal study of pre-service teachers' self-efficacy and stress during the final teaching practicum.* Poster presented at The Canadian Society for the Study of Education Annual Congress, Ontario, Canada.
- Durksen, T. L., & Klassen, R. M. (2012, April). *A longitudinal study of pre-service teachers' commitment and engagement.* Poster presented at annual meeting of the Western Psychological Association, San Francisco, CA.

I was involved in additional analyses of data from the same practicum students, which led to co-authoring a manuscript that has been published as Klassen, R. M., & Durksen, T. L. (2014). Weekly self-efficacy and work stress during the final teaching practicum: A mixed methods study. *Learning and Instruction, 33,* 158-169. Retrieved from

http://dx.doi.org/10.1016/j.learninstruc.2014.05.003. I also continued to explore teacher engagement through the co-development and validation of the Engaged Teacher Scale, which resulted in the following publication: Klassen, R. M., Yerdelen, S., & Durksen, T. L. (2013). Measuring teacher engagement: The development of the Engaged Teacher Scale (ETS). *Frontline Learning Research, 1,* 33-52. Retrieved from http://journals.sfu.ca/flr/index.php/journal/article/view/44/37.

Chapter Four is based on a longitudinal research project (with Professor Klassen, Dr. Jim Parsons, and Dr. Larry Beauchamp of the Faculty of Education, University of Alberta). The project was carried out from September 2011 to October 2013 under contract from the Alberta Teachers' Association (ATA), funded by Alberta Education, with guidance from a provincial education stakeholder steering committee. I was responsible for literature reviews, compiling and creating scale items, piloting a questionnaire, collecting and analyzing questionnaire data, and report writing. During the two-year project, I shared preliminary results through the following article:

- Klassen, R. M. & Durksen, T. L. (2012). Teachers working together: Why collaboration really matters. *The Alberta Teachers' Association Magazine, 92*(4). Retrieved from http://www.teachers.ab.ca/Publications/Pages/default.aspx

Preliminary results were also shared during the following six research presentations:

- Durksen, T. L. (2014, August). *From isolation to collaboration: The relationship between professional learning and teachers' efficacy beliefs*. Symposium paper presentation for Practical Implications of Teachers' Attitudes and Cognitions for Quality of Teaching (Division 15: Educational Psychology) at the 2014 American Psychological Association convention, Washington, D. C.

- Durksen, T. L., Klassen, R. M., Parsons, J., & Taylor, L. (2014, June). *Collective confidence: The influence of collaborative professional learning on teachers' efficacy beliefs.* Paper presented at the Practice-Oriented Teacher Learning and Professional Development conference, European Association for Research on Learning and Instruction (SIG 11), Frauenchiemesee, Germany.
- Parsons, J., Taylor, L., Klassen, R. M., & Durksen, T. L. (2013, October). *The collaborative efficacy of action research*. Paper presented at the 18th Annual Values and Leadership Conference: Ethical Leadership across Borders. Oklahoma City, Oklahoma.
- Durksen, T. L., & Klassen, R. M. (2013, August). *Pre-service and practicing teachers' emotions and meta-emotions during professional development*. Paper presented at the 2013 American Psychological Association convention, Honolulu, HI.
- Durksen, T. L., & Klassen, R. M. (2013, April). *Exploring teachers' emotions and meta-emotions in relation to efficacy and professional learning.* Poster presented at the British Psychological Society conference, Harrogate, UK.
- Durksen, T. L., & Klassen, R. M. (2013, April). *From isolation to inspiration: The development of self- and collective efficacy through teachers' professional learning activities*. Paper presented at the annual American Educational Research Association conference, San Francisco, CA.

I include a brief summary of the larger ATA project in Chapter Four as the context for Study 3. Project details are based on a final research report I co-ordinated and co-authored for the ATA: Beauchamp, L., Klassen, R. M., Parsons, J., Durksen, T. L., &. Taylor, L. (2014, January). *Exploring the development of teacher efficacy through professional learning experiences* [Final Research Report]. Edmonton, Alberta: Alberta Teachers' Association. Retrieved from

http://www.teachers.ab.ca. We presented our final report to ATA and made revisions in collaboration with their Research Advisory Committee and the Steering Committee. The report was a highlight during an ATA invitational symposium in November 2014 involving stakeholders in group discussions that focused on implications for professional learning and strategies for supporting teachers' self-efficacy.

In Chapter Five I thread the three studies together as well as present overall limitations and implications for practice and future research. Conclusions include findings from preliminary analyses that were based on Study 2 (Chapter Three) and Study 3 (Chapter Four) that were included in the conference presentation: Durksen, T. L., & Klassen, R. M. (2013). *Pre-service and practicing teachers' emotions and meta-emotions during professional development*. Paper presented at the 2013 American Psychological Association convention, Honolulu, HI.

Dedication

My dissertation is dedicated to the pre-service and practicing teachers of Alberta for their commitment to student learning; the University of Alberta teacher educators and the Alberta Teachers' Association for supporting teachers' professional growth and well-being; and the educational researchers who are committed to bridging the gap between theory and practice.

Acknowledgements

When I started my PhD program, I chose the over-used metaphor of *embarking on a journey*. At first the metaphor held a general and more solitary image – one involving a backpack, a map in hand, and a trail guide. Over the past four years, this image has morphed into a more complex and collaborative metaphor – one more akin to plane travel. While there are a number of travel companions to thank for their support, I would like to first and foremost thank my supervisor, Professor Robert Klassen, and co-supervisor, Dr. Lia Daniels, for providing me with a motivational PhD program that helped satisfy my basic psychological needs of *autonomy, competence,* and *relatedness*. During the research proposal and candidacy process, I was also thankful for feedback and support from Drs. Christina Rinaldi and Rosemary Foster. My committee helped keep me on course and acknowledged that I had the necessary skills to handle the process…even if some unexpected turbulence or re-routing occurred.

It was also encouraging to be a part of a group headed towards the same destination. I received support and gained knowledge while travelling alongside members of the Alberta Consortium of Motivation and Emotion. I am especially grateful to Dr. Man Chung (Virginia) Tze for her help during Study 1 and Study 3 and to Dr. Sündüs Yerdelen for her help during Study 3. I also acknowledge Amanda Wagner for her role in the inter-rater reliability process during Study 2. I am very grateful for the insights into Study 3 that emerged through a partnership with Dr. Larry Beauchamp (who sadly passed away in 2013), Professor Klassen, and Dr. Jim Parsons. I appreciated their wisdom and passion for teacher education and well-being.

Like plane travel, a PhD student requires funds. I would like to acknowledge the Social Sciences and Humanities Research Council of Canada for the Doctoral Fellowship and the Faculty of Graduate Studies and Research (University of Alberta) for the President's Doctoral

Prize of Distinction. I would like to thank the Department of Educational Psychology for the sessional positions where I had the opportunity to contribute to the professional learning of pre-service teachers, the research assistantships with Professor Klassen that advanced my research skills, and the various funds provided for my conference travels.

A number of scholars have contributed to my professional learning as a researcher, beginning with my course instructors. For example, Professor Klassen, Dr. Daniels, and Dr. Rinaldi inspired my theoretical interests through courses on achievement motivation and emotional development, and Drs. Cheryl Poth and Sherry Ann Chapman contributed to my methodological perspective through mixed methods and community-based research and evaluation courses. I am also thankful for research experiences in Australia with Professor Andrew Martin and Dr. Jihyun Lee of the University of New South Wales and Drs. Helen Watt and Paul Richardson of Monash University. I gratefully acknowledge my fellow PhD students and mentors who helped me refine my research during conferences. Two key events were particularly influential: the 2013 APA Division 15 (Educational Psychology) Doctoral Student Seminar and the 2014 European Association for Research on Learning and Instruction (International Conference of Motivation) Summer School. I would especially like to thank my APA Doctoral Student Seminar mentors: Drs. Helenrose Fives and Anita Woolfolk-Hoy.

Last, but not least, I am grateful for the ongoing encouragement and support I received from my family and friends – my ground crew. Thank you for being along for the ride! I am especially grateful for Frank – my travelling companion for life. He has been a constant motivational source throughout all of my personal and professional learning experiences – my PhD plane would still be grounded if not for his love and support.

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Chapter One

A Developmental and Motivational Approach to Teachers' Professional Learning

"Our school currently lacks the resources to offer you extra support as you go through your first year as a teacher. You will be on your own…treading water…sorry Tracy."
- Administrator of a Canadian independent school, personal communication, 2003

I enjoyed being a primary teacher, partly because my young students were so inquisitive. Together we looked for answers to new questions each day. Like my students, I often pose "why" questions. For example, why did I become a statistic by leaving the teaching profession within the first three to four years (Kutsyuruba, Godden, & Tregunna, 2014)? I miss the students, but not the overwhelming responsibilities I personally felt as their classroom teacher (Lauermann & Karabenick, 2014). I delighted in creating thematic units and celebrating students' successes yet found the workload and multiple social relations within the school exhausting. Despite my expressed enthusiasm and passion for teaching, I struggled professionally to "just survive," with early experiences of emotional defeat. Why was I unable to persevere past the beginning teacher phase - the survival "sink or swim" phase (Huberman, 1989)? Although my PhD research does not presume to provide answers to questions from my experience, it contributes to the complex and emerging field of teacher motivation research (Kaplan, 2014). To begin with, I wondered about those resources or extra supports that were missing from my work environment and whether they would have helped with the demands I experienced as a beginning teacher. For example, would an induction program or mentor have helped pull me in from treading water while "lost at sea" (Hobson, Ashby, Malderez, & Tomlinson, 2009; Ingersoll & Strong, 2011)?

Although beginning teacher attrition rates are a cause for concern, experienced teachers are also leaving the profession while citing personal and professional dissatisfaction (Salinitri,

Howitt, & Donohoo, 2007). When examining attrition rates and seeking ways of retaining quality teachers, educational researchers often focus on teacher characteristics and working conditions (ATA, 2013). Given the multiple and reciprocal influences that contribute to the complexity of teacher motivation, I recognize that working conditions (e.g., limited professional job resources) may have been one factor hindering my commitment to a long career in teaching. Yet teacher characteristics are more often cited as factors influencing commitment and engagement. For example, Robertson-Kraft and Duckworth (2014) may have questioned whether I possessed the "grit" necessary for sustained engagement as a primary teacher. Maybe an implicit theory about my ability to teach impacted my self-concept (Fives & Buehl, 2008)? There is also the possibility that a combination of increased stress and decreased teacher self-efficacy influenced my commitment to the profession (Klassen & Durksen, 2014). Or perhaps I had entered the profession already weak in key teacher competencies (e.g., resilience and adaptability; Klassen, Durksen, Rowett, & Patterson, 2014). Despite being motivated by altruistic and intrinsic reasons (e.g., a desire to help children; Watt & Richardson, 2007), maybe I was ill prepared to cope with the social complexities and cultural realities of teaching in my own classroom (Day & Gu, 2010). With my research focus on job and personal resources, I aim to identify ways in which the teaching profession can help teachers to not only persevere in a demanding work environment, but to flourish as "open, engaged, and healthy functioning" professionals (Ryan & Deci, 2011, p. 47).

To promote what is best for students' learning and teacher well-being, we need to support teachers who are in constant contact with students (Shirley, 2015). This research makes a meaningful and original contribution by examining the relationships between teachers' professional learning (TPL) and motivational constructs at different professional life phases:

beginning coursework-based students in teacher education, advanced students in teacher education (final practicum), and practicing teachers (0 to 42 years of experience). The conclusions drawn from the three studies will help us identify how TPL might best be shaped to better accommodate the motivational and practical needs of teachers as they attempt to influence student learning.

Theoretical Framework

The overall framework for the dissertation, graphically represented through Figure 1, is based on Bandura's (1997) social cognitive theory that explains learning according to three sets of reciprocal influences: personal, environmental, and behavioural. Within social cognitive theory, personal (e.g., teachers' self-efficacy) and environmental influences (e.g., collaborative climate) can encourage behaviours (e.g., engaged teaching and learning) that lead to professional growth and enhanced teaching practice. Bandura's theory also highlights the reciprocal impact behaviours can have on personal and environmental factors. For example, when a teacher recognizes that a change in his or her teaching behaviour is enhancing student learning (e.g., applying a new strategy after a professional learning experience), teacher self-efficacy may increase.

Social cognitive theory provides an overarching framework for the premise that TPL influences, and is influenced by, teachers' motivational beliefs and practices (Ross & Bruce, 2007). Since teacher motivation research is complex and cannot be reduced to a system of just personality traits or developmental trends, Kaplan (2014) called for a common model of integrated and reciprocal influences. In response, I framed this dissertation with Bandura's (1997) theory of reciprocal influences with key theoretical components integrated from job

demands-resources model (JD-R; Bakker & Bal, 2010) and self-determination theory (SDT; Ryan & Deci, 2000).

The JD-R model allows for a more holistic approach to understanding teachers' motivation and professional learning, with key theoretical components specific to personal and work-related characteristics. Job resources, such as those accessed through effective TPL can strengthen personal resources, promote work engagement, and help buffer against job demands that are often presented through workload (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007). Klassen and Anderson (2009) demonstrated changes in teachers' job demands and resources – with more demands and dissatisfaction in the teaching profession today than in previous generations. In light of increasing demands in the teaching profession, the JD-R model is useful for researchers exploring teachers' resources and motivation at different professional life phases. For example, Evers, Van der Heijden, Kreijns, and Vermeulen (2012) considered the influence of job demands and resources on teachers' professional development and predicted competence. By using the JD-R model, key job resources can be identified through TPL. When exploring the relationship between job resources and personal resources, SDT provides the framework for identifying the influences that help satisfy teachers' three key intrinsic motivators: autonomy, competence, and relatedness. Together, the JD-R model and SDT provide the definition of motivation used in this dissertation, that is, the initiation of and persistence in professional behaviours that can be related to self-determined or engaged teaching.

Teachers' Professional Learning

I propose that each developing teacher is influenced by ongoing inter-relationships between TPL and motivational constructs, and how the process is experienced depends on a teacher's career or professional life phase. Teachers' well-being (i.e., satisfaction of needs for

autonomy, competence, and relatedness) is considered a function of the motivational relationship between perceptions of what a teacher wants from the profession and what the job entails and has to offer at a given career stage (Day & Gu, 2009; Ho & Au, 2006). My "trial by fire" experience as a beginning teacher and associated feelings of isolation was rich with themes of teacher burnout, stress, and anxiety – all important areas of research for teacher well-being. But beginning teachers are not the only ones with feelings of isolation, and a deficit model is not the only way to enhance teacher well-being. In order to help combat feelings of isolation and promote the retention of high-quality educators across all career phases, researchers suggest using motivational research to study teachers' professional learning (Barrera, Braley, & Slate, 2010; Guarino, Santibanez, & Daley, 2006). While there is an increased awareness about the benefits of collaboration on teachers' practice, factors related to isolation still exist when professional development opportunities are disconnected from a school's culture (OECD, 2015).

The teaching profession offers and mandates opportunities for teachers to learn how to teach more effectively. Teachers' professional learning (TPL)—commonly known as teachers' professional development—includes formal and informal professional activities that centre on enhancing teacher effectiveness. The phrase professional *development* is often used when referencing activities that are arranged *for* teachers, while professional *learning* places the focus and responsibility for learning on teachers and their evolving needs. The Alberta Teachers' Association (2014) defines professional development as the wide range of programs or activities that teachers undertake to further understand the nature of teaching and learning, to enhance professional practice, and to contribute to the profession. The definition of professional learning used in this research comes from Avalos (2011) along with Richter and colleagues (Richter, Kunter, Klusmann, Lüdtke, & Baumert, 2011) because of their inclusion of constructs that align

with social cognitive theory. Overall, I define TPL as:

> a complex process, which requires cognitive and emotional involvement of teachers, individually and collectively, the capacity and willingness to examine where each one stands in terms of convictions and beliefs and the perusal and enactment of appropriate alternatives for improvement or change…[within] particular educational policy environments or school cultures (Avalos, 2011, p. 10).

Specifically, the complex process of TPL includes "the uptake of formal and informal learning opportunities that deepen and extend teachers' professional competence, including knowledge, beliefs, motivation, and self-regulatory skills" (Richter et al., 2011, p. 116).

Overall, TPL is identified by a teacher's professional growth plan that leads to the improvement of student learning. Often the TPL process is described by comparisons that emphasize the activity (e.g., formal/informal, receptive/constructive) or the people involved (e.g., individual/collaborative, teacher-initiated/mandated; Clarke & Hollingsworth, 2002; Hoekstra, Korthagen, Brekelmans, Beijaard, & Imants, 2009; Jansen in de Wal, et al., 2014). I initially defined TPL activities using Joyce and Calhoun's (2010) five categories of professional learning: individual TPL such as online coursework, collaborative professional service identified through mentorship, groups of teachers in collaborative and cooperative models such as professional learning communities, models for curricular and instructional changes such as workshops on formal initiatives, and traditional workshop models recognized as conferences or conventions.

For researchers interested in the frequency of teachers' participation within categories of professional learning, there is the Teachers' Professional Development at Work (TPD@Work) survey by Evers, Kreijns, and Van der Heijden (2011). The TPD@Work survey was based on Kwakman's (2003) work and asks teachers to score how often (1 = *hardly ever* to 4 = *often*) they participated in professional learning activities. The TPD@Work survey contains themes similar to Joyce and Calhoun (2010) and consists of items within the following five theoretical categories:

- Keeping up-to-date through activities such as visiting educational sites on the Internet.
- Experimenting within the classroom by applying and evaluating new practices such as new forms of assessment.
- Activities that encourage reflection such as inviting colleagues to attend and provide feedback on a lesson.
- Collaborating with colleagues for the purpose of improving a lesson through activities such as co-developing materials.
- Collaborating with colleagues for the purpose of improving school development through activities such as assembling a school working group or committee.

A new model of TPL emerged from my research (see Chapter Five), one that built on previous literature (e.g., Evers, et al., 2011; Joyce & Calhoun, 2010) and is based in motivational theory and the results of the three studies reported in Chapters Two, Three, and Four of the dissertation.

Motivational Beliefs

Although researchers (e.g., Henson, 2001; Palmer, 2011) have found professional learning activities of different formats can have an impact on teaching performance and confidence through professional responsibilities and instructional domains, less is known about the impact

on teacher motivation and emotional well-being. Given that teachers' motivational beliefs may act as a barrier or positively influence successful TPL, more research is needed. In response, Fives and Buehl (2014) applied a belief systems approach in their examination of beliefs about teaching. While a range of belief subsystems can influence motivation (e.g., importance of teaching knowledge, source of teaching ability; Fives & Buehl, 2010), efficacy beliefs were chosen for the TPL context of my dissertation because they are considered central to the larger belief system of a teacher and are action-oriented. By examining motivational beliefs in relation to professional learning experiences, we can provide a way to identify and broaden teachers' coping options and help build motivational supports for lasting personal resources (Fredrickson, 2004). With stories abound of pre-service teachers having either highly positive or negative relationships with their mentor teacher, it is particularly imperative that motivational researchers consider how TPL experiences influence personal resources.

Motivation researchers consider teachers' self-efficacy as a personal resource that can enhance teachers' engagement (Bakker, Albrecht, & Leitner, 2011; Klassen & Chiu, 2011). Teachers' self-efficacy—the belief a teacher has about their capabilities to influence student learning (Bandura, 1997)—is one of the key motivation beliefs influencing teachers' professional behaviours. Teachers' self-efficacy is commonly measured on three dimensions: student engagement, instructional strategies, and classroom management (Tschannen-Moran & Woolfolk Hoy, 2001). Teachers' collective efficacy—beliefs that a school staff as a group is collectively able to influence student outcomes, even in challenging conditions (Goddard & Goddard, 2001)—is also considered an important area of research given the established relationship to student achievement and academic climate, even after controlling for prior student achievement and demographic characteristics, such as socioeconomic status (Klassen et al., 2008).

Efficacy beliefs are associated with other personal resources (e.g., teacher resilience; Day & Gu, 2014) as well as job resources (e.g., commitment to the teaching profession; Klassen & Chiu, 2011). For example, teacher self-efficacy influences a teacher's persistence, enthusiasm, job satisfaction, and teaching behaviours, and has been found to influence student achievement (Tschannen-Moran & Woolfolk Hoy, 2001). Kunter and Holzberger (2014) also propose that a teacher's intrinsic motivation within the classroom can have an indirect effect on professional activities they engage in outside of the classroom. Overall, teachers' self-efficacy and TPL present researchers with a complex relationship that includes connections to other motivational factors and belief subsystems. Since Tschannen-Moran and McMaster (2009) found teachers with high self-efficacy approached professional learning experiences more positively and confidently, I consider efficacy beliefs to be both a product of TPL experiences and a constructor of TPL experiences (see Figure 1).

Through this dissertation, I argue that experience with job resources available through TPL can help build and broaden personal resources (e.g., efficacy beliefs) and that the process begins in initial teacher training. Bandura (1997) suggests that teachers' self- and collective efficacy are formed and nurtured through four sources: mastery experiences, verbal persuasion, vicarious experience, and interpretation of physiological and affective states. For example, in the early years of a teacher education program, coursework can be introduced as a job resource since it can be continued throughout a career through activities such as enrolling in an online course as a practicing teacher. Sources of efficacy are also enacted at the end of a teacher education program when pre-service teachers enter a final practicum. For example, a practicum involves learning through vicarious experiences by observing a mentor teacher with students, receiving feedback, and learning how to cope with classroom stresses like workload. Hopefully, a practicum also

provides pre-service teachers with mastery experiences by allowing opportunities for trying different instructional strategies with students. Professional learning through mentorship often continues into the first year of teaching through induction programs and, as experience increases, the mentee will have opportunities to become a mentor. Therefore, early experiences can contribute to beliefs and expectations about the formal and informal ways they can increase their own learning and motivation in terms of self- and collective efficacy during their career.

Engagement

In this dissertation, I examine relationships among TPL, efficacy beliefs, and engagement. Teachers' self- and collective efficacy are considered motivational resources that predict engagement (Xanthopoulou et al., 2007).[1] Engagement has been defined as the motivational investment of personal energy in teaching-related activities and conceptualized as the behavioural manifestation of a positive motivational state through physical, cognitive, emotional, and social dimensions (Bakker, Albrecht, & Leitner, 2011; Klassen, et al., 2012). Bakker and Bal (2010) measured engagement using three dimensions: vigour, dedication, and absorption. Other researchers have used the Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006) to measure work engagement in a range of professions as well as teaching and student engagement (Schaufeli, Salanova, González-Romá, & Bakker, 2002).

Teacher engagement is considered "key to pushing the envelope of learning innovation, student success and teacher retention" (ATA, 2010, p. 18). In Study 1, we used items from the student version of the UWES items to assess teacher education students' engagement while

[1] While emotions and meta-emotions are considered mediators between teachers' self-efficacy and engagement, emotion-related constructs are beyond the scope of the three studies reported in the dissertation (see Durksen & Klassen, 2012).

Study 2 invited pre-service teachers to answer one item from the UWES. Practicing teachers' engagement was measured in Study 3 using the Engaged Teachers Scale (Klassen, Yerdelen, & Durksen, 2013). Engagement measures were selected in order to: (a) test whether teacher education students' current engagement (as a student) in coursework is predicted by teachers' self-efficacy, (b) examine pre-service teachers' engagement over a 9-week practicum, and (c) test whether teacher engagement is predicted by teachers' self- and collective efficacy. Engagement in learning during initial teacher education was theoretically explored in relation to future engagement in learning as a practicing teacher. Gaining developmental inferences on teachers' engagement in relation to professional learning is vital, particularly since research has shown that engaged teachers display higher teaching performance (Bakker & Bal, 2010), and teachers' engagement may translate into students' engagement (Roth, Assor, Kanat-Maymon, & Kaplan, 2007).

Developmental Considerations

Although the three studies in my dissertation are cohort based, a life-span perspective has inspired my research. The commonly cited career stage model of Huberman (1989) was foundational to Day and Gu's (2010) understanding of teachers' career stages or professional life phases.[2] Although these researchers present career trajectories that are not intended to apply to each teacher in the same way, my experience as a beginning teacher appears to be typical. For example, Richter et al. (2011) refers to Huberman's research when describing the first three years as the survival phase, which included a sense of accomplishment despite feeling overwhelmed and exhausted from the job demands. Beginning teachers may be likely to seek content-focused workshops or conferences and collaborative opportunities to learn from

[2] Professional life phase is used to describe career phase or career stage throughout the dissertation.

experienced teachers (Richter, et al., 2011). Richter et al. found mid-career teachers (7-30 years) preferred a range of TPL experiences (e.g., experimentation, scheduled collaborations, conferences), while late-career teachers (30+ years) reduced their enrolment in coursework, focused more on personal rather than collective goals, and increased their access to training in varied technologies. Anecdotally, late-career teachers often express disinterest in formalized professional events because they have "heard it all before" or are tired of hearing about the "next best thing." However, it is not just late-career teachers who become focused on short-term personal goals. According to Shirley (2015), overwhelmed teachers across professional life phases may retreat to personalized short-term coping solutions when faced with school-wide professional learning on curriculum initiatives and since "a new initiative will just come out again in another three years."

Through my research, I adopt Rimm-Kaufman and Hamre's (2010) stance that teachers are "developing people," and not just the product of an initial teacher education program (p. 2993). Therefore, a life-span perspective was necessary because the focus was on professional learning and motivation across professional life phases and not just at the beginning and end of a teacher's career. I also chose to include pre-service teachers in my research on teachers' professional learning because initial teacher education and the professional learning of practicing teachers are weakly coordinated (Sahlberg, 2015). My research also includes another professional life phase that remains neglected in the areas of teachers' professional learning: mid-career teachers.

Klassen and Chiu (2011) found teachers' self-efficacy peaks mid-career, which could explain why TPL interventions tend to focus on extremes of the career spectrum. However, Hargreaves and Fullan (2012) call for an investment into the professional development of the

mid-career teacher, whose confidence has the power to increase the professional capital of teachers *across* the career span. Despite findings (e.g., Richter et al., 2011) that mid-career teachers frequently participate in formal activities, we can not assume that frequency of formalized professional learning increases professional capital, nor can we assume that frequency of TPL participation increases motivation. There may appear to be a correlation in mid-career between high teachers' self-efficacy and high participation rates in formal activities, but research has not yet provided a clear reason for the relationship.

Overview of the Dissertation

The purpose for undertaking the PhD research was to gain a developmental understanding of the relationships between motivation beliefs and teachers' professional learning at different professional life phases. The main research question that guided the three studies reported in the dissertation was: *What patterns exist within and across professional life phases, in relation to the influences of efficacy and engagement on teachers' professional learning?* The main research question was split into three key sub-questions:

1. How do personal characteristics, teachers' self-efficacy, and current course engagement influence the professional learning beliefs of students at the beginning of their teacher education program?
2. How does a 9-week professional learning experience influence pre-service teachers' motivation, and in particular, commitment and engagement to the profession?
3. How do practicing teachers' efficacy beliefs and engagement influence professional learning beliefs?

To answer the first sub-question, I recruited students at an early stage of their teacher education program to complete one questionnaire that contained multiple scales (Study 1). The second sub-

question was answered by analyzing responses from a sample of pre-service teachers who completed weekly surveys while experiencing intensive TPL (9-week practicum) at the end of their teacher education program (Study 2). To answer the third sub-question, I examined responses from a sub-sample of practising teachers (up to 42 years experience) who responded to questionnaires during a longitudinal mixed methods project (Study 3). Multiple quantitative and qualitative methods were used when examining the relationships between TPL and motivational constructs in the context of professional life phases.

Context of the Dissertation Research

It is important to view teachers' work in the overall school context and to critically examine the working conditions that enable teachers to teach effectively (OECD, 2013, 2015). All three studies reported in this dissertation were conducted in Alberta, Canada. Alberta has been described as one of six high performance international systems (Hargreaves & Fullan, 2012; Hargreaves & Shirley, 2012; Sahlberg, 2015), with research attention drawn to the successes of the Alberta Initiative for School Improvement (Parsons, McRae, & Taylor, 2006). Results from the 2013 Teaching and Learning International Survey found teachers in Alberta had high levels of job satisfaction and confidence, particularly in their classroom management abilities and instructional skills (OECD, 2014). Moreover, Alberta teachers reported one of the highest rates of participation in professional development and the highest level of support for participation in those activities such as days off (OECD, 2014).

Engaging in TPL is a mandated and contractual obligation in Alberta (Judah & Richardson, 2006). Similar to most North American jurisdictions, Alberta's teachers attend conventions, in-service workshops, and teacher consortia offered by both provincial and district authorities. While many teachers enrol in graduate education to promote personal and professional growth,

teacher education programs remain weakly coordinated to practicing teachers' professional learning efforts (Sahlberg, 2015). Although local, district, and provincial committees meet regularly; there has been little overall coordination of TPL (Beauchamp, Klassen, Parsons, Durksen, & Taylor, 2014).

Most Alberta teachers attend professional development days that occur yearly or semi-yearly. Teachers' contracts have set aside professional learning in school calendars and, typically, various consultants, administrators, or teachers are charged with organizing sessions most often delivered as presentations or through workshops. Such organized experiences are usually designed top-down around broad themes. Typically, teachers attend these one-time informational events with little formal follow-up to explore any learning that might have occurred. The "one-size-fits-all" experiences seldom engage teachers in collaboration intentionally, offering little consideration for the variety of professional life phases.

Since education is a provincial rather than federal responsibility, it was appropriate for my research to focus on teachers' professional learning within one province (and not cross-country). It is important to also acknowledge that Alberta, over the years, developed a province-wide culture of innovation in practice through the Alberta Initiative for School Improvement (AISI; Hargreaves et al., 2009; Parsons, et al., 2006). AISI captured international attention (e.g., Hargreaves & Fullan, 2012) and was an active part of TPL in Alberta for 14 years. Key AISI projects helped build teacher capacity through professional development, collaborative development of leadership, instructional practice, and school climate. Unfortunately, funding for AISI was removed in 2013.[3] Although innovative teaching practices and high-performing students highlight Alberta as an appropriate context for my PhD research, it is also important to note that Alberta teachers reported one of the highest rates of participation in professional

[3] Provincial funding cuts occurred during Study 3.

development as well as an above-average teaching workload (OECD, 2015). The removal of resources such as AISI, the motivational influence of increased job demands, and the fact that only half of Alberta teachers felt teaching was valued by society also highlight the need for contextual research on TPL and teachers' motivation (OECD, 2013).

Teacher Professional Learning Across Professional Life Phases

In this dissertation, I defined three samples of participants according to five professional life phases within two general career stages (pre-service and practicing teachers). Early teacher education students in Study 1 were within the first professional life phase of the pre-service stage because they were engaged in initial professional learning through coursework and had no formal classroom experience. Study 2 took place during the second phase of a pre-service teacher's professional life: classroom teaching experience within a practicum placement. Study 3 included participants across three professional life phases (early, middle, and late) of a practicing teacher's career.

Although I have organized this dissertation in a developmental fashion, the three studies informed each other through a non-linear process (see Figure 2). Just as the three studies are presented developmentally according to teaching experience, the methodology used to answer these questions progressed in complexity from Study 1 through to Study 3. Study 1 was a descriptive study that analyzed teacher education students' responses to one quantitative questionnaire, Study 2 included the results of mixed analyses (quantitative and qualitative) of pre-service teachers' scale and open-ended responses on weekly questionnaires during a 9-week practicum, and Study 3 was based on a two-year project that used a mixed methods approach. Inter-connections between Study 1 and Study 3 occurred when preliminary results from Study 3 were used in the development of items for the questionnaire used in Study 1. Chapter Five

includes a developmental synthesis of the three studies.

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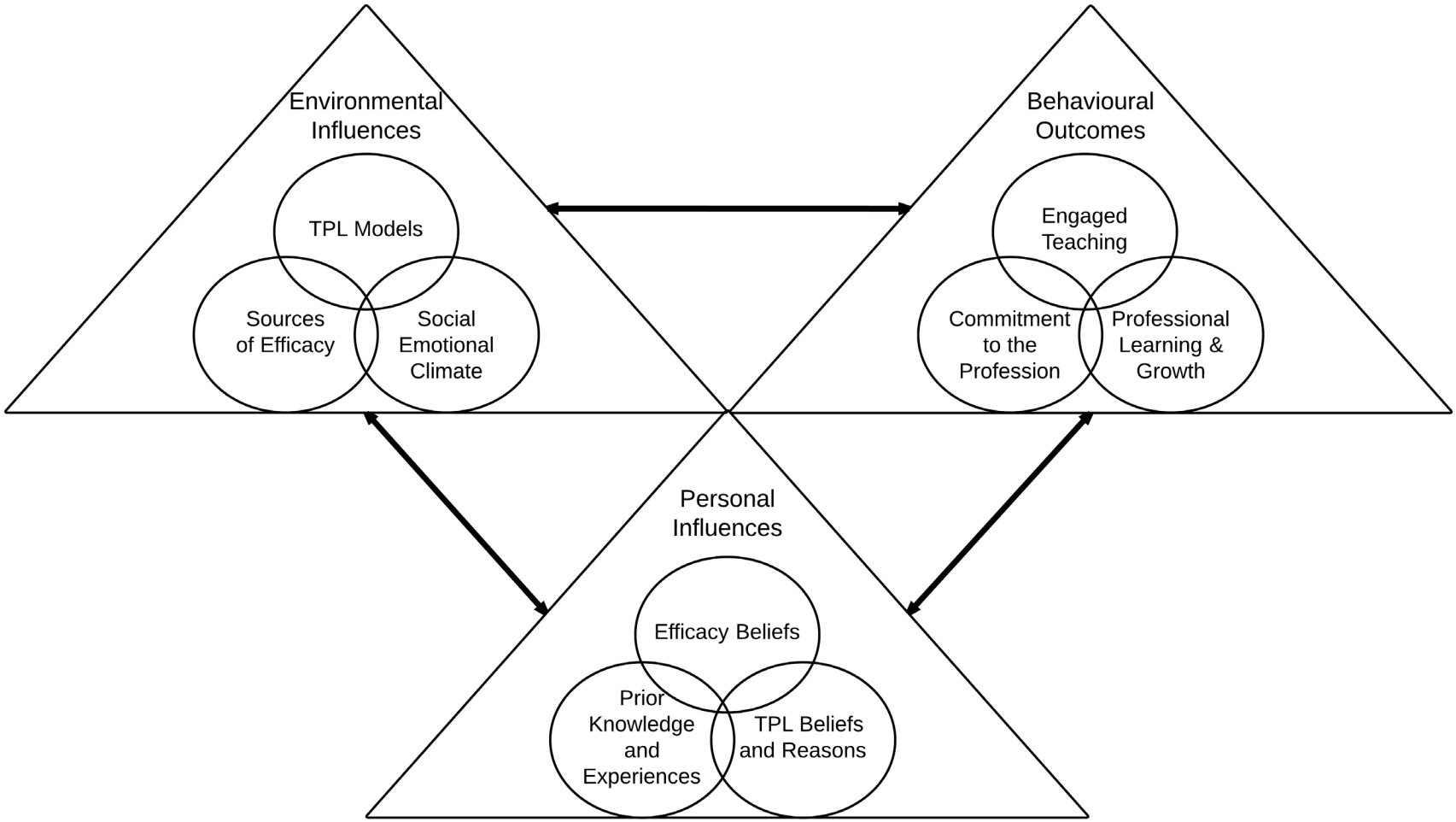

Figure 1. Examples of influences in the professional lives of teachers. The diagram is based on Bandura's (1997) triarchic reciprocal causality model. "Personal influences" include personal resources while "environmental influences" include job demands and job resources. TPL = teachers' professional learning.

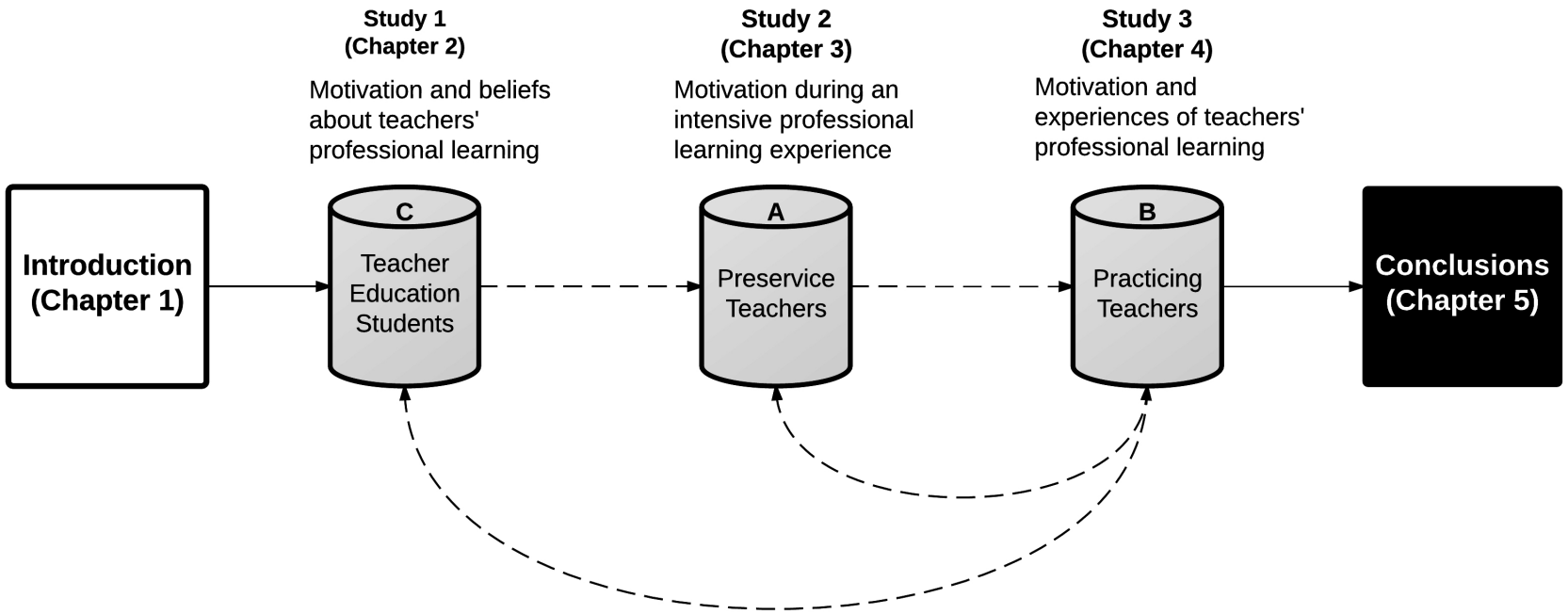

Figure 2. The non-linear inter-connections among the three studies reported in the dissertation. The letters (A, B, C) indicate the order in which the studies were conducted.

Chapter Two

Teacher Education Students' Motivation and Professional Learning Beliefs

Teachers' professional growth is a career-long process – one that is influenced by many complex and developmental factors. The goal for conducting Study 1 was to go beyond describing pre-service teachers' motivations to teach and discover the influences that relate to teacher professional learning (TPL). Examining relationships among teacher education students' motivational beliefs at an early stage of their professional learning (i.e., degree coursework) is important because the more we know, the more we can help enhance their professional growth during initial teacher education. By understanding the emerging beliefs that pre-service teachers hold for TPL, we can better support and direct them towards an optimal expectation for, and enhanced experience of, professional learning. Exploring teacher education students' beliefs about TPL early on in the teacher education program can help teacher educators foster motivation within the program and identify developmental and learning preferences that help satisfy basic psychological needs (i.e., competence, autonomy, and relatedness; Ryan & Deci, 2000). In response to Kaplan's (2014) call for an integrative theoretical model stemming from motivational research that is relevant to real educational contexts, Study 1 was designed to present and test an explanatory model of motivation and professional learning that was based on conceptual support from related research and responses from practicing teachers (see Study 3 in Chapter Four for more information on the practicing teachers' responses).

Conceptual Framework

The overarching framework for the dissertation was presented in Chapter One. The Factors Influencing Teaching Choice framework (FIT-Choice; Watt & Richardson, 2007) also provided

a dimension to motivation and TPL that is unique to the early professional life phase of teacher education students. Using a theoretical expectancy-value approach and a longitudinal research program, FIT-Choice researchers provide an empirically validated framework for why individuals choose teaching as a career. The FIT-Choice framework identifies prior teaching and learning experiences as contributing factors to a range of motivations (e.g., shaping the future of children, social status), which, in turn, influences the choice of teaching as a career. Although Watt, Richardson, and Wilkins (2014) present some conceptual support for relationships among efficacy beliefs and engagement with professional learning, the current study addresses the call for more research that extends an understanding of how these constructs interact simultaneously.

The current study of education students is based on evidence that career development aspirations and engagement in professional learning has already been influenced by their background, experiences, and belief systems. Since longitudinal FIT-Choice research (Watt & Richardson, 2007; Watt et al., 2014) revealed evidence that teacher education students' initial motivations for teaching predict later engagement and career development aspirations, I sought to test relationships among motivational and specific professional learning constructs. The current study is also in line with recent research (Jansen in de Wal, Den Brok, Hooijer, Martens, & Den Beemt, 2014) that revealed motivational profiles by applying SDT to an investigation of engagement in professional learning. Since Jansen in de Wal et al. (2014) found teachers with high intrinsic motivation engaged more frequently in professional learning, I expected to find a positive relationship with professional learning constructs that extended from an intrinsic motivation to pursue a teacher education degree.

The Current Study

With data from a sample of teacher education students, I simultaneously tested engagement as an education student in relation to teachers' self-efficacy and professional learning constructs. By examining education students as a unique professional life phase, the research allows for tentative developmental inferences that contribute to our understanding of motivation and professional learning. A model that focuses on the emerging beliefs of education students is important given that initial teacher education lays the foundation for future professional learning behaviours. Overall, I designed Study 1 to create a picture of emerging professional learning beliefs and preferences through relationships with motivational constructs.

The central research question that guided the analyses of teacher education students' responses on a questionnaire was: *How do personal characteristics, teachers' self-efficacy beliefs, and current course engagement influence the professional learning beliefs of students at the beginning of their teacher education program?* The following four hypotheses were tested through structural equation modeling:

1. Given the relationships detailed within Watt and Richardson's (2007) FIT-Choice framework, a teaching-related motivation for pursuing an education degree and higher satisfaction with career choice will predict higher teachers' self-efficacy.
2. Since efficacy beliefs are a personal resource and an important influence on human achievement in educational settings (Bandura, 1997; Klassen, Tze, Gordon, & Betts, 2011), I expect education students' level of teachers' self-efficacy to predict current engagement as a learner in initial teacher training.
3. Teacher education students' engagement in current learning will predict the value associated with future learning activities.

4. Program level will predict the level of importance placed on different types of professional learning, with elementary teacher education students reporting higher values for collaborative TPL than those in the secondary program.

Methods

Participants

The data for the current study consisted of questionnaire responses provided by 153 students enrolled in an elementary (37%) or secondary (63%) teacher education program at a Canadian university. It is important to note that typically 55% of education students are enrolled in the elementary program and 45% in the secondary program at the university. Students who were enrolled in a second-year education course were recruited through a participant pool in the university's education department and asked to complete one 40-minute questionnaire in exchange for course credits. Participation was voluntary and if students declined to participate, an alternate activity was provided by the instructor for equal course credit.

Table 1 displays the demographic details of the participating students, including a description of how students reportedly prepared for a career in education. Eight possible influences were listed on the questionnaire and participants were invited to check all that applied. The influences were based on themes in the literature (e.g., Watt & Richardson, 2007) that highlight personal factors (e.g., social utility value of working with children) and social influences (e.g., family members). Since Watt and Richardson (2007) found more personal factors (i.e., intrinsic or altruistic motivations) contributed to higher career choice satisfaction and less teacher attrition, the experiences in the current study were coded on a continuum, from low (for external) to high (for personal), with a midpoint being an equal number of external and personal experiences. Scores ranged from 0 (one participant did not indicate personal or external

experiences) to 7 (one participant reported 4 types of personal experiences and 0 external). Participants, on average, reported equal or more personal influences than external experiences that prepared them for a career in teaching.

Procedure and Measures

Participants completed one questionnaire online (Survey Monkey) during the first month of a four-month semester. Although the questionnaire included several measures, only those measuring career choice satisfaction, teachers' self-efficacy, engagement as a student, and beliefs about professional learning were analyzed through structural equation modelling. Two independent background variables were also included: program level (elementary or secondary) and motivation for pursuing an education degree (teaching or non-teaching motivation).

Motivation for pursuing degree. In addition to program level, the study included an item aimed at assessing participants' motivation for pursuing an education degree. Watt and Richardson's (2007) FIT-Choice scale influenced the idea for the motivational background variable. The FIT-Choice scale is a comprehensive measure that includes reasons for choosing to become a teacher, each with a 7-point rating scale of importance (e.g., "I chose to become a teacher because I like working with children/adolescents"). For the descriptive purpose of the current study, one item was created for participants to select one of three response options that best represented their current motivation for pursuing a degree in education: "I look forward to a long teaching career because I have always wanted to be a teacher" (to represent intrinsic career value or teaching motivation), "A degree in education will allow me to be a teacher but I am open to exploring other job options" (to represent extrinsic or non-teaching motivations), and "I am pursuing a degree in education because…" (open-ended). The first response option, "I look forward to a long teaching career because I have always wanted to be a teacher," was related to

one of the FIT-Choice influential factor items, “I chose to become a teacher because I’ve always wanted to be a teacher.” The second response option was based on FIT-Choice items that capture personal utility (e.g., job transferability) or the idea of a fall back career, such as “I was unsure of what career I wanted” or “I was not accepted into my first-career choice” (Watt & Richardson, 2007).

Career choice satisfaction. Measuring career choice satisfaction of beginning teachers has also been a focus for FIT-Choice researchers (Watt, et al., 2014). For example, the Professional Engagement and Career Development Aspirations scale (Watt & Richardson, 2008) includes two items on career choice (e.g., “How satisfied are you with your choice of a teaching career?”). In order to assess education students’ current satisfaction with their choice of teaching as a profession, participants responded on a 5-point scale (1= *strongly disagree* to 5= *strongly agree*) to a revised version of the 5-item Teaching Satisfaction Scale (Ho & Au, 2006). Items were revised from assessing a practicing teacher’s satisfaction (e.g., “In most ways, being a teacher is close to my ideal”) to the satisfaction of a student in a teacher education program (e.g., “A career in teaching is an ideal profession for me”). The original scale was reliable ($\alpha = .77$) as was the revised version used in the current study ($\alpha = .80$).

Teachers’ self-efficacy. Teachers’ self-efficacy was measured using 11 adapted items from the 12-item Tschannen-Moran and Woolfolk Hoy (2001) Teachers’ Sense of Efficacy Scale (TSES) because it closely aligns with social cognitive theory, specific to self-efficacy, and is considered “superior to previous measures of teacher efficacy” (Woolfolk Hoy & Burke Spero, 2005, p. 354). Previous research revealed adequate reliability and evidence of construct and convergent validity for the TSES in a range of settings (Klassen et al., 2009). The scores from the three subscales of the TSES (instructional strategies, student engagement, and classroom

management) are often differentiated when assessing practicing teachers' beliefs. Since Fives and Buehl (2010) found that teacher education students do not differentiate on the three domains, the 11 items were combined as an overall composite score of teachers' self-efficacy. One item from the original 12-item TSES, "to what extent can you provide an alternative explanation or example when students are confused?" was excluded on the basis that it could not be easily adapted for second-year teacher education students who tend to have little or no classroom experience. Similarly, some of the items had to be adapted in order to measure their efficacy beliefs as related to perceived future teaching. The 11-item measure, assessed on a 9-point scale (1 = *not at all* to 9 = *a great deal*), was reliable (as indicated by $\alpha = .93$).

Engagement. Since the participants were students enrolled in the early stages of teacher training, the inclusion of a student-based motivation variable in the model was of interest. The questionnaire included the 9-item short form of Schaufeli and Bakker's (2004) Utrecht Work Engagement Scale for Students (UWES-S) using a 7-point scale (1 = *never* to 7 = *always*). The UWES-S consists of three domains: cognitive engagement with absorption-related items (e.g., "Time flew when I was studying"), affective engagement with vigor-related items (e.g., "When I was studying, I felt mentally strong"), and motivational engagement with items representing dedication (e.g., "I found my studies to be full of meaning and purpose"). Like researchers (e.g., Schaufeli & Bakker, 2004) who deemed the UWES-S as valid and reliable, the scale was reliable in the current study ($\alpha = .86$).

Professional learning. I created three measures related to professional learning: Types, Reasons, and Beliefs. The measures of TPL were based on items developed through Study 3, with content assessed by practicing teachers (see Appendix A for items used in the current study). Participants were invited to answer the 5-item Types of professional learning measure by

indicating how much they personally valued each of the five possible types of TPL (1 = *least valuable* to 7 = *most valuable*). Since previous testing of the five types (see Study 3) proved difficult because teachers perceived experiences as belonging to more than one type of professional learning, a low reliability for Types was expected. Preliminary inter-item correlation results revealed non-significant correlations between teacher-directed and the other four types. However, three of the five types had significant and positive correlations (professional learning communities, workshops on curricular initiatives, large-scale conferences), which were combined to represent a moderately reliable group collaboration variable ($\alpha = .65$). Since the remaining two types of professional learning (teacher-directed and mentorship) did not correlate with each other, and related to activities different from collaborative group professional learning, they were used as single items in subsequent analyses.

The 7-item measure of Reasons for professional learning asked education students to assign a value (1 = *not essential for me*, 4 = *of some importance*, 7 = *essential*) to each of the seven possible reasons for professional learning. The items were based on key reasons for professional learning that emerged from focus groups with practicing teachers (see Study 3). Examination of descriptive statistics revealed one item, "learning more about how to teach more effectively," violated the normality assumption (with a high number of extreme values). After comparisons with related results from Study 3, the reason was removed from further analyses. While "how to teach more effectively" appeared to be a highly rated reason for professional learning, the other six reasons were more specific. For example, to learn how to teach more effectively, a teacher may seek out professional learning that will help advance their "subject-area knowledge." Means for each of the six reasons ranged from 5.90 ($SD = 1.07$) for "time and

space to think" to 6.45 (*SD* = .82) for "learning about strengths as a teacher." The reliability of the 6-item measure of Reasons was high (α = .85).

The creation of a 5-item Beliefs about professional learning measure was based on Tschannen-Moran and Woolfolk Hoy's (2007) work on sources of self-efficacy and content that emerged from Study 3. For example, "My professional growth will depend on the interpersonal support and feedback I receive from colleagues" was based on Tschannen-Moran and Woolfolk Hoy's verbal persuasion source of efficacy item ("Rate your interpersonal support provided by your colleagues at your school"). The 5-item measure that assessed beliefs about professional learning on a 5-point scale (1 = *strongly* disagree to 5= *strongly agree*) was reliable (α = .78) and had a significant and positive relationship with Reasons ($r = .41$, $p < .01$).

Analytic Strategy

The focus of the analysis was on relationships among motivational variables and the extent to which they influenced education students' beliefs about teachers' professional learning (as measured by Reasons and Beliefs). In addition, professional learning categories from the Types measure (individual, one-to-one, collaborative group)[4] were included in analyses, as was program level. Statistical analyses were performed using SPSS 22 and Mplus 7.3. Structural equation modelling (SEM) was chosen as the main analytical technique because it allows for the simultaneous examination of relationships that are based on apriori specifications (Kline, 2011; Tabachnick & Fidell, 2007). In Mplus 7.3, the default missing data command (Maximum Likelihood Estimator) ensured that data were not dropped but instead assumed missing data were random and estimated the likelihood for each missing case.

[4] *Individual* represents teacher-directed or personalized TPL; *One-to-one* represents mentorship; *Collaborative group* represents a composite of three types (professional learning communities, workshops, and conferences).

Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Standardised Root Mean Square Residual (SRMR) were selected as the three indices that would assess the goodness of fit of hypothesized models. RMSEA measures goodness-of-fit by assessing fit of the model compared to a perfect model, where a lower score represents better fit (Tabachnick & Fidell, 2007). CFI measures relative improvements to the fit of the final model compared to an independence model (i.e., a model involving completely unrelated variables; Kline, 2011; Tabachnick & Fidell, 2007). A higher CFI corresponds with better fit. Finally, SRMR examines differences between the observed and predicted correlations in the data and model, respectively. For SRMR, a lower statistic represents a better fit. When combined, these three indices provide a more comprehensive argument for the fit of a model than one index because each calculates fit using a different method.

Cut-offs established in Hu and Bentler's (1999) work were used to determine an acceptable degree of fit for the chosen indices. RMSEA values of less than .06 were assessed as evidence of a good fit and RMSEA 90 percent confidence intervals (CI) of below .08 were considered acceptable. A CFI value that met the cut-off of .95 was deemed a good fit (>.90 as an adequate fit). Lastly, SRMR values of less than .08 were assessed as evidence of good fit. A final chi-square difference test between the explanatory and baseline model with a significant p-value (< .05) can provide confirmation of the explanatory model as the best fit.

Results

An examination of descriptive statistics and correlations related to participants' (N = 153) motivation and professional learning led to the development of a structural equation model of education students' motivation and professional learning.

Descriptive Statistics and Correlations

I explored the data through frequencies, means with standard deviations, and correlations. More participants (n = 86) indicated a teaching-related motivation (e.g., always wanted to be a teacher; just love to work with children) for pursuing an education degree while 67 cited a non-teaching motivation (e.g., upgrade my GPA; apply to a Master's program). Career choice satisfaction (e.g., "I am satisfied with my decision to pursue a teaching career") was high with a mean of 3.95 out of 5, teachers' self-efficacy (e.g., "How confident are you that you will be able to motivate students who show low interest in school work?") was 6.73 out of 9, and engagement (e.g., "I find my studies full of meaning and purpose") was 4.24 out of 7. As expected, career choice satisfaction was positively correlated with teachers' self-efficacy, which in turn was positively correlated with engagement (see Table 2 for correlations).

Table 2 displays the correlations between all constructs initially considered when modelling motivation and professional learning. Motivation for pursuing an education degree was positively correlated with career choice satisfaction (r = .30, p < .01), career choice satisfaction was positively correlated with teachers' self-efficacy (r = .20, p < .05), and teachers' self-efficacy was positively correlated with current engagement as a student (r = .30, p < .01). The correlation between the beliefs and reasons for professional learning was positive (r = .41, p < .01), as was the hypothesized relationship between current engagement and beliefs about professional learning (r = .26, p < .01). In addition, one-to-one and collaborative group activities positively and significantly correlated with reasons and beliefs (rs = .26 to .37). Not surprising was the positive correlation between individual TPL and teachers' self-efficacy (r = .21, p < .05).

Modelling Education Students' Motivation and Professional Learning

Based on previous theory and research, a hypothesized or explanatory model was specified using Mplus 7.3 (Muthén & Muthén, 1998-2012) with coefficients estimated to test the hypotheses. The predicted relationships between variables were tested through structural equation modelling (SEM). SEM allows for the specification of factors and factor loadings as well as regression and covariance. Significant parameter estimates were indicative of a reliable relationship between constructs. Table 3 displays the fit indices for four models and presents Model 4 as the best fitting model for the data. Model 1 through Model 3 tested one or both independent variables as predictors of career choice satisfaction, but were not the best fit for the data. Model 4, which specified motivation to pursue an education degree as the overarching independent variable and program level as a direct predictor on types of TPL, was the best-fitting model because it explained the correlation matrix best, namely that TPL Value (as a latent combination of Beliefs and Reasons) predicted types of TPL. Model 4 is graphically depicted through Figure 3.

Since the sample size ($N = 153$) was less than ideal for SEM (which is best performed with a sample > 200), the number of free parameters was limited to less than 31 (5:1 ratio of participants to parameters; Bentler & Chou, 1987). When examining the fit indices, the p-value for the chi-square test of model fit should be greater than .05 in order to confirm that the hypothesized model can explain the data better than the baseline model. The difference between the hypothesized model and a baseline model should be small, but if the p-value associated with chi-square value was small and the chi-square value was larger, then the hypothesized explanatory model would be rejected.

I assessed and confirmed model fit by using three main fit indices: RMSEA, CFI, and SRMR. The resulting RMSEA value of .05 was assessed as a good fit with adequate RMSEA 90 percent confidence intervals (0 - .08). An adequate fit was established by the CFI value (.92) and the SRMR value of .05 was assessed as a good fit. The chi-square value for the explanatory model ($\chi^2 = 38.96$, $df = 29$) revealed a p-value of .10, representing the 10% probability that deviation from results are due to chance and not other factors. The deviation is within acceptable limits and is small enough that chance alone accounts for the deviation. Relative chi-square (χ^2 value/$df = 1.34$) also indicated an acceptable fit because it was less than 2 (Ullman, 2001). A final chi-square difference test between the explanatory and baseline model was performed in order to provide confirmation that Model 4 was the best fit ($\chi^2 = 174.39$, $df = 44$, $p < .05$.).

Figure 3 displays Model 4 as the best fit for the data with paths marked with standardized coefficients. As expected, career choice satisfaction was predicted by motivation to teach ($\beta = .30$). Teachers' self-efficacy was predicted by career choice motivation ($\beta = .19$) and predicted engagement ($\beta = .29$). TPL Value, comprised of beliefs ($\beta = .75$) and reasons ($\beta = .57$), was predicted by engagement ($\beta = .29$) and TPL Value predicted types of TPL (individual, $\beta = .19$; one-to-one, $\beta = .38$, collaborative, $\beta = .50$). Program as an overall independent variable did not result in the best-fitting model (see fit indices for Models 1 and 2 in Table 3). Since the current study hypothesized that education students' TPL preferences would differ according to program level, a model (Model 4) was specified to test if program level was a direct predictor on individual ($\beta = -.26$), one-to-one, and collaborative ($\beta = .16$) types of TPL. Here, individual TPL was significantly predicted by enrolment in the secondary program, whereas being enrolled in the elementary program was a predictor for collaborative TPL.

Discussion

The current study developed a model of professional learning and motivation based on responses from students in the beginning of their teacher education. Several findings provide insight into TPL and motivation with most providing support for previous research and implications for practice and future research. Given the work of Watt and Richardson (2007, 2008) that connected the motivation to teach with satisfaction and self-efficacy, it was not surprising to find a more teaching-related (intrinsic) motivation to pursue an education degree predicting greater career choice satisfaction, and in turn, teacher self-efficacy (Hypothesis 1). Support for extending known connections between teacher self-efficacy and teaching engagement (e.g., Xanthopoulou, et al., 2007) was also found with teacher self-efficacy predicting engagement in teacher education coursework (Hypothesis 2).

Since the dissertation identifies initial teacher education as a key professional learning experience occurring during the first professional life phase in a teacher's career, connections between current learning and beliefs about future learning were explored. Not only is initial teacher education considered the first step in TPL, the questionnaire items also provided the students with an opportunity for reflection – a teacher-initiated professional learning activity – as they considered the potential value of engaging in professional learning activities. Although pre-service teachers' beliefs about the teaching profession can go unchanged during teacher education, Kim and Cho (2014) cite indications that significant changes can occur if a program provides an optimal learning environment. Therefore, the findings support recommendations for teacher education providers and implications for future research.

Engagement and Professional Learning

In the current study, education students' engagement in current learning predicted the value they placed on future learning activities (Hypothesis 3). Of specific interest was the predictive and positive relation of TPL Value with three types of professional activities for teacher education students: individual (i.e., teacher-initiated or teacher-directed), one-to-one (i.e., mentorship), and collaborative (i.e., professional learning communities). While this is an encouraging result, longitudinal studies that examine changes in engagement in relation to TPL can provide confirmation. Longitudinal studies can advance understanding of the predictive connection between engagement and professional learning.

The findings from the current study highlight the importance of measuring engagement in relation to collaborative TPL throughout teachers' professional life phases. Anecdotal and empirical evidence demonstrate clear differences between elementary and secondary school cultures, with more school-wide teacher collaboration occurring at the elementary level (Hargreaves & Fullan, 2012). Although collaboration does exist in secondary schools, it is considered less effective given the prominence of professional learning within "balkanized" or insulated subject-specific groups or team-teaching pairs (Hargreaves & Fullan, 2012, p. 115). The current study, which revealed higher values for collaborative TPL reported by students enrolled in the elementary program (Hypothesis 4), highlights the importance of fostering a culture of collaboration within and across teaching levels. Evaluating the collaborative cultures that exist early in teacher education programs is foundational, especially since recent research on supporting beginning teachers emphasizes the importance of providing professional learning opportunities for collaboration (Brown, 2012; Feiman-Nemser, 2012).

Given the documented benefits of teacher collaboration (e.g., influences collective efficacy; Hargreaves & Fullan, 2012), assessing and teaching collaborative skills within elementary and secondary education programs can contribute to the developing beliefs surrounding collaborative professional learning. Despite students in elementary teacher education appearing more inclined to collaboration than secondary specialists, programs that teach *effective* group collaboration will help enhance all engagement across teaching levels. Highlighting the importance of collaboration for collegial cultures is important for students in both programs, especially since education systems may become more specialized. For example, in order to improve student learning in math and science, the Teacher Education Ministerial Advisory Group (2014) for the Australian Government suggests training elementary math and science specialists who would be expected to remain in elementary school settings and serve as mentors to their colleagues. On the other hand, systems overloaded with elementary teachers, may encourage re-training in secondary specialization to meet the demand for qualified secondary math and science teachers. If systems increase specializations, collaborative skills taught during initial teacher training will become particularly important at both the elementary and secondary level.

Researchers like Linda Darling-Hammond (interviewed by Scherer, 2012) frequently recommend schools support new teachers by structuring collaborative activities such as curriculum planning groups, since most entering the profession are collaboratively oriented. The current study supports previous findings of more collaborative cultures among elementary schools and suggests that this begins well before teachers enter the profession. Students in the secondary education program generally report a preference for teacher-directed professional learning. Similarly, teacher-directed instruction is often a priority for pre-service secondary

teachers – a focus that can be magnified through secondary education programs (Decker & Rimm-Kaufman, 2008).

While the structure of secondary schools may appear less conducive to collaboration, the personal characteristics of secondary teachers can be a contributing factor. For example, pre-service elementary school teachers have rated higher on agreeableness and conscientiousness than secondary school teachers (Decker & Rimm-Kaufman, 2008). Therefore, the re-training of elementary teachers for entry into the secondary specialists positions may not only help meet the demand for upper-level math and science teachers, but the personal characteristics of a typical elementary teacher may contribute to a more collaborative secondary setting. Future research can provide insight into the extent to which personal characteristics (e.g., personality traits) and secondary teacher education programs contribute to the balkanized professional learning culture of secondary schools.

Limitations and Future Research

Since the proportion of participants in the study sample that were enrolled in the elementary (37%) and secondary (63%) programs was not typical of the university's teacher education student population (55% and 45%, respectively), research with more representative samples will help substantiate program-related conclusions. In addition, the number of participants limited the analyses and a larger sample size would allow for modelling with multi-level options (e.g., teacher education students grouped according to program level).

The data source for the study was limited to participant responses to one quantitative questionnaire. Although the scales used in the study were reliable, the number of items was limited so as to not burden the participants who were also completing additional scales for

projects beyond the current study. Future research would benefit from using the complete FIT-Choice Motivation to Teach scale (Watt & Richardson, 2007) and the Professional Engagement and Career Development Aspirations scale (Watt & Richardson, 2008). Since longitudinal research can help to identify changes in beliefs over time, a longitudinal replication of the Australian FIT-Choice project with Canadian teacher education students would advance understanding of motivation and professional learning in the early professional life phases.

Given that the Types of TPL were not mutually exclusive, interviews and focus groups can be used to gain a deeper understanding of the beliefs and preferences held by teacher education students. In the current study, I was interested in testing whether overall TPL Value (a latent variable of Reasons and Beliefs) predicted Types of TPL. Since the model was not specified to reveal which reasons were most important to education students, further research is needed. For example, a longitudinal investigation can potentially provide insight into the changing TPL needs of teachers as they become more experienced.

Conclusion

The Alberta Teachers' Association (2010) identified the important role of teacher education programs in relation to effective TPL. By considering initial teacher education as a foundational time for professional growth, teacher education providers can help foster an engaged and collaborative culture – one that can be transferred to practice. The study highlighted the important connections between current motivation and prospective professional learning with particular attention to collaboration. During initial teacher education programs, students learn how to foster collaborative classroom learning among students, yet collaborative skills for teachers are rarely addressed or taught. Teacher education providers need to support the

development of education students' effective collaboration skills that will later contribute to professional growth, influence colleagues, and transform school cultures.

Prior to beginning a career in teaching, education students enter a different form of professional learning: one-to-one mentorship within a practicum placement. The final practicum is a transitional professional life phase when education students become pre-service teachers. In the current study, one-to-one professional learning was highlighted as an important type of TPL – predicted by TPL Value (but not program level). The next chapter details an examination of pre-service teachers within a 9-week practicum that further advances understanding of the connection between engagement and professional learning.

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Table 1

Participant Demographics (N = 153)

Age	Range from 17 to 50 (*M* = 22.91, *SD* = 5.91)
Gender	Female: 75.2% Male: 24.8%
Education Program Level	Elementary: 37.3% Secondary: 62.7%
Year in University	First: 10% Second: 37% Third: 20% Fourth: 7% After-degree: 25% Unspecified: 1%
Primary Funding Source	Family: 33.6% Student loan: 33.6% Personal: 29.6% Scholarship: 3.3%
Current Employment	Average of 16.53 hours per week (*SD* = 9.71) Not working: 41% Looking for work: 3% Casual work: 1% Part time: 51% Full time: 4%
Career Goal	Pre-K to Grade 12 Teacher: 77.2% Principal/Administration: 7.4% Overseas English Instructor: 4.0% Second Language Teacher: 3.4% School Psychologist: 2.0% University Professor: 1.3% Undecided: 7.4%
Career Choice Influences Range = 0 to 7 influences *M* = 3.18, *SD* = 1.35	Personal interactions: 64% (volunteer, childcare, group or one-to-one teaching experiences). External influences: 36% (know teachers, overseas experience, coursework, work experience). On average, participants reported equal or more personal influences than external influences (*M* = 3.88, *SD* = 1.25).

Table 2

Descriptive Statistics and Correlations

	α	1	2	3	4	5	6	7	8	9	10
1. Motivation	1 item	.56 (.50)									
2. Program Level	1 item	.11	.37 (.49)								
3. CCS	.80	.30**	.06	19.75 (3.70)							
4. TSE	.93	.14	-.05	.20*	74.54 (12.21)						
5. Engagement	.86	.06	-.08	.11	.30**	38.19 (9.33)					
6. TPL Reasons	.85	-.01	.11	.01	-.03	.12	44.21 (4.61)				
7. TPL Beliefs	.78	-.07	.04	.13	.09	.26**	.41**	20.56 (2.93)			
8. TPL Individual	1 item	-.13	-.25**	-.03	.21*	-.01	.07	.15	5.21 (1.15)		
9. TPL One-to-One	1 item	.17*	-.02	.04	-.06	-.05	.30**	.26**	.11	6.05 (.91)	
10.TPL Collab	.65	.02	.19**	-.05	-.07	.14	.30**	.37**	.02	.23**	15.31 (3.10)

$N = 153$ $^{*}p < .05$ $p <. 01^{**}$

Note. Means (with standard deviations in parentheses) appear on the diagonal. Abbreviations: Motivation = motivation to pursue education degree (0 = non-teaching, 1 = teaching-related), Program = program level (0 = secondary, 1 = elementary), CCS = career choice satisfaction, TSE = teachers' self-efficacy, TPL = teachers' professional development. Collab = collaborative group TPL

Table 3

Fit Statistics for Education Students' Model of Motivation and Professional Learning

Model	$\chi 2$	*df*	CFI	RMSEA	CI	SRMR
1. Program level and Motivation for Pursuing Education Degree	54.24	31	.82	.07	[.04-.10]	.07
2. Program level (no Motivation for Pursuing Education Degree)	39.43	24	.86	.07	[.02-.10]	.06
3. Motivation for Pursuing Education Degree (no Program Level)	34.92	24	.91	.05	[.00-.09]	.05
4. Motivation for Pursuing Education Degree predicting all; Program Level predicting Individual, One-to-One, Collaborative types of TPL	**38.96**	**29**	**.92**	**.05**	**[.00-.08]**	**.05**

Note. TPL = Teachers' professional learning

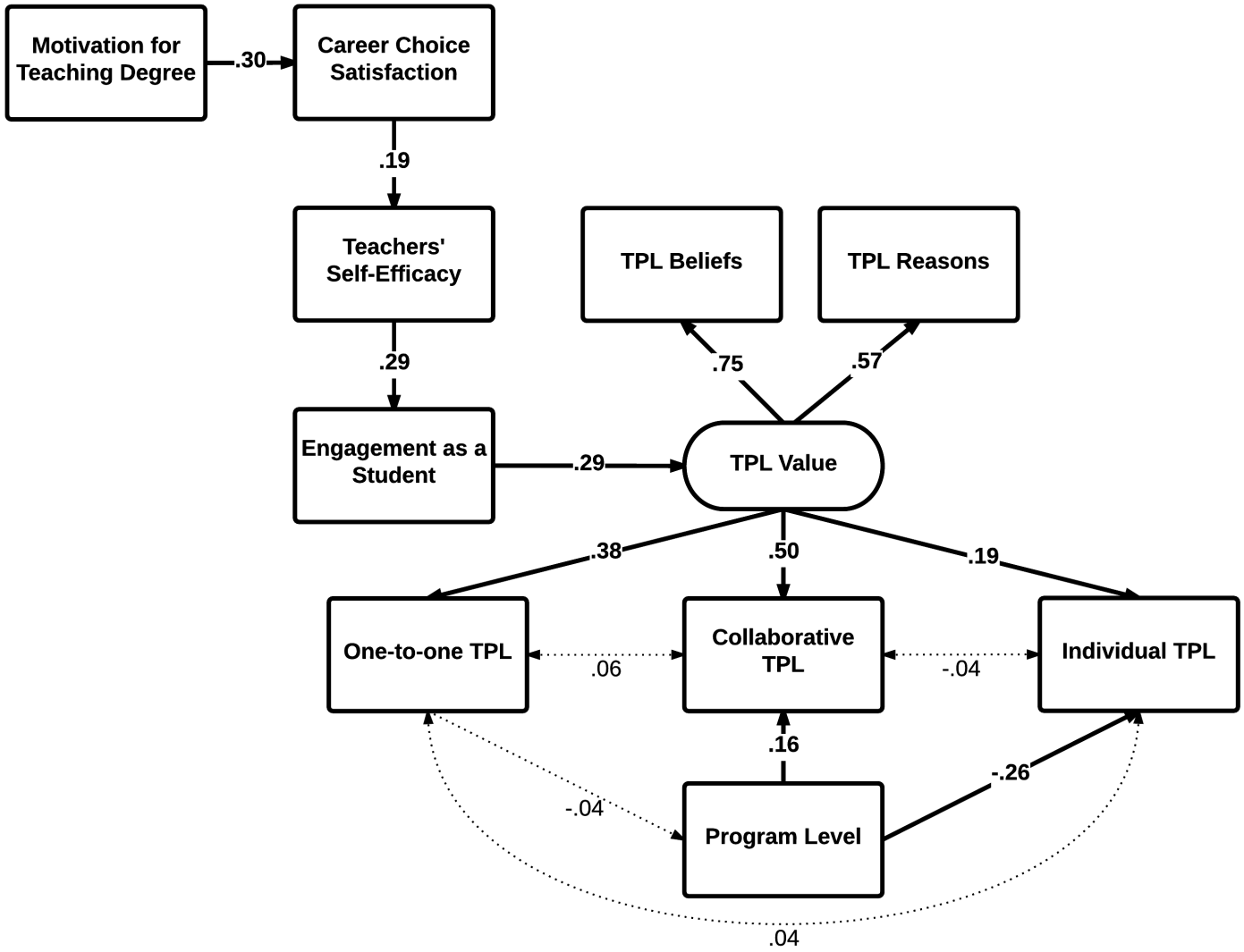

Figure 3. Model for education students' motivation and professional learning. **Bold** connectors represent significant parameter estimates (dotted lines represent non-significant estimates). TPL = Teachers' professional learning. Note that program level was coded as 0 for secondary and 1 for elementary.

Appendix A

Questionnaire Items

Instructions: Teachers are required to develop professional growth plans. As a pre-service teacher, please provide personal responses to the following items on professional learning (also called professional development).

Types of Professional Learning
1 = *least valuable to me*, 4 = *somewhat valuable*, 7 = *most valuable*

Please consider how you personally value each of these possible types of teacher professional learning:
1. Teacher-directed and personalized (e.g., optional course)
2. Mentorship (e.g., learning through observation; receiving/providing feedback)
3. Small group work (e.g., book club with colleagues)
4. Workshops at the school or district level (e.g., short-term activities on a single topic; curricular initiatives)
5. Large-scale single-event (e.g., 1-2 day teaching convention on multiple topics)

Reasons for Professional Learning
1 = *not essential for me*, 4 = *of some importance*, 7 = *essential*

Please consider how you personally value each of these possible reasons for teacher professional learning:
1. Learning more about children
2. Learning more about myself (my strengths) as a teacher
3. Learning more about how to teacher more effectively
4. Gaining subject area knowledge
5. Offering me space and time to think
6. Building community (sharing with colleagues and social networking)
7. Coming into contact and being influenced by a significant person, teacher, or mentor

Beliefs about Professional Learning
1 = *strongly disagree* to 5 = *strongly agree*

Please indicate your personal response to each of the following statements:
1. All teachers need to continually upgrade their skills
2. Recording professional reflections regularly can improve teaching quality
3. Professional learning should be built into a teacher's weekly schedule
4. My professional growth will depend on the interpersonal support and feedback I receive from colleagues
5. Professional learning activities can help you cope with day-to-day teaching activities

Chapter Three

Pre-service Teachers' Weekly Commitment and Engagement during a Final Practicum: A Longitudinal Mixed Methods Study

Teachers' early years can invoke images of challenge, defeat, and survival through phrases such as *sink or swim*, *lost at sea,* or *trial by fire*, all commonly used to describe a profession that some say "cannabilizes its young" (Ingersoll & Strong, 2011, p. 202). The final practicum represents a psychological *metamorphosis* for pre-service teachers as they undergo a developmental shift from student to teacher*,* and from passive learner to active professional. The experiences in the final stage of professional preparation can strongly influence career expectations and decisions about entering the profession (Rots, Aelterman, Vlerick, & Vermeulen, 2007). Although many pre-service teachers find the practicum experience satisfying, with resultant increased professional commitment, others find it one of "the most intensively miserable and depressing experience(s)" of their educational and professional lives (Cockburn & Haydn, 2004, p. 48). The current study extends existing research by investigating the longitudinal development of professional commitment and teaching engagement during a critical period in the formation of new teachers. Importantly, the study offers suggestions for education professionals, such as educational psychologists, to support pre-service and novice teachers in broadening and building their personal resources (e.g., teachers' self-efficacy, ways of coping).

Teacher Recruitment and Retention

Although recent employment trends in education point to a current oversupply of potential teachers in the UK and elsewhere (e.g., BBC, 2011), securing and retaining the very best teachers is of perennial interest to education authorities. In Canada for example, many teachers

(at least 25%) leave the profession within the first three to five years (Alberta Teachers' Association, 2010); therefore, research aimed at building an understanding of novice teachers' commitment and engagement is crucial. The attrition rate for teachers in England is higher than many other developed countries, with many teachers leaving within the first few years of their careers (UK Department of Education, 2011; Ladd, 2007). Also drawing recent attention is the high turnover of experienced teachers choosing to leave the profession due to personal and professional dissatisfaction (Salinitri, Howitt, & Donohoo, 2007). According to Klassen and Chiu (2011), high turnover of teachers might be predicted given that experienced teachers report lower commitment and higher levels of stress than pre-service teachers. Although stresses associated with salary and time commitments are commonly cited, most teachers leave the profession due to lack of support and due to feeling emotionally overwhelmed (NEA, 2009). Moreover, the high attrition rate within teachers' beginning years may be linked to the disorienting transition from the positive *discovery* stage of pre-service teaching (with heightened commitment and engagement) to the 'reality shock' of the classroom environment (Caires, Almeida, & Martins, 2010; Klassen & Chiu, 2011).

Commitment and Engagement During the Teaching Practicum

During the teaching practicum (variously known as field experiences, initial teacher training, or teaching practice), pre-service teachers may experience fluctuating levels of motivation and emotions. Caires et al. (2010) found that the practicum experience stimulated considerable within-person changes, with positive adjustments of teachers' self-efficacy, paired with substantial distress, changes in eating and sleeping patterns, and high levels of emotional vulnerability associated with fatigue and heavy workloads. In order to better understand how to enhance novice teachers' well-being, we examined two components of work-related motivation

involving positive psychological states: *professional commitment*, defined as a teachers' psychological attachment to the profession (Klassen & Chiu, 2011) and *work engagement*, characterized by vigour, dedication, and absorption (Bakker & Bal, 2010). Teachers' professional commitment and work engagement are reciprocally influenced by overall psychological health and well-being (Day & Gu, 2009; Heuven, Bakker, Schaufeli, & Huisman, 2006).

The practicum offers the opportunity for education professionals such as educational psychologists to support pre-service teachers. For example, the teachers' self-efficacy level—confidence to carry out specific tasks—of pre-service teachers can be boosted through the modeling provided by school-based personnel (Bandura, 1997). Similarly, pre-service teachers' level of stress is influenced by professional interactions with colleagues (teachers and other education professionals), which subsequently influences commitment and engagement. The quality of support offered to pre-service teachers' may influence important decisions about next steps in career exploration. For pre-service teachers, the practicum is a high-stakes experience, with successful navigation of the experience enhancing employment prospects, but unsuccessful navigation resulting in restricted access to teaching jobs (Caires et al., 2010). The ways in which pre-service teachers are influenced by interactions with education professionals may make a difference in week-to-week fluctuations of professional commitment and teaching engagement during the practicum.

Current Study and Theoretical Framework

In light of the potential for rapid change over time (Bakker & Bal, 2010), we designed a longitudinal exploration using quantitative and qualitative data to understand the patterns and sources of change in pre-service teachers' commitment and engagement during the practicum.

By using a mixed-methods embedded design and by examining changes in a tightly-focused time frame, we advance and deepen understanding of the development of the links between commitment, engagement, and the psychological health and well-being of teachers. With the deliberate integration of quantitative and qualitative approaches, we provide general insight into the patterns and inter-relationships within our data (Bryman, 2007; Creswell, 2009; Onwuegbuzie & Johnson, 2006). Figure 4 provides an explanatory diagram of the purposeful integration of our data in the analysis process.

The theoretical framework for our study is provided by the job demands-resources model (JD-R; Bakker & Bal, 2010), situated within the framework of self-determination theory (SDT; Ryan & Deci, 2000). Figure 5 provides a graphical rendering of how professional commitment and engagement are fostered by university preparation, mentor teacher, the JD-R categories of *job resources* (e.g., support from educational professionals, workload) and *personal resources* (e.g., TSE and resilience), eventually leading to satisfaction of teachers' well-being through basic psychological needs (the *relatedness, competence,* and *autonomy* of SDT; Ryan & Deci, 2000). We address a gap in the literature by exploring connections between resources (job and personal) and teachers' basic psychological needs since most studies have focused on students (e.g., Jang, Reeve, Ryan, & Kim, 2009), despite the evident connection between the well-being of students and teachers (Davis, 2003). The current study also addresses the call for more longitudinal investigations of teachers' well-being (Parker & Martin, 2009; Simbula, Gulielmi, & Schaufeli, 2011).

Research Questions

The current study examines how pre-service teachers' commitment and engagement develop during a high-stakes final teaching practicum, with attention paid to broad patterns

(quantitative analysis), and the particular reasons and experiences associated with increasing or decreasing patterns (qualitative case study analysis). We hypothesized that the fluctuations in emotional and motivational components (commitment and engagement) resulting from the challenges of the teaching practicum might be related to personal and job resources, which include interactions with colleagues and support from education professionals. The results from the current study may inform the kinds of guidance educational psychologists and other education professionals provide to pre-service and beginning teachers in order for them to experience optimal levels of success. Our research questions are as follows:

1. What are the developmental trajectories of pre-service teachers' commitment and engagement over a teaching practicum? In light of the 'reality shock' pre-service teachers typically experience at the outset of a new teaching placement (Caires et al., 2010), we predicted that commitment and engagement would show an initial drop followed by a steady increase.
2. Is there a difference in the level of commitment or engagement according to age, gender, and teaching level? We predicted that age and gender would not be associated with significant differences in commitment and engagement (Klassen, & Durksen, 2014), and that pre-service teachers in secondary school settings would report lower commitment and engagement than teachers in primary and middle school (Geving, 2007; Rots et al., 2007).
3. What do participants with an overall pattern of increasing commitment and engagement report about their experiences over the teaching practicum?
4. What do participants with an overall pattern of decreasing commitment and engagement report about their experiences over the teaching practicum?

Methods

Participants and Procedure

Our sample consisted of 150 participants from three cohorts (collected over two years) of final year undergraduate pre-service teachers enrolled in a final teaching practicum. Participants were volunteers recruited from 16 pre-practicum seminars who responded > 4 times to weekly electronic surveys. Participants reported age, gender, school level, and estimates of school socio-economic status (SES). The participants (mean age of 25.7 years, 77% female), had placements in 74 schools (primary, middle, secondary). Participant ethnicity closely matched the ethnicity and teaching level demographics of students enrolled in the teacher education program at the university.[5]

A total of 226 electronic questionnaires were sent nine times during the practicum to email addresses provided by participants. Of the 226 participants, 150 were classified as "good responders" (> 4 responses), and 76 were "poor responders" (< 4 responses). Our test for attrition bias (McArdle, 2009) found no significant differences for gender, school level, or week 1 commitment and engagement levels.

Questionnaires were sent out at the end of each teaching week (Friday at 4 p.m.), with participants asked to respond before the end of the weekend (Sunday at midnight). A reminder was sent Sunday afternoon to non-respondents, with no responses permitted past midnight on Sunday at the end of each weekend.

Measures

The weekly questionnaire consisted of four sections, only two of which are the focus

[5] The student data collected by the undergraduate teacher education program codes ethnicity as Aboriginal or non-Aboriginal.

of the current study. We decided to use single item measures of key constructs in order to minimize the weekly intrusion of responding to the survey. Single item measures have been used in recent studies of teachers' experiences with strong evidence of construct validity (e.g., Boyle, Borg, Falzon, & Baglioni, 1995; Chaplain, 2008; Klassen, 2010). The measures of commitment and engagement were administered using a 1 to 11 scale (1 = *not true at all*; 6 = *moderately true*; 11 = *extremely true*). The commitment item ("I believe teaching is the ideal profession for me") was selected from Hackett, Lapierre, and Hausdorf's (2001) work on occupational commitment, and the engagement item ("I feel energetic when teaching") was chosen from the Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006). Qualitative data were collected from open-ended questions on commitment and engagement ("What experiences in your practicum this week have led to these ratings?").

Analyses

We used SPSS (PASW, 2010) to analyze the quantitative data and NVivo9 (QSR International, 2011) to prepare, organize, and code the qualitative data. Quantitative analyses involved generating fit lines, descriptive statistics and correlations prior to performing repeated measures ANOVA. For the qualitative analysis, we used the multiple-case theoretical replication design with two contrasting cases in order to strengthen the external validity of our findings (Yin, 2003). Twelve participants were purposefully selected to represent two broad contrasting cases for qualitative theoretical analysis. Our integrated mixed methods analysis process (see Figure 4) began with preliminary exploration of quantitative data, and specifically by generating and examining fit lines for the purpose of selecting participants for our qualitative case analysis.

The qualitative case selection process used the quantitatively generated fit lines. By visually examining the individual commitment and engagement fit lines from participants, we

identified two clusters of participants (cases) with contrasting trajectories (Miles & Huberman, 1994). We selected participants with fit lines showing markedly increasing and decreasing trajectories. Of the initial participants, 67 (45%) displayed conspicuous changes (>2.0 units of change) in engagement across 9 weeks; of these 67 participants, 27 (40%) presented noticeable changes of similar trajectories (increasing or decreasing) for commitment. We identified 12 participants (6 each of increasing and decreasing trajectories) who had responded > 4 times over the 9-week period. As a result of our criterion-based selection process, six participants (one male and five females) with increasing commitment and engagement were clustered to form Case 1 (four in primary/middle and two in secondary school settings). Six participants (one male and five females) with declining commitment and engagement were clustered to form Case 2 (three in primary/middle and three in secondary school settings).

We systematically examined the qualitative text data using interpretational analysis procedures to ensure key themes emerged (i.e., we divided text data into meaningful chunks, developed themes and categories, and coded data segments using applicable categories; Gall, Gall, & Borg 2005; Miles & Huberman, 1994; Saldaña, 2003). We categorically examined the longitudinal text data through theory-based (e.g., JD-R; Bakker, Albrecht, & Leitner, 2011) themes of *job and personal resources*, and basic psychological needs (*autonomy, relatedness,* and *competence*), while looking for examples of change across the practicum. Initial coding categories and themes were derived from the JD-R model research (e.g., Bakker et al., 2011; Bakker & Bal, 2010). Qualitative coding inter-rater reliability was established through employing an external rater to code 10% of the data using the final operationally defined code list. After comparing the newly coded data, an inter-rater agreement of 91.5% was achieved.

Responses were analyzed longitudinally for evidence of adaptation or change by

identifying the challenges (e.g., high workload) and hindrances (e.g., actions from mentor teacher) experienced over the practicum (Crawford, LePine, & Rich, 2010). For example, embracing the challenges that come with a high teaching workload and viewing them as 'learning opportunities' was one example of *positive* adaptation to job demands. In contrast, citing the workload as 'way too much' or the actions of a mentor teacher as hindering or 'unsupportive' were examples of hindered change due to job demands. Additional support for applying these coding themes of change can be found in the work of Crawford et al. (2010), Peters (2008), Saldaña (2003), Simbula et al., (2011), and Troman and Woods (2000).

Results

Quantitative Results

Descriptive statistics for commitment and engagement ($N = 144$)[6] across the 9-week practicum are shown in Table 4. Participants reported moderately to high commitment and engagement with means between 8.59 (commitment at week 3) and 9.78 (engagement at week 9). However, the range of scores each week spanned from 6 to 10. The range was smaller as the end of the practicum neared, with commitment (weeks 8 and 9) along with engagement (week 9) spanning 6 points (scores ranging from 5 to 11). Commitment scores for Week 3 and Week 6 ranged from 1 to 11. As presented in Table 5, all correlations for commitment and engagement were significant at the .01 level, showing increasing stability over time for the 9 weeks.

Repeated measures ANOVA revealed significant quadratic (non-linear; U-shaped) trends for both commitment ($F_{(1,143)} = 40.033$, $p < .001$) and engagement ($F_{(1,143)} = 41.821$, $p < .001$). Figure 6 displays declining trajectories from Week 1 to Week 3 (for commitment) and from Week 1 to Week 4 (for engagement), with levels rising through to the final week. Levels of

[6] Six outliers were removed from the sample of 150 after preliminary quantitative analyses.

commitment and engagement at the end of the practicum were higher than at the outset. The U-shaped trajectory confirmed our prediction—based on Caires et al. (2010)— that commitment and engagement would show an initial drop followed by a steady increase. No significant differences were found when accounting for contextual factors of age, gender, or teaching level, but there was a three-way interaction influence (marginally significant, $p = .058$) on engagement across the 9 weeks. The interaction effect suggested that age, gender, and teaching level influenced engagement in a similar cubic or 'S' shaped pattern. Contextual factors also posed non-significant influences on commitment; however pre-service teachers in primary and middle school had means consistently higher than pre-service teachers in secondary school placements, partially confirming our prediction that teachers in secondary schools would report lower commitment and engagement than teachers in lower levels.

Qualitative Results

Although the quantitative results portrayed an overall U-shaped trajectory for participants' commitment and engagement over the practicum, we conducted qualitative analyses to provide examples of the range of experiences of participants. Participants' quotes were selected as examples if the relationship to a particular construct was clearly expressed; for example, uncertain commitment and low teachers' self-efficacy (i.e., personal resource) were represented through quotes such as "I still wonder if I am cut out for this profession…I want to be here, but I fear burnout or being overwhelmed…"

Case 1: Increasing commitment and engagement. Participants in Case 1 expressed high commitment with reports of increasing ease and enjoyment in the classroom. Although participants reported generally positive and energizing work climates ("working with staff who are helpful and energetic"), they also discovered "that a large portion of this job involves dealing

with dissatisfied or concerned parents and weaving [through] school and school board politics." The "realities of the profession from curricular expectations to professional politics" were strongly connected with low profession-related competence. Low commitment stemmed from attributions to uncontrollable, external forces (e.g., government cuts in education spending), while uncertain commitment came from fears of "burnout or being overwhelmed in [the] first few years of teaching" or a willingness to do something else "if jobs don't come through this year."

Participants in Case 1 expressed the importance of relatedness to colleagues and students. In fact, they received "great feedback" from mentors, and as one participant exclaimed, "my connection/relationships with students keeps getting deeper and deeper…the best feeling ever!" The personal resource of teachers' self-efficacy was usually low, as evidenced through comments such as "…students need that little extra from their teachers and I don't think I can provide it" and "I do not have much confidence in (my) teaching." Evidence of higher teachers' self-efficacy emerged through comments on preparedness (e.g., "…I have a better knowledge of what I am teaching so I can be more confident…"). Yet, lack of university preparation was a common explanation for struggles during the practicum (e.g., "…university time was useless and did not help me at all"; "…in many ways I feel unprepared to be a teacher"). Likewise, participants commonly expressed a lack of competence (e.g., "having failed a lesson plan, really made me feel incompetent"; "there are next to zero schools that would hire me based on my major…"), but high resilience (e.g., "today was one of hardest [yet]…but I know if I can keep going, I will be stronger for it").

High levels of engagement were expressed through "love" – mentioned 9 times by participants in Case 1 (e.g., "I love being in the classroom and I already don't want my practicum

to end"; "Everyday that I am in the classroom I fall more in love with teaching and just continue to enjoy it so very much!"). On the other hand, low engagement was evident through comments such as "just trying to survive," "sometimes it is just too stressful, and I cannot enjoy it as much as I'd like" and "…feeling stressed so I am not nearly as positive at the end of [the] week." Ways of coping included "learning to relax more and view situations with humour" and exercise. Overall, participants in Case 1 expressed increased commitment and engagement through positive relationships with a mentor teacher and students, buffering somewhat against feeling ill-prepared by the university. Thus, personal resources (e.g., optimism and resilience) and job resources (e.g., supportive work climate and learning opportunities) continued to build and broaden despite the practicum demands (e.g., workload).

Case 2: Declining commitment and engagement. Participants in Case 2 provided several low ("just want to be done") or unsure ("…enjoy many parts, but still struggle with [time]…") explanations for levels of commitment, with only a handful of expressions of high commitment ("I still want to be a teacher. This experience is teaching me a lot…"). Personal, and often physical, reasons were common indicators of low commitment to the profession. For example, participants linked their commitment to a "lack of enthusiasm," "exhaustion, "no energy," or were just "surviving." They also revealed the influence of a mentor teacher (e.g., "my mentor teacher has drained both my motivation for the profession and for the day") as well as parents, students, and staff relationships (e.g., "parents and students [were] hard to deal with as well as other teachers in the school;" and, "not all teachers in a school are there to help…made me rethink if I was actually a good teacher"). Although participants felt some enjoyment through "helping students with their projects," they found "the rewards [did] not come around too often."

Low profession-related competence was associated with low engagement for participants in Case 2 ("I struggle with self-esteem [when] it comes to seeing myself as a good teacher"). Participants in Case 2 expressed feeling overwhelmed ("…I can't picture myself [as] a first year teacher next fall") and unprepared (e.g., "[I do not] have enough background knowledge from my studies"; "…makes me feel super-pathetic"). Generally, when participants in Case 2 expressed high engagement, responses included an emphasis on *when* (e.g., "when I do get the opportunity to teach, I love it") and *but* (e.g., "I feel energetic when I am teaching but exhausted the rest of the day"). Low engagement was evidenced through comments on the overwhelming workload and exhaustion. One pre-service teacher expressed the need for more opportunities to work with peers on practicum planning, because "[she] was floundering." Overall, participants in Case 2 expressed declining commitment and engagement due to a lack of supportive relationships, and due to feeling unprepared and exhausted. Workload was high, coupled with low perception of rewards or learning opportunities. Thus, the practicum was experienced with low personal resources and unavailable job resources.

Discussion

Our results show that pre-service teachers' commitment and engagement fluctuate during the brief but psychologically intense final teaching practicum, with an overall pattern describing a U-shaped trajectory composed of initially high ratings sinking in weeks 3 or 4 (of a 9-week practicum), and then rising in the latter stages of the practicum. Qualitative findings provide examples of, and exceptions, to, the nature of the psychological fluctuations: "I feel like a yo-yo from last week where I was outrageously unhappy and disappointed with everything. This week was WAY better" (Case 1); and, "Some days are amazing; others make me want to jump off tall buildings" (Case 2). The nature of the support offered by colleagues, coupled with the evaluative

and novel aspects of the practicum, challenge pre-service teachers' well-being as they learn how to manage student behaviour, plan lessons, and negotiate classroom management in a new environment (Maistre & Paré, 2010).

Our study provides support for previous findings on the importance of mentor teacher support and school climate for engagement (Cockburn & Haydn, 2004). The view of practicum workload as positive and full of learning opportunities came through comments by participants in Case 1 who noted increased autonomy ("having more responsibility"), relatedness ("even if I am having a bad day…seeing [the students] thriving and growing is extremely encouraging"), and competence ("doing a good lesson for the students…students 'getting' it as I wrap up my units"). Participants in both cases cited how the high workload influenced engagement, with Case 1 feeling "too stressed about [teaching]... to have enough energy to really enjoy [it]" and Case 2 feeling "exhausted all the time [because] it's too much work" with few rewards. Results also provided support for the connection between commitment and engagement (Hackett et al., 2001). For some participants, teaching level influenced engagement, which in turn affected commitment; however, the trend was not statistically significant. As an example, a participant in Case 1 expressed low commitment to the profession through frustrations with high expectations and recent government cuts to education ("I do not have much confidence in teaching"), but by the end of the practicum, he realized: "high school is not for me, but I can see a future in junior high."

The commitment of participants in Case 2 was also influenced by engagement, thereby providing additional confirmation for our theoretical model. For example, the longitudinal pattern of decline began with "I'm overwhelmed at the moment and I can't picture myself struggling as a first year teacher…" progressed to "I think I'd like to teach adults" and continued

to decline with a recognition of "too much work" and "there is always something [more] you could be doing." A decline in engagement was expressed through exhaustion-filled explanations and lack of support. For example, one participant in Case 2 wished she could "work with other student teachers and share resources" because on her own she was "floundering," and felt like an unprepared "outsider" at her school placement. Participants in Case 2 illustrated their declining commitment with strong, emotionally-charged phrases (some entered with capitals for emphasis), which progressed from examples such as "kids are spoiled…" to "I hate it" and "…it is over!!!" by the end of the practicum. Although the overall trend of the data was a U-shaped trajectory with an implied recovery after a sharp decline, for some pre-service teachers commitment and engagement continued to drop throughout the practicum experience, with no sign of an accompanying recovery. It may be that the pre-service teachers showing a prolonged decline are most in need of the support offered by educational psychologists and associated education professionals.

Implications for Educational Psychologists and other Professionals

Pre-service teachers may find themselves in teaching environments "that are hostile to their well-being" (Day & Gu, 2009, p. 15); thus, it is crucial that education professionals support pre-service teachers as they strive to identify and develop adequate job and personal resources necessary for healthy coping. The final practicum experience provides the potential for pre-service teachers to "transform themselves, becoming more creative, knowledgeable, resilient, socially integrated and healthy" professionals (Fredrickson, 2004, p. 1369). Since positive emotions experienced within the teaching practicum can influence long-term professional commitment and work engagement, educational psychologists might provide training for mentor teachers to develop strong mentoring skills that can contribute to a positive practicum experience

for pre-service teachers. Prior to the practicum student joining the school setting, psychologists can also work with the school staff to develop teamwork and communication skills. According to Evelein, Korthagen, and Brekelmans (2008), practicum experiences that provide safe and effective classrooms with supportive mentors can promote reflection and healthy development for pre-service teachers.

Educational psychologists and other education professionals can support the development of positive and healthy teaching and learning environments. First, they can support and work with the administration and staff through leadership development, conflict resolution, policy development (e.g., school-wide behavioural expectations and enforcement plans), and by focusing on whole-school climate and development of collective efficacy beliefs (e.g., Gibbs & Powell, 2011). Supporting administration and staff members through these actions can promote the importance of teacher engagement, commitment, and subsequent professional satisfaction. At the classroom level, professionals can help pre-service teachers manage student behaviours by observing in the classroom and by providing possible strategy suggestions or recommendations for interventions.

Limitations

The use of single items to measure professional commitment and work engagement is not psychometrically optimal, but recent studies have supported the inclusion of single item measures of job-related beliefs (e.g., Dolbier, Webster, McCalister, Mallon, & Steinhardt, 2005), because of the high levels of face validity and the convenience for data collection in busy workplace settings. Although keeping weekly reflection procedures to a minimum (i.e., only requiring a brief diary entry) reduced burden on participants and potentially reduced the attrition rate, it restricted the depth of insight into participants' experiences. We recognize, however, that

pre-service teachers in the midst of a high stress, time-limited professional experience may not view completing a weekly survey as a high-priority task. The current study focused primarily on beliefs about individual commitment and engagement, but recent research (e.g., Gibbs & Powell, 2011) emphasizes the role that school-level collective beliefs play as job and personal resources.

The two cases included for qualitative analysis were formed using a carefully documented, theoretically and empirically justifiable process, yet we do not claim that the participants in each case were representative of broader populations. Indeed, the two cases were not proportionately divided by gender, teaching level, or age. What the participants in each case *did* share was a similar trajectory of commitment and engagement during a structurally similar practicum experience. Our purpose of using qualitative analysis within the mixed methods approach was not to propose generalizable categories, but rather to show the variability in experience during a practicum, and to draw out commonalities in the experiences within each case.

Finally, the sample was not representative of pre-service teachers in other contexts, with predominantly female, European (Anglo) Canadian participants from one Canadian university. However, conducting longitudinal research with broadly representative samples of pre-service teachers may not be feasible, with practicum experiences varying widely across institutions and countries. Nevertheless, examining longitudinal patterns of pre-service teachers' motivation and emotions in additional settings would strengthen the claims based on the current study.

Conclusions and Future Research

The quantitative results of significant U-shaped patterns of commitment and engagement were informative; however, upon closer examination not all participants' experiences conformed to these general trends. By focusing on (quantitative) patterns as well as pre-service teachers' (qualitative) explanations, we have attempted to capture at least some of the complexity inherent

in understanding the teaching practicum, and the ways in which a multiplicity of contexts influence teaching experiences. Our inclusion of integrated quantitative and qualitative methods highlight how context and individual differences interact to influence perceptions of motivation and emotions for individuals who may be going through the same experience, but whose cognitive processing of the experience results in notable differences and outcomes. Educational psychologists and associated education professionals can help "transform [teaching] from being a frightful profession to one which is thoroughly rewarding and satisfying" (Cockburn & Haydn, 2004, p. 43). Pre-service teachers will benefit from the increase in job resources provided by educational psychologists' support as they cope with the very real demands of the practicum.

The current study placed an emphasis on resources (personal and job) as a driver of engagement and subsequent commitment, with analyses theoretically grounded in our framework of JD-R within SDT. Other researchers have combined JD-R with the Conservation of Resources theory (see Hakanen, Peeters, & Perhoniem, 2011) in order to investigate the reciprocal nature of commitment and engagement, and future research would benefit from the inclusion of this perspective. Finally, future investigations should examine the reciprocity of teacher and student engagement in light of recent calls (e.g., Spilt, Koomen, & Thijs, 2011) for empirical studies that explicitly investigate the effects of teacher-student relationships on teachers' well-being.

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Table 4

Descriptive Statistics for Commitment and Engagement

Variable	*M*	*SD*	Skewness	Kurtosis
Commitment 1	9.29	2.09	-1.53	2.02
Commitment 2	8.71	2.21	-.78	-.14
Commitment 3	8.59	2.28	-.96	.41
Commitment 4	8.75	2.16	-.98	.47
Commitment 5	8.87	1.87	-.85	.55
Commitment 6	8.94	1.86	-1.25	2.10
Commitment 7	9.03	1.80	-1.10	1.26
Commitment 8	9.33	1.59	-1.06	.78
Commitment 9	9.58	1.58	-1.41	1.43
Engagement 1	9.20	1.55	-1.00	.96
Engagement 2	8.85	1.96	-.93	.29
Engagement 3	8.65	1.96	-1.01	1.09
Engagement 4	8.59	2.13	-.99	.76
Engagement 5	9.05	1.67	-.95	.90
Engagement 6	9.18	1.62	-1.29	2.23
Engagement 7	9.20	1.60	-1.29	2.16
Engagement 8	9.51	1.42	-1.42	2.49
Engagement 9	9.78	1.29	-1.60	3.01

Note. $N = 144$. The range for commitment and engagement scores is 1-11

Table 5

Correlational Results for Commitment and Engagement

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Com1	1																	
2. Com2	.72	1																
3. Com3	.66	.81	1															
4. Com4	.64	.80	.81	1														
5. Com5	.58	.71	.76	.76	1													
6. Com6	.51	.62	.67	.61	.76	1												
7. Com7	.48	.64	.66	.68	.76	.77	1											
8. Com8	.51	.59	.57	.62	.71	.75	.85	1										
9. Com9	.51	.55	.56	.62	.66	.71	.82	.86	1									
10. Eng1	.66	.63	.65	.57	.59	.52	.54	.48	.49	1								
11. Eng2	.49	.70	.61	.57	.52	.41	.49	.40	.37	.57	1							
12. Eng3	.49	.58	.73	.59	.64	.45	.54	.44	.37	.59	.63	1						
13. Eng4	.39	.50	.51	.65	.55	.41	.50	.44	.36	.49	.60	.66	1					
14. Eng5	.40	.55	.61	.63	.82	.55	.62	.53	.46	.53	.54	.72	.65	1				
15. Eng6	.35	.53	.60	.54	.64	.80	.67	.64	.60	.43	.44	.52	.50	.66	1			
16. Eng7	.35	.55	.54	.60	.64	.62	.87	.72	.66	.49	.53	.60	.59	.71	.68	1		
17. Eng8	.34	.46	.47	.49	.59	.65	.73	.81	.70	.44	.39	.50	.48	.63	.68	.80	1	
18. Eng9	.31	.47	.48	.56	.57	.60	.73	.73	.82	.42	.41	.46	.48	.60	.68	.77	.78	1

Note. All correlations are significant at $p < .01$ (2-tailed). Com = Commitment, Eng = Engagement

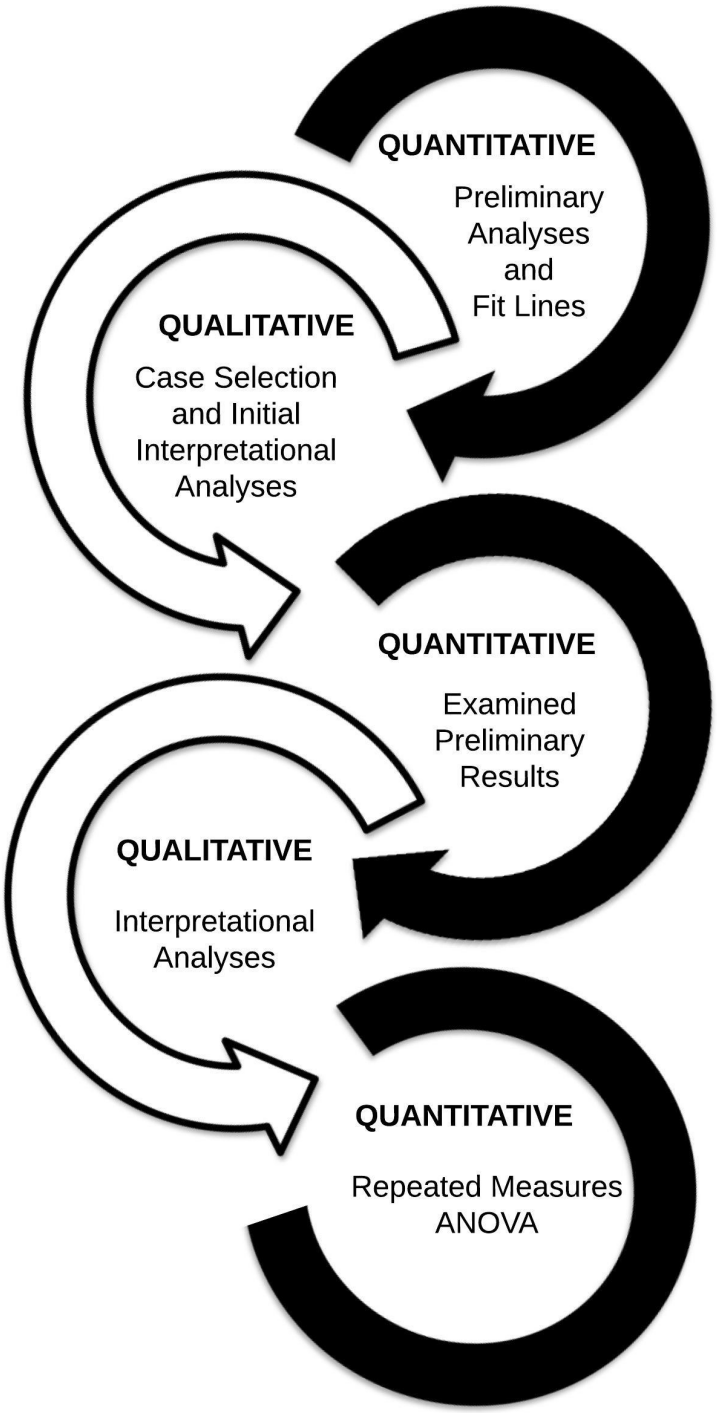

Figure 4. Integrative mixed methods analysis process.

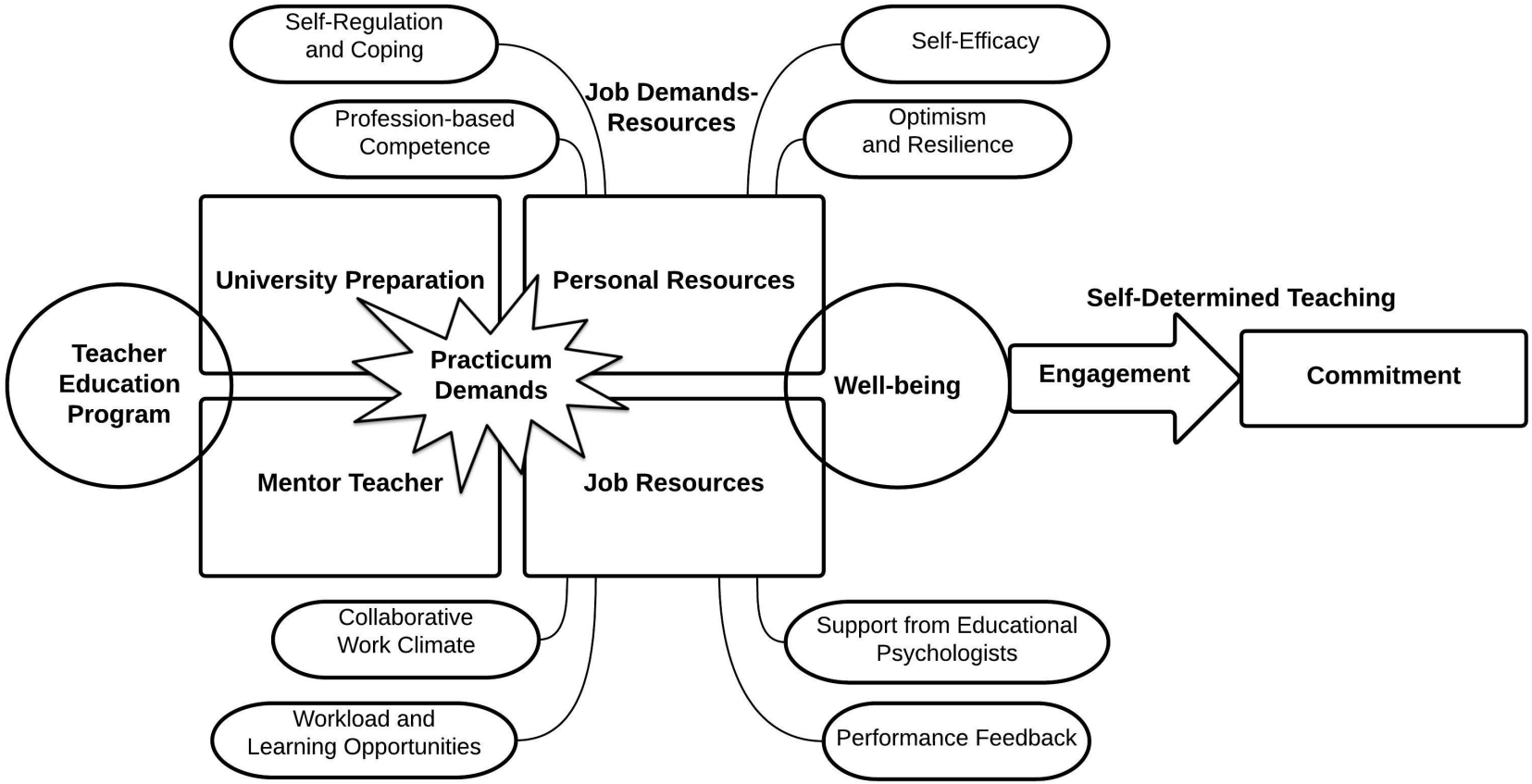

Figure 5. Graphical display of the theoretical framework.

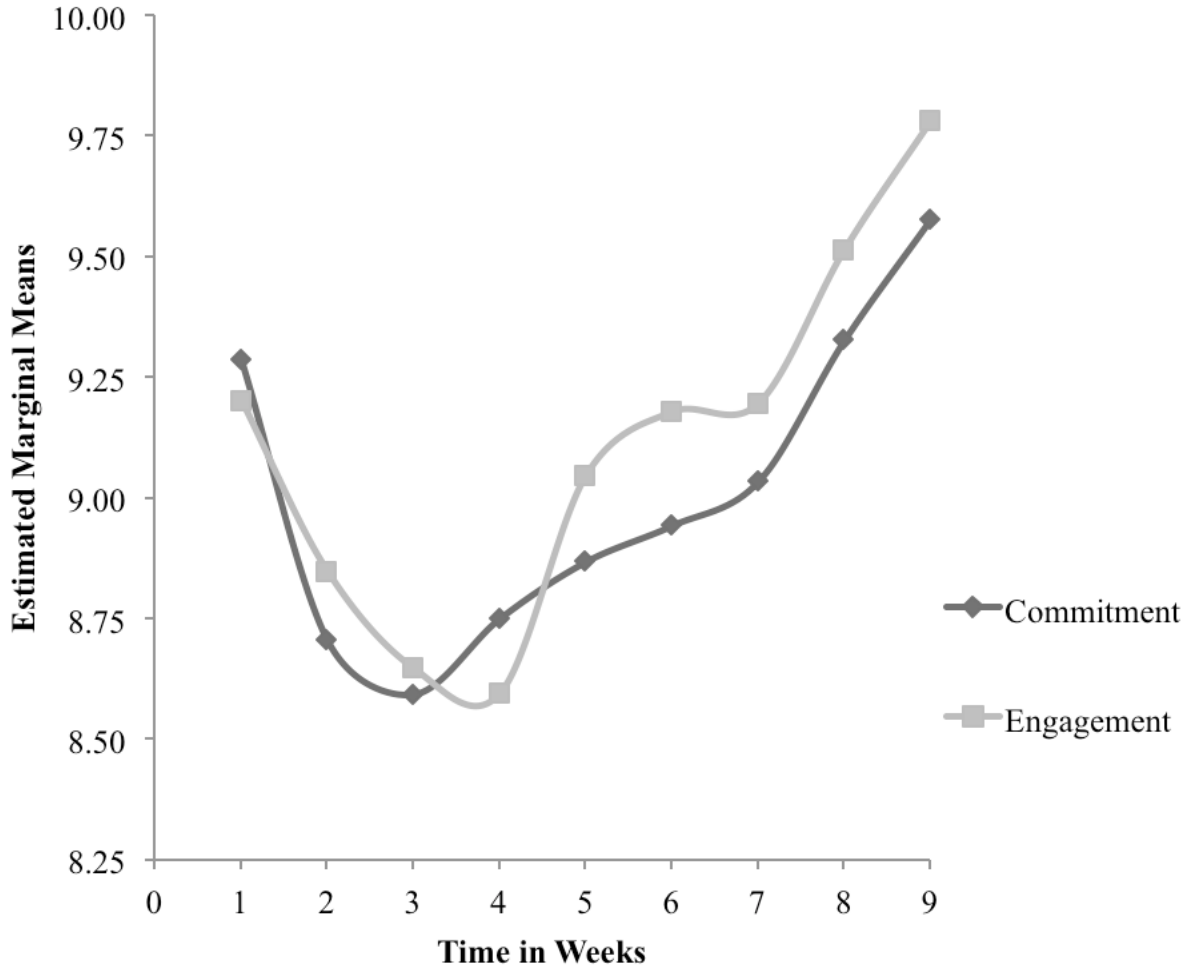

Figure 6. Significant quadratic trends for commitment and engagement over 9 weeks (N = 144)

Chapter Four

Motivation and Collaboration: The Keys to a Developmental Model of Teachers' Professional Learning

Although we know that motivation beliefs in relation to professional learning and practice likely change over time, we do not know much about the nature of these changes (Klassen, Durksen, & Tze, 2014). Recent research found a teacher's level of commitment to the profession is more at risk as experience increases; however, we still need to know more about the quality of conditions and relationships that add to (or take away from) teachers' sense of commitment (Day & Gu, 2009). Adopting a professional life phase perspective to the development of teachers' careers emphasizes change in behaviour and beliefs across the life course, with an emphasis on the dynamic processes of gains and losses, and on individual plasticity (i.e., modifiability) over time (Baltes, 1987). Huberman (1989), and more recently, Day and Gu (2010) build on a life-span approach with a focus on career development and especially on teachers' motivational and affective development over the career span. For example, Day and Gu's research has revealed that a majority of teachers in mid-career (8-23 years of teaching) experience increases in motivation and commitment, while teachers in a later professional life phase (24+ years of experience) often report declining levels of motivation indicated by feelings of disenchantment, fatigue, or being trapped. However, job resources such as collaboration with other teachers may act as a buffer against disengagement. After learning of the influential role a mentor teacher plays in the engagement or disengagement and commitment of a pre-service teacher (see Study 2), research that considers motivation in relation to teachers' professional learning (TPL) at different professional life phases is paramount.

The current study contributes to the growing body of empirical research on the relationship between motivation, conceptualized in terms of teachers' self- and collective efficacy beliefs, and TPL. From a life-span approach, changes in the frequency or variety of TPL may be attributed to career stage expectations. For example, a change in TPL preferences could be associated with disengagement in a later-career stage. Recently, Richter, Kunter, Klusmann, Lüdtke, and Baumert (2011) measured engagement in a cross-sectional study of TPL participation using Huberman's (1989) life-span perspective. Findings revealed an increase in the use of independent activities and a decrease in collaboration with teachers' age. While mid-career teachers reported a high participation rate in formal TPL, the reason for participating is unclear. Klassen and Chiu (2010) may speculate high teacher efficacy as one contributor to participation. Richter et al. provided insights into teachers' changing needs, but called for a more specific theoretical model that supports a developmental description of TPL.

In the current study, I use motivational theory to examine TPL, an approach that has been gaining much-needed attention. For example, Jansen in de Wal, Den Brok, Hooijer, Martens, and Den Beemt (2014) examined TPL participation by applying self-determination theory when identifying engagement profiles. Since their measurement focused on general TPL participation, Jansen in de Wal and colleagues encouraged future research on measuring motivation in relation to specific types of TPL. The current study addressed related gaps in the research literature by taking a developmental and motivational approach to examining various categories of TPL. In the context of the dissertation, the current study also contributed to a more specific theoretical model that supports a motivational and developmental approach to understanding TPL (see Chapter Five).

Motivational Framework

TPL has the potential to influence (and be influenced by) teachers' beliefs and practices, which in turn influence student engagement and learning. The current study highlights contributions from Bandura's (1997) social cognitive theory, namely three sets of reciprocal influences on a teachers' professional learning: personal, environmental, and behavioural. Teachers' self-efficacy refers to teachers' beliefs about their capabilities to influence students' classroom success through teaching and instructional behaviours (Bandura, 1997). Teachers' self-efficacy is a personal influence and a key factor in teacher motivation since teachers who confidently maintain classrooms are more likely to provide optimal conditions for students to overcome obstacles, experience enjoyment in their teaching and learning, and consequently promote positive development and student achievement (Frenzel, et al., 2009).

But teachers do not work in isolation – their work environment is rich and involves interactive social contexts with a varied range of individuals. While successful teachers are likely to possess a strong sense of their own self-efficacy, successful schools are characterized by teachers' collective efficacy – "a group's shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainments" (Bandura, 1997, p. 477). Although researchers have paid more attention to teachers' self-efficacy, interest in what the important relationship between teachers' collective efficacy and TPL can do for the teaching profession is growing (Klassen et. al., 2011).

Teachers' collective efficacy is related to student achievement and academic climate, even after controlling for prior student achievement and demographic characteristics, such as socioeconomic status (Klassen et al., 2008). Yet, few studies have examined how teachers' professional learning experiences are associated with teachers' collective efficacy beliefs.

According to Klassen et al.'s (2011) review, research on teacher collective efficacy has not kept pace with teacher self-efficacy research. In fact, almost nothing was found on *how* collective efficacy beliefs are formed in school settings. Klassen et al.'s review found only two studies examining teachers' collective efficacy using a qualitative approach (case study used by Puchner & Taylor, 2006; interviews analyzed by Rivard, Follo, & Walsh, 2004) and no studies exploring teachers' collective beliefs using a longitudinal design. Given the potentially collaborative nature of embedded TPL (e.g., within-school meetings on a topic), an inclusion of collective efficacy measures has the potential for providing a more complete understanding of the relationship between TPL and teachers' efficacy beliefs.

Klassen and Chiu (2010) conducted cross-sectional research examining teachers' self-efficacy across career stages with a large sample of practicing Canadian teachers. They applied Tschannen-Moran and Woolfolk Hoy's (2001) conceptualization and measure of teachers' self-efficacy that consisted of three dimensions: instructional strategies, classroom management, and student engagement. Results showed that teachers' years of experience were linked to all three forms of self-efficacy in a non-linear, inverted U, curvilinear fashion. In each case, teachers' self-efficacy increased from 0 years of experience to a peak at about 23 years of experience, and then receded in late career. The finding of teachers' self-efficacy peaking at about 23 years of experience and then declining in the later-career years maps onto conceptualizations of career stages. For teachers, self-efficacy may peak during the period Huberman (1989) names as *serenity*, before decreasing as the teacher enters into the disengagement phase. A follow-up study (Klassen & Chiu, 2011) with another group of practicing teachers confirmed the result that teachers' self-efficacy increased until late-mid career and then declined in later career stages. Overall, Klassen and Chiu suggested that the decrease was not due only to biological and

psychological changes related to chronological age, but by external influences related to student and peer perceptions of declining competence influenced by stereotyped beliefs about aging. Therefore it is important for researchers to consider the psycho-social context (e.g., job demands, autonomy, relatedness) of the work environment when measuring changes in teachers' motivation.

Researchers have also identified self- and collective efficacy beliefs as being nourished by the same four sources—past experience, vicarious experience, verbal persuasion, and self- or group-level affective state (e.g., Bandura, 1997; Goddard & Goddard, 2001; Tschannen-Moran & McMaster, 2009). For example, Gabriele and Joram (2007) found teachers who rely on judging success using criteria connected to positive feeling states would, over time, develop high self-efficacy for teaching. Recent findings from Brown and Gibbs' (2014) study of teachers' levels of responsibility and shared leadership roles revealed four sources of enhanced collective efficacy: communication as verbal persuasion, learning through mastery experiences, vicarious supporting role models, and affective stress management. For example, feedback as verbal persuasion from fellow teachers can help highlight the relationship between TPL and school climate (OECD, 2013). When appraising self-efficacy, teachers also consider the group processes and how the affective state of staff, school, and district are influencing their TPL and development (Bandura, 1997). Examining different types of TPL that foster experiences from different sources of efficacy can enhance our understanding of *how* and *why* teacher efficacy is affected.

The 2013 Teaching and Learning International Survey results revealed teachers spent half their working time on non-teaching activities, with twice as much time spent on individual activities like lesson planning than collaborating with colleagues (OECD, 2015). According to

Hargreaves (2009), “teachers can only really learn once they get outside their own classrooms and connect with other teachers” (p. 98). Connecting with other teachers can nourish resources such as vicarious experience (e.g., observing another teacher) and affective states (e.g., enthusiasm). Teachers’ self- and collective efficacy beliefs can also alter the way a teacher regulates and interprets experiences of emotion, suggesting that affect—a reciprocal source of efficacy—influences teachers’ work engagement (Salanova, Llorens, & Schaufeli, 2011). When experiencing job demands, teachers’ personal resources (e.g., self-efficacy) can influence engagement in TPL (Lohman, 2006). While engagement in TPL is often used in the literature as synonymous with participation, the current study considers teacher engagement as an indicator of motivation represented through four dimensions: cognitive engagement, emotional engagement, social engagement with students, and social engagement with colleagues (Klassen, Yerdelen, & Durksen, 2013).

Teachers’ Professional Learning

The current study took place in the Canadian province of Alberta, where the term *professional learning* has been used to encapsulate the wide variety of formal and informal opportunities for enhancing teaching practice while reciprocal forces engage teachers to remain centered on student learning. Yet Alberta teachers are more familiar with the Alberta Teachers’ Association’s (ATA) use of the term *professional development* that is similarly defined as the wide range of programs, activities, and services that teachers identify and undertake individually or collectively to further understand the nature of teaching and learning, to enhance professional practice, and to contribute to the profession. Professional development in Alberta includes in servicing, a process of upgrading specific skills and knowledge to remain current in curricula, teaching tools, strategies, and other supports as well as staff development initiatives that are

collective efforts to implement a specific initiative – often in response to goals set by the school or government.

In the current study, I examined teachers' efficacy beliefs and engagement in relation to influential professional learning practices according to five categories described by Joyce and Calhoun (2010): models that support individuals, collaborative personal/professional models such as mentorship, collaborative and cooperative models, models for curricular and instructional change, and traditional workshop models involved in large-scale single event multiple-topic conferences.

The Current Study

Five hypotheses were tested during the current study in order to answer the research question: How do practicing teachers' efficacy beliefs and engagement influence teachers' professional learning beliefs?

1. The importance that teachers place on different reasons for TPL will vary according to professional life phase.
2. Higher efficacy beliefs will be predicted by teaching level and professional life phase. Based on previous findings, it is expected that elementary teachers and more experienced teachers will report higher efficacy beliefs.
3. Teachers' self- and collective efficacy beliefs will positively influence collaborative TPL activities as key influences on efficacy beliefs as well as the importance placed on reasons for TPL.
4. Higher teacher engagement will be predicted by higher efficacy beliefs since related relationships were found with pre-service teachers (see Study 1) and practicing teachers (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007).

5. Based on Watt, Richardson, and Wilkins's (2014) research with practicing teachers and the predictive relationship revealed by pre-service teachers (see Study 1), engagement was expected to have a positive relationship with TPL variables.

Methods

Participants and Procedures

A sub-sample of teachers who participated in a two-year research project on teachers' professional learning and efficacy beliefs was selected for analysis in the current study. Given the complexity of the larger mixed methods research project, the sampling scheme (i.e., how participants were recruited, sample size, sampling strategy) was guided by explicit criteria (Collins, 2010). Participant criteria helped create boundaries for the larger project and included:

- Employed teachers at a school within one of the five participating school districts.
- Teachers with Internet service for accessing questionnaires online via Survey Monkey.
- An assumption that participants were honest when confidentially responding to questionnaire items and while providing responses within focus groups.

Recruitment for questionnaire participants involved forwarding a request to the administration at the participating school district in the middle and end of the school year (January and June) for two consecutive years. Administrators from each of the participating school districts acted as intermediaries by distributing the survey link to teachers.

Approximately 1170 teachers[8] were invited to participate in the larger project, 65% of teachers ($N = 758$) whom completed at least one out of four possible questionnaires (only 13 teachers completed all four). The data source for the current study consisted of questionnaires completed by 296 teachers during the second year of the two-year mixed methods project. Mean

[8] Based on 2011-2012 school employment records (ATA, personal communication, 2014).

scores were calculated for responses provided by 68 of the 296 teachers because they completed both questionnaires during Year Two (January and June) and no significant differences existed between their responses.

Table 6 displays the demographic details specific to teachers who participated in Year Two. Overall, the demographics of Year Two participants were representative of Year One participants. Comparisons of Year Two participants to the general teaching population in Alberta (as reported by OECD, 2014), revealed study participants with slightly more experience (mean of 15.2 years compared to 13 years) and a higher proportion of females (72.6% compared to 60%).

Although the current study reports specifically on data collected in the second year of the two-year project, it is important to understand the overall research procedures. After developing and piloting the first questionnaire, a refined version was administered to teachers within the participating school districts in the middle of the school year (January). Next, focus groups were carried out in ten schools within the same five districts. Year One data collection ended in June with the second online questionnaire, which was a shorter version of the first questionnaire. Following preliminary mixed analyses of data from Year One questionnaires and focus groups, Year Two data were collected at two time points (January and June) with the same questionnaire procedures used in Year One.

Measures

The current study involved the analysis of teachers' responses to at least one of the two questionnaires that were administered in the second year of the larger project (see Appendix B for questionnaire items). Items were based on a set of five types of TPL that were defined by teachers in Year One through focus groups and two questionnaires. The five types of TPL were

collaboration with other teachers, implementing special projects, curricular initiatives specific to AISI, attending workshops or conferences, and other personal experiences.

Efficacy beliefs. A reliable (α = .88) short form (6-item; *M* = 53.53, *SD* = 8.14) of the Teacher Self-Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) measured teachers' self-efficacy in three domains: student engagement, classroom management, and instructional strategies. Participants were asked to respond on an 11-point scale (1 = *not at all confident*, 6 = *moderately confident*, and 11 = *extremely confident*) to questions such as "How confident are you that you can motivate students who show low interest in school?" Reliabilities for the original full scale have ranged from .92 to .95 (Tschannen-Moran & Woolfolk Hoy, 2007). Collective efficacy was measured using the five-item (*M* = 39.89, *SD* = 10.89) collective efficacy scale (based on Goddard & Goddard, 2001), which was also reliable (α = .95). Specifically, participants were asked to respond (using an 11-point scale) to five questions of whole-school confidence (e.g., "How confident are you that teachers in your school can work together to overcome various difficulties that may arise").

The same 11 items (6 for teachers' self-efficacy and 5 for collective efficacy) were repeated a second time within the questionnaire, but with alternate instructions. For the second presentation of the 11 efficacy items, participants were asked to indicate the professional learning activity (selected from five options or none) that influenced their confidence the most. For example, teachers' self-efficacy in relation to professional learning was measured with items such as "In the past six months, my confidence to motivate students who show low interest in school has been influenced most by [choose one]," while collective efficacy was measured with items such as "In the last six months, my confidence in my school's capabilities to work together to implement new curricula/interventions was most influenced by [choose one]." In addition,

four items based on Tschannen-Moran and Woolfolk Hoy (2007) assessed sources of self-efficacy in relation to TPL. While reflecting on the last six months of teaching, participants were asked to choose the one TPL activity out of five that best completed each statement. For example, to assess mastery experience in relation to TPL, "Rate your satisfaction [on a 9-point scale] with your professional performance this year" was adapted to "My satisfaction with my teaching performance was most influenced by [choose one]." Likewise, the item related to verbal persuasion was adapted from "Rate [on a 9-point scale] your interpersonal support provided by your colleagues at your school" to "The interpersonal support I have received was influenced most by [choose one]."

Reasons for Professional Learning. During Year One, teachers in focus groups provided and rank-ordered seven reasons considered important for professional learning. In Year Two, participants were provided with an opportunity to rate the level of importance for each of the top seven reasons. The Reasons for Professional Learning scale asked participants to assign a value (1 = *not at all important*, 4 = *somewhat important*, 7 = *very important*) to seven possible reasons for professional learning. Participants provided extremely high ratings for "learning more about how to teach more effectively," and since pre-service teachers similarly rated this reason for TPL high (see Study 1), the item was removed from further analyses. While "how to teach more effectively" is a valid overall reason for professional learning that was provided by practicing teachers through focus groups, the other six reasons were more specific. For example, to learn how to teach more effectively, a teacher may seek out professional learning that will help advance their "subject area knowledge" (one of the remaining reasons).

Engagement. The 16-item four-factor Engaged Teacher Scale (ETS; Klassen et al., 2013) measured the degree of attention and absorption a teacher feels during teaching-related activities.

Participants were asked to rate items, using a 7-point scale (1 = *never*, 4 = *sometimes*, 7 = *always*) on cognitive engagement (e.g., "While teaching, I work with intensity"), emotional engagement (e.g., "I feel happy while teaching"), social engagement with students (e.g., "In class, I show warmth to my students"), and social engagement with colleagues (e.g., "At school, I am committed to helping my colleagues"). The ETS is related to measures of teachers' self-efficacy as well as other measures of engagement (i.e., UWES; Schaufeli, Bakker, & Salanova, 2006). One composite score for teacher engagement (M = 83.15, SD = 9.60) was used during analyses in the current study. The scale was reliable, as indicated by Cronbach's alpha (.92), and was similar to the reliability coefficient revealed through the previous scale validation process (α = .91; Klassen et al., 2013).

Analytic Strategy

The focus of the analysis was on relationships among motivational variables and the extent to which they influenced practicing teachers' professional learning. Statistical analyses were performed using SPSS 22 and Mplus 7.3. Descriptive statistics, an ANOVA, and correlational analyses were used for descriptive purposes and for insight into existing relationships among variables. Structural equation modelling (SEM) was chosen as the main analytical technique because it allows for the simultaneous examination of relationships that are based on a priori specifications (Kline, 2011; Tabachnick & Fidell, 2007).

Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Standardised Root Mean Square Residual (SRMR) were selected as the three indices that would assess the goodness of fit of hypothesized models. RMSEA measures goodness-of-fit by assessing fit of the model compared to a perfect model, where a lower score represents better fit (Tabachnick & Fidell, 2007). CFI measures relative improvements to the fit of the final model

compared to an independence model (i.e., a model involving completely unrelated variables; Kline, 2011; Tabachnick & Fidell, 2007). A higher CFI corresponds with better fit. Finally, SRMR examines differences between the observed and predicted correlations in the data and model, respectively. For SRMR, a lower statistic represents a better fit. When combined, these three indices provide a more comprehensive argument for the fit of a model than one index because each calculates fit using a different method. In Mplus 7.3, the default missing data command (Maximum Likelihood Estimator) ensured that data were not dropped but instead assumed missing data were random and estimated the likelihood for each missing case.

Cut-offs established in Hu and Bentler's (1999) work were used to determine an acceptable degree of fit for the chosen indices. RMSEA values of less than .06 were assessed as evidence of a good fit and RMSEA 90 percent confidence intervals (CI) of below .08 were considered acceptable. A CFI value that met the cut-off of .95 was deemed a good fit (>.90 as an adequate fit). Lastly, SRMR values of less than .08 were assessed as evidence of good fit. A final chi-square difference test between the explanatory and baseline model with a significant p-value (< .05) can provide confirmation of the explanatory model as the best fit.

Results

Summary of Larger Project

Overall, participating teachers ($N = 758$) completed at least one of four questionnaires that were administered over two years. Consistent with previous research (e.g., Klassen & Chui, 2010), teachers rated self- and collective efficacy moderately high, with those in mid-career reporting the highest teacher self-efficacy. Analyses of data collected from teachers at two or more time-points revealed efficacy levels at an earlier time were significant predictors of efficacy reported later. In Year One, teacher-initiated activities were reported as having the most

influence on teachers' self-efficacy, while professional learning communities, professional service, and workshops on curricular initiatives had the most influence on collective efficacy. Verbal persuasion was the highest source of efficacy reported through collaborative activities such as mentorship and professional learning communities. Mastery experiences and affective states were the highest sources of efficacy when professional learning was considered teacher-directed. Vicarious and affective sources were reported equally through collaborative professional learning activities. Results from the two-year project suggest teachers and schools consider balancing three professional goal areas to help develop teachers' self- and collective efficacy: *process*, *content*, and *connection*. Process can be addressed through mastery and vicarious sources of efficacy (e.g., co-developing teaching resources), teachers can focus on content through mastery, vicarious, and affective sources (e.g., deepen knowledge through workshop experiences), and verbal persuasion, vicarious, and affective sources can contribute to teachers feeling connected and valued. For more results from the larger project, see Beauchamp et al. (2014).

Descriptive Statistics

Descriptive statistics on 296 practicing teachers' demographic characteristics were presented earlier (see Methods section), however additional analyses contributed to the description of participants in the current study. Descriptive analyses revealed participants with an average of 8.98 (out of 11) for teachers' self-efficacy (*SD* = 1.30) and 8.06 (out of 11) for collective efficacy (*SD* = 2.06). The average for collective efficacy was slightly lower than teachers' self-efficacy with scores ranging from 1 to 11 (whereas the lowest score for teachers' self-efficacy was 4 out of 11). Teachers rated engagement with an average of 5.19 (*SD* = .61) out of 7. Overall, early career teachers produced the lowest mean scores for teachers' engagement

and self- and collective efficacy. As expected, “collaboration with other teachers” was reported as the most influential type of professional learning on teachers’ self-efficacy, collective efficacy, and sources of efficacy.

Means for each of the six reasons for TPL were examined, revealing “time and space to think” as the most important and “to be influenced by a mentor” as the least important. For developmental inferences and to test the first hypothesis, I compared ratings for all six reasons across practicing teachers’ professional life phases. An ANOVA revealed a significant quadratic (non-linear) result for “time and space to think” ($F_{(1,287)} = 5.60$, $p < .05$), indicating that mid-career teachers consider time and space to be a significantly more important reason for TPL than early and late-career teachers. Early career teachers provided higher ratings for the remaining five reasons, but no significant differences were found between professional life phases.

Correlations Among Variables

Table 7 displays the correlations among variables that were considered for modelling. Teachers’ self-efficacy was significantly and positively correlated with professional life phase ($r = .23$) and negatively correlated with teaching level ($r = -.14$). Teachers’ self-efficacy, collective efficacy, and teaching engagement were also significantly correlated (rs = .43 to .56). The significant correlation between teaching engagement and teaching level provides some support for the finding in Study 2 of lower engagement among pre-service teachers in secondary school placements. The most influential type of professional learning on efficacy beliefs was selected for further analysis: “collaboration with other teachers.” Given the collective nature of collaborative TPL, it was not surprising to find significant correlations between collective efficacy and the ratings of three measures of collaborative TPL: collaboration as most influential on teachers’ self-efficacy ($r = .13$), collaboration as most influential on collective efficacy ($r =$

.28), and collaboration as most influential in fostering sources of efficacy (r = .22). The three efficacy-related measures of collaborative TPL were also significantly correlated (rs = .35 to .52).

Engagement was positively and significantly correlated to all six reasons for professional learning (rs = .12 to .33), while teachers' self-efficacy was only significantly correlated to more personal reasons for TPL: learning more about children (r = .21), being influenced by a mentor (r = .19), having time and space to think (r = .15), and learning more about personal strengths as a teacher (r = .17). As expected, collective efficacy was significantly correlated with four reasons for TPL and not with the two most personal or self-focused reasons: time and space to think and learning more about personal strengths as a teacher.

Modelling Teachers' Motivation and Professional Learning

A hypothesized model, also known as an explanatory model, was specified using Mplus 7.3 (Muthén & Muthén, 1998-2012) with coefficients estimated to test the hypotheses. Based on theory and previous research, the predicted relationships between variables were tested through structural equation modelling (SEM). SEM allows for the specification of factors and factor loadings as well as regression and covariance. Significant parameter estimates were indicative of a reliable relationship between constructs.

Table 8 displays the fit statistics for three models and presents Model 3 as the best fitting model for the data. Chi-square is affected by sample size, often resulting in a significant chi-square (indicative of a poor fit) when a sample size is over 200. Therefore, model assessment was based on three fit indices as well the relative chi-square and chi-square difference test. RMSEA, CFI, and SRMR were chosen as fit indices because they offer three different methods

for calculating fit and, when combined, they provide a more comprehensive argument for the fit of a model than one index may provide.

Model 1 tested whether teachers' self- and collective efficacy, teaching level, professional life phase, and teaching engagement predicted collaborative TPL (latent variable) and six reasons for TPL. Model 2 tested whether teachers' self- and collective efficacy, teaching level and professional life phase predicted engagement, and subsequently collaborative TPL (latent variable) and six reasons for TPL. Model 3 tested teaching level and professional life phase as predictors of efficacy, efficacy as a predictor of engagement, and engagement as a predictor of collaborative TPL and six reasons for TPL.

Model 3 was assessed as the best-fitting model for the data. The RMSEA value of .05 met the criteria for a good fit with acceptable 90 percent confidence intervals (.04-.07). The CFI value (.94) satisfied the cut-off for an adequate fit (a good fit would be >.95) and the SRMR value of .06 was assessed as a good fit. Relative chi-square (χ^2 value/df = 1.73) also indicated an acceptable fit because it was less than 2 (Ullman, 2001). A final chi-square difference test between the explanatory and baseline model was performed in order to provide confirmation that Model 3 was the best fit ($\chi^2 = 677.88$, $df = 36$, $p < .05$).

Figure 7 displays the best fit for the data with significant paths marked with standardized coefficients. The latent variable "Collaborative TPL" was created by the significant influence of collaborative professional learning on collective efficacy (β = .52), teachers' self-efficacy (β = .68), and sources of efficacy (β = .75) and there was significant covariation among collaboration and two reasons for professional learning: building community (β = .41) and being influenced by a mentor (β = .20). Teaching level and professional life phase were significant independent

variables that confirmed Hypothesis 2 with elementary teachers and more experienced teachers revealed as more efficacious. The best fitting model also confirmed Hypotheses 3, 4, and 5 by depicting efficacy beliefs as a predictor of teaching engagement, which in turn was a positive predictor of Collaborative TPL and all six reasons for TPL.

Discussion

In the current study, I specified a model of TPL and motivation that was framed by Bandura's (1997) social cognitive theory of reciprocal influences since TPL has the potential to influence (and be influenced by) teachers' beliefs and practices. A model that considered reciprocal influences was important because (a) the larger project (see Beauchamp, et al., 2014) revealed collaboration as the most influential type of professional learning on practicing teachers' efficacy beliefs and, (b) previous research, as well as Study 1 of my dissertation, has shown efficacy predicting engagement which, in turn, influences TPL.

Motivation and Collaboration

According to Hargreaves and Fullan (2012), "good teaching is a collective accomplishment and responsibility" (p. 14) and "a more collaborative and collegial profession improves student learning and achievement" (*preface*). The current study confirmed collaboration as an important theme that was also revealed through the larger project (Beauchamp et al., 2014). Results from the current study also indicate that teachers' efficacy beliefs predict teacher engagement. The predictive relationship was not surprising since teachers with higher efficacy are more likely to be emotionally engaged in their teaching (Frenzel et al., 2009) and efficacy beliefs and teaching engagement have been considered in relation to practicing teachers' professional learning (Watt et al., 2014).

Findings from the current study revealed higher efficacy beliefs for teachers in upper professional life phases and elementary teachers. Efficacy beliefs predicted teacher engagement, which in turn positively predicted beliefs about teachers' professional learning. Teaching engagement was a positive predictor on the importance teachers placed on a range of reasons for TPL. Two collegial reasons ("building a community" and "being influenced by a mentor") were related to collaborative TPL and highlighted the influence of efficacy beliefs. The current study also attempted to test efficacy beliefs as reciprocal influences on TPL by specifying a model with efficacy beliefs influencing TPL while also including a category of TPL that was identified by teachers as most influential on efficacy beliefs (i.e., Collaborative TPL).

The larger project revealed the highest efficacy reported by mid-career teachers, a finding that corroborates with previous research (e.g., Klassen & Chiu, 2010, 2011). The current study found evidence of "time and space to think" as a significantly more important reason for mid-career teachers. TPL providers would benefit by focusing on the professional capital of mid-career teachers – the professional life phase of teachers often neglected by interventions. By investing more into the TPL needs of the highly efficacious "dream teachers" of the middle, the professional life phases at the extremes (i.e., early and late-career) will also benefit from sustainable momentum in the mid-career years (Hargreaves & Fullan, 2012). Embedded (within-school) collaborative TPL that is primarily organized around the needs and interests of mid-career teachers may positively influence the professional growth of colleagues with varied experience.

The current study found a positive relationship between professional life phase and collaborative TPL and Richter et al. (2011) reported a decline in collaborative TPL for late-

career teachers. However, often what is measured is participation and not necessarily what teachers consider most influential – resulting in a gap between what teachers value and what is actually available. For example, previous research (e.g., Goddard, Goddard, & Tschannen-Moran, 2007; OECD, 2013) found embedded collaborative TPL positively influenced collective efficacy along with teachers' knowledge and practices, yet most TPL opportunities are non-embedded and outside of a teacher's school culture (OECD, 2015). Future research that takes into account motivational beliefs, available resources, and participation rates can help clarify why the influence of collaborative TPL on efficacy beliefs is reportedly not as important in later professional life phases.

Limitations and Future Research

The cross sectional design of Study 3 restricts the interpretation of the findings. The data provide insights into professional life phases but not into intra-individual developmental trajectories. Future research using repeated measures is needed since it is not possible to determine whether the patterns observed are due to cohort effects. The larger project found evidence of higher efficacy during the mid-career phase and the current study confirmed that professional life phase is a significant and positive predictor of efficacy beliefs. However, additional analyses (e.g., multilevel) with equal samples across phases can allow for a more nuanced description and comparison of the professional life phases.

Future investigations that include school principals and students will help identify the impact that context has on engagement and TPL beliefs and practices. Analyses of collective efficacy, collaboration, and the number of years a teacher had been teaching at a specific school were not possible since the number of teachers who could be identified by school varied and samples were generally small. Future research on teachers' motivation and TPL with teachers

nested within schools would provide more detail on the reciprocal influences of collective efficacy and collaboration. Since collaborations are still more likely to be district-wide than embedded within schools, analyses of teachers nested within school districts may yield further insights into the influence of collaborative TPL on teachers' self- and collective efficacy.

Although directional relationships are presented through the findings, a longitudinal design would allow for more conclusive claims. The original intention for the larger project and current study was to analyze data collected over the two-year period for evidence of change, but only 13 teachers (out of 758) completed all four questionnaires. Future survey research involving Alberta teachers would benefit from designing shorter questionnaires as some participants expressed fatigue from responding to "all the different surveys they are asked to complete by Alberta researchers" – a likely consequence of Alberta's successful TPL initiatives. Limitations were also inherent in the formatting of the online questionnaires (e.g., multiple drop-down menus), and may have influenced the quantity and quality of the data.

Limitations also exist within the measures used in Study 3. In Year One of the larger project, teachers recommended re-defining Joyce and Calhoun's (2010) five categories of TPL – categories that were applied in Year Two questionnaires. For example, "Teacher-initiated TPL" became an "other" category in Year Two. Although we presented examples that defined "other" TPL in a similar way as teacher-initiated TPL, participants may have selected "other" if the remaining categories seemed too constraining. Moreover, some participants expressed difficulty with having to choose "just one TPL" activity that most influenced particular efficacy belief items since the five categories were not considered mutually exclusive. Despite being a measurement limitation, feedback from participants provides further support for TPL that blends categories (e.g., collaboration and curricular initiatives) – particularly if we expect to help meet

teachers' basic psychological needs and the needs of their students at a particular school level, within a school culture representative of a range of professional life phases.

Another limitation was the omission of practicing teachers' reported frequency of TPL participation. When asked to indicate the amount of time spent on TPL, the numbers varied greatly with some teachers considering every intentional and non-intentional activity (e.g., watching a science program on TV) as TPL. Though there is no direct relationship between the amount of TPL and efficacy beliefs, future investigations would benefit from including a measure of intentional professional learning (e.g., TPD@Work scale; Evers et al., 2011) to explore this idea further, specifically when a particular type like collaboration is considered more influential than others. To advance our understanding beyond engagement-as-participation, future studies could investigate the extent to which collaborative TPL (as an influence on teachers' efficacy beliefs) is related to social engagement by using the Engaged Teacher Scale (ETS; Klassen et al., 2013). The ETS could also be adapted in a way similar to how efficacy was measured in the current study – with items rated according to the most influential TPL activity.

While Study 3 revealed teachers who rated collaborative activities as important and highly influential, it is unclear if the teachers were *actually* experiencing a high amount of collaboration or if they *wished* they had more collaborative opportunities. Other scales administered in the larger project consisted of items that asked teachers to indicate the particular topic (e.g., Information and Communication Technologies) they were focused on developing personally, within school, and/or across schools. Unfortunately, we did not capture *how* these topics were being experienced. We also received feedback on the "in the past 6-months" framing of questionnaire items indicating that an outcome or improvement from a TPL experience "may

take years."

The research findings' validity increased for school districts throughout Alberta, but findings from Alberta's practicing teachers are difficult to generalize to populations outside of the province for a number of reasons. First, Study 3 participants were not selected randomly. Those who participated were recruited from five school districts and schools from within those districts. As well, the number of focus group participants (from the larger project) that contributed ideas for the questionnaire items used in Study 3 was too small to represent the population. Moreover, some teachers who responded to questionnaires in Study 3 may have also engaged in focus groups in the first year of the two-year project. Communication between members of focus groups likely impacted the questionnaire responses, however that limitation was recognized at the outset given the choice of a mixed methods research design. The mixed approach also required an adaptation of questionnaire items in Year Two in order to adequately address the teachers' educational context in Alberta and, as a result, may have altered the reliability and validity of some scales used in Year One. Therefore, the results from the current study (based on Year Two data) cannot be generalized to Year One participants.

Study 3 also lacks generalizability because TPL participation in Alberta is above average when compared to other jurisdictions; with survey results from OECD (2015) revealing that a very high percentage of teachers undertook TPL activities (in the 12 months prior to their survey). The larger project was also tailored to Alberta's teachers within two academic years (2011/2012 and 2012/2013). Alberta's context included provincial budget cuts that influenced school district budgets and led to the dissolution of AISI in 2013. Many teachers in Study 3 had experienced AISI and had likely been impacted by problems

resulting from AISI's dissolution. Thus, it is difficult to draw generalized conclusions – even throughout Canada.

Conclusion

The current study supports Karabenick and Conley's (2011) findings that although teachers are open to a range of TPL models, they prefer participating in TPL with colleagues. To enhance the relationship between teachers' self- and collective efficacy and TPL, Bandura (1997) urges a unification of interests (individual and school-wide) to explicitly stated attainable developmental goals and shared purposes. Through the larger project and current study, practicing teachers reported that collaborative TPL had the most impact on their efficacy beliefs, but did not appreciate "forced collaboration" (Beauchamp, et al., 2014). Positive collegial and collaborative relationships support teachers' sense of self-efficacy and collective efficacy, but fostering relationships are difficult due to the challenges of time, isolation, workload, and differing learning needs or subject areas. Survey results from OECD (2014) indicate that schools need to dedicate more time to TPL, and results from the current study revealed having time and space to think as the most important reason for TPL. Therefore, embedding more time within a collaborative school climate is key for the development of strong efficacy beliefs – especially since opportunities for connection can buffer against job demands and produce engaged teachers who feel more effective in addressing curricular challenges or changes (Beauchamp et al., 2014).

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Table 6

Participant Demographics

Schools: 60 (out of 72)	Range of 1 to 18 participants per school • 1 participant per school = 17 schools • 2 per school = 11 schools • 3 to 5 teachers per school = 17 schools • 6 to 9 teachers per school = 9 schools • 10+ teachers per school = 6 schools • 43 teachers (unspecified)
Teaching Level	Elementary: 45.3% Secondary: 43.6% Unspecified or both levels: 11.2%
Years of Teaching	0 to 42 years (M = 15.20, SD = 9.68)
• Early career (0-7 years) • Mid-career (8-23 years) • Late career (24+ years)	n = 87 n = 136 n = 68
Years Teacher at Current School	0 to 33 years (M = 8.03, SD = 7.16)
Age of Teachers	< 25 years: 2.4% 25-35 years: 25.3% 36-45 years: 30.1% 46-55 years: 33.8% 56+ years: 8.1% Unspecified: 0.3%
Gender	Female: 72.6% Male: 26.4% Unspecified: 1.0%

Note. N = 296

Table 7

Correlations between Variables for Structural Equation Modelling

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Professional Life Phase	1													
2. Teaching Level	-.07	1												
3. Collective Efficacy	.09	-.19**	1											
4. Teachers' Self-Efficacy	.23**	-.14*	.44**	1										
5. Teacher Engagement	.07	-.21**	.43**	.56**	1									
6. TSE: Collaboration	-.01	-.02	.13*	-.04	-.05	1								
7. CE: Collaboration	-.11	-.06	.28**	-.002	.11	.35**	1							
8. Sources: Collaboration	-.08	-.04	.22**	.07	.15**	.52**	.36**	1						
9. Community	-.04	-.04	.24**	.11	.25**	.21**	.24**	.31**	1					
10. Children	-.06	-.30**	.26**	.21**	.33**	.03	.03	.10	.16**	1				
11. Subject-area	-.09	-.16*	.14*	.07	.12*	.06	.13*	.02	.06	.30**	1			
12. Mentor	-.02	-.12	.21**	.19**	.32**	.17**	.11	.15*	.30**	.39**	.25**	1		
13. Time and space	.03	-.06	.01	.15*	.16**	-.05	-.09	-.06	.07	.21**	.20**	.21**	1	
14. Self as teacher	-.04	-.12	.11	.17**	.22**	-.003	.01	.01	.07	.40**	.29**	.47**	.53**	1

*p <. 05 **p < .01

Note. TSE = Teachers' Self-Efficacy, CE = Collective Efficacy, Sources = Sources of Efficacy. Items 9 to 14 are reasons for teachers' professional learning. See Appendix B for questionnaire items.

Table 8

Fit Statistics for Teachers' Model of Motivation and Professional Learning

Model	$\chi 2$	*df*	CFI	RMSEA	CI	SRMR
1. Efficacy latent variable (TSE, CE), Teaching Level, Professional Life Phase, and Engagement predicting Collaborative TPL (latent variable) and Six Reasons for TPL	150.76	34	.83	.12	[.10-.13]	.08
2. Efficacy latent variable (TSE, CE) Teaching level, and Professional life phase predicting Engagement; Engagement predicting TPL latent variable (Collaborative TPL) and Six Reasons for TPL	109.14	54	.92	.06	[.05-.08]	.07
3. Teaching Level, Professional Life Phase predicting Efficacy latent variable (TSE, CE); Efficacy predicting Engagement; Engagement predicting Collaborative TPL (latent variable) and Six Reasons for TPL	**93.91**	**54**	**.94**	**.05**	**[.04-.07]**	**.06**

Note. TSE = Teachers' Self-Efficacy, CE = Collective Efficacy, TPL = Teachers' Professional Learning

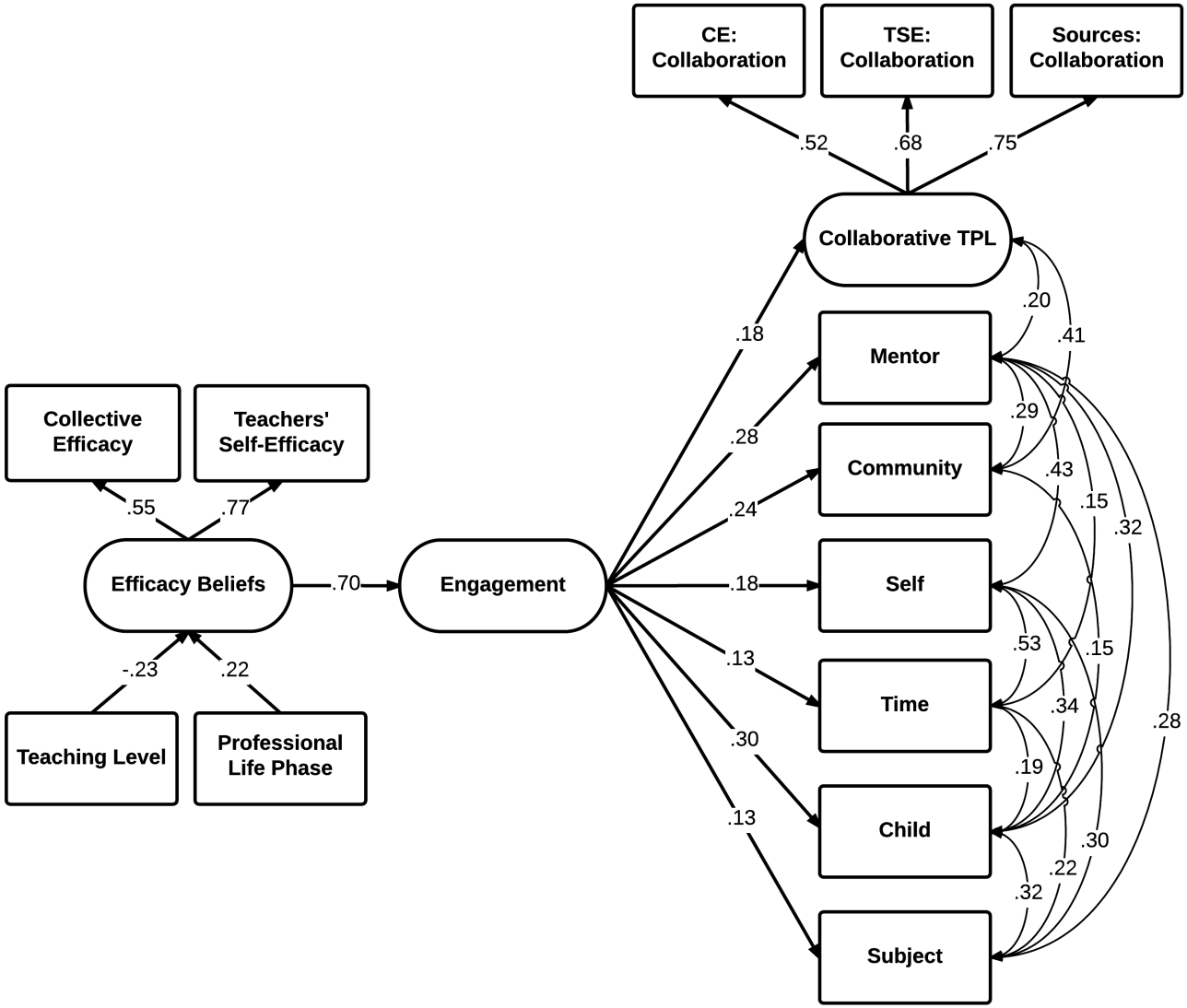

Figure 7. Model of practicing teachers' motivation and professional learning. All parameter estimates displayed are significant ($p < .05$).

Appendix B

Questionnaire Items

Teachers' Self-Efficacy (1 = *not at all confident*, 6 = *moderately confident*, 11 = *extremely confident*)

How confident are you that you can…
1. get students to believe they can do well in school work?
2. motivate students who show low interest in school?
3. get students to follow classroom rules?
4. implement a variety of assessment strategies for and of student learning?
5. offer appropriate instruction for students of varying abilities?
6. link instruction to curriculum learning objectives?

Teachers' Self-Efficacy and Professional Learning

Last year we conducted focus groups with over 200 teachers in five districts.
Teachers reported their teaching practice as being influenced through 5 types of professional learning activities.

- *Collaboration with other teachers (e.g., Professional Learning Communities, mentorship or coaching program, informal collaboration with other teachers)*
- *Implementing special projects (e.g., informal grade level, subject area, or school-wide focus like "SMART learning")*
- *AISI (e.g., focused and formalized school/district professional learning on a specific topic or theme)*
- *Attending workshops or conferences (e.g., full- or multi-day convention involving multiple workshops on varied topics)*
- *Other (e.g., professional reading on own, personal reflection, courses)*

For each statement below, please select which of the 5 activities (or choose none of the above) influenced your confidence the MOST:

In the past 6 months…
1. my confidence to get students to believe they can do well in school work has been influenced most by [select]
2. my confidence to motivate students who show low interest in school [select]
3. my confidence to get students to follow classroom rules [select]
4. my confidence to implement a variety of assessment strategies for and of student learning [select]
5. my confidence to offer appropriate instruction for students of varying abilities [select]
6. my confidence to link instruction to curriculum learning objectives [select]

Collective Efficacy (1 = *not at all confident*, 6 = *moderately confident*, 11 = *extremely confident*)

How confident are you that teachers in your school can…
1. work collectively to develop or implement new curricula/interventions that increase student engagement?
2. work together to effectively work with parents?
3. collaborate with other public and social agencies that are in the community?
4. work together to maximize your effectiveness, even when facing unexpected challenges and problems?
5. work together to overcome various difficulties that may arise?

Appendix B (Continued)

Collective Efficacy and Professional Learning

Last year we conducted focus groups with over 200 teachers in five districts.
Teachers reported their teaching practice as being influenced through 5 types of professional learning activities.

- *Collaboration with other teachers (e.g., Professional Learning Communities, mentorship or coaching program, informal collaboration with other teachers)*
- *Implementing special projects (e.g., informal grade level, subject area, or school-wide focus like "SMART learning")*
- *AISI (e.g., focused and formalized school/district professional learning on a specific topic or theme)*
- *Attending workshops or conferences (e.g., full- or multi-day convention involving multiple workshops on varied topics)*
- *Other (e.g., professional reading on own, personal reflection, courses)*

For each statement below, please select which of the 5 activities (or choose none of the above) influenced YOUR confidence in YOUR SCHOOL's capabilities the MOST:

In the past 6 months my confidence in my school's capabilities to…

1. work together to develop or implement new curricula/interventions was most influenced by [select]
2. work together to effectively work with parents was most influenced by [select]
3. collaborate with other public and social agencies that are in the community was most influenced by [select]
4. work together to maximize our effectiveness was most influenced by [select]
5. work together to overcome various difficulties that may arise was most influenced by [select]

Sources of Efficacy

Last year we conducted focus groups with over 200 teachers in five districts.
Teachers reported their teaching practice as being influenced through 5 types of professional learning activities.

- *Collaboration with other teachers (e.g., Professional Learning Communities, mentorship or coaching program, informal collaboration with other teachers)*
- *Implementing special projects (e.g., informal grade level, subject area, or school-wide focus like "SMART learning")*
- *AISI (e.g., focused and formalized school/district professional learning on a specific topic or theme)*
- *Attending workshops or conferences (e.g., full- or multi-day convention involving multiple workshops on varied topics)*
- *Other (e.g., professional reading on own, personal reflection, courses)*

Reflecting on the last 6 months of teaching, please select the professional learning activity (or choose none of the above) that best completes each statement.

1. My satisfaction with my teaching performance was most influenced by [select]
2. The interpersonal support I have received was influenced most by [select]
3. My opportunity to reflect upon my own teaching performance with others was influenced most by [select]
4. The satisfaction with how I coped with day-to-day teaching activities was influenced most by [select]

Appendix B (Continued)

Reasons for Professional Learning

Last year, over 200 teachers participated in focus groups on professional learning across the province. We asked teachers to identify and prioritize 7 reasons for their participation in professional learning.

These were the results:
#1 (most important) = learning more about how to teach more effectively
#2 = building a learning community (sharing with colleagues and social networking)
#3 = learning more about children
#4 = gaining subject area knowledge
#5 = being influenced by a significant person, teacher, or mentor
#6 = offering me time and space to think
#7 (least important) = learning more about myself (my strengths as a teacher)

Please rate how important each of the following reasons are for YOUR professional learning.
1 = *not at all important*, 4 = *somewhat important*, 7 = *very important*

1. learning more about how to teach more effectively
2. building a learning community (sharing with colleagues and social networking)
3. learning more about children
4. gaining subject area knowledge
5. being influenced by a significant person, teacher, or mentor
6. offering me time and space to think
7. learning more about myself (my strengths as a teacher)

Engaged Teacher Scale (Klassen, Durksen, & Yerdelen, 2013)

Below you will find a list of statements describing your experiences as a teacher. Please indicate your personal response to each of these statements (1 = *never*, 4 = *sometimes*, 7 = *always*)

1. At school, I connect well with my colleagues
2. I am excited about teaching
3. In class, I show warmth to my students
4. I try my hardest to perform well while teaching
5. I feel happy while teaching
6. In class, I am aware of my students' feelings
7. At school, I am committed to helping my colleagues
8. While teaching, I really "throw" myself into my work
9. At school, I value the relationships I build with my colleagues
10. I love teaching
11. While teaching I pay a lot of attention to my work
12. At school, I care about the problems of my colleagues
13. I find teaching fun
14. In class, I care about the problems of my students
15. While teaching, I work with intensity
16. In class, I am empathetic towards my students

Chapter Five

Developmental Synthesis of Teachers' Motivation and Learning

For my dissertation research, I set out to help move teacher motivation research from theory to practice (Klassen, Durksen, & Tze, 2014) by asking the question: What patterns exist within and across professional life phases, in relation to the influences of efficacy and engagement on teachers' professional learning? In the first section of this chapter, I synthesize the three studies with cross-study comparisons. Next, I highlight the theoretical implications of my dissertation through an integrative theoretical framework and a new comprehensive model for teachers' professional learning (TPL). Lastly, I present the practical implications and future research that extend from my dissertation.

Synthesis and Extension of the Three Studies

A developmental and motivational approach to teacher motivation research is necessary when considering the complexity of teachers' contextual learning. Overall, the three studies highlight the motivational importance of collaboration. Findings from Study 3 revealed that an increase in teachers' efficacy beliefs had a positive effect on teacher engagement. A similar phenomenon was evident in Study 1 where an increase in pre-service teachers' efficacy had a positive effect on engagement in their teacher education coursework. Study 1 supports previous findings of a more collaborative culture within elementary schools and research suggests this begins well before teachers enter the profession (Decker & Rimm-Kaufman, 2008). Likewise, teaching in an elementary school setting had a positive effect on efficacy beliefs, engagement, and collaborative TPL for practicing teachers (Study 3). Analyses of practicum students' responses to items on engagement and commitment found participants expressing a need for

collaboration, yet collaborative efforts within the mentor relationship were not always successful (Study 2).

Study 2 and previous research (e.g., Geving, 2007; Rots et al., 2007) found lower engagement among pre-service secondary teachers. Therefore, efforts aimed at creating a collaborative school climate may help increase engagement, particularly in secondary settings. Although collaboration does exist in secondary schools, it is considered less effective given the prominence of professional learning within "balkanized" or insulated subject-specific groups or team-teaching pairs (Hargreaves & Fullan, 2012). Regardless of the setting, planning collaborative TPL should begin with teachers' self-identified needs and a recognition that needs change over time. For example, school-based peer groups can be organized during practicum placements and collaborative training provided for mentor teachers (Sorensen, 2014).

Reasons for Professional Learning. In Study 1, I explored education students' influences and motivations for pursuing an education degree. I extended my investigation to include motivations related to professional learning by presenting reasons for TPL to education students and practicing teachers. Study 1 and Study 3 found engagement as a positive predictor of reasons for TPL. In Study 3, teachers' engagement also predicted collaboration as the most influential TPL on efficacy beliefs, which co-varied with two collegial reasons for TPL (building community and being influenced by a mentor). A comparison between ratings of reasons for TPL—as provided by education students in Study 1 and practicing teachers in Study 3—is presented through Figure 8. Though descriptive and cross-sectional, the results from this comparison seem theoretically and developmentally accurate.

For initial teacher education students, the most important reason for TPL was to discover and develop personal "strengths as a teacher," while having "time and space to think" was

reported as the most important reason for practicing teachers. Understandably, "time and space to think" was the least important reason for education students since they have yet to experience the reality of a teaching workload. In fact, time and space was the only reason that practicing teachers (and specifically, mid-career teachers) rated higher than education students.

It was not surprising to find an overall decline between the two professional life phases for the level of importance attributed to three reasons: learning more about personal strengths, children, and being influenced by a mentor. Early teacher education students are initially focused on developing personal strengths as a teacher whereas practicing teachers have more experience and the potential for collective efficacy within a school setting. At the same time, there appears to be a shift from learning more about children to learning more about what the school as a collective can do to support children's learning. The only reason that did not change (in level of importance) from education student to practicing teacher was "gaining subject-area knowledge."

Emotions. Although emotion-related constructs were beyond the scope of the three studies included in my dissertation, it is important to recognize the role of emotions as mediators between teachers' self-efficacy and engagement. For example, an expectation for enjoyment is considered a highly motivating reason for teachers to participate in TPL (Karabenick & Conley, 2011). Since enjoyment is considered a key teacher emotion by motivational researchers (e.g., Frenzel, Goetz, Lüdtke, Pekrun, & Sutton, 2009), measuring enjoyment as a reason for TPL in relation to future professional learning can contribute greatly to our understanding of teacher effectiveness (Karabenick & Conley, 2011).

The final practicum, as a foundational professional learning experience, has the potential to help promote reflection and healthy development for pre-service teachers – especially if success is experienced within safe and effective classrooms alongside supportive mentors (Evelein,

Korthagen, & Brekelmans, 2008). For insight into the emotions experienced by Study 2 participants, a follow-up qualitative analysis focused on their experiences of pleasant and unpleasant emotions during the intensive 9-week practicum (see Durksen & Klassen, 2012, 2013). Results revealed declining trajectories of pleasant and unpleasant emotions from Week 1 to Week 6 before rising again. In the second half of the practicum, weekly frequencies between pleasant and unpleasant emotions widened, with pleasant emotions being reported more often than unpleasant. An analysis of emotional experiences revealed content that set Weeks 6 and 7 qualitatively apart from previous weeks. Evidence of a shift in thinking about emotional experiences emerged through entries such as, "in spite of a stressful and busy week, the stress level felt more manageable as I [am becoming] more and more comfortable teaching" and participants were "starting to enjoy teaching more." The results provided additional support for the non-linear pattern of commitment and engagement found in Study 2.

Theoretical Implications

The categorical framework for understanding TPL at the outset of my research was based on Joyce and Calhoun's (2010) five models: models that support individuals, collaborative personal or professional direct service models, collaborative and cooperative models, models designed to achieve curricular and instructional change, and traditional workshop models. As my research progressed, it became clear that categories were not mutually exclusive and that no one type of TPL would emerge as the "best" way to promote teachers' professional growth. Instead, a new framework emerged as a motivational and developmental approach to categorizing the complex, relational, and context-specific nature of teachers' professional learning. As presented through Table 9, "The 6P model of TPL" outlines professional learning as a developmental process that includes initial teacher training (*Preservice*), independent TPL experiences

(*Personal*), mandated workshops (*Predetermined*), and three forms of collaboration (*Process*, *Project*, and *Product*). The developmental process that led to the 6P model is presented through the first six columns of Table 9.

I also framed my dissertation using Bandura's (1997) social cognitive theory with reciprocal influences and key theoretical components from job demands-resources model (JD-R; Bakker & Bal, 2010) and self-determination theory (SDT; Ryan & Deci, 2000). In Study 2 (see Figure 5) my overarching framework became more specific in order to highlight key teaching demands and resources within the context of initial teacher education. Based on the results of my dissertation, I have developed a new framework that accounts for TPL across professional life phases. As displayed through Figure 9, motivational influences have a reciprocal relationship with TPL as job resources (presented through the 6P model) and form a theoretical guide for future teacher motivation research on professional learning.

Practical Implications

According to Hoekstra and Korthagen (2011), professional learning will *only* occur if teachers are "supported in learning how to deal effectively with personal factors involved in the learning process" (p. 75). Just as a number of factors may hinder or enhance student learning, there are a number of factors that influence teachers' motivation and experiences of professional learning throughout their career. Understanding the importance of collective efficacy is one essential factor when planning for TPL since a more collaborative professional practice improves student learning (Hargreaves & Fullan, 2012). Yet enhancing collective efficacy through professional learning remains a challenge as teachers commonly express feelings of isolation, despite working within rich and interactive social contexts.

Directing or prescribing motivational TPL is a "motivational paradox" akin to teachers prescribing motivational practices for their students (Kaplan, 2014, p. 64). Although forced collaboration can undermine the motivation of teachers, administrators have the ability – and responsibility – to promote structures and processes that can help develop and nurture teachers' self- and collective efficacy (Woolfolk Hoy, 2012). For example, schools can benefit from aligning pre-service and practicing teachers TPL across professional life phases in ways that build collaborative skills and extend beyond the practicum model (Goddard, Goddard, & Tschannen-Moran, 2007; Jones, 2008; Sahlberg, 2015). Teacher educators, school administrators, and teachers can also work to identify sources of efficacy and promote supportive and motivational TPL by considering a range of reflective questions by McDonald (as cited in Woolfolk Hoy, 2012, p. 99), such as:

- What feedback are teachers given about their competence in the classroom and within the school teaching staff?
- Do teachers in your school engage in formal professional conversations about their learning, their teaching successes and failures, their own sense of ability to encourage students to learn and shine?
- Are we really aware of the link between teacher efficacy and student learning?

Directions for Future Research

In addition to the recommendations presented in Chapters Two, Three, and Four, this chapter concludes with suggestions that can advance our understanding of the complexity of teacher motivation and TPL. Specifically, researchers interested in the motivational and developmental implications of TPL need to consider the interactions between teacher, student, learning tasks, colleagues, and school climate. For example, Shirley (2015) encourages

administrators to hire teachers with a collaborative disposition over content-focused and independent applicants. Therefore, future research could test measures of collaboration with selection tools designed to assess teachers' interpersonal skills. Tools designed to identify personal characteristics of successful teachers are useful for assessing initial teacher education candidates (see Klassen, Durksen, Rowett, & Patterson, 2014) and job applicants, but can also help administrators and teachers identify targeted areas for professional growth (Robertson-Kraft & Duckworth, 2014).

While Study 2 provided insight into pre-service teachers' commitment and engagement during a final practicum, future research on mentorship would benefit from including the perspective of mentor teachers. Since interpretations of the mentor-mentee relationship made by a pre-service teacher and mentor teacher may overlap, Richter et al. (2013) recommends studies with trained observers (e.g., Classroom Assessment Scoring System; Pianta & Hamre, 2009). Moreover, Kunter and Holzberger (2014) recommend the use of observational measures outside the classroom in order to identify ways of fostering collective efficacy and engagement in a school's embedded learning opportunities.

One overall limitation of this dissertation lies in the reliance on self-report questionnaire data. Some actions were taken (i.e., focus groups, open-ended questionnaire items) to provide teachers with a voice; however future research will benefit from in-depth qualitative data collection (e.g., interviews) and behavioural measures. For example, mobile eye-tracking technology can allow researchers to focus on patterns of visual engagement and motivation within professional learning opportunities (e.g., gaze patterns of novices in pre-service teacher training and expert teachers in mentorship roles), interview participants (e.g., while each participant views personal gaze tracked data), and request retrospective verbalizations of their

thoughts, emotions, and actions (Holmqvist et al., 2011). Eye tracking can help build a deeper understanding of the behaviours that lead to teacher engagement and collaboration by exploring how visual attention and cognitive states vary among teachers at different professional life phases and across different types of TPL (Tatler, Hayhoe, Land, & Ballard, 2011).

Conclusion

An understanding of motivation is critical to fostering TPL (Hoekstra & Korthagen, 2011). I recommend both a developmental and motivational approach to research on teachers' engagement, professional growth, and commitment to the profession. Across professional life phases, social job resources (i.e., mentorship or collaborative TPL) can act as a buffer against job demands, help nurture sources of teachers' efficacy, and contribute to the satisfaction of basic psychological needs. By encouraging collaborative and supportive environments for teachers' complex learning circumstances, personal resources like efficacy and resilience can flourish. As collaborative practices increase, so will:

> [t]eacher resilience [as] a relational, multifaceted, and dynamic construct. The resilience building process is embedded in a web of interpersonal relationships which interactively influence an overall level of resilience as perceived by teachers. It is the culmination and continuation of collective and collaborative endeavors driven by a common understanding of moral purpose. It is nurtured by the social and intellectual environments in which teachers work and live, rather than determined by nature (Gu, 2014, p. 521).

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Table 9

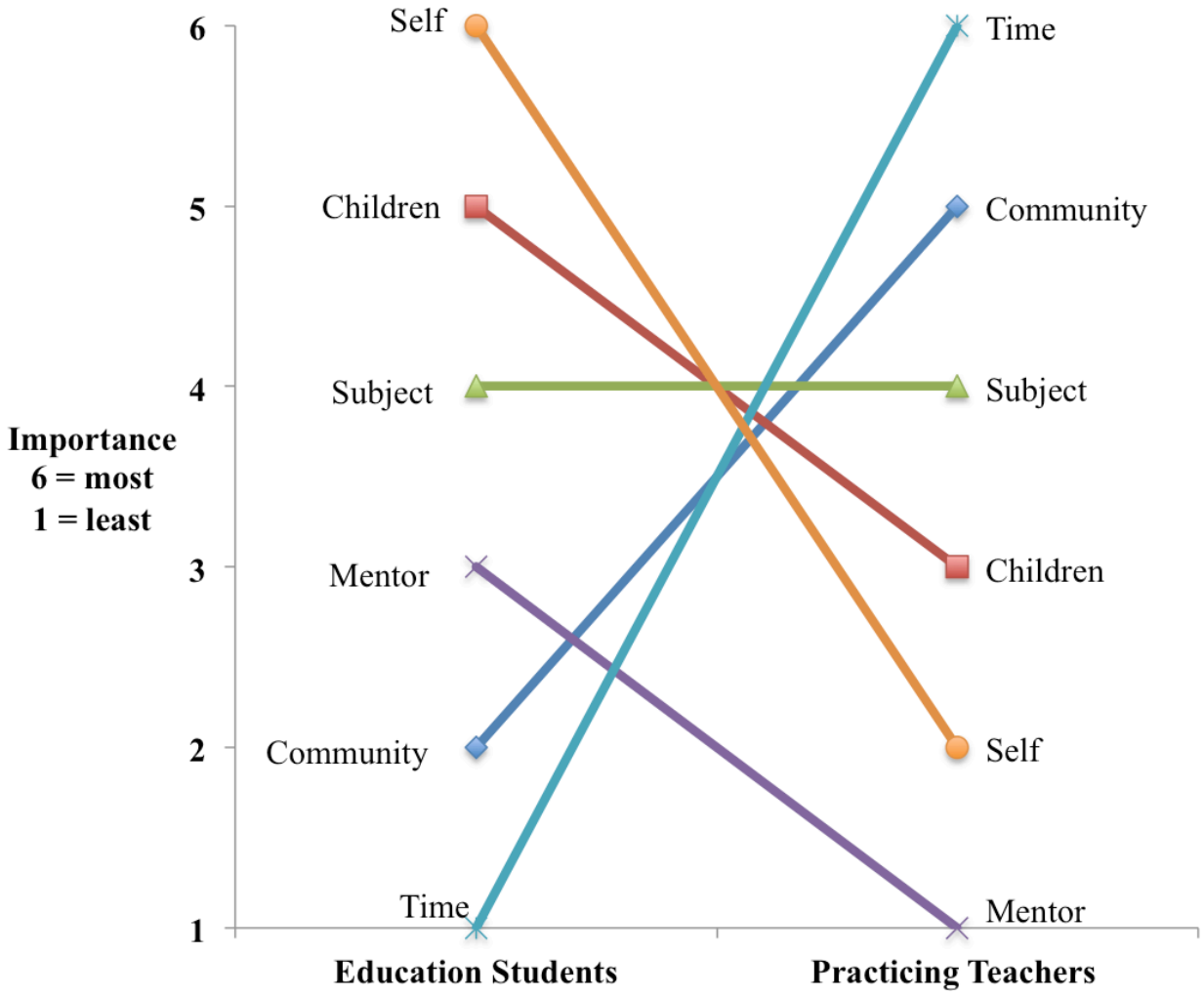
Development of the 6P Model of Teachers' Professional Learning (page 1 of 2)

Joyce and Calhoun (2010)	Alberta Education[1]	Alberta Teachers[2]	Buehl and Fives (2009)	OECD (2013)	TPD@Work[3]	**6P Model of TPL[4]**
			1. Formal education	1. Qualification programme		**1. Preservice** Formal education that aligns with practicing TPL
1. Models the support individuals	1. Teacher-initiated or teacher-directed models (independent)	1. Other: professional reading on own, reflection, courses	2. Personal teaching experiences 3. Self-reflection	2. Individual or collaborative research on a topic of interest to a teacher professionally	1. Keeping up-to-date 2. Experimenting 3. Reflecting	**2. Personal** Intentional and teacher-initiated TPL carried out apart from school groups
2. Collaborative personal/ professional direct service models	2. Professional service models (one-to-one)	2. Collaboration with other teachers: mentorship communities of practice, coaching program, informal collaboration	3. Self-reflection 4. Collaboration with others 5. Observational learning	2. Individual or collaborative research on a topic of interest to a teacher professionally	3. Reflecting 4. Collaborating with colleagues to improve the lesson	**3. Process** Collaborative and cooperative TPL that involves partnerships and communities of practice focused on promoting professional growth
3. Collaborative and cooperative models	3. Professional learning communities			3. Observation visits to other schools 4. Formal mentoring and/or peer observation and coaching		

Table 9 (Continued)

4. Models for curricular and instructional change	4. Formal curricular or instructional workshops and initiatives	3. AISI: focused and formalized district professional learning on a specific topic or theme	4. Collaboration with others	5. Participation in a network of teachers formed for professional development 6. Courses/ workshops that are education-related	5. Collaborating with colleagues to improve school development	**4. Project** Informal collaborations that are initiated and embedded within a school to meet the needs of specific teachers and students
		4. Special projects: informally implementing a change at grade, subject, or school level				**5. Product** Formal collaborations within school or across district involving colleagues and administration
5. Traditional workshop models	5. Large-scale single-event professional conferences	5. Attending formal full- or multi-day workshops or conferences	6. Formal bodies of knowledge	6. Courses/ workshops that are education-related 7. Education conferences or seminars	1. Keeping up-to-date	**6. Predetermined** Mandated workshops and conferences

[1] Based on consultation with researchers and representatives from Alberta Education and Alberta Teachers' Association and used in Study 1 questionnaire items.
[2] TPL categories were re-defined during a two-year project by teachers in focus groups. The new categories were used in questionnaires during Study 3.
[3] Theoretical categories from the Teachers Professional Development at Work survey (Evers, Kreijns, & Van der Heijden, 2011).
[4] The 6P Model of TPL is based on the work presented in the first six columns of Table 9 and on conclusions from my dissertation research.
[5] AISI: Alberta Initiative for School Improvement (1999-2013). For more information on AISI, see Hargreaves et al. (2009).



	Education Students	Practicing Teachers
Learning more about children	**2** = 6.42 (0.91)	**4** = 5.69 (1.26)
Learning about self as a teacher	**1** = 6.45 (0.82)	**5** = 5.39 (1.50)
Gaining subject-area knowledge	**3** = 6.37 (0.94)	**3** = 5.73 (1.25)
Time and space to think	**6** = 5.90 (1.07)	**1** = 6.08 (1.21)
Building community (colleagues)	**5** = 6.15 (1.02)	**2** = 5.88 (1.18)
To be influenced by a mentor	**4** = 6.16 (0.95)	**6** = 5.06 (1.45)

Figure 8. Six reasons for TPL: A comparison of ratings provided by education students and practicing teachers. Values in the table represent means (with standard deviations in parentheses) based on a 7-point scale. The values were used to graphically represent the order of importance (indicated in **bold**) associated with responses on six reasons for TPL from 153 education students (Study 1) and 296 practicing teachers in the current study (averaged across early, middle, and late career).

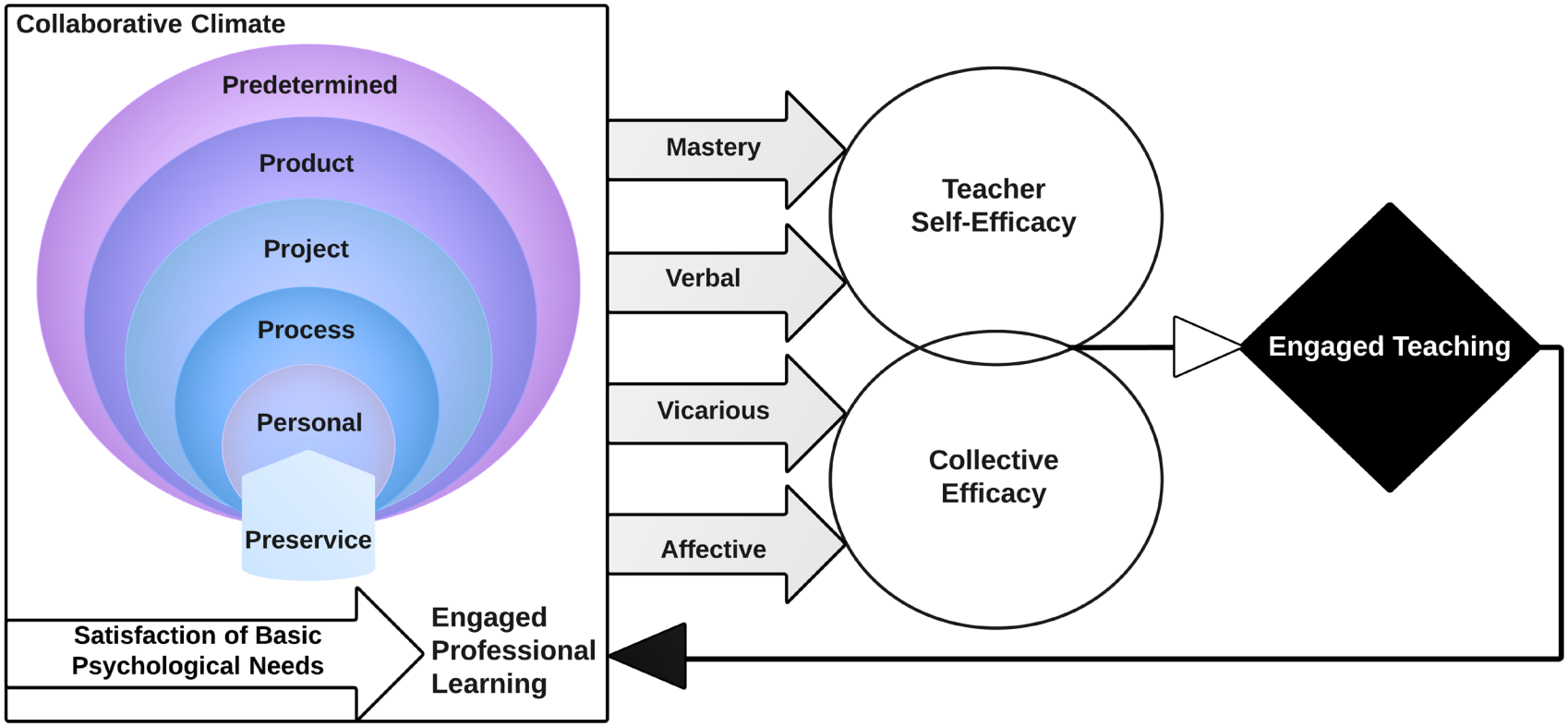


Figure 9. Integrative model of influences on teachers' professional growth.

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