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Abstract

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Abstract

The current study contributes to the growing body of empirical research on the connection between motivation and teachers' learning across professional life phases. With data from 253 practicing teachers, we tested hypothesised relationships through structural equation modelling in order to answer the question: How do practicing teachers' efficacy beliefs and engagement influence their professional learning beliefs? Results highlight the positive relationship between motivational constructs and professional learning – specifically, when learning is collaborative. Conclusions include implications for future research and a proposed integrative theoretical and developmental framework for understanding teachers' motivation and professional learning.

Key words: teacher motivation, professional learning, teacher development, teacher engagement, teacher self-efficacy, collective efficacy

Motivation and Collaboration:

The Keys to a Developmental Framework for Teachers' Professional Learning

To promote what is best for student learning and teacher wellbeing, we need to support teachers who are in constant contact with students (Shirley, 2015). Teachers' wellbeing is nurtured through the satisfaction of key intrinsic motivators (e.g., relatedness; Deci & Ryan, 2000) and can be influenced by ongoing relationships between teachers' professional and personal resources. Yet how this process is experienced can depend on a teacher's career stage. In the current study, we focus on the opportunities and resources for motivational and engaging professional learning as one critical way to support teachers. We begin with a definition of teachers' professional learning and identify the influential role that motivation plays in the life of a teacher. Next we describe how social cognitive theory serves as an initial overarching framework for hypothesizing a structural equation model of teachers' motivation and professional learning. Following the presentation and interpretation of the results, we conclude by proposing an integrated theoretical and developmental framework that attempts to categorize the complex, relational, and context-specific nature of professional learning for teachers.

Teachers' Professional Learning

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 definition of teachers' professional learning (TPL) used in this research comes from Avalos (2011) along with Richter and colleagues (Richter, Kunter, Klusmann, Lüdtke, & Baumert, 2011) because of their inclusion of motivational constructs. Here we view 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).

Ideally, effective TPL can be identified by a teacher’s professional growth plan that leads to the improvement of student learning. The description of the TPL process often includes 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, Den Brok, Hooijer, Martens, & Van den Beemt, 2014). In the current research, we begin with a definition of 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 comprehensive Teaching and Learning International Survey

(TALIS; OECD, 2010). The TALIS questions are organised around seven categories: initial qualification programme, individual or collaborative research, observational school visits, formal mentoring, network or community of teachers, courses and workshops, and education conferences. Similarly, the Teachers' Professional Development at Work (TPD@Work; Evers, Kreijns, & Van der Heijden, 2011) survey presents questions organised by five theoretical themes. 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 on professional learning through:

- Keeping up-to-date through activities such as visiting educational Internet sites
- 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.

From this foundation, we sought to understand how practicing teachers define and value their own professional learning when framed in relation to motivational beliefs. As a result of this study, we conclude by proposing an integrative and non-linear framework of motivation with professional growth occurring through six embedded models of teachers' professional learning.

Context for Learning

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). 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 (Authors et al., 2014). 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 a professional learning program called the Alberta Initiative for School Improvement (Hargreaves & Fullan, 2012; Parsons, McRae, & Taylor, 2006). It is also important to note that Alberta teachers reported one of the highest rates of participation in professional learning despite an above-average teaching workload (OECD, 2015). Moreover, Alberta teachers reported the highest level of support for participation in those activities. Support, according to OECD (2014), was defined by administration's provisions for professional learning participation (e.g., additional days off from teaching). Yet TPL tends to involve more "one-size-fits-all" experiences (e.g., workshops or conventions), leaving little opportunity for teachers to intentionally engage in professional collaboration (Sahlberg, 2015).

A Motivational Approach to TPL

The overarching framework for the current study is social cognitive theory (Bandura, 1997). While examining TPL from a life-span approach, we recognize that TPL has the potential to influence *and* be influenced by teachers' beliefs and practices, which in turn influences student engagement and learning. Thus, we frame the current study with Bandura's (1997) theoretical reciprocal determinism by acknowledging three influential factors – personal,

environmental, and behavioural – that can lead to professional growth and enhanced teaching practice. 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—the belief a teacher has about their capabilities to influence student learning (Bandura, 1997)—may increase.

Moreover, motivation researchers consider teachers' self-efficacy as a personal resource that can enhance teachers' engagement (Author et al., 2011; Bakker, Albrecht, & Leitner, 2011). Job resources, such as those available 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). Thus, elements of the Job Demands-Resources model (JD-R; Bakker & Bal, 2010) may help further identify the important relationship between job resources (e.g., TPL) and personal resources (e.g., teachers' self-efficacy beliefs). In addition, elements of self-determination theory (SDT; Ryan & Deci, 2000) may further help promote our understanding of the important influences stemming from TPL that can help satisfy teachers' key intrinsic motivators (e.g., relatedness through collaborative TPL opportunities). Thus, elements from JD-R and SDT contributed to our overarching theoretical framework.

Teachers' sense of self-efficacy is one of the key motivation beliefs influencing teachers' professional behaviours. For example, longitudinal research on factors influencing aspirations for teaching and professional engagement (Watt & Richardson, 2007; Watt, Richardson, & Wilkins, 2014) revealed evidence that teacher education students' initial motivations for teaching predict later engagement and career development aspirations. Such a predictive relationship was not surprising since teachers with higher efficacy are more likely to be emotionally engaged in their

teaching (Frenzel et al., 2009). Although Watt et al. (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 our understanding of how these constructs interact simultaneously.

Researchers have also identified personal and professional differences based on teaching level and experience. For example, teachers' self-efficacy tends to increase with experience (peaking around 23 years of teaching; Author et al., 2010) and has been reportedly higher for elementary teachers (Authors, 2014b). Moreover, elementary school teachers have rated higher on agreeableness and conscientiousness (Decker & Rimm-Kaufman, 2008) with lower commitment and engagement being reported by teachers in secondary school settings (Geving, 2007; Rots et al., 2007). As such, efforts aimed at creating a collaborative school climate may help increase efficacy levels and engagement, particularly in secondary settings (Hargreaves & Fullan, 2012).

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). Teachers' collective efficacy is related to student achievement and academic climate, even after controlling for prior student achievement and demographic characteristics (Author et al., 2008). Yet, few studies have examined how teachers' professional learning experiences are associated with teachers' collective efficacy beliefs (Author et al., 2011). Taken together, teachers' self- and collective beliefs help define the motivational dimension deemed important for professional behaviours.

Teacher self-efficacy influences a teacher's persistence, enthusiasm, job satisfaction, and successful 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. Teachers' self-efficacy and TPL present researchers with a complex relationship that may help operationalise what is meant by a 'successful teacher' through connections to other motivational factors and belief subsystems. Therefore, since teachers with high self-efficacy tend to approach professional learning experiences more positively and confidently (Tschannen-Moran and McMaster, 2009), efficacy beliefs may be both a product of TPL experiences and a constructor of TPL experiences.

Researchers have identified self- and collective efficacy beliefs as being nourished by the same four sources—past experiences, vicarious experiences, verbal persuasion, and self- or group-level affective states (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. When appraising collective efficacy beliefs, teachers consider the group processes and how the affective state of staff, school, and district are influencing their TPL (Bandura, 1997). Verbal persuasion through feedback from colleagues has also been highlighted by the OECD (2013) as an important source of efficacy that influences the relationship between TPL and school climate. Overall, examining different types of TPL that foster experiences from different sources of efficacy can enhance our understanding of *how* and *why* teacher motivation is affected.

When examining a range of influences, it is important to consider TPL from a developmental or life-span perspective. Huberman (1989), and more recently, Day and Gu (2010) build on a life-span approach that helps focus on teachers' motivational development across career phases. With interest in being able to evaluate changes in the frequency or variety of TPL, Day and Gu (2009) found (a) the majority of mid-career teachers (8-23 years of teaching) report increases in motivation and commitment, and (b) teachers in a later professional life phase of (24+ years of experience) often report declining levels of motivation indicated by feelings of disenchantment, fatigue, or being trapped. In connection to TPL participation, one cross-sectional study found an increase in the use of independent activities and a decrease in collaboration with teachers' age (Richter, et al., 2011). While mid-career teachers reported a high participation rate in formal TPL, the reason for participating is unclear. In light of their findings of teachers' self-efficacy peaking at about 23 years of experience and then declining, Author et al. (2010, 2011) speculated that personal resources like high teacher efficacy may serve as one contributor to participation. Thus, approaching our research from a life-span perspective helps promote the view of teachers as "developing people," and not just the product of an initial teacher education program (Rimm-Kaufman & Hamre, 2010, p. 2993).

The Current Study

Based on the literature and previous research findings, we set out to test five hypotheses in order to answer the research question: *How do practicing teachers' efficacy beliefs and engagement influence their professional learning beliefs?*

1. The importance that teachers place on different reasons for TPL will vary according to professional life phase (Richter et al., 2011).

2. Higher efficacy beliefs will be predicted by teaching level and professional life phase. It is expected that elementary teachers and more experienced teachers will report higher efficacy beliefs (e.g., Authors, 2014b)
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 (Authors, 2014a).
4. Higher teacher engagement will be predicted by higher efficacy beliefs since related relationships were found with pre-service teachers and practicing teachers (Xanthopoulou, et al., 2007).
5. Based on previous findings from Watt, Richardson, and Wilkins (2014), we expect that teacher engagement will have a positive relationship with TPL.

Methods

Participants and Procedures

The data were collected from teachers in the second year of a two-year mixed methods research project on TPL and efficacy beliefs (see Authors, 2014a for a complete description). Although the current study reports specifically on data collected in the second year, it is important to understand the overall research procedures. First, participant selection criteria helped create boundaries for the larger project and included employed teachers at a school within five participating school districts. 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 (five primary and five secondary) within the same five districts. Data from initial focus groups were summarised and then presented back to the groups when they met a second time. 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 one questionnaire (with items based on Year One findings) using the same procedures as in Year One.

The data source for the current study consisted of an online questionnaire completed by 253 teachers during the second year of the larger project. Recruitment for questionnaire participants involved forwarding a request to the administration at participating school districts 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 online questionnaire link to teachers. Of the 1170 teachers¹ invited to participate in the larger project, 758 teachers responded by completing at least one out of four possible questionnaires over a two-year period (13 teachers completed all four). At each time point, we received data from over 200 teachers (maximum of 345 teachers). The current study focused on responses from 253 who completed one of the questionnaires during Year Two of the larger project.

Table 1 displays the demographic details specific to 253 teachers who responded during Year Two – specifically those who completed the questionnaire administered in January. 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 15.3 years compared to 13 years) and a higher proportion of females (74.7% compared to 60%).

¹ Approximate number of teachers in the five participating school districts based on 2011-2012 school employment records (ATA, personal communication, 2014).

Measures

The current study compiled teachers' responses to one of the two identical questionnaires that were administered in Year Two of the larger project (see Appendix for questionnaire items). Items for the Year Two questionnaire were based on analyses of Year One data. In Year One, teachers were provided with questions around the five types of TPL as defined by Joyce and Calhoun (2010): individual TPL (e.g., online coursework), collaborative professional service (e.g., one-to-one mentorship), groups of teachers in collaborative and cooperative models (e.g., professional learning communities, models for curricular and instructional changes (e.g., workshops on formal initiatives), and traditional workshop models (e.g., large-scale conference). As a result of preliminary analyses of Year One responses, Year Two participants were presented with questions and definitions related to the following five types of TPL: collaboration with other teachers, implementing special projects, curricular initiatives (i.e., the Alberta Initiative for School Improvement), attending workshops or conferences, and other personal experiences. What follows is a description of the measures used with descriptive information (Means, Standard Deviations, and correlations) presented in Table 2.

Teachers' Self-Efficacy. A brief measure of self-efficacy (six items) was used to lessen the response burden on participants, particularly since the questionnaire presented the items a second time in relation to professional learning. We chose six items (two from each of the three subscales) from Tschannen-Moran and Woolfolk Hoy's (2001) Teachers' Sense of Efficacy Scale (TSES) as it closely aligns with self-efficacy theory and is considered "superior to previous measures of teacher efficacy" (Woolfolk Hoy & Burke Spero, 2005, p. 354). Specifically, we chose items based on two factors: (a) items that had high factor loadings in previous research

(e.g., Author et al., 2009; Tschannen-Moran & Woolfolk Hoy, 2001), and (b) items that provided coverage of the tasks most relevant (as determined by the three authors) for the study.

Previous studies (e.g., Author et al., 2009) found adequate reliability and evidence of construct and convergent validity for this measure in a range of settings. We are also confident in our results given the use of a 3-item measure of self-efficacy in a previous longitudinal study (see Authors, 2014b). While the original scale asks participants to respond on a 9-point scale, we used an 11-point scale (1 = *not at all confident*, 6 = *moderately confident*, and 11 = *extremely confident*) as a sensitive approach since the larger project was longitudinal (with four quantitative data collection points over 2 years). We also used the 11-point scale for teachers' self-efficacy in a previous longitudinal study (see Authors, 2014).

Collective Efficacy. As with the brief measure of teachers' self-efficacy (adapted from the TSES), we used a brief measure of collective efficacy to reduce the burden on participants – particularly since the questionnaire presented the collective efficacy items a second time (in relation to professional learning). The choice of items for this study were based on guidance provided by Bandura (2000) on the measurement of collective efficacy, and adapted from the teachers' collective efficacy measure created by Tschannen-Moran and Barr (2004). Tschannen-Moran and Barr had adapted Goddard and Goddard's (2001) 21-item scale by creating a 12-item teachers' collective efficacy scale. Since Author et al. (2011a) found measurement issues and no longitudinal studies of collective efficacy, we chose to create a shortened form (five items) that could be used in relation to professional learning over time. The five-item reliable ($\alpha = .95$) measure of collective efficacy asked participants to respond (using an 11-point scale) to questions of whole-school confidence such as 'How confident are you that teachers in your school can work together to overcome various difficulties that may arise.'

Efficacy beliefs and TPL. The same 11 items (six for teachers' self-efficacy and five 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 which of the five types of TPL 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]."

TPL and sources of efficacy. Four items based on Tschannen-Moran and Woolfolk Hoy (2007) assessed sources of efficacy in relation to TPL. While reflecting on the last six months of teaching, participants were asked to choose the one TPL types (out of five) that best completed each statement. For example, to assess past 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 (see Authors, 2014a). In Year Two (the focus on the current study), participants were provided with a questionnaire that asked for ratings 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 Author, 2015), 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).

Teachers’ Engagement. Engagement in TPL is often used in the literature as synonymous with participation. However, 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. The 16-item four-factor Engaged Teacher Scale (ETS; Authors 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 for analyses in the current study. The scale was reliable with a similar reliability coefficient revealed through the previous scale validation process ($\alpha = .91$; Authors et al., 2013). Given our interest in collaborative TPL, we considered a

specific focus on one subscale of four items: Social Engagement with Colleagues ($\alpha = .87$)

Analytic Strategy

The focus of the analysis was on relationships among motivational variables and the extent to which they were associated with TPL. Statistical analyses were performed using SPSS 22 and Mplus 7.3. As preliminary analyses we used descriptive statistics, an ANOVA, and correlational analyses to examine the sample and zero-order relationships among variables. The main analyses used structural equation modelling (SEM) 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 hypothesised models. RMSEA measures goodness-of-fit by assessing fit of the model compared to a perfect model, CFI measures relative improvements to the fit of the final model compared to an independence model, and SRMR examines differences between the observed and predicted correlations in the data and model (Kline, 2011; Tabachnick & Fidell, 2007). 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. 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.

Results

Preliminary Analyses

Participants' reported high levels of both sense of self-efficacy and collective efficacy.

Teachers rated their engagement as moderately high. 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. Prior to specifying a model, we also conducted exploratory analyses on the reasons for TPL. By examining the means for each of the six reasons for TPL, we found "time and space to think" as the most important reason for teachers. For developmental inferences and to test Hypothesis 1, we compared ratings for all six reasons across practicing teachers' professional life phases (early, middle, and late-career). An ANOVA revealed a significant quadratic (non-linear) result for "time and space to think" ($F_{(1,212)} = 4.23, p = .04$), 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.

Table 2 displays the correlations among variables that contributed to the best fitting model. Teachers' self-efficacy items ($r_s = .33$ to $.69$) and collective efficacy items ($r_s = .76$ to $.92$) were significantly correlated. Collective efficacy items were negatively correlated with teaching level while teachers' self-efficacy items were positively correlated with professional life phase. Teaching engagement (social with colleagues) was negatively correlated with teaching level providing some support for the previous research findings (Authors, 2012) of lower engagement reported 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, collaboration as most influential on collective efficacy, and collaboration as most influential in fostering sources of efficacy. The three efficacy-related measures of collaborative TPL were also significantly correlated ($r_s = .27$ to $.56$). In addition, collective efficacy and social engagement with colleagues were 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

Based on theory and previous research, we specified four models using Mplus 7.3 (Muthén & Muthén, 1998-2012) with coefficients estimated to test the hypotheses. Table 3 displays the fit statistics for four models with Model 4 identified as the best fitting model for the data. Model 1 tested whether teaching level and professional life phase predicted teachers' self- and collective efficacy (as a higher-order latent variable of efficacy beliefs), if efficacy beliefs predicted teacher engagement (as a latent variable for the four subscales), and if teaching engagement predicted collaborative TPL (latent variable) and six reasons for TPL. Model 2 tested whether professional life phase predicted teachers' self-efficacy and if teaching level predicted collective efficacy, in relation to teaching engagement (as a latent variable for the four subscales) and Model 3 focused on testing teachers' engagement using one subscale of interest (social engagement with colleagues). Model 4 proved the best fit by specifying teaching level and professional life phase as predictors of teachers' self- and collective efficacy (as a higher-order latent variable of efficacy beliefs).

Model 4 was the best fit for the data and is presented in Figure 1 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 ($\beta = .44$), teachers' self-efficacy ($\beta = .66$) and sources of efficacy ($\beta = .81$). Results revealed significant covariation among collaboration and one reason for professional learning: building community ($\beta = .31$). Teaching level and professional life phase were both independent variables that helped confirm Hypothesis 2 with elementary teachers ($\beta = -.15$; significant) and more experienced teachers revealed as reportedly more efficacious ($\beta = .13$; non-significant). 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 reasons for TPL.

[insert Figure 1]

Figure 1. Model of practicing teachers' motivation and professional learning. All parameter estimates displayed are significant ($p < .05$). As illustrated, lower teaching level (i.e., elementary) predicted efficacy beliefs, social engagement with colleagues, and subsequently positive beliefs around collaboration. Moreover, higher levels of importance were placed on a range of more social reasons for teachers' professional learning (TPL).

Discussion

This field of research is important because teachers, with an inherent commitment to life-long learning, sow the seeds for their students to become life-long learners. In the current study, we specified a model of motivation and TPL within the overarching framework of Bandura's (1997) social cognitive theory of reciprocal influences. A model that considered reciprocal

influences and focused on constructs of collaborative TPL was important because (a) our participants, as well as experts such as Hargreaves and Fullan (2012), revealed collaboration as the most influential type of professional learning on practicing teachers (b) previous research (e.g., Watt et al., 2014), has shown teachers' efficacy beliefs 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*). Given the potentially collaborative nature of embedded TPL (e.g., within-school meetings on a topic), we included a TPL-specific measure of collective efficacy with the aim of providing a more complete understanding of the relationship between TPL and teachers' efficacy beliefs. This was explored as one possible way of gaining insight into the reciprocity of motivational beliefs influencing, and being influenced by, TPL. The current study confirmed collaboration as an important theme that was also revealed through the larger project (Authors, 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, Goetz, Lüdtke, Pekrun, & Sutton, 2009) and efficacy beliefs and teaching engagement have previously 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 later career phases and those teaching in an elementary school context. Overall, efficacy beliefs predicted teacher engagement, which in turn positively predicted teachers' beliefs about professional learning. Teachers' social engagement with colleagues was a positive predictor

on the importance teachers placed on a range of reasons for TPL. For example, one collegial reason (“building a community”) was related to collaborative TPL and, at the same time, 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., Author et al., 2010, 2011). In addition, 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 and building capacity 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 of colleagues in the mid-career years (Hargreaves & Fullan, 2012, p. 75). Therefore, embedded (within-school) collaborative TPL that is primarily organized around the needs and interests of mid-career teachers may positively influence the collective efficacy and professional growth of colleagues with varied experience.

The current study found a positive relationship between professional life phase and collaborative TPL yet Richter et al. (2011) reported a decline in collaborative TPL for late-career teachers. However, often what is measured can be described as participation and not necessarily what teachers consider most influential – resulting in a gap between what teachers value and what is actually provided or 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.

Context Matters

Overall, our results support Karabenick and Conley's (2011) findings that although teachers are open to a range of TPL models, they prefer participating in TPL with colleagues. 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 personal resources through vicarious experiences (e.g., observing another teacher) and shared affective states (e.g., enthusiasm) thus contributing to the wellbeing of a resilient teacher. Research on teacher wellbeing has also highlighted the importance of taking into account organizational influences (e.g., support offered by school leadership; Collie, Shapka, Perry, & Martin, 2015). To enhance the relationship between teachers' self- and collective efficacy and TPL, Bandura (1997) argues for a unification of interests (individual and school-wide) with explicitly stated, attainable, and developmental goals around shared organizational 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 collaboration that is forced (Authors et al., 2014). Positive collegial and collaborative relationships support teachers' sense of self-efficacy and collective efficacy, but fostering relationships are difficult due to a range of

contextual challenges such as time, isolation, workload, and differing learning needs or subject areas. Practical challenges remain for administrators to offer support through the necessary time, space, and procedures that can promote formal collaborative practices without top-down or mandated designs.

While Alberta teachers reported one of the highest rates of participation in TPL, and the highest level of support for participation, this was complicated by an above-average teaching workload (OECD, 2014, 2015). Internationally, the OECD found that 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). This confirms that schools need to dedicate more time to TPL. Moreover, results from the current study specifically found that “having time and space to think” to be the most important reason for TPL, though this was likely also related to their high workload. Therefore, embedding more time within a collaborative school climate can be 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 (Authors et al., 2014).

Though there is no direct relationship between the amount of TPL participation 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. While results found teachers rating 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

(but beyond the scope of the current study) 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 within school districts. Unfortunately, *how* these topics were being experienced was not captured. Future research using a longitudinal design is needed to examine actual collaboration, the amount of time, and related influences on practice, particularly since some participants suggested an outcome ‘may take years’ and is not feasible to identify ‘in the past 6-months’ on our questionnaire or even “during the last 18 months” (p. 5) as indicated through the OECD (2013) Teaching and Learning International Survey.

Limitations and Future Research

We applied Bronfenbrenner’s (1979) ecological systems to identify important limitations and directions for future research. Given that teachers influence their students, colleagues, and communities, it seems natural to identify the range of embedded contextual systems that are at work in a teachers’ practice. First, while the data provided insights into professional life phases, the cross-sectional design did not account for the *chronosystem* of intra-individual developmental trajectories. Thus we recommend longitudinal research on the development of teachers – a much-needed focus on TPL and the change in behaviour and beliefs through the dynamic processes of gains and losses, and individual adaptability that occurs over a career (Baltes, 1987). While the larger project did find 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, additional analyses (e.g., multilevel) with equal samples across phases can allow for a more nuanced description and comparison of the professional life phases.

We also recognised the *macrosystem* of influence represented through the socio-political

context of the participants at the time of the study. For example, few participants completed more than one of the four questionnaires administered during the larger two-year project. In total 758 teachers (out of 1170) were involved in the larger project. Although this was an overall response rate of approximately 65%, we consistently collected responses from over 200 teachers (up to 345 teachers) at each of the four time points. Given the theory-building focus of this study, we chose to focus on the responses during the second year of the project as the first-year questionnaires informed the questions posed during the second year. The low response rate (only 13 teachers completed all four questionnaires) may have stemmed from teachers feeling over-surveyed given “all the different surveys they are asked to complete by local and international researchers” – a likely consequence of Alberta’s successful TPL initiatives. We tried to lessen the burden on our participants with the use of condensed measures of self-efficacy. While not psychometrically optimal, recent studies have supported the inclusion of brief – even single item – measures of job-related beliefs (e.g., Chaplain, 2008). Nonetheless, we recommend future studies examine self-efficacy and professional learning longitudinally using validated full versions of scales such as the TSES (Tschannen-Moran & Woolfolk Hoy, 2001).

Although our study results contribute a description of professional learning for teachers in Alberta, our results are difficult to generalize to populations outside of the five school districts. First, participants were not selected randomly. Those who participated were recruited from five school districts and ten schools from within those districts, thus the *exosystem* of influence was represented. For example, the selected school districts may have been known for exceptional TPL but we did not determine whether the five school districts’ experiences of TPL significantly differed from others in Alberta. Second, age and gender of participants were compared to the general teaching population in Alberta (as reported by OECD, 2014), revealing study participants

with slightly more experience (mean of 15.3 years compared to 13 years) and a higher proportion of females (74.7% compared to 60%). Additional demographic comparisons may have revealed further differences. In addition, the larger project was tailored to Alberta's teachers within two academic years (2011/2012 and 2012/2013) and we did not anticipate that, at the same time, provincial and school district budget cuts would lead to the dissolution of a key component of their professional learning that had been active for 14 years: the Alberta Initiative for School Improvement. Lastly, we recognize that some teachers who provided data for the current study may have also engaged in focus groups in the first year of the two-year project. Communication between members of focus groups likely impacted some participants' questionnaire responses both in Year One and in Year Two, however that limitation was recognized at the outset of the larger project given the choice of a mixed methods research design.

It is also particularly important to acknowledge teachers' *micro-* and *mesosystems* when interpreting motivation and TPL in future studies. Analyses of collective efficacy, collaboration, and experience teaching within a specific school were not possible for the current study since the number of teachers who chose to be identified by school varied and samples were generally small. Future research with teachers nested within schools would provide more detail on the reciprocal influences of collective efficacy and collaboration. Since formal collaborations appear more likely to occur district-wide than embedded within schools, analyses of teachers nested within school districts may yield even further insights into the influence of collaborative TPL on teachers' self- and collective efficacy, and in turn, teaching engagement. Future investigations that include school principals as well as students can also help identify the impact that context can have on teachers' motivation, engagement, and TPL beliefs and practices. Lastly, a report on Alberta teachers' work-life balance (Duxbury & Higgins, 2013) highlights the importance of

considering a teachers' personal (*micro*) context when conducting future research on motivation and professional learning beliefs. In order to promote personal resources in the face of job demands, future research can examine how collaborative TPL targets teachers' coping and buoyancy (i.e., everyday resilience; Parker & Martin, 2009).

Conclusions: Towards A New Framework

Although we know that motivational beliefs in relation to professional learning and practice likely change over a teacher's career, we do not know much about the nature of these changes (Authors et al., 2014b). Because teacher motivation research is complex and cannot be reduced to a system of simple personality traits or developmental trends, Kaplan (2014) called for a common model of integrated and reciprocal influences. Moreover, Richter et al. (2011) called for a more specific theoretical framework that supports a developmental description of TPL. By building on previous research, models for TPL, and the current study results, we conclude by proposing a new framework for future investigations. As displayed through Table 4, a number of components that were previously identified through the current study resulted from consultations (e.g., experts from Alberta Education and Alberta Teachers' Association) and related research. In the last column of the table, we propose a "6P Framework of TPL."

Table 4 displays how each previously identified component contributes and aligns with at least one of the proposed "Ps": *Preservice*, *Personal*, *Process*, *Project*, *Product*, and *Predetermined*. For example, Preservice represents the foundation for TPL commitment and engagement that begins in initial teacher education (Authors, 2012) – an important recognition previously highlighted by the OECD (2013) and motivational beliefs researchers Buehl and Fives (2009). The proposed framework includes five additional components deemed necessary for teachers' professional learning: a range of learning opportunities such as independent TPL

experiences (Personal), mandated workshop models (Predetermined), and three forms of collaborative TPL (Process, Project, and Product). While Preservice is a foundational professional learning model, all too often it is viewed as a pre-cursor to beginning the professional learning trajectories expected of practicing teachers. This perspective is expressed internationally—not just in Alberta, Canada—with Finnish education expert Pasi Sahlberg's (2015) concern with the weak coordination of teacher education programs and practicing teachers' professional learning. Therefore, we call for more opportunities for both preservice and practicing teachers to embed professional learning experiences that go beyond just the one-to-one practicum model. Thus, we encourage teacher educators, administrators, and researchers to draw attention to ways in which the 6Ps of professional learning can form embedded and motivational experiences within and across professional life phases.

Previous theory and research, models for TPL presented through Table 4, and the current study provide support for embedding the 6Ps into an integrative theoretical framework of motivational influences. Through Figure 2, we illustrate the proposed framework as a summary of our response to the research question: *How do practicing teachers' efficacy beliefs and engagement influence teachers' professional learning beliefs?* Here, we present a combination of our empirical results and overarching theoretical framework to illustrate the developmental and interactional influence of motivation with TPL. First, we present key intrinsic motivators or basic psychological needs (e.g., relatedness; Ryan and Deci, 2000) as being satisfied within a collaborative climate of professional learning. Next we illustrate how four key motivational sources (mastery experiences, verbal persuasion, vicarious experience, and affective states) can be nourished from an optimal TPL environment and promote teachers' self- and collective efficacy, which in turn, leads to engaged teaching. But, as with Bronfenbrenner's ecological

framework of embedded social systems, this process of teachers' professional learning is not linear, but instead occurs through an embedded, reciprocal and inter-related set of components or models (i.e., 6Ps) that relate to motivational influences.

[insert Figure 2]

Figure 2. Motivation and Professional Learning: An integrative framework of influences on teachers' professional growth. We present basic psychological needs (e.g., relatedness) as being satisfied within a collaborative climate of professional learning. Next, we consider four key motivational sources (mastery experiences, verbal persuasion, vicarious experience, and affective states) as stemming from an engaging context and contributing to teachers' efficacy beliefs, which in turn, leads to engaged teaching. Here, professional growth through the embedded six models of professional learning is not as a linear process, but a reciprocal one.

Overall, we recommend a developmental and motivational approach to future research on teachers' professional growth. An understanding of motivation is critical to fostering TPL (Hoekstra & Korthagen, 2011) and fostering collaborative TPL can promote teacher resilience (Gu, 2014; Mansfield, Beltman, Price, & McConney, 2012). Across professional life phases, social job resources such as building support and relationships through collaboration can act as a buffer against job demands and disengagement while helping to nurture sources of teachers' efficacy and contribute to the satisfaction of basic psychological needs like relatedness. Thus, by encouraging collaborative and supportive environments for teachers' complex learning circumstances, personal resources like efficacy and resilience 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).

References

- Authors 2015 [details removed for peer review]
- Authors 2014a [details removed for peer review]
- Authors 2014b [details removed for peer review]
- Authors 2012 [details removed for peer review]
- Authors et al. 2013 [details removed for peer review]
- Author et al. 2011a [details removed for peer review]
- Author et al. 2011b [details removed for peer review]
- Author et al. 2010 [details removed for peer review]
- Author et al. 2009 [details removed for peer review]
- Author et al. 2008 [details removed for peer review]
- Avalos, B. (2011). Teacher professional development in Teaching and Teacher Education over ten years. *Teaching and Teacher Education*, 27, 10-20.
doi:10.1016/j.tate.2010.08.007
- Bakker, A. B., Albrecht, S. L., & Leitner, M. P. (2011). Key questions regarding work engagement. *European Journal of Work and Organizational Psychology*, 20, 4-28.
Retrieved from <http://dx.doi.org/10.1080/1359432X.2010.485352>
- Bakker, A. B. & Bal, P. M. (2010). Weekly work engagement and performance: A study among starting teachers. *Journal of Occupational and Organizational Psychology*, 83, 189-206. doi:10.1348/096317909X402596
- Baltes, P. B. (1987). Theoretical propositions of life-span developmental psychology: On the dynamics between growth and decline. *Developmental Psychology*, 23, 611-626.
- Bandura, A. (2000). Exercise of human agency through collective efficacy. *Current Directions in Psychological Science*, 9, 75–78.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. London, England: Harvard University Press.
- Buehl, M. M., & Fives, H. (2009). Exploring teachers' beliefs about teaching knowledge: Where does it come from? Does it change? *The Journal of Experimental Education*, 77(4), 367-407.
- Chaplain, R. P. (2008). Stress and psychological distress among trainee secondary teachers in England. *Educational Psychology*, 28, 195-209. doi: 10.1080/01443410701491858
- Clarke, D., & Hollingsworth, H. (2002). Elaborating a model of teacher professional growth. *Teaching and Teacher Education*, 18(8), 947-967. doi:10.1016/S0742-051X(02)00053-7
- Collie, R. J., Shapka, J. D., Perry, N. E., & Martin, A. J. (2015). Teacher wellbeing: Exploring its components and a practice-oriented scale. *Journal of Psychoeducational Assessment*, 38, 744-756. doi:10.1177/0734282915587990
- Day, C., & Gu, Q. (2010). *The new lives of teachers*. New York, NY: Routledge Taylor Francis.
- Day, C., & Gu, Q. (2009). Teacher emotions: Wellbeing and effectiveness. In P.A. Schutz & M. Zembylas (Eds.), *Advances in teacher emotion research: The impact on teachers' lives* (pp. 15-31). Springer Science Business Media, LLC. doi: 10.1007/978-1-4419-0564-2_2
- Decker, L. E., & Rimm-Kaufman, S. E. (2008). Personality characteristics and teacher beliefs among pre-service teachers. *Teacher Education Quarterly*, 35(2), 45-64.
<http://www.jstor.org/stable/23479223>
- Duxbury, L., & Higgins, C. (2013, March). *The 2011/12 National Study on Balancing Work, Life and Caregiving in Canada: The situation for Alberta teachers*. Edmonton, AB: Alberta Teachers' Association. Retrieved from <https://www.teachers.ab.ca/>

- Evers, A. T., Kreijns, K., & Van der Heijden, B. I. J. M. (2011). *The design and validation of an instrument to measure teachers' professional development*. Paper presented at the Annual Educational Research Conference, Maastricht, Netherlands.
- Frenzel, A. C., Goetz, T., Lüdtke, O., Pekrun, R., & Sutton, R. E. (2009). Emotional transmission in the classroom: Exploring the relationship between teacher and student enjoyment. *Journal of Educational Psychology, 101*, 705-716. doi: 10.1037/a0014695
- Gabriele, A. J., & Joram, E. (2007). Teachers' reflections on their reform-based teaching in mathematics: Implications for the development of teacher self-efficacy. *Action in Teacher Education, 29*, 60-74.
- Geving, A. M. (2007). Identifying the types of student and teacher behaviours associated with teacher stress. *Teaching and Teacher Education, 23*, 624-640.
- Goddard, R. D., & Goddard, Y. L. (2001). A multilevel analysis of the relationship between teacher and collective efficacy in urban schools. *Teaching and Teacher Education, 17*, 807-818.
- Goddard, Y. L., Goddard, R. D., & Tschannen-Moran, M. (2007). A theoretical and empirical investigation of teacher collaboration for school improvement and student achievement in public elementary schools. *Teachers College Record, 109*(4), 877-896. Retrieved from <http://www.tcrecord.org>
- Gu, Q. (2014). The role of relational resilience in teachers' career-long commitment and effectiveness. *Teachers and Teaching: Theory and practice, 20*, 502-529. doi: 10.1080/13540602.2014.937961
- Hargreaves, A. (2009). A decade of educational change and a defining moment of opportunity: An introduction. *Journal of Educational Change, 10*, 89-100. doi: 10.1007/s10833-009-9103-4

- Hargreaves, A., & Fullan, M. (2012). *Professional capital: Transforming teaching in every school*. New York, NY: Teachers College, Columbia University.
- Hargreaves, A., & Shirley, D. (2012). *The global fourth way: The quest for educational excellence*. Thousand Oaks, CA: Corwin.
- Hoekstra, H., & Korthagen, F. (2011). Teacher learning in a context of educational change: Informal learning versus systematically supported learning. *Journal of Teacher Education, 62*, 76-92. doi: 10.1177/0022487110382917
- Hoekstra, A., Korthagen, F., Brekelmans, M., Beijaard, D., & Imants, J. (2009). Experienced teachers' informal workplace learning and perceptions of workplace conditions. *Journal of Workplace Learning, 21*, 276-298. doi:10.1108/13665620910954193
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55. doi: 10.1080/10705519909540118
- Huberman, M. (1989). The professional life cycle of teachers. *Teachers College Record, 91*, 31-57.
- Jansen in de Wal, J., Den Brok, P. J., Hooijer, J. G., Martens, R. L., & Van den Beemt, A. (2014). Teachers' engagement in professional learning: Exploring motivational profiles. *Learning and Individual Differences, 36*, 27-36. doi: 10.1016/j.lindif.2014.08.001
- Joyce, B., & Calhoun, E. (2010). *Models of professional development: A celebration of educators*. Thousand Oaks, CA: Corwin.
- Kaplan, A. (2014). Theory and research on teachers' motivation: Managing an emerging conceptual terrain [Section Commentary]. In P. W. Richardson, S. A. Karabenick, & H. M. G. Watt (Eds.), *Teacher motivation: Theory and practice* (pp. 52-66). New York, NY: Routledge Taylor/Francis.

- Karabenick, S. A., & Conley, A. (2011). *Teacher motivation for professional development*. Math and Science Partnership - Motivation Assessment Program, University of Michigan, Ann Arbor, MI. Retrieved from <http://mspmap.org>
- Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: The Guildford Press.
- Kunter, M., & Holzberger, D. (2014). Loving teaching: Research on teachers' intrinsic orientations. In P.W. Richardson, S. Karabenick, & H. M. G. Watt (Eds.), *Teacher motivation: Theory and practice* (pp. 83-99). New York, NY: Routledge Taylor/Francis.
- Kwakman, K. (2003). Factors affecting teachers' participation in professional learning activities. *Teaching and Teacher Education*, 19, 149-170.
- Mansfield, C. F., Beltman, S., Price, A., & McConney, A. (2012). "Don't sweat the small stuff:" Understanding teacher resilience at the chalkface. *Teaching and Teacher Education*, 28, 357-367. doi: 10.1016/j.tate.2011.11.001
- Muthén, L.K., & Muthén, B.O. (1998-2012). *Mplus User's Guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.
- OECD (2015). Embedding professional development in schools for teacher success, Working Paper. *Teaching in Focus*, 10. Paris: OECD Publishing.
<http://dx.doi.org/10.1787/5js4rv7s7snt-en>
- OECD (2014). *OECD Factbook 2014: Economic, Environmental and Social Statistics*. Paris: OECD Publishing. doi: <http://dx.doi.org/10.1787/factbook-2014-en>
- OECD (2013). *Teaching and Learning International Survey (TALIS 2013): Conceptual framework*. Paris: OECD Publishing. Retrieved from http://www.oecd.org/edu/school/TALIS%20Conceptual%20Framework_FINAL.pdf

- Parker, P. D., & Martin, A. J. (2009). Coping and buoyancy in the workplace: Understanding their effects on teachers' work-related wellbeing and engagement. *Teaching and Teacher Education, 25*, 68-75. doi:10.1016/j.tate.2008.06.009
- Richter, D., Kunter, M., Klusmann, U., Lüdtke, & Baumert, J. (2011). Professional development across the teaching career: Teachers' uptake of formal and informal learning opportunities. *Teaching and Teacher Education, 27*, 116-126. doi: 10.1016/j.tate.2010.07.008
- Rimm-Kaufman, S. E., & Hamre, B. K. (2010). The role of psychological and developmental science in efforts to improve teacher quality. *Teachers College Record, 112*, 2988-3023.
- Rots, I., Aelterman, A., Vlerick, P., & Vermeulen, K. (2007). Teacher education, graduates' teaching commitment and entrance into the teaching profession. *Teaching and Teacher Education, 23*, 543-556.
- Ryan, R. M., & Deci, E. L. (2011). A self-determination theory perspective on social, institutional, cultural, and economic supports for autonomy and their importance for wellbeing. In V. I. Chirkov, R. M. Ryan & K. M. Sheldon (Eds.), *Human autonomy in cross-cultural context* (pp. 45-64). Dordrecht, Netherlands: Springer. doi: 10.1007/978-90-481-9667-8_3
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and wellbeing. *American Psychologist, 55*, 68-78. doi: 10.1037/110003-066X.55.1.68
- Sahlberg, P. (2015). *Finnish lessons 2.0: What can the world learn from educational change in Finland?* (2nd ed.). New York, NY: Teachers College.

- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with the short questionnaire: A cross-national study. *Educational and Psychological Measurement, 66*, 701-716.
- Shirley, D. [GLkanalen]. (2015, April 21). *The role of teachers in developing students' talents* [Video file]. Invited lecture, GL's 125 års jubilæumskonference om elevernes læring og lærernes undervisning (Secondary School Teachers 125th Anniversary Conference: Student Learning and Teachers' Teaching), Copenhagen, Denmark. Retrieved from <https://youtu.be/hlDvf4RhtcE>
- Tabachnick, B., & Fidell, L. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson Education.
- Tschannen-Moran, M., & Barr, M. (2004). Fostering student learning: The relationship of collective teacher efficacy and student achievement. *Leadership and Policy in Schools, 3*(3), 187-207. doi: 0.1080/15700760490503706
- Tschannen-Moran, M., & McMaster, P. (2009). Sources of self-efficacy: Professional development formats and their relationship to self-efficacy and implementation of a new teaching strategy. *The Elementary School Journal, 110*, 228-245.
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education, 23*, 944-956. doi:10.1016/j.tate.2006.05.003
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education, 17*, 783–805.
- Watt, H. M. G., & Richardson, P. W. (2007). Motivational factors influencing teaching as a career choice: Development and validation of the FIT-Choice scale. *The Journal of Experimental Education, 75*, 167-202.
- Watt, H. M. G., Richardson, P. W., & Wilkins, K. (2014). Profiles of professional

engagement and career development aspirations among USA preservice teachers.

International Journal of Educational Research, 65, 23-40. doi:

10.1016/j.ijer.2013.09.008

Woolfolk Hoy, A., & Burke Spero, R. (2005). Changes in teacher efficacy during the early years of teaching: A comparison of four measures. *Teaching and Teacher Education*, 21, 343-356. doi: 10.1016/j.tate.2005.01.007

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli W. B. (2007). The role of personal resources in the Job Demands-Resources Model. *International Journal of Stress Management*, 14, 121-141. doi: 10.1037/1072-5245.14.2.121

Table 1

Participant Demographics (N = 253)

Schools: 52 (out of 72)	Range of 1 to 12 participants per school: 1 participant per school = 15 schools 2 per school = 11 schools 3 to 5 teachers per school = 14 schools 6 to 9 teachers per school = 11 schools 10+ teachers per school = 3 schools 55 teachers (unspecified)
Teaching Level	Elementary: 44.3% Secondary: 42.3% Unspecified or both levels: 12.6%
Years of Teaching	0 to 38 years ($M = 15.30$, $SD = 9.12$)
Early career (0-7 years)	$n = 70$
Mid-career (8-23 years)	$n = 120$
Late career (24+ years)	$n = 58$
Years Teacher at Current School	0 to 33 years ($M = 8.32$, $SD = 7.05$)
Age of Teachers	< 25 years: 2.4% 25-35 years: 25.3% 36-45 years: 31.6% 46-55 years: 32.0% 56+ years: 8.7%
Gender	Female: 74.7% Male: 24.1% Unspecified: 1.2%

Table 2
Correlations between Variables for Structural Equation Modelling

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1. PLP	-																							
2. Level	-.12	-																						
3. CE1	.13*	-.07	8.26																					
4. CE2	.12	-.14*	.81**	2.27																				
5. CE3	.11	-.13*	.73**	.822	2.09																			
6. CE4	.09	-.14*	.82**	.81**	.76**	7.98																		
7. CE5	.10	-.12	.81**	.80**	.76**	.78**	8.30																	
8. TSE1	.20**	-.10	.26**	.25**	.28**	.31**	.34**	8.28																
9. TSE2	.21**	-.08	.35**	.34**	.35**	.38**	.43**	.69**	8.96															
10. TSE3	.12	-.08	.25**	.28**	.28**	.33**	.31**	.54**	1.52															
11. TSE4	.18**	.04	.32**	.27**	.31**	.27**	.32**	.47**	7.96															
12. TSE5	.16*	-.02	.29**	.23**	.30**	.26**	.31**	.53**	2.09															
13. TSE6	.17**	.03	.37**	.29**	.30**	.30**	.33**	.33**	9.03															
14. TE: Social	.03	-.19**	.37**	.48**	.40**	.40**	.45**	.17*	1.66															
15. TSE: Coll	-.10	.10	.12	.14	.14	.09	.09	.08	1.82															
16. CE: Coll	-.12	-.01	.03	.09	.02	.02	-.01	-.01	9.97															
17. SO: Coll	-.05	.09	.15	.16*	.16*	.12	.11	.01	1.23															
18. Comm	-.03	.02	.22**	.26**	.20**	.22**	.19**	.18*	5.00															
19. Children	-.06	-.19**	.21**	.15*	.22**	.14*	.17*	.07	0.90															
20. Subject	-.08	-.15*	.14*	.14*	.20**	.16*	.18**	.16*	.18*															
21. Mentor	.04	-.11	.15*	.14*	.19**	.18**	.22**	.10	1.18															
22. Time	.10	-.11	.13	.06	.05	.04	.06	.14*	1.30															
23. Self	-.01	-.01	.13	.06	.10	.08	.13	.12	1.44															
									5.18															
									1.68															

* $p < .05$ ** $p < .01$ Note. Means (Standard Deviations) are presented on the diagonal.

Abbreviations: PLP = Professional Life Phase, Level = Teaching Level, TSE = Teachers' Self-efficacy, CE = Collective Efficacy, TE: Social = Teachers' Engagement (Social with Colleagues), Coll = Collaborative TPL, SO: Sources of Efficacy, Comm = Building Community Items (18 to 23 are reasons for TPL)

Table 3

Fit Statistics for Teachers' Model of Motivation and Professional Learning

Model	χ^2	<i>df</i>	CFI	RMSEA	CI	SRMR
1. Teaching Level, Professional Life Phase predicting Efficacy Beliefs (TSE, CE), and Teachers' Engagement (four subscales) predicting Collaborative TPL and Six Reasons for TPL	614.99	267	.87	.07	[.06-.08]	.12
2. Professional Life Phase predicting TSE; Teaching Level predicting CE; TSE and CE predicting Teachers' Engagement (4 subscales); Teachers' Engagement predicting Collaborative TPL and Six Reasons for TPL	611.09	272	.88	.07	[.06-.08]	.12
3. Teaching Level, Professional Life Phase predicting TSE, CE; TSE, CE predicting Teachers' Engagement (SwC); Teacher Engagement (SwC) predicting Collaborative TPL (latent variable) and Six Reasons for TPL	512.54	272	.92	.07	[.05-.07]	.11
4. Teaching Level, Professional Life Phase predicting Efficacy Beliefs (TSE, CE); Efficacy Beliefs predicting Teacher Engagement (SwC); Teachers' Engagement (SwC) predicting Collaborative TPL and Six Reasons for TPL	475.04	273	.93	.06	 [.05-.06]	.06

Note. The best fitting model details are presented in **Bold**.

Abbreviations: TSE = Teachers' Self-Efficacy, CE = Collective Efficacy, Engagement (SwC) = Teachers' Engagement (Social with Colleagues), TPL = Teachers' Professional Learning,

Table 4

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

Joyce and Calhoun (2010)	Alberta Education	Alberta Teachers	Buehl and Fives (2009)	OECD (2013)	TPD@Work Survey ^a	6P Framework of TPL
			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. Observation visits to other schools 4. Formal mentoring and/or peer observation and coaching	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					

Table 4 (Continued)

Joyce and Calhoun (2010)	Alberta Education	Alberta Teachers	Buehl and Fives (2009)	OECD (2013)	TPD@Work Survey ^a	6P Framework of TPL
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

^aTheoretical categories from the Teachers Professional Development at Work survey (Evers, Kreijns, & Van der Heijden, 2011).

Note. Numbers within each column refer to components that were previously identified through consultations (e.g., Alberta Teachers’ Association) and research. The table displays how each component contributes and aligns with at least one proposed “P” in the “6P framework” (as presented in the final column).

MOTIVATION AND COLLABORATION

Appendix

Questionnaire Items

A. Teachers' Self-Efficacy

Items rated from Not at all confident (1) to Extremely confident (11)

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?

B. Teachers' Self-Efficacy and Professional Learning

Introduction: 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
2. my confidence to motivate students who show low interest in school has been influenced most by
3. my confidence to get students to follow classroom rules has been influenced most by
4. my confidence to implement a variety of assessment strategies for and of student learning has been influenced most by
5. my confidence to offer appropriate instruction for students of varying abilities has been influenced most by
6. my confidence to link instruction to curriculum learning objectives has been influenced most by

MOTIVATION AND COLLABORATION

Appendix (Continued)

C. Collective Efficacy

Items rated from Not at all confident (1) to Extremely confident (11)

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?

D. Collective Efficacy and Professional Learning

[see section B for the introduction]

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
2. work together to effectively work with parents was most influenced by
3. collaborate with other public and social agencies that are in the community was most influenced by
4. work together to maximize our effectiveness was most influenced by
5. work together to overcome various difficulties that may arise was most influenced by

E. Sources of Efficacy

[see section B for the introduction]

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

MOTIVATION AND COLLABORATION

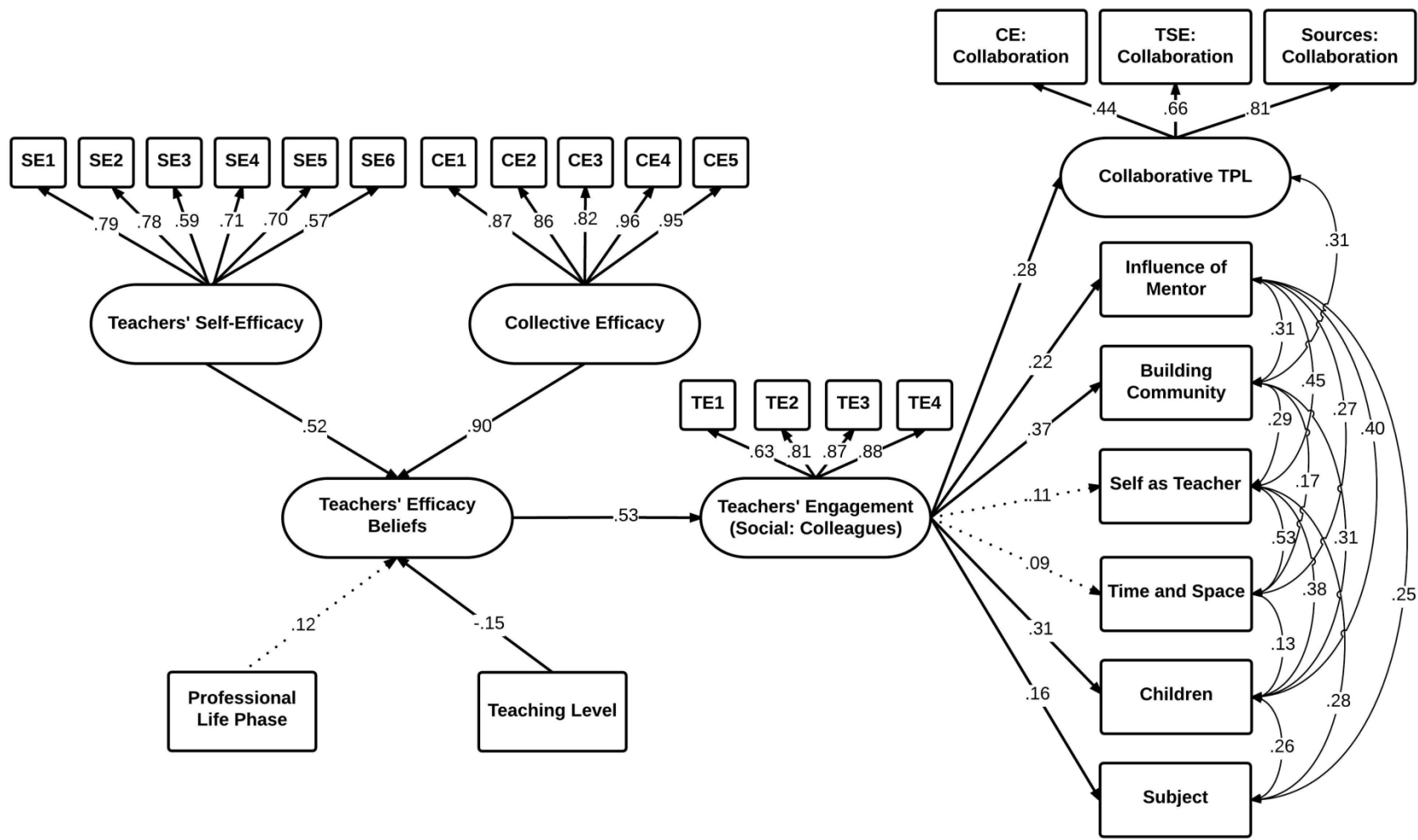
Appendix (Continued)

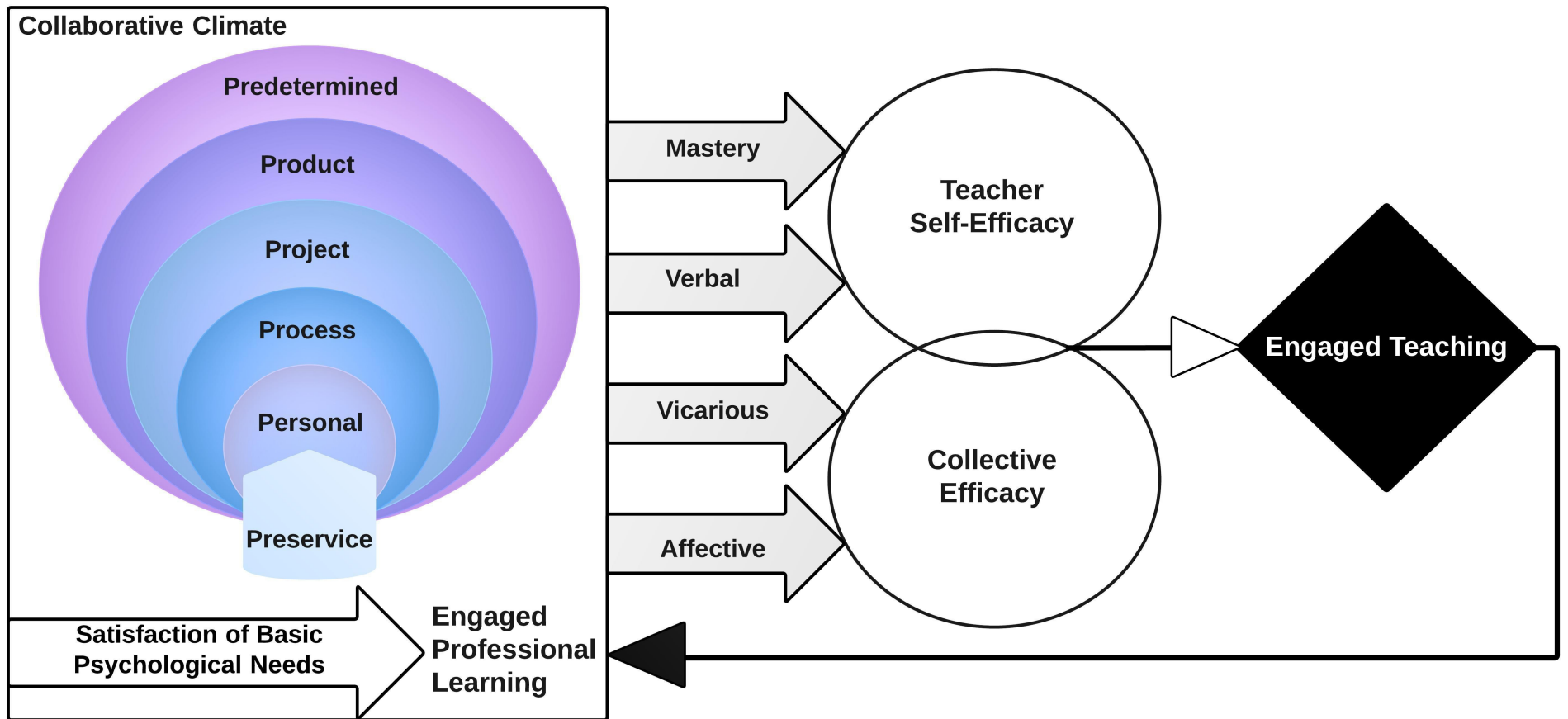
F. Reasons for Professional Learning

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)

Instructions: Please rate how important each of reason is for YOUR professional learning
Items rated from Not at all important (1) to Very Important (7)





Highlights

- Teachers' motivational beliefs and professional learning are positively related
- Time and space to think is the most important reason for professional learning
- The most important types of professional learning involve collaboration
- We propose a research framework for teachers' motivation and professional learning

Motivation and Collaboration:

The Keys to a Developmental Framework for Teachers' Professional Learning

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