



DEPARTMENT OF EDUCATION  
AND SPECIAL EDUCATION

# Effect of Professional Development and Self-efficacy on Teachers' Job Satisfaction in Swedish Lower Secondary School

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Course Code:	PDA184 Master Thesis in Education
Credits:	30
Program:	International Master in Educational Research
Level:	Advanced level
Term/Year:	Spring 2018
Supervisor:	Kajsa Yang Hansen
Examiner:	Ernst Thoutenhoofd

## Abstract

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**Aim:** The intent of this study is to examine the effect of professional development and self-efficacy on job satisfaction of teachers who work at the lower secondary schools in Sweden. The second part of the study is to investigate the internal factors of teachers' characteristics and external factors of school climate effect on job satisfaction. The Swedish data from Teaching and Learning International 2013 Survey (TALIS 2013) are utilised in this study.

**Theory:** Input-Process-Outcome (IPO) model as the conceptual frameworks is applied in this study. IPO is a model for contextualising teaching and learning conditions and widely applied in education statistical models, which abridges the theory and methods translational gap and helps to conceptualise the settings that is to understand the variables in individual-level and school-level and also to interpret the results.

**Method:** Two statistic software programmes are utilised in this thesis. Statistical Package for the Social Sciences (SPSS) version 25.0 is used for data management and Structural Equation Modelling (SEM) estimation is carried out with the Mplus 7.4. Path analysis are offered to examine each indicator direct or an indirectly influences on teachers' job satisfaction.

**Results:** Professional development and self-efficacy directly and positively influence teachers' job satisfaction. Teachers' constructive beliefs and classroom disciplinary climate show the significant positive indirect teachers' job satisfaction by affecting professional development and self-efficacy respectively. Gender, age, teacher co-operation, teacher-student relationship and participation among stakeholders have direct and positive effect on job satisfaction. The factors of years working as a teacher in total show negative direct effect on job satisfaction. Gender indirectly and positively influences job satisfaction by impacting teachers' professional development and through self-efficacy by affecting teachers' professional development separately. Age negatively and indirectly affects job satisfaction both through constructive beliefs and through self-efficacy by impacting on constructive beliefs. Teacher co-operation has positive and indirect impact on job satisfaction through teacher self-efficacy and professional development respectively. Teacher-student relations indirectly and positively affect job satisfaction through classroom disciplinary climate, through teacher self-efficacy, and through self-efficacy by influencing classroom disciplinary climate. The indirect effects of participation among stakeholders are achieved through classroom disciplinary climate or professional development. By comparing three models, the school environment has a greater impact than teachers' characteristics on Swedish compulsory teachers' job satisfaction.

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Xin Liu  
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## Abbreviation

CFA	<i>Confirmatory Factor Analysis</i>
IPO	<i>Input-Process-Output model</i>
ISCED	<i>International Standard Classification of Education</i>
OECD	<i>Organization for Economic Co-operation and Development</i>
PISA	<i>Programme for International Student Assessment</i>
SEM	<i>Structural Equation Modelling</i>
TALIS	<i>Teaching and Learning International Survey</i>

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# **1. Introduction**

## **1.1 Background of the Study**

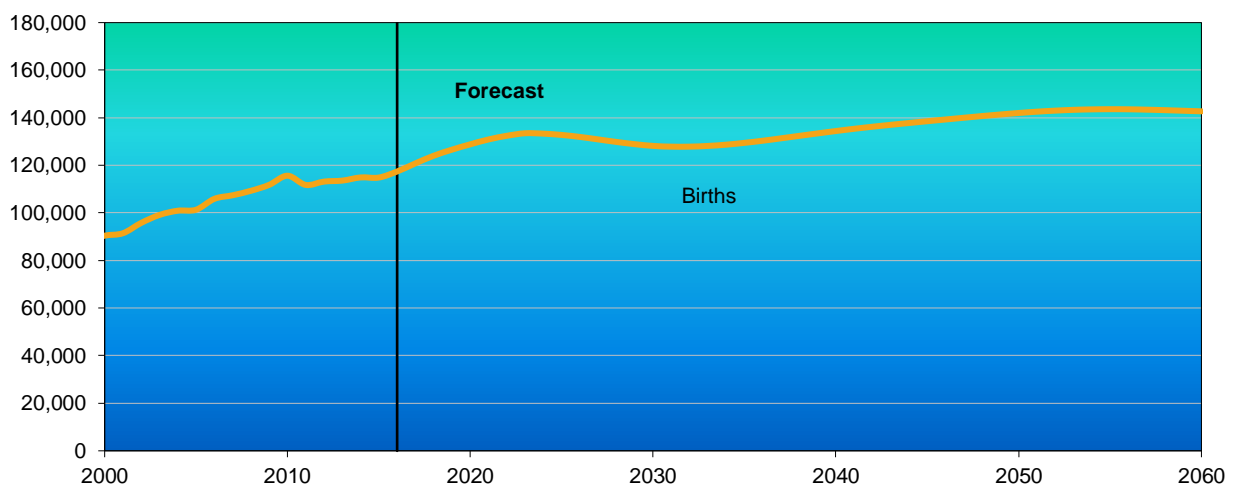
### **1.1.1 The Context of the Topic**

Teachers play a crucial role in the educational system. Many studies (Earl & Timperley, 2008; Harris & Sass, 2011; Hattie, 2008; Ko & Sammons, 2012; Konstantopoulos, 2006; Leigh, 2010; TALIS 2013) state that the quality of teachers and teaching as critical related factors affect school development and students' academic achievement. To recruit, retain and develop teachers are significant problems in many countries, the following reasons to cause the problems, such as teacher turnover, teacher attrition, negative working conditions, less job satisfaction, which lead teachers to leave the profession before their retirement age (Borman & Dowling, 2008; Skaalvik & Skaalvik, 2011). Several studies showed that satisfied teachers contributed to teacher retention, low turnover, high productivity, teaching quality, teachers' attitude, individual professional development, students' outcomes and school improvement (Akiri, 2014; Caprara et al., 2003; Demirtas, 2010; Skaalvik & Skaalvik, 2011; Iqbal et al., 2017; Ingersoll, 2001; Judge et al., 2001). In other words, teachers' job satisfaction is not only related to teacher overall well-being, but also to job performance, student achievement and school success (Cerit, 2009; Ostroff, 1992).

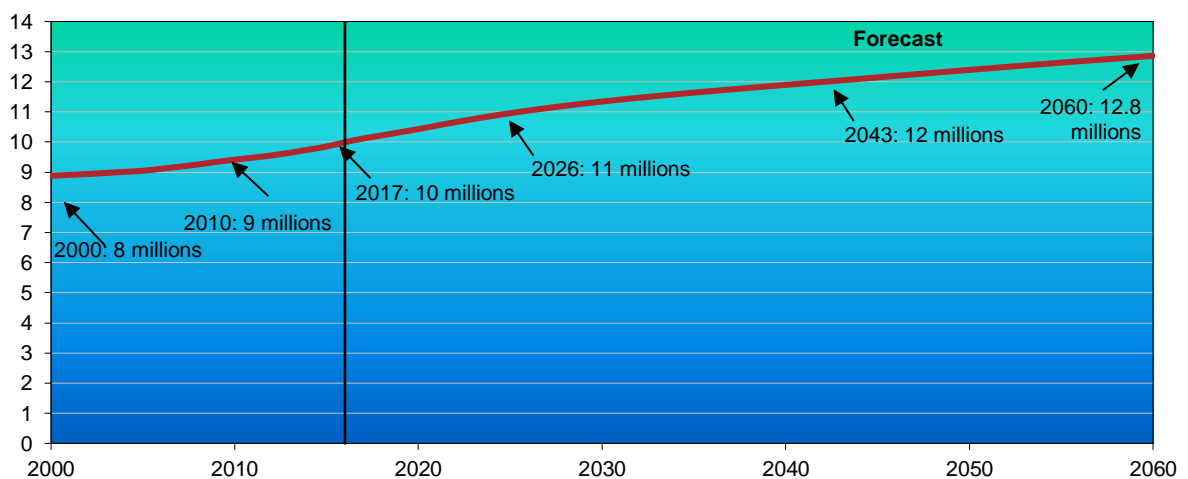
The survey of *The Future Population of Sweden 2017-2060* from the Statistics Sweden forecasts that a population increase of three million in Sweden in 2060, which includes new-born children, schoolchildren, older and immigration. The Figure 1 and Figure 2 demonstrate the number of births and total population between 2000 and 2016 and forecast between 2017 and 2060 in Sweden. The population increase rapidly during the following years, which will positively influence on technical change and national economic development (Coale & Hoover, 2015; Easterlin, 1967). Meanwhile, it means that more children will receive an education. In Swedish educational system, the nine-year comprehensive compulsory school consists of six-year primary and three-year lower secondary education. All of children residents between the age of 7 and 16 are required to go to school (if there are particular reasons, the starting time is flexible at the age of 6, 7 or 8-year old) (Halldén, 2008; Skolverket, 2018). That is to say, large quantities of teachers are required in compulsory education stage.

In the *Absences Report* from the Swedish Teacher Union (Läraryrket, 2017) states that

38,391 teachers left teaching profession and are working in other areas. According to Statistics Sweden (SCB), there will be a lack of 79,000 teachers by 2035 and Sweden is experiencing an extremely teacher shortage (Lärarförbundet, 2017). SCB surveyed in 2016 about what could make the leaving teacher return to school, and the results included three aspects: more reasonable workload in working hours, more opportunity to control work situation and higher wages. A number of studies demonstrate that teacher personality traits influence teachers' job satisfaction, school climate and culture, education policy, work tasks, professional development, interpersonal relationship and salary (August & Waltman, 2004; Black, 2004; Butt et al., 2005; Crossman and Harris, 2006; Dinham and Scott, 1998; Knox, 2011).



**Figure 1** Births 2000–2016 and forecast 2017–2060 (Statistics Sweden, 2017)



**Figure 2** Population 2000–2016 and forecast 2017–2060 (Statistics Sweden, 2017)



### 1.1.2 Problem Statement

In the *Organization for Economic Co-operation and Development (OECD) Teaching and Learning International 2013 Survey (TALIS, 2013a)*, 85.4% Swedish lower secondary school teachers are satisfied with their job. Compared with other Nordic countries, 91 % in Finland, 92.9 % in Denmark, 94.5% in Iceland, 94.9% in Norway, the proportion of Swedish teachers' job satisfaction is the lowest. Moreover, the average percentage of TALIS and OECD is 91.1% and 91.4 % respectively. Sweden was the fourth from bottom in all 34 participating countries and economies (TALIS, 2013a). The key findings from the TALIS 2013 show: (1) only 5% teachers in Sweden reports that teaching is a valued profession in society; (2) 53.4% of teachers indicate that they would choose to be teachers again (ranking last one and the international average of 77.6% ); (3) 17.8% report that they regret becoming teachers (4) 50.4% versus the OECD average of 31.6% teachers wonder whether it would have been better to choose another profession (ranking the last one). Table 1 shows the comparison data among Sweden, other Nordic countries and the average of TALIS 2013.

**Table 1** Percentage of lower secondary education teachers who “agree” or “strongly agree” with the statement (From OECD, TALIS 2013 database)

	I think that the teaching profession is valued in society			If I could decide again, I would still choose to work as a teacher			I regret that I decided to become a teacher			I wonder whether it would have been better to choose another profession		
	%	(S.E.)	Ranking	%	(S.E.)	Ranking	%	(S.E.)	Ranking	%	(S.E.)	Ranking
<b>Denmark</b>	18.4	(1.0)	22	78.3	(1.4)	20	5.2	(0.7)	5	34.1	(1.7)	20
<b>Finland</b>	58.6	(1.2)	5	85.3	(1.0)	6	5.0	(0.4)	3	27.5	(0.9)	12
<b>Iceland</b>	17.5	(1.1)	24	70.4	(1.4)	27	11.6	(0.9)	25	45.4	(1.5)	32
<b>Norway</b>	30.6	(1.5)	17	76.7	(1.4)	22	8.3	(0.6)	18	38.2	(1.5)	27
<b>Sweden</b>	<b>5.0</b>	<b>(0.5)</b>	<b>32</b>	<b>53.4</b>	<b>(1.1)</b>	<b>34</b>	<b>17.8</b>	<b>(0.8)</b>	<b>33</b>	<b>50.4</b>	<b>(1.2)</b>	<b>34</b>
<b>Average</b>	<b>30.9</b>	<b>(0.2)</b>	<b>-</b>	<b>77.6</b>	<b>(0.2)</b>	<b>-</b>	<b>9.5</b>	<b>(0.1)</b>	<b>-</b>	<b>31.6</b>	<b>(0.2)</b>	<b>-</b>

Much debate continues about how to retain and recruit extensive teachers and decrease teacher shortage in Sweden. To satisfy the needs of teachers, the report *Sweden Needs More Teachers* from Teachers' Union (2015) presents five proposals. Besides higher salary, teacher autonomy, better career opportunities, a combined strategy from government and organisations and professional skills development are also proposed.

In TALIS 2013, teachers in Sweden spend fewer days than TALIS average participating in professional development activities in past 12 months. Compared with the TALIS average of participating professional activities rate, Swedish teachers report higher rates in education

conferences and a network of teachers, and lower rates in courses/workshops, in-service training, individual or collaborative research and qualification programme. Meanwhile, most Swedish teachers receive feedback only from the principal, and 32% Swedish teachers never have received feedback (TALIS average is 12%). TALIS 2013 provides some themes and indicators to examine the relationship between them and teachers' job satisfaction, such as teacher education (initial education, induction, and in-service professional development), school leadership, teacher self-efficacy, school climate and ethos and teachers' pedagogical beliefs and practices. Previous empirical evidence has shown that teachers' self-efficacy play a crucial role in affecting and retaining teachers' commitment to school and job satisfaction (Caprara et al., 2003a; Caprara et al., 2003b; Judge et al., 2001; Klassen et al., 2009; Skaalvik & Skaalvik, 2007). How does teacher professional development influence the Swedish teachers' job satisfaction in TALIS 2013? How does Swedish teachers' self-efficacy impact on job satisfaction? Will the teachers' characteristics and school climate factors play a role in this process? This study will utilise TALIS 2013 database to investigate the how professional development, self-efficacy directly or indirectly affect Swedish teachers' job satisfaction in lower secondary school. Meanwhile, it is also to examine whether teachers characteristics and school climate have an effect on job satisfaction or not.

### **1.1.3 Defining the Key Terms**

#### *Job Satisfaction*

Locke (1976) defined job satisfaction as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (p. 1304). Job satisfaction is an individual multidimensional psychological response to the personals' job, which always is affected by environmental, psychological, and demographic factors (Crossman & Harri, 2006; Scott & Dinham, 2003; Spector, 1997; O' Brien, 1983).

#### *Self-efficacy*

From Bandura's (1977, 1978) social cognitive model, self-efficacy is defined as one's ability and capacity to accomplish a task or deal effectively with environmental demands. Self-efficacy has positively, strongly affect work-related performance, and makes diverse in individual's think, feel, and act (Stajkovic & Luthans, 1998). For example, a person with low self-efficacy is associated with pessimistic thoughts, depression, anxiety, helplessness, and negative cognitive processes.

#### *Professional Development*

Professional development is defined as a learning process to earn skills or qualifications and maintain career advancement (Speck & Knipe, 2005). In educational area, it is about developing teachers' skills, knowledge, and expertise, learning procedures, learning how to learn and transforming the knowledge into practice (Bailey, Curtis, & Nunan, 2001; Avalos, 2011; TALIS, 2013a).

#### **1.1.4 Personal Interest in the Topic**

The main reason for choosing this topic is personal interest. After leaving teaching profession because of job attrition, the author became interested in teacher professional development and job satisfaction. After noticed the Swedish data in TALIS 2013, the results and teachers' perspectives were surprising. What are the reasons for unsatisfactory results, and how do these indicators affect Swedish teachers' job satisfaction? Curiosity and the power of finding causality drive the author to do this study.

#### **1.1.5 Research Gap**

Teachers' job satisfaction is a prevalence research area during the recent forty years. A body of empirical literature research the relationship between some indicators and job satisfaction, such as school culture and climate (August & Waltman, 2004; Hatchett, 2010), professional development (Nir & Bogler, 2008; Reeves, Pun & Chung, 2017), teachers' self-efficacy beliefs (Bandura, 1997; Coladarci, 1992; Reyes & Shin, 1995), principal leadership (Bogler, 2001; Cerit, 2009; Griffith, 2004), teacher characteristics (Judge & Bono, 2001; Oshagebemi, 2000; Cano & Miller, 1992), student achievement (Hatchett, 2010; Iqbal et al., 2016; Kett, 2014), etc.

The gaps of previous literature centre on three aspects: variable, correlation and result. Some essential variables as important elements in the personal and organisational environment, but few existing kinds of literature to research. Such as the effect of constructivist belief on professional development or job satisfaction by affecting teachers' professional development; teacher-student relations impact on teachers' professional development or self-efficacy; the age influence self-efficacy. There are two controversial and different result from professional development effect on job satisfaction, gender effect on teachers' job satisfaction. Meanwhile, there is a doubt about the positive effect of working experience on teacher job satisfaction. In this study, the absence variables will be investigated. Try to find the same or different result, this study re-examines in Swedish education context. Meanwhile, not only assess the

professional development, self-efficacy directly affect teachers' job satisfaction, also include the indirect influence.

In Swedish research context, some articles focus on teachers' job satisfaction in nine-year comprehensive education or six-year primary education (Åhlander, Rydell & Löfqvist, 2011; Arvidsson et al., 2016; Dorozynska, 2016; Ellmin, 1995; Jacobsson, Pousette & Thylefors, 2001; Mykletun, 1985), less engage in three-year lower secondary education, not mention to utilise large-scale database from TALIS. This research will fill this gap in the research participants, school context and data resources, which concentrate on the Swedish lower secondary teachers' data from OECD TALIS 2013. Regarding research method, there has been a lack of structural equation modelling (SEM) to analyse the dependencies among a set of variables in Swedish teachers' job satisfaction. In this study, SEM will be offered as statistical methods to impute relationships among teacher characteristics, school climate, professional development, teachers' self-efficacy beliefs and job satisfaction as well as to state the directly or indirectly correlation among each variable.

## **1.2 The Research**

### **1.2.1 Purpose Statement**

The intent of this study is to examine the effect of professional development and self-efficacy on job satisfaction of teachers who work at the lower secondary schools in Sweden. The complex scale factors of teachers' constructive belief and classroom disciplinary climate are as the important independent variables in this study. The second part of the study is to investigate the internal factors of teachers' characteristics and external factors of school climate effect on job satisfaction. Personal characteristics are divided into gender, age, highest formal education level and years working as teaching profession; school climate contains teacher co-operation, teacher-student relationship and teachers' participation as stakeholders. These six factors as independent variables control moderating variables professional development and self-efficacy, which are utilised to assess the effect change on teachers' job satisfaction. The overall purposes are to understand the lower job satisfaction of Swedish teachers.

### **1.2.2 Questions**

Based on the previous introduction, a quantitative analysis with TALIS 2013 data is carried out to investigate the teachers' job satisfaction in Swedish lower secondary schools. The aim of the study will be fulfilled by answering the following research question:

- (1) Irrespective of personal background information and school climate, how do professional development, self-efficacy directly and indirectly affect teachers' job satisfaction in Swedish Lower Secondary School?
- (2) Does personal background (gender, age and working years as a teacher in total) affect teachers' job satisfaction? Regarding individual background information, does the influence of professional development, self-efficacy on teachers' job satisfaction change?
- (3) Do school climate factors (teacher co-operation, teacher-student relationship and participation among stakeholders) bring out teachers' job satisfaction in Swedish schools? Take into account the aspect of school climate, does the impact of professional development, self-efficacy on teachers' job satisfaction change?

To answer the research question, the following four null hypotheses are established:

***Hypothesis1*** Swedish Teacher professional development has no significant direct and indirect effect on teachers' job satisfaction without regard to personal background information and school climate.

***Hypothesis2*** Teachers' self-efficacy has no significant direct and indirect effect on job satisfaction at lower secondary schools in Sweden.

***Hypothesis3*** Swedish teachers' background (gender, age, highest education level and working years as a teacher in total) has no significant effect on their job satisfaction.

***Hypothesis4*** School climate (teacher co-operation, teacher-student relationship and participation among stakeholders) does not affect Swedish teachers' job satisfaction.

### **1.2.3 Design**

The study uses a quantitative approach to explore teachers' job satisfaction in Swedish lower secondary school. By analysing teachers' job satisfaction in TALSI 2013 database, Input-Process-Output as the conceptual framework and structural equation modelling as the main method of analysis is offered in this research. To achieve robust explanation and comprehension, 15 main single or complex scale items from TALIS 2013 Swedish data as the factors or constructs are examined the relationship with teachers' job satisfaction in the lower secondary education context. TALIS is an international survey from OECD, which focus on teacher learning environment and working conditions in schools to develop a high-quality teaching profession. In TALIS 2013, 34 countries and economies and approximately 106 000 lower secondary teachers respond to the survey. The questionnaires (online and paper) are separate for teachers and principals, requiring between 45 and 60 minutes completing the

questionnaires. By comparing and analysing the international data, the questions for TALIS 2013 focus on seven aspects, such as teacher characteristics, working environments, school leadership, learning and development opportunities, appraisal and feedback, pedagogical practices and beliefs, self-efficacy and job satisfaction (TALIS, 2013). In Sweden, 3,319 from 186 schools completed the TALIS questionnaires (TALIS, 2013), which is 87% teacher participation in 96% participating schools in Swedish lower secondary schools.

#### **1.2.4 Ethical Considerations**

The ethical issues of the TALIS data have already been thoroughly dealt with by the national research coordinator in each participating country. The identities of the teachers and schools have been assigned with unique ID numbers and protected, which cannot be identified. OECD has published the data from TALIS publicly, and the content and indicators are available to each researcher. Thus, the ethical consent is not required to consider.

#### **1.2.5 Value of the Research**

The values of this research have four dimensions. In terms of the teachers, to better understand dissatisfied teachers, and try to find the reasons for teacher attrition and leaving the teaching profession. The results will have the advantage to shape positive individual beliefs and well-being career development. The second dimension is to aid in policies or programmes of professional development in Swedish lower secondary school, which will be the benefit of forming an active and sustainable working environment. Meanwhile, plenty of high job satisfaction teachers will bring prolific research output to promote school improvement. For the student, higher job satisfaction teacher will provide high-quality job performance on instructional skills and structure support, which strongly influence student achievement. In country-level, especially in Sweden, to investigate the factors affect teachers' job satisfaction will keep teacher retention and improve teacher recruitment. Both adequate quantity and great job satisfaction teachers will take considerable and vigorous in education development.

#### **1.2.6 Limitation**

There are two aspects of limitation in this study, including the data resources and analysis process.

In this study, all the analyses and results are based on the public database from OECD-TALIS 2013. Although the database is valid and reliable, the questionnaires cannot stand for each's

perception. Compared to data resource of other research, the Sweden sample from 3,319 teachers is large-scale, but they are still the small part of the teacher group. The honest and actual from each teacher cannot be fully guaranteed.

The time of data collection is in seven years ago. Although the teachers' personality traits will not change in a person's whole life (Cobb-Clark & Schurer, 2012; Soto & Gosling, 2011), importantly, school climate is not static (Klassen & Chiu, 2010). The school potential development and improvement target to support and offer professional development opportunities for teachers. Seven years later has passed the result may not explain all the problems.

In the analysis part, path-analysis model is utilised to investigate whether teacher background factors or school climate factors impact on job satisfaction respectively. If two-level model integrates the individual level and school level to estimate covariance, the consequence will be more complete.

### **1.3 Overview of the Structure**

This research is consists of seven sections. The first section is this part to introduce the background information and basic research content. The second section is to state the conceptual framework of this research. Next part turns to present a review of previous literature on the key terms, theories and instruments relevant to the study. The fourth section marks the heart of this study: methodology and data analysis, which contains detailed data source and variables, reliability and validity of data analysis, analytical approach-SEM introduction, and modelling process. The fifth section stats the modelling description and the findings from the model. The discussions on results are the sixth section. This part will interpret the findings and the contribution to the research problems. The end section of the research is the conclusion part. By once more concisely highlight the result and point the future research tendency.

## **2. Theoretical and Conceptual Framework**

### **2.1 Theoretical Stands on Job Satisfaction**

Job satisfaction is an individual multidimensional psychological response to the private job, which always is affected by environmental, psychological, and demographic factors (Crossman & Harri, 2006; Scott & Dinham, 2003; Spector, 1997; O' Brien, 1983). Herzberg (1968) developed a Two-Factor Theory or Motivator-Hygiene Theory to classify two categories factors that contributed to job satisfaction. The motivational factors consist of employees' recognition, sense of achievement, one's growth and promotional opportunities, responsibilities, and meaningfulness of the work (Hackman & Oldham, 1976). The hygiene factors include job security, interpersonal relations, physical working conditions, administrative policies, salary, fringe benefits and so on (Herzberg, 1968). According to Herzberg's theory, both motivational and hygiene factors are independent and he found these factors were related to human job dissatisfaction or satisfaction in a work environment. Higher hygiene factors would be increase satisfaction in the workplace and the motivation factors would be motivate the employee to higher performance. Hence, Herzberg stated that both of two factors were important to create higher job satisfaction conditions.

This study investigate part of the intrinsic factors and extrinsic factors effect on teachers' job satisfaction, including teachers' self-efficacy, professional development, teacher characteristics and school environment. The Motivator-Hygiene Theory will support to examine these factors whether have effect on job satisfaction in Swedish compulsory educational system.

### **2.2 Input-Process-Output Model**

The conceptual framework of this study is based on effective teaching and learning conditions. Thus, input-process-outcome (IPO) model as the basic structure is offered in this study. IPO outlines the relationships between individuals and the contexts they are nested in. It is used for contextualising teaching and learning conditions and widely applied in education statistical models, which effectively measure the variables of input, process and outcomes in the school context (Grabau & Ma, 2017; TALIS, 2013b). The components of IPO model defines as: input contains the information, ideas and resources used, process includes actions using input materials, and outcome is the results of the procession. IPO abridges the theory and methods



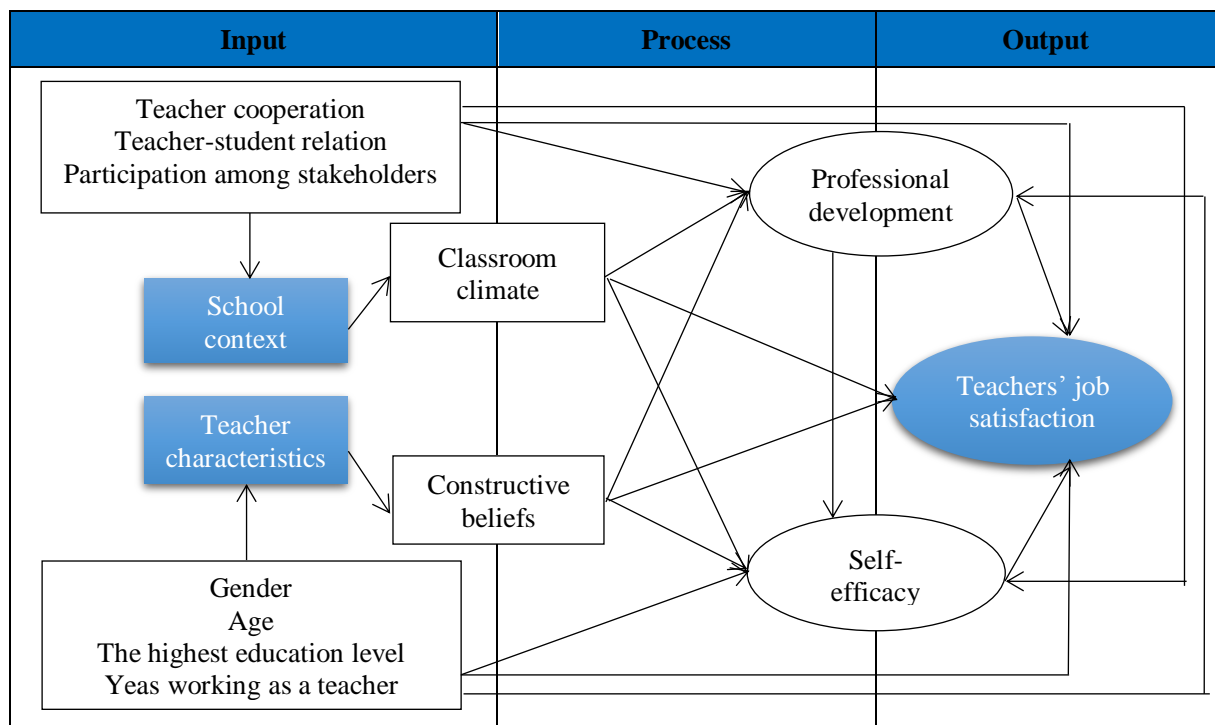
translational gap and helps to conceptualise the settings that is to understand the variables in individual-level and school-level and also to interpret the results.

**Table 2** A conceptual framework based on Input-Process-Output model

<b>Educational Actors</b>	<b>Input</b>	<b>Process</b>	<b>Output</b>
<b>Teacher/Classroom</b>	<b>Teacher characteristics:</b> gender, age, work experience, employment status, education background, formal education or training, subject knowledge, working time per week	<b>Teacher professional development</b> <b>Instructional time, student engagement</b> <b>Teacher pedagogical beliefs and practices</b> <b>Teacher-student relationships</b> <b>Classroom management</b>	<b>Teacher self-efficacy</b> <b>Job satisfaction</b> Classroom climate and behaviour
<b>School</b>	<b>School management</b>	<b>teacher co-operation</b> <b>Participation among stakeholders</b> <b>Professional development opportunities and support</b>	Promotion/retention policies School climate

Hence, IPO conceptual framework provides a well-defined analytical model for teacher individual and school context indicators. In TALIS 2013, to explain Swedish teachers' job satisfaction, some input factors such as stable teacher characteristics (e.g. age, gender), malleable (e.g. school context) should be considered. The role of personality has a strong effect on individual's work performance and job satisfaction (Judge, Bono, & Locke, 2000; Judge, Heller, & Mount, 2002; Ilies & Judge, 2003; Tett & Burnett, 2003; Tett, Jackson, & Rothstein, 1991). Teacher characteristics, such as gender, age, years of experiences, educational background affect teacher self-efficacy and job satisfaction (Ghaith & Shaaban, 1999; Meagher, 2011; Klassen & Chiu, 2010). "Teachers' professional development activities might be thought of as having two levels of effect: an effect on teaching practices and an effect on teachers' levels of self-efficacy and job satisfaction (TALIS, 2013, p.24)." According to Hattie (2009), teacher professional development has the most impact on teacher learning, knowledge, and classroom behaviour. At the school level, the school context affects teachers' professional needs, form, content, resources provided for professional development and teachers' participating in school as stakeholders (Bredeson & Johansson, 2000; Newmann, King & Youngs, 2000; Skaalvik &

Skaalvik, 2011). The core of IPO model is the process section that contains eight indicators, which will be utilised to examine the correlation between output factors. Although classroom climate and behaviour, promotion/retention policies, and school climate as the output factors from teacher-level and school-level actors, they also need to be investigated the relationship with teacher self-efficacy and job satisfaction respectively. By the indicators from TALIS 2013 and the conceptual framework, an analysis path diagram is created (shown in Figure 3). As shown in Figure 3, there are many factors which have either a direct or an indirectly influences on teachers' job satisfaction. In the path diagram, latent variables or constructs are represented by ellipses, and the observed variables or constructs are represented by squares. Structural equation modelling will analyse each path in the fourth section of the study.



**Figure 3** Hypothetical relationships model

### 2.3 Confirmatory Factor Analysis Model

The TALIS 2013 teacher questionnaire contains several items on different themes (e.g. teacher background, professional development, teacher job satisfaction...), some themes can be utilised single variable to analyse directly, while plenty of themes need to combine with different factors into latent variable constructs (e.g. teacher self-efficacy, teacher-student relationship). The confirmatory factor analysis (CFA) is used to construct the complex scale, which treats the

constructs as latent variables and measures the hypothesis relationship between the observed variables and their underlying latent constructs. (Bollen, 1989; Cronbach, 1951; Lahey et al., 2012).

The CFA model is a type of structural equation modelling (SEM) that is based on measurement theory (Wang & Wang, 2012). In measurement theory, each indicator in a set of observed measure reflects both the underlying common variance on the latent construct and unique variance (e.g. systematic latent variables that influence only one indicator, measurement error) (Thurstone, 1947). Therefore, the CFA model allows for measurement error in the manifest variables, inferences about the latent constructs can be interpreted as if the latent constructs were measured without error. The advantage of the CFA model is that it separates the error variance from unexplained variance in the latent variable constructs (Bollen, 1989; Brown, 2006).

The Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error Approximation (RMSEA) and the Standardized Root Mean Square Residual (SRMR) are commonly used to evaluate how well the CAF model fits the indicators (Kline, 2010; Taasobshirazi & Wang, 2016; Worthington & Whittaker, 2006). These indices all evaluate the correspondence between the observed variables with the variable constructs that based on the model. The CFI and TLI are both incremental fit indices that assess the fit of a baseline model with no relationship among the variables, and larger values indicate the better model fit. (Brown, 2006; Kline, 2010). The RMSEA assess the reasonable applicability of a model in the population, with the value closer to 0 represent a good fit (Brown, 2006; Kline, 2010). The SRMR is a measure of the difference between the residuals of the sample covariance matrix and the hypothesised model, with lower SRMR values indicating good model fit (Brown, 2006; Kline, 2010). The scientific conventions recommend cut-offs  $CFI \geq 0.90$ ,  $TFI \geq 0.90$ ,  $RMSEA < 0.08$ ,  $SRMR < 0.08$  that indicate an acceptably good model fit (Hu and Bentler, 1999; Schermelleh-Engel et al., 2003; Steiger, 1990; Yu, 2002). In this study, Mplus 7.4 (Muthén & Muthén, 1998-2012) carried out CFA model analysis.

### 3. Literature Review

This part provides the prior studies that are closely related to the central matters to introduce the general knowledge background, to fill the gaps and to establish the framework for this research. In the quantitative study, the related literature deductive as a basis for advancing the research questions (Creswell, 2018). There are four parts in this section. The first part is previous empirical research, and then review related theories about the subject issues. The third part is to present the previous scholarly articles on the instrument. The last part provides a clear and concise account of the current state of the knowledge and instruments on this research. A literature map is conducted to organise and summarise the overview of existing literature (shown in Figure 4).

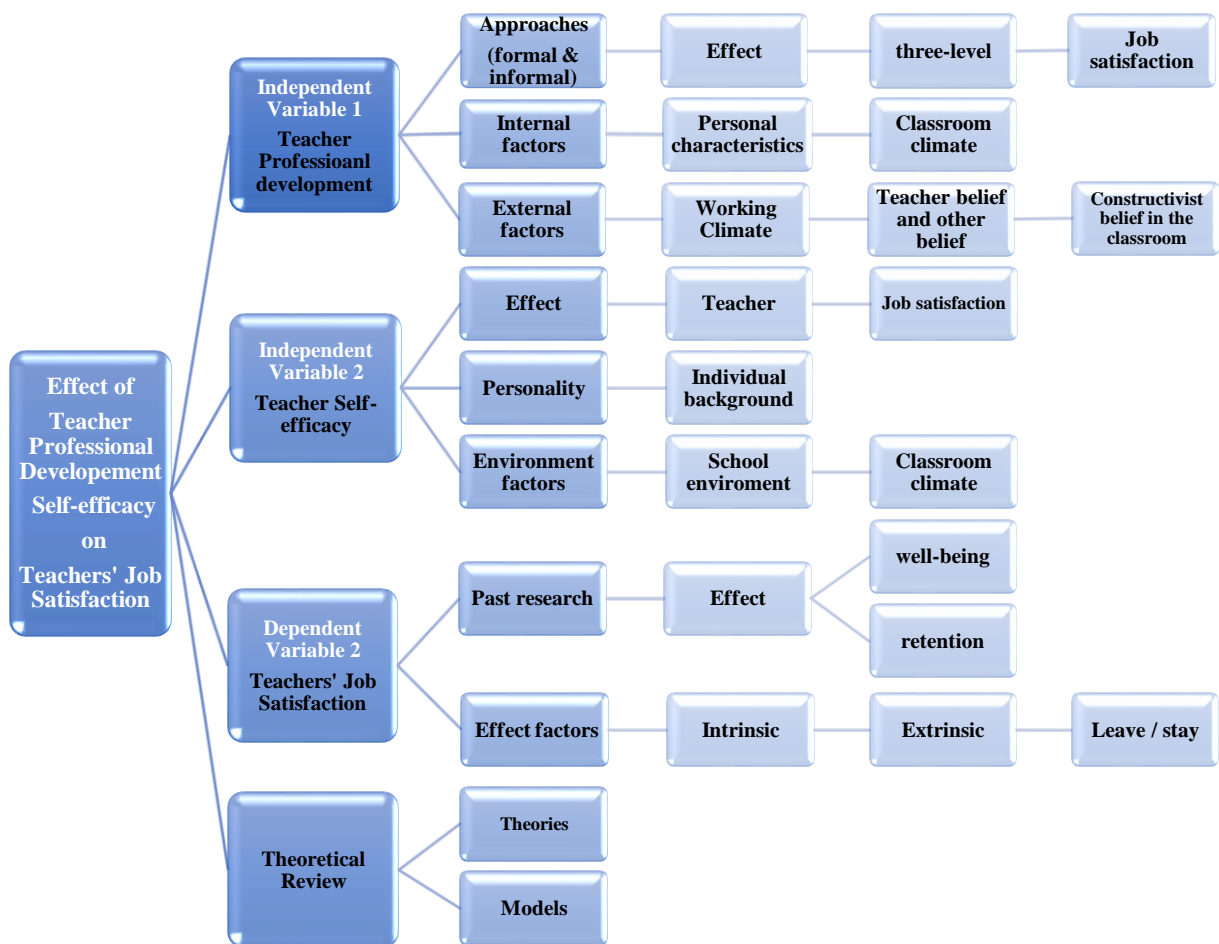


Figure 4 Literature map of the relations between independent and dependent variables

### **3.1 Teacher Professional Development**

Based on the definition of professional development in the previous section, refers to a person's development in his or her professional role, in the education area, teacher professional development can be defined as the teachers' professional growth of improving competence, gaining experience and examining teaching through the career cycle (Glatthorn, 1995). Professional development as a type of teacher education contains several patterns, such as formal education, pre-service training, in-servicing training, induction programme, teacher co-operation, individual research, qualification programmes, mentoring and peer observation and feedback, and so on (Avalos, 2011; Ganser, 2000; Marsick, 2001; Richter et al., 2011; TALIS, 2013c). Plenty of articles portray that teachers' professional development activities focus on competence improvement on teaching, learning, reading, understanding or research (Barlow & Antoniou, 2007; Behari-Leak, 2017; Gourlay, 2011; Nicholls, 2005; Warhurst, 2008; Weller, 2011; Wood, Farmer, & Goodall, 2016). In European Commission 2010 *Teachers' Professional Development* reported that schools provided various professional development activities during working time to support professional development in many European countries (European Commission, 2010). OECD 2012 stated that there were multiple professional development contents provided by varies countries (OECD, 2012). A policy of Teacher Evaluation System from the Chinese Ministry of Education (Ministry of Education of China, 2016) showed that teacher professional development was the keynote of teacher education area in next five years. What are the reasons that plenty of countries focus on the teachers' professional development?

#### **3.1.1 Effect of Teachers' Professional Development**

Previous studies showed that teachers' professional development activities had three-level effects on teacher individual, student achievement and school improvement respectively (Desimone et al., 2002; Goddard, Goddard & Tschannen-Moran, 2007; Heller et al., 2012; Lump et al., 2012; Stein, 1988; Taylor et al., 2005; Torff & Byrnes, 2011).

The impact of professional development activities on teacher level is thought of the effect on teaching practices behaviour, teacher retention, teachers' self-efficacy and job satisfaction (TALIS, 2013a; TALIS, 2013b). According to a meta-analysis from Hattie (2009) and other studies (Desimone et al., 2002; Snow-Renner & Lauer, 2005) showed that teacher professional development might not directly affect teacher instructional skills, but had the strongest impact

on teacher learning followed by the changes in teacher practices behaviour. There are four types of professional development have the most impact on teachers' knowledge and behaviour that include "observation of actual classroom methods; microteaching; video/audio feedback; and practice" (Hattie, 2009, p. 120). Three core features of teacher professional development collaboration and active learning, continuity across time and activities and differentiation, which have a positive association with teachers' knowledge and skills changes in the classroom practices (Garet et al., 2001). Meta-Analysis research from Harrison (1980) found that the professional development was an effective way to improve job satisfaction. Several studies note that induction programme, mentoring from others and working conditions as the elements of teacher professional development might influence the occupation attrition rates and teacher retention (Bennell, 2004; Ladd, 2009; Smith and Ingersoll; Strong, Villar, & Fletcher, 2008).

Regarding teacher professional development effects on self-efficacy, a small number of researchers have investigated the relations between them. The researchers demonstrated that teacher self-efficacy obtained higher scores through participated effective professional development activities (Rimm-Kaufman & Sawyer, 2004; Robarney, Allard, & Brown, 1994; Ross, 1994). Posnanski (2002) found that long-term in-service training programme of professional development had a positive effect on self-efficacy and teaching behaviours. Some studies focus on peer-coaching to examine the impact of professional development on teacher self-efficacy. A quasi-experimental study tested the teacher self-efficacy relevant input in four professional development formats with same teaching strategy. The result showed the supported mastery experiences through follow-up coaching had the strongest effect on self-efficacy belief for instruction (Tschannen-Moran & McMaster, 2009). Edwards and his colleagues (1998) found the peer mentoring had a small positive effect on teacher efficacy. Ma & MacMillan (1999) stated that the sense of professional activities participation might increase the higher sense of higher job satisfaction. From Nir and Bolger's study (2008) finds teachers in the instructional programmes and receive principal's support directly gained higher job satisfaction. Several studies showed that high-quality professional development led the teacher to remain in the profession and decrease the levels of attrition, particularly in the form of induction or coaching (Ladd, 2009; Stong, Villar & Fletcher, 2008).

The meta-analysis from Harrison (1980) found that teachers' professional development was an effective way to improve teachers' job performance and satisfaction; meanwhile, it had positive effects on students' outcomes. Another meta-analysis from 72 studies (Timperley et al., 2007)

assessed the effects of teachers' professional development on students' outcomes, which found a strong effect on students' science, writing, mathematics and reading achievement. Regarding the effect of teachers' professional development on students' learning, Borko and Putnam (1995) provided the research to examine the relations between teacher' teaching methods as the important element in the professional development and students' learning. The results showed that the students' learning changed based on the different instructional methods. The research to investigate the relationship between teachers' professional development and school improvement are rare. A document analysis literature from 52 publications (Poekerk, 2012) examined the professional development by affecting teacher leadership, which led further teachers' professional development and significant contributions to school improvement. Two quantitative studies from Pfannamstiel et al. (2000) and Hoque et al. (2011) found that six dimensions of teacher professional development activities influence the school improvement, including teacher co-operation, in-service training, action research, classroom observation, curricular focus and less emphasis on individual action enquiry. Teachers' professional development might produce a positive school climate and ethos, but it might also be the case that a specific school climate and ethos (TALIS, 2013b).

So far, in the educational area, most of the teachers' professional development studies focus on the effect on student achievement, rarely research on self-efficacy and job satisfaction. Unlike the consistent result of professional development has a positive effect on self-efficacy, the relations between teachers' professional development and job satisfaction has diverse voices. The research result from Meagher (2011) shows that teachers' professional development has no significant effect on job satisfaction. This study integrates four items of professional development to re-examine the effect on teachers' job satisfaction, meanwhile, as a mediator to assess the self-efficacy indirectly effect on job satisfaction.

### **3.1.2 Internal and External Factors Affecting Professional Development**

Over past 40 years several studies have investigated that Big Five personality traits of agreeableness, conscientiousness, extraversion, neuroticism and openness to experience are related job characteristics and work performance (Barrick & Mount, 1991; Ghiselli, 1973; Guion & Gottier, 1965; Hough et al., 1990; Loele & Hulin, 1962; Reilly & Chao, 1982; Rothmann & Coetzer, 2003). The characteristics of Big Five factors are: agreeableness seems to be good-natured, cooperative and trusting; conscientiousness is responsible, dependable, persistent, and achievement-oriented; extraversion is sociable, assertive and talkative;

neuroticism is tense, insecure and nervous; openness to experience seems to be artistically sensitive, imaginative and intellectual (Barrick, 1993). Differences in gender (Cavallera, Passerini & Pepe, 2013; Costa, Terracciano & McCrae, 2011; Schmitt, Realo & Voracek, 2008), age (Soto & Gosling, 2011; Specht et al., 2011), birth-order (Harris, 2006; Jefferson, Herbst & McCrea, 1998) and cultural background (Cheung et al., 2011; McCrea, 2002; Thompson, 2008; Trull & Geary, 1997) will impact the personality's formation. Some research showed that Big Five personalities tended to stabilise during a person is at work for about one to four years (McCrea & Costa, 1990; Kagan & Snidman, 2009). At the same time, the research data also found that the personality traits of adults would not change too much in a person's whole life (Cobb-Clark & Schurer, 2012; Soto & Gosling, 2011; Srivastava et al., 2003). Some studies showed that the teachers' demographic characteristics and attributes, such as gender, age, the level of formal education, experiences in the classroom could contribute to their beliefs (Celep, 2000; Doyle, 1997; Minor et al., 2002; Rimm-Kaufman, 2006; Richardson, 1996). Teachers' beliefs about learning and educational matters are reflected in professional belief, teacher learning, classroom practices, knowledge constructivist beliefs and instructional behaviours (Leder, Pehkonen & Torner, 2003; TALIS, 2013b; Staub & Stern, 2002; Woolfolk Hoy, Davis & Pape, 2006).

The school context is regarded as the elements of teaching and learning practices, disciplinary norms, decision-making processes, the sense of community, organisational structures, interpersonal relationships and safety (Allodi, 2010; Anderson, 1982; Battistich et al., 1997). Results from several studies showed the school context strongly affected teachers' professional development. For example, Geijsel et al. (2009) found school organisational conditions (e.g. teacher collaboration and decision-making) and leadership practices (e.g. individual consideration and intellectual stimulation) had a strong effect on teachers' professional learning. Teacher collaboration promotes the quality of professional development on teacher observation, peer coaching, shifting practice, problem-solving and feedback giving (Boudah et al., 2001; Butler et al., 2004; Glatthorn, 1987; Stein et al., 1999). The meta-analysis of Hattie (2009) also stated that peers co-operation influenced teachers' learning and assist in emotional support, cognitive restructuring, and social facilitation and comparisons.

The teachers' constructivist belief regards learning is a process of knowledge construction rather than a process of knowledge transmission (TALIS, 2013b). In the previous research, the strong evidence shows that the personality characteristics of gender, age, working years or



formal education background have a direct impact on teacher professional belief, classroom practice and instructional behaviour. However, there is hardly any research on the effect of constructivist belief on professional development or effect on job satisfaction by affecting teachers' professional development. The primary relationship in the classroom climate is between teacher and student. A meta-analysis stated that the relationship between teacher and student was a powerful moderator of classroom management (Cornelius-White, 2007). While the literature almost investigates the teacher-student relations affect student learning, student outcomes, or student achievement, scarcely focus on the effect on teachers' professional development.

### **3.2 Teachers' Self-efficacy**

As the definition in the previous part, self-efficacy played an essential role in individual behaviours and reactions to approach task, challenges and expectations (Bandura 1977, 1978). The result of a meta-analysis (114 studies, N=21,616) showed that the self-efficacy had a strong significant positive effect on work performance. Self-efficacy is not any actual skills (Gkolia, Belias & Koustelios, 2014), or an objective measure of teaching effectiveness (Ross & Bruce, 2007), it is a self-perception (Ross & Bruce, 2007). Teachers' self-efficacy is defined as teachers predict their abilities to bring functional behaviours and valued student learning and achievement (Tschannen-Moran, Hoy & Hoy, 1998). A number of studies stated teachers' self-efficacy positively influenced their teaching behaviours and student achievements on cognitive abilities (Muijs & Rejnoldes, 2001; Ross, 1992, 1998), on students' autonomy (Cousins & Walker, 1995; Guskey, 1998), on learning outcome (Henson, 2001), on motivation and self-esteem (Borton, 1991; Roeser, Arbreton, & Anderman, 1993), and on students' positive attitude and self-efficacy (Miskel, McDonald & Bloom, 1983; Ross, 1998).

Plenty of research showed that teachers' self-efficacy not only contributed to students' autonomy, self-esteem formation, also to their self-esteem, autonomy, profession choice and school commitment at work (Bogler, 2001; Rosenblatt, 2001). Previous research (Klassen et al., 2010; Tschannen-Moran, Woolfolk Hoy & Hoy, 1989) pointed the evidence that teachers' belief about their self-efficacy was linked with their instructional practices, the general level of classroom engagement, and their well-being. Furthermore, researchers pointed that teachers' self-efficacy was positively related to teachers' job satisfaction (Bandura, 1997; Caprara, Barbaranelli, Steca, & Malone, 2006; Coladarci, 1992; Reyes & Shin, 1995; Klassen & Chiu, 2010) and negatively with teachers' stress and burnout (Caprara et al., 2003; Schwarzer &

Greenglass, 1999; Klassen & Chiu, 2010). Self-efficacious teachers are more inclined to discover and appreciate principals, colleagues, staffs' contribution to the school, positively enter into a commitment, and view school as a place of achieving their career goals in affecting and sustaining their job satisfaction (Caprara, Barbaranelli, Borgogni, & Steca 2003; Rosenlatt, 2001).

### **3.2.1 Personality Traits and Task Context Effect on Teachers' Self-efficacy**

Gibbs (2003) pointed four type of teachers' self-efficacy beliefs, behavioural self-efficacy, cognitive self-efficacy, emotional self-efficacy and, finally, the culture of teachers' self-efficacy. The behavioural self-efficacy describes the degree of a teachers' efficacy belief in executing specific actions to handle teaching situations. The cognitive self-efficacy explains a teacher's capability estimation to adjust thinking during the teaching action. The emotional self-efficacy is about teachers' belief in the ability to manage own emotions in a particular teaching context. The cultural self-efficacy refers to teacher's expectations of being effective in specific situations in culturally appropriate teaching ways (Gkolia, Belia, & Koustelios, 2014).

The former part stated that teachers' personality traits of gender, age, working years and education background were related to teachers' job beliefs. Plenty of previous researchers examine the gender and effect on teachers' self-efficacy beliefs. The result of teacher gender impact on self-efficacy are mixed, male teachers' self-efficacy are better than female (While Cousins et al., 1996; Klassen and Chiu, 2010), while Coladarci (1992) stated female teachers to be higher, while Malmberg et al. (2014) found no gender effect. Similarly, the result of working years also is a dispute. Pas et al. (2012) found that there was no significant influence of work experience on teachers' self- efficacy. Wolters and Daughterty (2007) stated teachers' self-efficacy increased with their working experience as a teacher. Klassen and Chiu (2010) pointed years of experience has nonmonotonic relationships with teachers' self-efficacy that the 23 years is the peak. The Big Five personality traits describe one's characteristics in thinking, feeling and acting (McCrae & Costa, 1987), but not adequately acknowledge the changing context and nature of everyday life. Hence, plenty of researchers investigate the school and classroom climate effect on teacher's self-efficacy.

Ashton and Webb (1986) found salaries, status, recognition and role demands had negative effect on teacher self-efficacy belief. The strong leadership from principal and responsive to teachers' concern that encouraged teacher motivation and collective efficacy leading to greater

teachers' self-efficacy (Chong & Kong, 2012; Fuller and Izu, 1986; Hoy & Sabo, 1998). Some literature point the effect of school structure on self-efficacy. Ashton and Webb (1986) stated the greater teachers' self-efficacy beliefs worked in high structure school than junior structure school. Klassen and Chiu (2010) showed teachers worked in elementary schools better classroom management self-efficacy than other grade levels. Plenty of research stated that teacher who holds more experiences and effective instructional methods in the classroom climate to increase their sense of self-efficacy (Bandura, 1977; Tschannen-Moran et al., 1998; Weinstein, 1988; Wheatley, 2002).

Investigations about the age and teacher-student relationships affect self-efficacy is scarce in the current literature. Most of the research tends to examine the elements from school climate effect on teachers' self-efficacy. As important elements of personality and classroom climate, how age and teacher-student relations influence the teachers' self-efficacy should be considered. Based on this premise, this study also explores the teacher's age and teacher-student relations as possible predictors of self-efficacy.

### **3.3 Teachers' Job Satisfaction**

Teachers' job satisfaction is always a significant issue in the educational research area (Dinham & Scott, 2000; Singh & Billingsley, 1996; Spector, 1997). It is described as how the teachers feel about the present work each day and the perceptions of fulfilment and success in work activities (Judge, Thoresen, Bono, & Patton, 2001; Taylor & Tashakkori, 1995). Teachers' job satisfaction is associated with the level of job performance (Judge et al., 2001; Ostroff, 1992). The teachers with higher satisfaction are inclined to commit time and effort to bring high productivity (Ofoegbu, 2004; Scott, 2004). Satisfied teachers always provide higher quality teaching and committing to beneficial to students' achievement and school improvement (Collie et al., 2012; Demirtas, 2010; Griva et al., 2012; Judge et al., 2001; Van Maele & Van Houtte, 2012). Besides, some studies also found that dissatisfied teachers displayed lower commitment in school activities and higher risk for leaving the profession before retirement age (Evans, 2001; Ingersoll, 2001). By enhancing job satisfaction to increase teachers' mental health and well-being, promoting work motivation, commitment and performance to reduce teacher attrition and turnover rate (Harrison et al. 2006; Smith, 2007; Wright and Kim 2004).

#### **3.3.1 Intrinsic and Extrinsic Factors in Teachers' Job Satisfaction**

Job satisfaction is an individual multidimensional psychological response to the private job, which always is affected by environmental, psychological, and demographic factors (Crossman & Harri, 2006; Scott & Dinham, 2003; Spector, 1997; O' Brien, 1983). Herzberg (1968) suggested two types of factors that contributed to job satisfaction, the intrinsic factors and extrinsic factors. Intrinsic factors are related to individual psychological motivators which exist within the individual rather than relies on any external pressure (Kondalkar, 2007), including recognition, belief, personal growth, opportunities for promotion, participation as stakeholders, success. Extrinsic factors are decided by external conditions which are out of control by an individual (Atchison, 1999), including supervision, salary, relationships in work context, security, organisational policies and the issues of fairness. The researchers hold different opinions on two factors which have stronger significance on teachers' job satisfaction (Crossman & Harris, 2006; Griva, Panitsidou, & Chostelidou, 2012; Herzberg, 1987; Wu and Short, 1996).

Some studies showed teacher demographic characteristics and teachers' belief affect job satisfaction. The study of the gender differences in the job satisfaction of 1,102 UK academics that the result showed gender and age do not affect the job satisfaction directly (Oshagbemi, 2000). However, the female academics at higher ranks were more satisfied with jobs than male academic, and the pay satisfaction is greatly influenced by gender and age. Another study showed the same result with Oshagbemi's which there were no significant differences between female and male academics (Tang & Talpade, 1999). A study from 785 teachers in 192 high schools showed that female teachers were more satisfied than male colleagues (Mahmood, Nudrat, & Asdaque, 2011). Klassen and Chiu (2010) examined the relations between gender and stress that female teachers had more 13% workload stress and 7% classroom stress than male teachers. Regarding the age effect, the older teacher easily gains higher satisfaction because of more teaching and classroom management experiences (Bishay, 1996; Klassen & Chiu, 2010; Van Maele & Van Houtte, 2012). Meanwhile, these research also stated experienced teacher had more recognition and more support from schools.

The sense of teachers' commitment and involvement appears to be related to organisational climates, and a positive school climate has a positive impact on job satisfaction and retention (Hargreaves, 1994; Miller, Brownell, & Smith, 1999; Weiss, 1999). In school climate, the researchers focus on the following aspects. The leadership and administrative support as the components of working conditions have an impact on teachers' job satisfaction (Ingersoll,

2002; Perie & Baker, 1997). The good relationship with administrators, teachers and students bring greater satisfaction (Abd-El-Fattah, 2010; Korb & Akintunde, 2013). Liu and Ramsey (2008) found that adverse work condition had the strongest influence on teachers' job satisfaction. Besides, feedback, coaching, decision-making and participation as stakeholders from school context lead teachers' job satisfaction increasing (Crossman & Harris, 2006; Demir, 2008; Kyriacou, 2001; Otto & Arnold, 2005).

The previous study of teachers' job satisfaction contains much more variables, including teacher personalities and school environment. However, there are three questions generated. The first is about gender effect on job satisfaction. Each research is in different countries and education systems, it can be summarised gender have or no significant effect on job satisfaction. It should concrete analysis of specific issues. The second is about job satisfaction and workload stress. Some research showed that workload stress and classroom stress had negatively effect on job satisfaction (Collie et al., 2012; Dorozynska, 2017; Tran & Le, 2015). Is high stress equal to low job satisfaction? The lower job satisfaction maybe obtains from policy fairness, low autonomy, negative relationship or less support and mentoring, the workload and classroom stress is one of the reasons. Does an experienced teacher have higher job satisfaction? Research showed that more work experience was more likely to generate a fixed mindset and overestimate the tendency and likelihood of events (Shepherd, Zacharakis, & Baron, 2003). Can experienced teachers avoid this phenomenon? This study examined the gender and working years effect on teachers' job satisfaction in Swedish school context.

### **3.4 Theoretical Review**

This section reviews some theories and theoretical models of job satisfaction. Maslow's Hierarchy of Needs Theory (1959) stated people motivate to satisfy five-level needs from basic living needs to value level. Five-level hierarchy consists of: (1) physiological needs (water, food, hunger, thirst, shelter, sex, and other bodily needs); (2) safety (security, stability, freedom from fear and emotional harm), (3) belongingness and love (acceptance, affection, affiliation and friendship); (4) esteem (self-respect, autonomy, achievement, status, recognition, attention and approval); (5) self-actualisation (growth, achieving potential and self-fulfillment). It explained job satisfaction regarding individual's need fulfilment. In other words, the human needs never end and the lower needs once is fulfilled, people are motivated to satisfy the higher level needs.

Based on his theory, Herzberg (1968) developed Two Factor Theory-motivators and hygiene, which focus on the work environment. In this theory, motivational factors decide the level of job satisfaction. The needs theory mainly focus on understanding human behaviour and explaining the needs fulfilment on job satisfaction. The Expectancy Theory was first formulated by Vroom (1964) and then developed by Armstrong (2006) and Amos, Pearson, Ristaw, and Ristaw (2008). This theory focuses on the individual factors to explain how human behaviour is directed, sustained and stopped (Adams, 1965; Vroom, 1964). It emphasises the thought processes in determining individual's motivation and satisfaction and assumes that job satisfaction is connected with various job motivators. (Ayele, 2014; Skaalvik & Skaalvik, 2011; Xia, Izumi, & Gao, 2015).

Hackman & Oldham (1976) proposed the Job Characteristics Model, which is a framework to examine how particular job characteristics impact on job outcomes, including job satisfaction. The model states that there are five core job characteristics (skill variety, task identity, task significance, autonomy and feedback), which impact three critical psychological states (experienced meaningfulness, experienced responsibility for outcomes and knowledge of the actual results), in turn influencing work outcomes (job satisfaction, absenteeism, work motivation). The situational model (Durick & Glisson, 1988) assume that the interaction of variables such as job characteristics, organizational characteristics, and individual characteristics influence job satisfaction (Hoy and Miskel, 1996).

### **3.5 Review of Literature on Instruments**

So far, various instruments developed to measure job satisfaction. From the literature review, seven main instruments are shown from 1969 to 2006, including three questionnaires, index or scale for teachers. Namely, Job Descriptive Index (JDI) (Smith, Kendall, & Hulin, 1969), Minnesota Satisfaction Questionnaire (MSQ) (Weiss, Dawis, England, & Lofquist, 1967), Purdue Teacher Opinionnaire (PTO) (Bentley & Rempel, 1980), Employee Satisfaction Inventory (ESI) (Koustelios, 1991; Koustelios & Bagiatis, 1997), Teacher Job Satisfaction Questionnaire (TJSQ) (Lester, 1987), Teacher Job Satisfaction (Evans & Johnson, 1990), Teaching Satisfaction Scale (TSS) (Ho & Au, 2006). Three latter's are for teacher job satisfaction. In the seven instruments, JDI, MSQ and ESI widely utilized in empirical research and provide the evidence for validity and reliability.

### **3.6 Summary**

From a review of the literature, the gaps centre on the variable, correlation and result. Some essential variables as important elements in the personal and organisational environment, but few existing kinds of literature to research. Such as the effect of constructivist belief on professional development or job satisfaction by affecting teachers' professional development; teacher-student relations impact on teachers' professional development and self-efficacy; the age influence self-efficacy. There are two controversial and different result from professional development effect on job satisfaction, gender effect on teachers' job satisfaction. Meanwhile, there is doubt the positive effect of working experience on teacher job satisfaction.

In this study, the absence variables will be investigated. Aim at the different result and doubt; this study re-examines in Swedish education context. Meanwhile, not only assess the professional development, self-efficacy directly affect teachers' job satisfaction, also include the indirect influence.

## **4 Methodology**

This section is to introduce data and analytical method through which the research questions were investigated. The validity and reliability issues of data and methods are also to be addressed. To answer the research questions, Statistical Package for the Social Sciences (SPSS) Version 25.0 is used for data management and Mplus Version 7.4 (Muthén & Muthén, 1998-2015) is used for Structural Equation Modelling (SEM).

### **4.1 Sample and Data**

#### **4.1.1 Data Source**

TALIS investigates the learning environment and working conditions of teachers and school principals in private and public schools, and different possible impact factors, such as degree to which teachers' professional development needs are being met, pedagogical beliefs and attitudes about teaching, teachers' feelings of satisfaction and self-efficacy. Although the primary focuses of TALIS is on lower secondary school, some countries also participated the upper secondary schools survey. The first cycle of TALIS was conducted in 2008 with 24 participating countries, and the current thesis is based on data from the second cycle of TALIS 2013, in which 34 countries and economies were partook.

The TALIS 2013 sampling is based on a two-stage design, with schools as the primary sampling unit and teachers as the secondary sampling unit. There are four-level international and national target populations in TALIS 2013. The core survey concentrates on International Standard Classification of Education (ISCED) Level 2 lower secondary teachers and school principals. Other three international option surveys focus on teachers and school principals at primary school (ISCED Level 1), and at upper secondary (ISCED Level 3), as well as school-level link to Programme for International Student Assessment 2012 (PISA 2012). Each country must meet the requirements from TALIS, having the option to survey all three ISCED levels and where each school offers education at only one ISCED level. The main data collection period is the end of the 2012-2013 school years.

Swedish sample is at the ISCED Level 2 of lower secondary teachers and principals. The national representative samples are randomly selected from approximately 200 schools and 20 teachers in each school. The data collection process via separate self-administered paper-and-pencil or online questionnaires for teachers and principals respectively, requiring between 45



and 60 minutes complete. Swedish data are composed of 3,319 lower secondary teachers (2,195 females and 1,124 males) and 171 principals from 186 schools.. The acceptable participation rates 75% of schools and 75% teachers from participating schools meet the requirement from the TALIS 2013.

#### **4.1.2 Survey Instruments**

The goal of TALIS 2013 is to monitor and compare education systems to understand the context and the correlation of teaching and learning environment. Thus, the indicators of TALIS 2013 focus on school context variables, management variables, teacher professional development, appraisal and feedback system and pedagogical approaches, among other elements. According to IPO model system, the TALIS 2013 instruments cover selected antecedents, school inputs, process and a limited set of outcomes. The Board of Participating Countries (BPC) set the survey, and the Instrument Development Expert Group (IDEG) translated the indicators into questionnaires. The core parts of teacher questionnaires which are related to this study shown in Table 3.

**Table 3** Parts of teacher questionnaires of TALIS 2013 (From OECD, TALIS 2013 database)

<b>Teacher Questionnaire</b>	
<i>Antecedents</i>	Teacher background characteristics
<i>School input</i>	Teacher continuous professional development
<i>Processes</i>	School leadership and management
	Teacher feedback
	Teachers' instructional beliefs
	Teachers' pedagogical practices
<i>School output</i>	School climate and school management
	Teacher efficacy (aggregated to school level)
	Teacher satisfaction (aggregated to school level)

The TALIS 2013 questionnaires consider the completeness and coherence of each indicator for the survey and provide a logical basis for instrument development (TALIS, 2013c). Based on the TALIS 2008 survey and other national and international studies, TALIS 2013 develop new indicators and focal research points to measure the variables as well as piloting the questionnaires. Professionals translated the field trial and main survey instruments into the Swedish language to ensure equivalency across versions.

### **4.1.3 Validity and Reliability of the Indicators**

Validity and Reliability are two main criteria for evaluating trustworthiness and accuracy of quantitative research. Validity refers to that an instrument measures what is designed to measure, and reliability refers to the results consistency and measurement precision (Field, 2009; Leavy, 2017). Construct validity lies in the heart of educational measurement. It directly reflects the quality of a researcher's operational definitions, i.e., operational definitions capture abstract concepts. In social behaviour sciences in general and educational research in particular, many theoretical constructs are not directly measurable. Researchers need to operationalize these constructs according to certain theoretical framework and implement different perspectives into the instrument that tries to collect observable indicators about the constructs. Other major forms of validity: the internal validity centres on the factors affect the internal links between the independent and dependent variables (Adler & Clark, 2007), and the external validity focuses on the population generalisation to support the survey (Leavy, 2017). Three types of reliability should be considered in a measure and survey instrument: inter-item reliability, test-retest reliability and interrater reliability. They describe the various aspects of the results consistency in across multiple questions or indicators to measuring a single variable, testing the measure with the same subject twice, and using two or more researchers to examine (Fallon, 2016).

According to TALIS 2013 Conceptual Framework Report (TALIS, 2013b), the guiding principles of validity and reliability states that *“based on a rigorous review of the knowledge base, the survey should yield information that is valid, reliable, and comparable across participating countries”* (TALIS, 2013b, p.10). The indicators of TALIS 2013 are at the levels of teachers and principals, information on factors represent teaching and learning environment nationally and internationally, and the comparative database should be reliable to allow researchers worldwide study. A list of theoretical concepts/constructs were operationalized within IPO framework and information about different input and process factors were collected by questionnaires (see Table 3 as examples of different constructs). For one thing, the selection of relevant constructs is based on the priorities and educational goals of each participating countries. Examining and reporting these factors to ensure malleability. Meanwhile, TALIS provide international benchmarks that allow policymakers to ascertain what they may learn about teaching and learning environments from other countries (TALIS, 2013b). For another, to guide the policy focus on the TALIS 2013, twenty-five OECD countries participated the priority rating exercise to ensure the survey instruments and indicators of TALIS 2013, and

repeated indicators from the first cycle TALIS 2008 reflect the countries' policy priorities. To validate the quality and the content of the TALIS 2013 questionnaires, the pilot study is conducted. The Field Trial test the survey instrument based on the results and feedback in the pilot study, and operational procedures in preparation for the main survey (TALIS, 2013b). The piloting and adjustment ensured that, 1) the construct being measured is a valid construct, and 2) the tool/instrument for measuring that construct being the optimal one. TALIS also applied confirmatory factor analysis (CFA) model to estimate factor score of the theoretical constructs. Wang & Wang (2012) stated that CFA could measure the unobserved latent variables and assess the relationship among each latent variable without measurement errors. Therefore, the CFA model ensured the construct validity of scales. One of the advantages of such an approach is to separate the true variance and error variance in the constructs collected through the questionnaire, and to eliminate the bias of parameter estimation caused by measurement errors of the constructs (see more discuss below).

The reliability coefficient alpha (i.e. Cronbach's alpha) was used as the measure of complex scale reliability, and the confirmatory factor analysis (CFA) was used to construct the complex scales and validate the constructed scales for TALIS 2013. For TALIS 2013, Cronbach's alpha was used to measure complex scale internal consistency, and this coefficient was reported for each scale for participating populations. (TALIS, 2013c). If the Cronbach's alpha is between 0.7 (include 0.7) and 0.8, the internal reliability is acceptable. If  $\alpha$  is between 0.8 (include 0.8) and 0.9, the internal reliability is good. (Cortina, 1993; De Vellis, 2012; George & Mallery, 2003). In this study, 14 scale-items composed ten complex scale indices based on CFA model. The alpha reliability coefficient was above 0.7, 0.8 or between 0.5 and 0.6 for the 14 scale-items. The index of constructivist beliefs (TCONSBS)  $\alpha = 0.58$ , two scales-items of teacher cooperation (TCOOPS) – exchange and coordination for teaching (TCEXCHS)  $\alpha = 0.64$ , professional collaboration (TCCOLLS)  $\alpha = 0.56$ , which had slightly lower reliability.

Results from the analysis of the internal structural relationship between the measured items and the latent factor, ten CFA models revealed a substantially good model-data fit for Swedish database. As stated in the previous section, the CFA model separate the latent variable constructs and measurement error, they only make the model based on true variance. Although three scale-items were lower reliability that the alpha was between 0.5 and 0.6, they only stand the data fit for the part of teachers but not explain the model good or bad. That is to say when CFA analysed TCONSBS, 58% variances were in standard and could be explained by scale,

42% were measurement errors and removed in the analysis. Similarly, 64% and 57 % “true” variances on the latent constructs plus 36% and 43% measurement errors were in the index of TCEXCHS and TCCOLLS.

Beyond that, the randomisation of sampling selection and data collection are considered in TALIS 2013. Each school of the participating countries has the same selection probability, and the individuals are randomly selected from the selected schools. Regarding the weights of selection, the sum of school weights is equal to the number of schools in the population, but the teacher final weights differ among schools which depend on the size of each selected school. SEM is used to provide CFA model analysis and Single-level path analysis, which to guarantee the research method validity and reliability of this study.

## 4.2 Variables and Variable Parcels

### 4.2.1 Single Scale Factors

#### Teacher Background Information

The OECD’s Indicators of Education Systems (INES) define the term “teacher” as “*a person whose professional activity involves the transmission of knowledge, attitudes and skills that are stipulated to students enrolled in an educational program*” (TALIS, 2013b, p. 19). Based on this definition, TALIS 2013 collected the data about teachers’ background from individual attributes of teachers, such as gender, age, employment status, work experience, education and training background, and teaching programme. The following tables present 19 Swedish teacher background indicators in TALIS 2013.

**Table 4** Gender and age distribution of Swedish lower secondary education teacher (From OECD, TALIS 2013 database)

<i>Indicator</i>	<i>Variable labels</i>	<i>N.</i>	<i>%</i>	<i>S.E.</i>	<i>Mean age</i>	
<b>TT2G01</b>	<b>Female</b>	2195	66.1	0.8	45.92  S.E.=0.3	
	<b>Male</b>	1124	33.9			
<b>TT2G02 TGEGR</b>	<b>Percentage of teachers in each age group</b>	<b>&lt; 25 years</b>	19	0.6		0.2
		<b>25-29 years</b>	152	4.4		0.5
		<b>30-39 years</b>	864	25.7		1.0
		<b>40-49 years</b>	1029	31.4		1.0
		<b>50-59 years</b>	810	24.5	0.8	
	<b>≥ 60 years</b>	445	13.3	0.7		

The variables of TT2G01 and TT2G02 contain the information on teacher gender and age (see Table 4), provided by teachers directly (see Appendix 1, Teacher Questionnaire, Q1 and Q2). TGEGR is a derived variable and is an indicator defining the teachers' age groups (under 25, 25-29, 30-39, 40-49, 50-59 and 60 or more years). In Table 4, *N*. stands for the number of samples, *S.E.* is the abbreviation for standard errors to estimate the standard deviation or the standard deviation of the sampling distribution (Louis, 2011).

Table 5 presents eight indicators to describe teacher employment status in Swedish lower secondary schools. Mean (*M*) of each indicator describes the central tendency, and standard deviation (*SD*) is used to describe the amount of variation or dispersion of a set of the data value has the relation to the mean. The low standard deviation also called the expected value, which indicates the data value tend to be close to the mean (Bland & Altman, 1996). The indicator of TT2G03 had four choice answers, 78.6% Swedish teachers worked at the schools more than 90% of full-time hours. TT2G04 was about the reason to work part-time, the result of Swedish teachers showed that 99.8% teachers logically not applicable to do a part-time job. The four indicators TT2G05A, TT2G05B, TT2G05C, T2G05D were four choice answers for Q5. The percentage of teachers who had been working at the current schools for less than ten years accounted for 59.9%, between 10 years and 20 years was 29%, more than 20 years was 10.3% (0.8% omitted or invalid data). About 66.3% teachers worked more than ten years as a teacher in total. The *SD* of TT2G05C and TT2G05D were remarkably higher than the mean, which indicated that the data points were spread out over a wider range of values. In the indicator TT2G05C, 61.5% teachers did not work in other education roles, that is to say, the teaching profession was the only profession for most of Swedish lower secondary teachers. In TT2G05D, only 26% teachers never worked in other jobs, the ratio of who worked in other professions between one year and ten years was 78.5%. In other words, most of the teachers in Swedish lower secondary schools had at least one job are irrelevant to education. From indicator TT2G06, 88.9% teachers were in permanent employment status and had on-going contracts with schools. At the current working schools, 86.4% teachers provided some special needs to students on mentally, physically or emotionally disadvantaged.

Ten indicators in Table 6 are about Swedish lower secondary teachers' education and training background, and teaching programme. TT2G10 investigated the teachers' highest level of formal education. The TALIS 2013 database adopted the 1997 version of International Standard Classification of Education (ISCED 97) to classify the level of education. Hence, ISCED 97 is

utilised to describe the variables. ISCED 5 is the first stage of tertiary education, which contains 5A and 5B different level. ISCED 5A provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skills requirements. ISCED 5B are more practical, technical and occupationally specific than ISCED 5A programmes. ISCED 6 is the second stage of tertiary education, which leads to award an advantage research qualification. The indicator of TT2G10 showed that 87.5% Swedish teachers were in ISCED Level 5A, 7.7% were in ISCED Level 5B, 3.6% were below ISCED Level 5, and 0.6% were in ISCED Level 6. Meanwhile, 90.2% teachers had completed the teacher education or training programme (TT2G11). In the formal education or training, 72.5%, 68% and 69.2% teachers accepted the training of all subjects content, pedagogy and classroom practice respectively (TT2G12A, TT2G12B, TT2G12C). In individuals' teaching, 96.5%, 89.3% and 89.5% teachers felt prepared well and very well for the content, pedagogy and classroom practice elements (TT2G13A, TT2G13B, TT2G13C). The indicator TT2G16 surveyed the working hours per calendar week spend on teaching and other tasks related to the job, also included the working hour during weekends, evenings or other off classrooms. From the data value, the wider range was distributed between 40 and 50 hours that the percentage is about 55.6%. However, the ratio of working time in each week beyond 50 hours was 10.7%, and reached to between 70 and 90 hours is 5%. In the most recent calendar week, 82.8% teachers spent the time on teaching less than 20 hours, and the teaching hours of 51% teachers ranged between 17 hours and 20 hours. That is, the Swedish teachers took the most of time on other job relative tasks in the recent week except teaching.

There is no missing data in each indicator of teacher background variables.

**Table 5** Teachers' employment status and work experiences in Swedish lower secondary education (From OECD, TALIS 2013 database)

<i>Indicators</i>	<i>Variable Labels</i>	<i>M</i>	<i>SD</i>
<b>TT2G03</b>	Current employment status as a teacher	1.13	0.69
<b>TT2G04</b>	Work part-time	4.99	1.99
<b>TT2G05A</b>	Years of work experience/Year(s) working as a teacher at this school	10.61	11.39
<b>TT2G05B</b>	Years of work experience/Year(s) working as a teacher in total	17.90	14.96
<b>TT2G05C</b>	Years of work experience/Year(s) working in other education roles	12.02	29.34
<b>TT2G05D</b>	Years of work experience/Year(s) working in other jobs	10.51	22.17
<b>TT2G06</b>	The employment status as a teacher at this school	1.22	0.72
<b>TT2G09</b>	At your schools, how many are special needs students?	2.16	0.79

**Table 6** Teachers' education and training background, and teaching programme in Swedish lower secondary education  
(From OECD, TALIS 2013 database)

<i>Indicator</i>	<i>Variable Labels</i>	<i>M</i>	<i>SD</i>	
<b>TT2G10</b>	The highest level of formal education	2.88	0.62	
<b>TT2G11</b>	Complete a teacher training programme	1.13	0.57	
<b>TT2G12A</b>	Elements included in formal education or training	Content of subject(s) teaching	1.33	0.75
<b>TT2G12B</b>		Pedagogy of subject(s) teaching	1.42	0.82
<b>TT2G12C</b>		Classroom practice of subject(s) teaching	1.43	0.84
<b>TT2G13A</b>	Prepared for elements in teaching	Content of subject(s) teaching	3.65	0.70
<b>TT2G13B</b>		Pedagogy of subject(s) teaching	3.40	0.87
<b>TT2G13C</b>		Classroom practice of subject(s) teaching	3.49	0.87
<b>TT2G16</b>	Hours spend on teaching and other tasks related to your job (per week)	59.59	126.74	
<b>TT2G17</b>	Hours spend on teaching during the most recent calendar week	40.37	147.73	

#### 4.1.2 Complex Scale Factors

The confirmatory factor analysis (CFA) model is utilised to integrate the observed single items together to define latent variables in TALIS 2013 (TALIS 2013). Latent variables are variables that cannot be observed directly but are inferred from other manifest variables that can be measured directly. The CFA model is written as:

$$\gamma = \tau_{\gamma} + \Lambda_{\gamma}\eta + \varepsilon$$

The CFA model predicts the responses to a set of observed indicators  $\gamma$  from the latent factor  $\eta$ , a matrix of factor loadings  $\Lambda$ , a vector of intercepts  $\tau$  and a vector of residuals  $\varepsilon$  also contains in the model. The vector of factor loadings for  $\Lambda$  is the vector of regression slopes for predicting the latent factor  $\gamma$ . The vector of intercepts  $\tau$  is the predicted values for they items when the value for the latent trait  $\eta$  is zero. The vector of residuals  $\varepsilon$  is the unique variance that cannot be explained by the latent variable  $\gamma$ . "The unexplained variance of the item is a combination of variances that is specific to the indicators and random error variances" (TALIS, 2013c, p.145). The following complex latent indicators are measured by CFA model that is carried out by Mplus 7.4 (Muthén & Muthén, 1998-2012)) and utilised in this study.

#### Teacher Self-efficacy (TSELEFFS)

The self-efficacy scale (TSELEFFS) was defined from three scales: efficacy in classroom management (SECLSS), efficacy in instruction (SEINSS) and efficacy in student engagement

(SEENGs). Three sub-scales were measured by four items. SECLSS was calculated by TT2G34D, TT2G34F, TT2G34H and TT2G34I; SEINSS was calculated by TT2G34C, TT2G34J, TT2G34K and TT2G34L; and SEENGs was calculated by TT2G34A, TT2G34B, TT2G34E and TT2G34G (see Table 7). All items in the scales were measured on a four-point scale. Response categories were 1 for “not at all”, 2 for “to some extent”, 3 for “quite a bit”, and 4 for “a lot” (TALIS, 2013c). The alpha coefficient of each indicator was above 0.7, which could be accepted and showed good reliability. The CFI= 0.932, TLI=0.912, RMSEA=0.064, SRMR=0.055, which means CFA model-data fit for all Swedish teachers in the lower secondary education in the teacher self-efficacy scale.

**Table 7** The scale for teacher self-efficacy (TSELEFFS)  
(From OECD, TALIS 2013 database)

Scale	Indicators	Variable Labels			M	SD	$\alpha$	
		N	M	SD				
SECLSS Efficacy in Classroom management	TT2G34D	Control disruptive behaviour in the classroom	3152	3.24	0.70	12.59	2.03	0.84
	TT2G34F	Make my expectations about student behaviour clear	3149	3.31	0.63			
	TT2G34H	Get students to follow classroom rules	3152	3.26	0.69			
	TT2G34I	Calm a student who is disruptive or noisy	3149	3.21	0.73			
SEINSS Efficacy in instruction	TT2G34C	Craft good questions for my students	3139	3.09	0.68	12.36	1.73	0.73
	TT2G34J	Use a variety of assessment strategies	3151	3.14	0.71			
	TT2G34K	Provide an alternative explanation for example when students are confused	3153	3.49	0.59			
	TT2G34L	Implement alternative instructional strategies in my classroom	3152	2.97	0.77			
SEENGs Efficacy in student engagement	TT2G34A	Get students to believe they can do well in school work	3158	3.37	0.59	11.73	1.55	0.74
	TT2G34B	Help my students value learning	3151	3.00	0.62			
	TT2G34E	Motivate students who show low interest in school work	3155	2.83	0.74			
	TT2G34G	Help students think critically	3149	2.96	0.70			

**CFI= 0.932 TLI=0.912 RMSEA=0.064 SRMR=0.055<sup>1</sup>**

<sup>1</sup> When evaluating a CFA model, Chi-square with degree of freedom (df), CFI (Comparative Fit Index), TLI (Tucker-Lewis Index), RMSEA (Root Mean Square Residual Approximation) and SRMR (Standardized Root Mean Residual) are used as measures for model fit. For a model with acceptable model fit, Chi-square/ df should be less than 5, CFI and TLI are greater than 0.90, RMSEA and SRMR should be less than 0.08.



### Teacher Job Satisfaction (TJOBSATS)

Two scales described the teacher job satisfaction (TJOBSATS): satisfaction with current work environment (TJSENV) and satisfaction with the profession (TJSPRO). TJSENV consisted of four items TT2G46C, TT2G46E, TT2G46G and TT2G46J. The second TJSPRO was measured by another four items TT2G46A, TT2G46B, TT2G46D and TT2G46F. TT2G46C, TT2G46D and TT2G46F were reverse coded due to their negative statements about teacher job satisfaction, and so they would have the same direction as the rest of the items. Table 8 describes the items for each scale. All items in the scales were measured on a four-point scale, for which the response categories were 1 for “strongly disagree”, 2 for “disagree”, 3 for “agree”, and 4 for “strongly agree”. The reliability of the TJOBSATS scale is represented by the reliabilities of the TJSENV and TJSPRO separately. The alpha coefficients of TJSENV and TJSPRO were above 0.7 that stated good reliability. Except the value of TLI is 0.855 and could be rounded to 0.90, the indices show the CAF model fits teacher job satisfaction scale.

**Table 8** The scale for teacher job satisfaction (TJOBSATS)

**Note.** # Item was reverse coded.

(From OECD, TALIS 2013 database)

Scale	Indicators	Variable Labels			M	SD	$\alpha$	
			N	M				SD
<b>TJSENV</b> Satisfaction with the current work environment	#TT2G46C	I would like to change to another school if that were possible	3132	1.89	0.85	12.13	1.99	0.77
	TT2G46E	I enjoy working at this school	3142	3.27	0.65			
	TT2G46G	I would recommend my school as a good place to work	3139	3.03	0.76			
	TT2G46J	All in all, I am satisfied with my job	3144	3.09	0.65			
<b>TJSPRO</b> Satisfaction with Profession	TT2G46A	The advantages of being a teacher clearly outweigh the disadvantages	3140	2.84	0.77	10.67	2.33	0.85
	TT2G46B	If I could decide again, I would still choose to work as a teacher	3139	2.55	0.93			
	#TT2G46D	I regret that I decided to become a teacher	3136	1.84	0.81			
	#TT2G46F	I wonder whether it would have been better to choose another profession	3125	2.44	0.96			

**CFI= 0.902 TLI=0.855 RMSEA=0.110 SRMR=0.082**

### Participation among stakeholders (TSCSTAKES)

There were five items in measuring participation among stakeholders - TT2G44A, TT2G44B, TT2G44C, TT2G44D and TT2G44E (see Table 9). All items were answered on a four-point scale, with response categories of 1 for “strongly disagree”, 2 for “disagree”, 3 for “agree” and 4 for “strongly agree”. The alpha reliability coefficient for scale TSCSTAKES is 0.82 that shows good reliability. The structural relationship between the measured items from the CFA modelling revealed good model-data fit (CFI=0.977, TLI=0.924, RMSEA=0.073, SRMR=0.022).

**Table 9** The scale for participation among stakeholders (TSCSTAKES)  
(From OECD, TALIS 2013 database)

Scale	Indicators	Variable Labels				M	SD	$\alpha$
			N	M	SD			
TSCSTAKES Participation among stakeholders	TT2G44A	School provides opportunities to actively participate in school decisions	3313	2.76	0.70	10.73	1.81	0.82
	TT2G44B	School provides parents or guardians with opportunities to actively participate in school decisions	3109	2.66	0.67			
	TT2G44C	School provides students with opportunities to actively participate in school decisions	3120	2.73	0.61			
	TT2G44D	School has a culture of shared responsibility for school issues	3109	2.62	0.66			
	TT2G44E	There is a collaborative school culture which is characterised by mutual support	3125	2.82	0.70			

CFI= 0.977 TLI=0.924 RMSEA=0.073 SRMR=0.022

### Teacher-student Relations (TSCTSTUDS)

The scale of teacher-student relations (TSCTSTUDS) was measured by four items, TT2G45A, TT2G45B, TT2G45C and TT2G45D (see Table 10). Each item was answered on a four-point scale, the response categories of which were 1 for “strongly disagree”, 2 for “disagree”, 3 for “agree” and 4 for “strongly agree”. The alpha reliability coefficient was 0.69 and closer to 0.7, although had slightly lower reliability. The CFA modelling on the structural relationship between the measured items and the latent construct TSCTSTUDS revealed a substantially good model-data fit.

**Table 10** The scale for teacher-student relations (TSCTSTUDS)  
(From OECD, TALIS 2013 database)

Scale	Indicators	Variable Labels				M	SD	$\alpha$
			N	M	SD			
TSCTSTUDS Teacher-student relations	TT2G45A	In this school, teachers and students usually get on well with each other	3148	3.40	0.52	14.04	1.81	0.69
	TT2G45B	Most teachers in this school believe that the students' well-being is important	3144	3.56	0.51			
	TT2G45C	Most teachers are interested in what students have to say	3143	3.29	0.56			
	TT2G45D	If a student needs extra assistance, the school provides it	3147	2.92	0.75			

CFI= 0.990 TLI=0.970 RMSEA=0.050 SRMR=0.015

**Classroom Disciplinary Climate: Need for Discipline (TCDISCS)**

Teachers answered four items measuring classroom disciplinary climate (TCDISCS), TT2G41A, TT2G41B, TT2G41C and TT2G41D. Each item (see Table 11) had four response categories: 1 for “strongly disagree”, 2 for “disagree”, 3 for “agree”, and 4 for “strongly agree”. Items TT2G41A, TT2G41C and TT2G41D were reverse coded due to their negative statement about classroom disciplinary climate and to ensure they had the same direction as the rest of the items. The alpha reliability coefficient was 0.86 for Sweden and had good reliability. The value of CFI, TLI, RMSEA and SRMR revealed a remarkably good model-data fit in the TCDISCS scale.

**Table 11** The scale for classroom disciplinary climate (TCDISCS)

**Note.** # Item was reverse coded  
(From OECD, TALIS 2013 database)

Scale	Indicators	Variable Labels				M	SD	$\alpha$
			N	M	SD			
TCDISCS Classroom disciplinary climate	TT2G41A	When the lesson begins, I have to wait quite a long time for students to quiet down	2350	2.05	0.85	11.09	2.14	0.86
	TT2G41B	Students in the class take care to create a pleasant learning atmosphere	2348	2.65	0.81			
	TT2G41C	I lose quite a lot of time because of students interrupting the lesson	2350	2.10	0.85			
	TT2G41D	There is much disruptive noise in this classroom	2352	2.18	0.87			

CFI= 1.000 TLI=1.002 RMSEA=0.000 SRMR=0.002

### Constructivist Beliefs (TCONSBS)

Four items measured the index of constructivist beliefs (TCONSBS), which are TT2G32A, TT2G32B, TT2G32C and TT2G32D (see Table 12). The items were administered to teachers and answered on a four-point scale, with response categories of 1 for “strongly disagree”, 2 for “disagree”, 3 for “agree” and 4 for “strongly agree”. The index of TCONSBS alpha reliability coefficient was 0.58, which showed lower reliability. The value of TLI and RMSEA were away from the scientific conventions, the CFA model of TCDISCS did not fit for each Swedish teacher.

**Table 12** The scale for constructivist beliefs (TCONSBS)  
(From OECD, TALIS 2013 database)

Scale	Indicators	Variable Labels			M	SD	$\alpha$	
			N	M				SD
TCONSBS Constructivist Beliefs	TT2G32A	The role as a teacher is to facilitate students' own inquiry	3168	3.05	0.70	11.06	1.37	0.58
	TT2G32B	Students learn best by finding solutions to solve problems on their own	3164	2.42	0.72			
	TT2G32C	Students should be allowed to think of solutions to practical problems by themselves before the teacher shows them how they are solved	3156	3.00	0.66			
	TT2G32D	Thinking and reasoning processes are more important than the specific curriculum content	3146	3.06	0.68			

CFI= 0.916 TLI=0.747 RMSEA=0.095 SRMR=0.030

### Teacher Co-operation (TCOOPS)

The teacher co-operation scale (TCOOPS) was measured by two scales with eight items: exchange and coordination for teaching (TCEXCHS) and professional collaboration (TCCOLLS). TCEXCHS was calculated by four items TT2G33D, TT2G33E, TT2G33F and TT2G33G, TCCOLLS was calculated by TT2G33A, TT2G33B, TT2G33C and TT2G33H (see Table 13). All items in the scales were measured on a six-point scale, with response categories of 1 for “never”, 2 for “once a year or less”, 3 for “2-4 times a year”, 4 for “5-10 times a year”, 5 for “1-3 times a month” and 6 for “once a week or more”. The reliability for TCEXCHS scale was represented by the reliabilities of TCEXCHS and TCCOLLS. The alpha of these two scales was between 0.5 and 0.7, the reliability were not good. The CFA modelling on the structural relationship between the measured items and the latent construct revealed a good model-data fit in teacher co-operation scale.

**Table 13** The scale for teacher co-operation (TCOOPS)  
(From OECD, TALIS 2013 database)

Scale	Indicators	Variable Labels				M	SD	$\alpha$
			N	M	SD			
<b>TCEXCH S</b> Exchange and coordination for teaching	TT2G33D	Exchange teaching materials with colleagues	3151	3.65	1.68	12.53	1.46	0.64
	TT2G33E	Engage in discussions about the learning development of the specific students	3159	5.32	1.05			
	TT2G33F	Work with other teachers in the school to ensure common standards in evaluations for assessing student progress	3163	4.37	1.11			
	TT2G33G	Attend team conferences	3158	5.26	1.18			
<b>TCCOLL S</b> Professional collaboration	TT2G33A	Teach jointly as a team in the same class	3165	3.40	2.05	9.03	1.54	0.56
	TT2G33B	Observe other teachers' classes and provide feedback	3164	1.92	1.42			
	TT2G33C	Engage in joint activities across different classes and age groups (e.g. projects)	3159	2.58	1.45			
	TT2G33H	Take part in collaborative professional learning	3158	3.34	1.15			

**CFI= 0.958 TLI=0.934 RMSEA=0.040 SRMR=0.032**

**Effective professional development (TEFFPROS)**

**Table 14** The scale for effective professional development (TEFFPROS)  
(From OECD, TALIS 2013 database)

Scale	Indicators	Variable Labels				M	SD	$\alpha$
			N	M	SD			
<b>TEFFPROS</b> Effective professional development	TT2G25A	A group of colleagues from my school or subject group	2573	2.55	0.96	8.38	1.98	0.70
	TT2G25B	Opportunities for active learning methods (not only listening to a lecturer)	2547	2.05	0.85			
	TT2G25C	Collaborative learning activities or research with other teachers	2536	1.78	0.88			
	TT2G25D	An extended time-period (several occasions spread out over several weeks or months)	2532	1.88	0.93			

**CFI= 0.978 TLI=0.943 RMSEA=0.061 SRMR=0.024**

Teachers were asked to answer items TT2G25A, TT2G25B, TT2G25C and TT2G25D to describe of the effectiveness of professional development scale (see Table 14). The items were measured on a four-point scale, with each item having response categories of 1 for “not in any activities”, 2 for “yes, in some activities”, 3 for “yes, in most activities” and 4 for “yes, in all

activities". The alpha reliability coefficient of TEFFPROS was 0.70 that showed the acceptable reliability. Results from the analysis of the internal structural relationship between the measured items and the latent factor TEFFPROS revealed a good model-data fit for Swedish teachers.

### **4.3 Analytical Approach**

#### **4.3.1 Introduction to Analytical Techniques**

Structural equation modelling (SEM) as the quantitative analytical method is used in this study. More specifically, path analysis. SEM is an advanced and powerful multivariate statistical analysis technique to assess unobservable latent constructs and analyse the structural relationships between observed variables and latent constructs (Wang & Wang, 2012; Kaplan, 2008). The technique is the combination of factor analysis and multiple regression analysis, which incorporate simultaneous equation models. SEM contains two types of models. The measurement model is a theory that how manifest indicators come together (e.g. confirmatory factor analysis), the structural model represents how latent constructs are related to other measured variables (e.g. path analysis) (Kline, 2011; Schumacker & Lomax, 2004). This study uses the latter one. It should be emphasized that the variables used in the path analyses are factor scores achieved from CFA analyses, as shown in the section above.

Path analysis is a structural model and used to describe the relationships among independent, intermediate and dependent variables (Muthén, & Muthén, 1998-2017). Unlike other models that include latent variables, path analysis that no measurement error in the model and only analyse the structural relations among the variables (Spirtes et al., 1998). In path analysis, a variable can be an independent variable in one relationship and a dependent factor in another. That is, a single indicator maybe serves as a predictor for each of variables in the causal model. The path model contains three types of effects, direct effect, indirect effect and total effect (direct effect plus indirect effect), which allow testing casual mechanisms among variables of interest (Alwin & Hause, 1975; Edward & Lambert, 2007). The path analysis model is shown by a square and an arrow, which shows the causation.

The path models in the current study were estimated by Mplus 7.4 (Muthén & Muthén, 1998-2012).

#### **4.3.2 Analytical Process**

Swedish data from TALIS 2013 was applied in this study to investigate the direct or indirect relationship between teachers' background, professional development, self-efficacy and teachers' job satisfaction. There are three path analysis models in the study: Model A is to examine the effect of professional development and self-efficacy on teachers' job satisfaction. To assess the teacher background characteristics impact on job satisfaction, mediating professional development and self-efficacy, the Model B was estimated. Model C investigates the effect of professional development and self-efficacy on teachers' job satisfaction in the school context (see Appendix B for detailed model inputs from Mplus).

The data are distinguished into two types of indices:

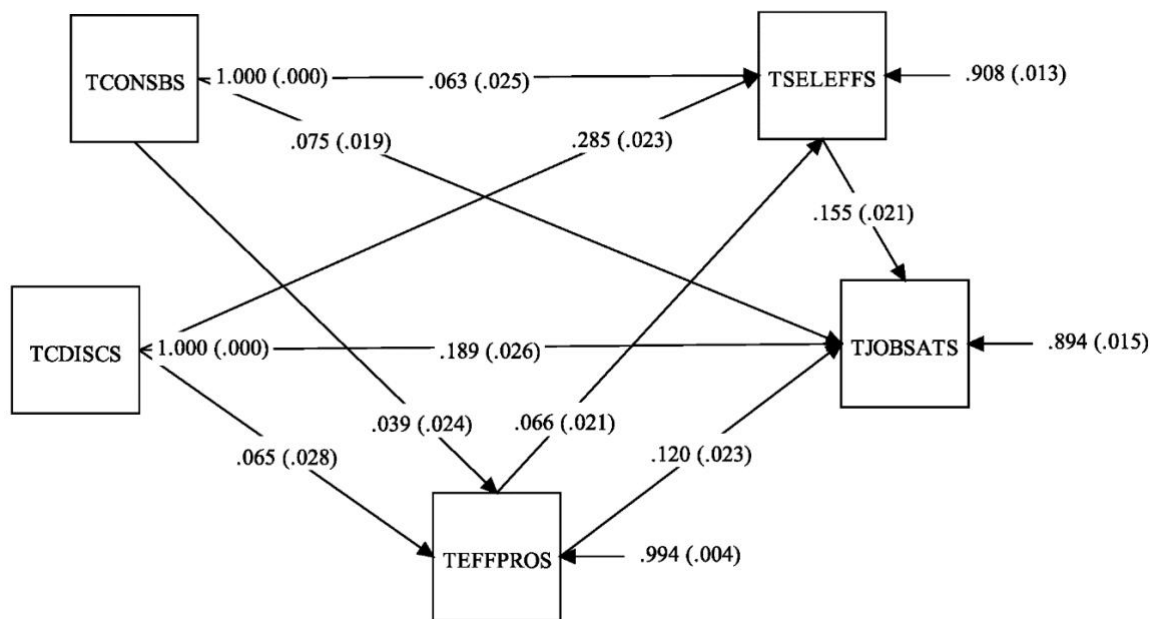
- Simple indices: constructed through the arithmetical transformation or recoding of one or more items, including teacher gender and age (TT2G01, TT2G02, TGEGR), teachers' employment status and work experience (TT2G03, TT2G04, TT2G05A, TT2G05B, TT2G05C, TT2G05D, TT2G06, TT2G09), education and training background (TT2G10, TT2G11, TT2G12A, TT2G12B, TT2G12C), teaching programme (TT2G13A, TT2G13B, TT2G13C, TT2G16, TT2G17).
- Complex scale indices: defined by observable items and constructed using complex procedures that involved scaling the items, including teacher self-efficacy TSELEFFS (SECLSS, SEINSS, SEENGs), teacher job satisfaction TJOBSATS (TJSENVs, TJSPROS), participation among stakeholders TSCSTAKES, teacher-student relations TSCTSTUDS, classroom disciplinary climate TCDISCS, constructivist beliefs TCONSBS, teacher co-operation TCOOPS (TCEXCHS, TCCOLLS), effective professional development TEFFPROS.

## 5 Result

In this section, model fit evaluation and model structure will be presented. Parameter estimates also will be interpreted in relation to the research questions.

### 5.1 Model A - Professional Development, Self-efficacy and Teachers' Job Satisfaction

The path model in Figure 5 presents the relationship among teacher constructivist belief (TCONSBS), classroom disciplinary climate (TCDISCS), professional development (TEFFPROS), teacher self-efficacy (TSELEFFS) and teachers' job satisfaction (TJOBSATS). The squares and arrows show the causation of one indicator to another. Table 17 shows the parameters in the model to check model-indicator fit.



**Figure 5** The structural model with relations between core indicators and job satisfaction (TJOBSATS)

**Table 17** The parameters of structural Model A

<i>Parameters</i>	<i><math>\chi^2</math></i>	<i>P</i>	<i>DF</i>	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>	<i>SRMR</i>
	358.696	0.000	9	0.999	0.991	0.011	0.007

In Table 17, the model has the excellent model fit based on each parameter. The Chi-square ( $\chi^2$ ) test is a statistical hypothesis test to measure if there is a significant difference between



the observed variance-covariance matrix and the model inferred variance-covariance matrix. If the model fits the data well, the model produced variance –covariance matrix should be very close to the observed one in our data. Therefore Chi-square test should be non-significant and p-value should be greater than .05 level. However, chi-square statistic is known to be sensitive to large sample size, which is the case here. That's why Chi-square test should be used with caution and in combination with other model fit indices when assessing model fit. The Comparative Fit Index (CFI) is 0.999, the Tucker-Lewis Index (TLI) is 0.991, the Root Mean Square Error Approximation (RMSEA) is 0.011, and the Standardized Root Mean Square Residual (SRMR) 0.007. According to Hu and Bentler (1999) a model is an acceptably fitting model when  $CFI$  and  $TLI \geq 0.95$ ,  $RMSEA < 0.08$ ,  $SRMR < 0.08$  (Steiger, 1990; Schermelleh-Engel et al., 2003; Yu, 2002). This leads the conclusion that the models in this thesis fit the data excellently.

Figure 5 shows the path diagram with standardised regression coefficients for this model. The foci relationship in Model A is between teacher professional development (TEFFPROS) and their job satisfaction (TJOBSATS). The effect of TEFFPROS on TJOBSATS is 0.12, and the p-value of this effect is less than .05, implying that teacher professional development has a significant impact on teachers' job satisfaction in Swedish lower secondary education (Wang & Wang, 2012). To find out the mechanism in which other factors impact on this foci relationship, teachers' instructional belief, self-efficacy and teaching environment are included in the model, and the direct and indirect effect of these variables on teachers' job satisfaction are evaluated.

### **Direct Effect**

As shown in Figure 5, the effect of TCONSBS and TCDISCS on teacher's job satisfaction are 0.08 and 0.19 respectively. The p-value of TCONSBS and TCDISCS are less than .05. Teacher's self-efficacy TSELEFFS also significantly affect their job-satisfaction, with an effect of 0.16. Therefore, teachers' constructivist beliefs variable TCONSBS and classroom disciplinary climate variable TCDISCS and teacher's self-efficacy TSELEFFS have a significant positive direct effect on teachers' job satisfaction TJOBSATS.

### **Indirect Effect**

In the path analysis diagram, teacher constructive beliefs TCONSBS and classroom disciplinary climate TCDISCS have an indirect effect on teachers' job satisfaction TJOBSATS via

professional development TEFFPROS and teacher's self-efficacy TSELEFFS (see Figure 5). The indirect effect is calculated by multiplying which need to together all regression coefficients from variables that have been chosen. In other words, the indirect effect is the product of two regression coefficients. The formula is indirect effect =  $\beta_{(1)} \times \beta_{(2)}$ . For example, the indirect effect between TCONSBS and TJOBSATS is a sum of products of all regression coefficients on the linear regression paths from variable TCONSBS to TJOBSATS. Thus, the indirect effect of TCONSBS =  $\beta_{(TCONSBS-TEFFPROS)} \times \beta_{(TEFFPROS-TJOBSATS)} = 0.039 \times 0.12 \approx 0.005$ . Similarly, the indirect effect of TCDISCS =  $\beta_{(TCDISCS-TEFFPROS)} \times \beta_{(TEFFPROS-TJOBSATS)} = 0.065 \times 0.12 = 0.008$ . The indirect effect TCDISCS-TSELEFFS-TJOBSATS is  $0.29 \times 0.16 = .05$ . The indirect effect TEFFPROS-TSELEFFS-TJOBSATS is  $0.07 \times 0.16 = .01$ . The variable of TCDISCS (0.008,  $P = 0.028 \leq 0.05$ ) has significant indirect effect on TJOBSATS through TEFFPROS.

In the model, the variable of TCONSBS (0.005,  $P = 0.140 > 0.05$ ) does not have significant direct effect on TJOBSATS through TEFFPROS. However, it has a significant indirect effect on TJOBSATS through TSELEFFS.

In summary, Teacher constructivist belief, classroom disciplinary climate and professional development, and teacher's self-efficacy have significant positive direct impacts on teachers' job satisfaction. Meanwhile, teacher's professional development mediates the effects of classroom disciplinary climate, constructivist belief and self-efficacy and affect indirectly on teachers' job satisfaction in Swedish lower secondary education. Teacher constructivist belief, classroom disciplinary climate and professional development also mediate teacher self-efficacy to affect teachers' job satisfaction.

## **5.2 Model B - Personal Background and Teachers' Job Satisfaction**

Model B investigates teacher's background effects on the mechanism of teacher's job satisfaction. Variables of teacher highest level education background (TT2G10), gender, age and number of years working as teacher were included in Model A. However, it was found that the TT2G10 have no significant effect on any indicators after model estimation, therefore was taken out from Model B.

Figure 6 showed the path diagram of teacher's background, i.e., gender (TT2G01), age (TT2G02) and working years as teacher in total (TT2G05B), effects on their job satisfaction

(TJOBSATS), mediating through teacher constructivist belief (TCONSBS), classroom disciplinary climate (TCDISCS), professional development (TEFFPROS), teacher self-efficacy (TSELEFFS).

Table 18 presents the parameters in the model to check model-indicator fit. The model B has the excellent model fit indicators. The Comparative Fit Index (CFI) is 1.000, the Tucker-Lewis Index (TLI) is 1.036, the Root Mean Square Error Approximation (RMSEA) is 0.000, and the Standardized Root Mean Square Residual (SRMR) 0.002. In the model B, the Chi-square ( $\chi^2$ ) is 540.664 with 25 degree of freedom (DF), and the p-value of Chi-square test statistic is 0.000 means the test significant.

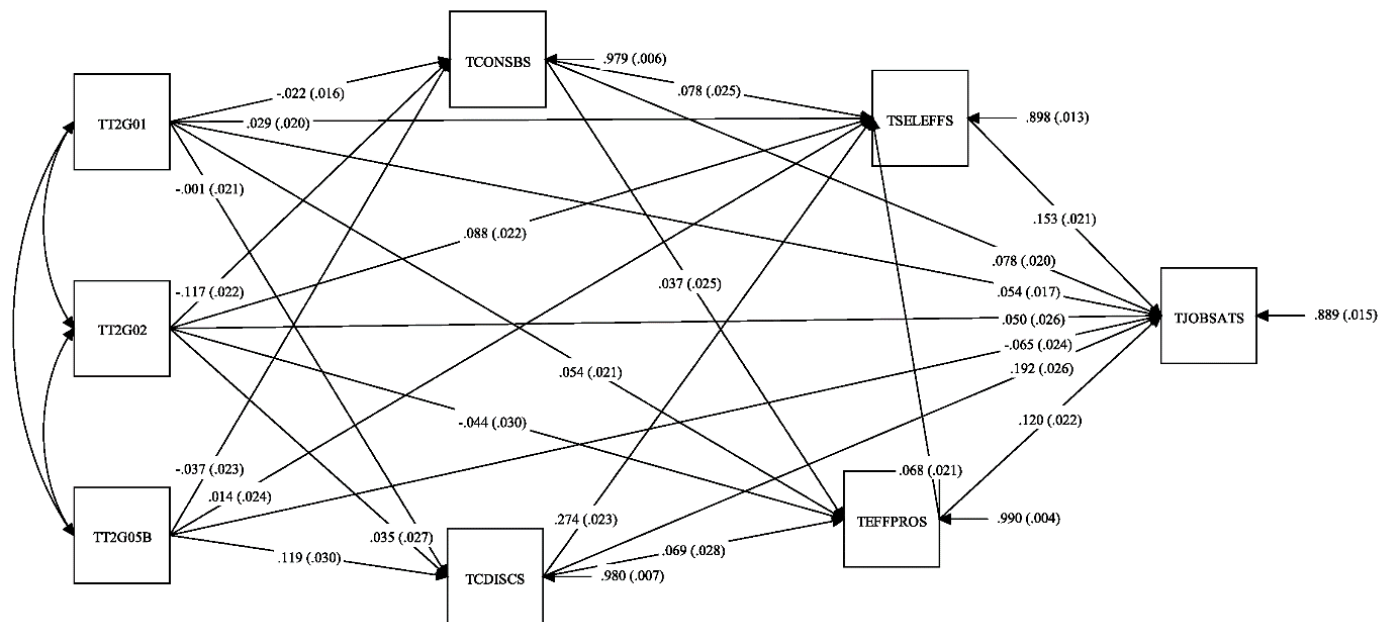


Figure 6 The relationship between Swedish teachers' background and job satisfaction

Table 18 The parameters of structural Model B

Parameters	$\chi^2$	P	DF	CFI	TLI	RMSEA	SRMR
	540.664	0.000	25	1.000	1.036	0.000	0.002

Gender (TT2G01), age (TT2G02) and working years as teaching profession (TT2G05B) are three variables in teachers' background and they all significantly related to TJOBSATS. As is

shown in Figure 6, the effects of three variables are 0.054, 0.050 and -0.065 respectively, with p-values are all below .05 (being 0.002, 0.050, 0.007).

According to the indirect effect formula, the following statements show the indirect effect value of TT2G01, TT2G02 and TT2G05 on TJOBSATS.

### ***Indirect effects from TT2G01 to TJOBSATS***

- *The significant positive indirect effect:*  
TT2G01 (0.006,  $P = 0.029 \leq 0.05$ ) through TEFFPROS  
TT2G01 (0.000,  $P = 0.043 \leq 0.05$ ) through TEFFPROS and TSELEFFS
- *No significant indirect effects were found for the following mediations:*  
TT2G01 (0.000,  $P = 0.970 > 0.05$ ) through TCDISCS  
TT2G01 (-0.002,  $P = 0.191 > 0.05$ ) through TCONSBS  
TT2G01 (0.004,  $P = 0.155 > 0.05$ ) through TSELEFFS  
TT2G01 (0.000,  $P = 0.970 > 0.05$ ) through TCDISCS and TSELEFFS  
TT2G01 (0.000,  $P = 0.220 > 0.05$ ) through TCONSBS and TSELEFFS  
TT2G01 (0.000,  $P = 0.970 > 0.05$ ) through TCDISCS and TEFEOROS  
TT2G01 (0.000,  $P = 0.344 > 0.05$ ) through TCONSBS and TEFFPROS  
TT2G01 (0.000,  $P = 0.970 > 0.05$ ) through TCDISCS, TEFFPROS and TSELEFFS  
TT2G01 (0.000,  $P = 0.356 > 0.05$ ) through TCONSBS, TEFFPROS and TSELEFFS

### ***Indirect effects from TT2G02 to TJOBSATS***

- *The significant positive indirect effect:*  
TT2G02 (0.014,  $P = 0.001 \leq 0.05$ ) through TSELEFFS
- *The significant negative indirect effect:*  
TT2G02 (-0.009,  $P = 0.003 \leq 0.05$ ) through TCONSBS  
TT2G02 (-0.001  $P = 0.019 \leq 0.05$ ) through TCONSBS and TSELEFFS
- *No significant effect were found for the following mediations:*  
TT2G02 (-0.005,  $P = 0.129 > 0.05$ ) through TEFFPROS.  
TT2G02 (0.007,  $P = 0.207 > 0.05$ ) through TCDISCS  
TT2G02 (0.001,  $P = 0.189 > 0.05$ ) through TCDISCS and TSELEFFS  
TT2G02 (0.000,  $P = 0.156 > 0.05$ ) through TEFFPROS and TSELEFFS  
TT2G02 (0.000,  $P = 0.267 > 0.05$ ) through TCDISCS and TEFFPROS  
TT2G02 (-0.001  $P = 0.186 > 0.05$ ) through TCONSBS and TEFFPROS

TT2G02 (0.000,  $P = 0.281 > 0.05$ ) through TCDISCS, TEFFPROS and TSELEFFS

TT2G02 (0.000,  $P = 0.201 > 0.05$ ) through TCONSBS, TEFFPROS and TSELEFFS

### ***Indirect effects from TT2G05B to TJOBSATS***

- *The significant positive indirect effect:*

TT2G05B (0.023,  $P = 0.001 \leq 0.05$ ) through TCDISCS

TT2G05B (0.001,  $P = 0.002 \leq 0.05$ ) through TCDISCS and TSELEFFS

TT2G05B (0.000,  $P = 0.040 \leq 0.05$ ) through TCDISCS and TEFFPROS

- *No significant effect were found for the following mediations:*

TT2G05B (-0.003,  $P = 0.131 > 0.05$ ) through TCONSBS

TT2G05B (0.002,  $P = 0.557 > 0.05$ ) through TSELEFFS

TT2G05B (0.000,  $P = 0.970 > 0.05$ ) through TEFFPROS

TT2G05B (0.000,  $P = 0.157 > 0.05$ ) through TCONSBS and TSELEFFS

TT2G05B (0.000,  $P = 0.970 > 0.05$ ) through TEFFPROS and TSELEFFS

TT2G05B (0.000,  $P = 0.299 > 0.05$ ) through TCONSBS and TEFFPROS

TT2G05B (0.000,  $P = 0.075 > 0.05$ ) through TCDISCS, TEFFPROS and TSELEFFS

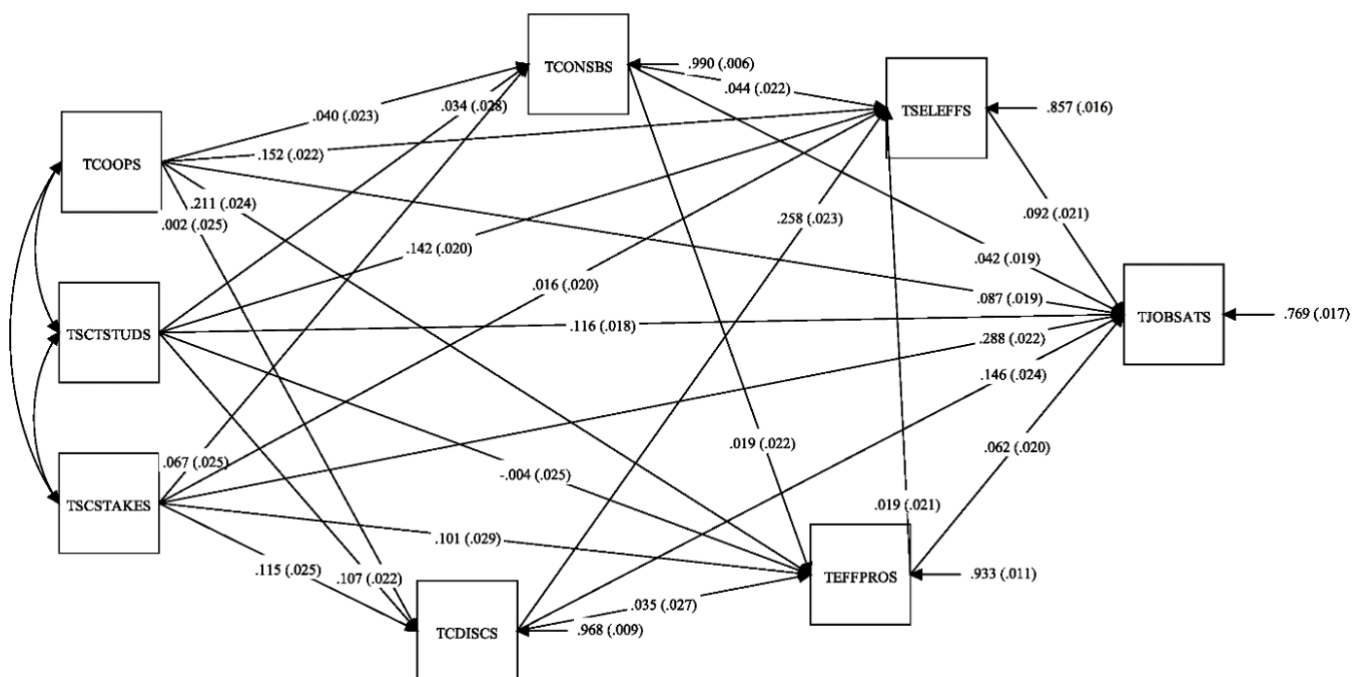
TT2G05B (0.000,  $P = 0.294 > 0.05$ ) through TCONSBS, TEFFPROS and TSELEFFS

From the results, it can be concluded that teacher job satisfaction is significantly differ across teacher's gender, and gender mediates the effects of teachers' effective professional development and self-efficacy to indirectly affect teacher's job satisfaction. Teachers' job satisfaction is not only positively and directly affected by age, that is to say, the level of teachers' job satisfaction is increasing with age growing. Age also has an indirect positive effect when self-efficacy directly affect job satisfaction, and teachers' constructivist beliefs affect job satisfaction through self-efficacy. However, age has a significant negative effect on teacher's' constructivist beliefs to affect job satisfaction. Teacher's working years have a significant indirect positive effect on job satisfaction via the classroom disciplinary climate, or by the effect of the classroom disciplinary climate on self-efficacy, or by the effect of classroom disciplinary climate on teacher professional development activities.

## **5.3 Model C –Teachers' Job Satisfaction in Swedish Lower Secondary School Climate**

The path analysis diagram of school climate and job satisfaction shows in Figure 7. It shows the relationship between the independent variables teacher co-operation (TCOOPS), teacher-student relations (TSCTSTUDS) and participation among stakeholders (TSCSTAKES) and Swedish compulsory school teachers' job satisfaction (TJOBSATS) separately. The model C has acceptable the goodness model fits (see Table 18). The Comparative Fit Index (CFI) is 0.997, the Tucker-Lewis Index (TLI) is 0.920, the Root Mean Square Error Approximation (RMSEA) is 0.032, and the Standardized Root Mean Square Residual (SRMR) 0.008. The Chi-square ( $\chi^2$ ) is 1014.050 with 25 degree of freedom (DF), and the p-value is 0.000 means the test significant.

**Figure 7** The relationship between Swedish teachers' background and job satisfaction



**Table 19** The parameters of structural Model C

Parameters	$\chi^2$	P	DF	CFI	TLI	RMSEA	SRMR
	1014.050	0.000	25	0.997	0.920	0.032	0.008

In the Model C, three school climate variables is added to Model A. All of the variables of teacher co-operation TCOOPS (0.087, P = 0.000), teacher-student relations TSCTSTUDS (0.116, P = 0.000), participation among stakeholders TBCSTAKES (0.288, P = 0.000) have significant positive direct effects on teachers' job satisfaction TJOBSATS in Swedish lower

secondary education. According to the indirect effect formula Indirect Effect value =  $\beta_1 \times \beta_2 \times \dots \times \beta_N$ , the following statements show the indirect effect value of TCOOPS, TSCSTUDS and TBCSTAKES on TJOBSATS.

***Indirect effects from TCOPPS to TJOBSATS***

- *The significant positive indirect effect:*  
TTCOPPS (0.014,  $P = 0.000 \leq 0.05$ ) through TSELEFFS  
TTCOPPS (0.013,  $P = 0.003 \leq 0.05$ ) through TEFPROS
- *No significant effect were found for the following mediations:*  
TTCOPPS (0.000,  $P = 0.944 > 0.05$ ) through TCDISCS  
TTCOPPS (0.002,  $P = 0.156 > 0.05$ ) through TCONSBS  
TTCOPPS (0.000,  $P = 0.944 > 0.05$ ) through TCDISCS and TSELEFFS  
TTCOPPS (0.000,  $P = 0.229 > 0.05$ ) through TCONSBS and TSELEFFS  
TTCOPPS (0.000,  $P = 0.379 > 0.05$ ) through TEFPROS and TSELEFFS  
TTCOPPS (0.000,  $P = 0.944 > 0.05$ ) through TCDISCS and TEFPROS  
TTCOPPS (0.000,  $P = 0.470 > 0.05$ ) through TCONSBS and TEFPROS  
TTCOPPS (0.000,  $P = 0.944 > 0.05$ ) through TCDISCS, TEFPROS and TSELEFFS  
TTCOPPS (0.000,  $P = 0.537 > 0.05$ ) through TCONSBS, TEFPROS and TSELEFFS

***Indirect effects from TSCTSTUDS to TJOBSATS***

- *The significant positive indirect effect:*  
TSCTSTUDS (0.016,  $P = 0.000 \leq 0.05$ ) through TCDISCS  
TSCTSTUDS (0.013,  $P = 0.000 \leq 0.05$ ) through TSELEFFS  
TSCTSTUDS (0.003,  $P = 0.002 \leq 0.05$ ) through TCDISCS and TSELEFFS
- *No significant effect were found for the following mediations:*  
TSCTSTUDS (0.001,  $P = 0.246 > 0.05$ ) through TCONSBS  
TSCTSTUDS (0.000,  $P = 0.877 > 0.05$ ) through TEFPROS  
TSCTSTUDS (0.000,  $P = 0.353 > 0.05$ ) through TCONSBS and TSELEFFS  
TSCTSTUDS (0.000,  $P = 0.877 > 0.05$ ) through TEFPROS and TSELEFFS  
TSCTSTUDS (0.000,  $P = 0.248 > 0.05$ ) through TCDISCS and TEFPROS  
TSCTSTUDS (0.000,  $P = 0.516 > 0.05$ ) through TCONSBS and TEFPROS  
TSCTSTUDS (0.000,  $P = 0.467 > 0.05$ ) through TCDISCS, TEFPROS and TSELEFFS  
TSCTSTUDS (0.000,  $P = 0.575 > 0.05$ ) through TCONSBS, TEFPROS and TSELEFFS

### ***Indirect effects from TSCSTAKES to TJOBSATS***

- *The significant positive indirect effect:*
  - TSCSTAKES (0.017,  $P = 0.000 \leq 0.05$ ) through TCDISCS
  - TSCSTAKES (0.006,  $P = 0.031 \leq 0.05$ ) through TEFFPROS
  - TSCSTAKES (0.003,  $P = 0.001 \leq 0.05$ ) through TCDISCS and TSELEFFS
- *No significant effect were found for the following mediations:*
  - TSCSTAKES (0.003,  $P = 0.077 > 0.05$ ) through TCONSBS
  - TSCSTAKES (0.001,  $P = 0.425 > 0.05$ ) through TSELEFFS
  - TSCSTAKES (0.000,  $P = 0.164 > 0.05$ ) through TSELEFFS and TCONSBS
  - TSCSTAKES (0.000,  $P = 0.381 > 0.05$ ) through TSELEFFS and TEFFPROS
  - TSCSTAKES (0.000,  $P = 0.252 > 0.05$ ) through TCDISCS and TEFFPROS
  - TSCSTAKES (0.000,  $P = 0.448 > 0.05$ ) through TCONSBS and TEFFPROS
  - TSCSTAKES (0.000,  $P = 0.475 > 0.05$ ) through TCDISCS, TEFFPROS and TSELEFFS
  - TSCSTAKES (0.000,  $P = 0.533 > 0.05$ ) through TCONSBS, TEFFPROS and TSELEFFS

Overall, teacher co-operation, teacher-student relations and participation among stakeholder both directly and indirectly affect Swedish compulsory teacher's job satisfaction. There is no negative significant between school climate and teachers' job satisfaction. The indirect effect of teacher co-operation on job satisfaction via effect on teacher self-efficacy and professional development respectively. There are three paths indirect effects of teacher-student relations on teachers' job satisfaction, via influencing teachers' constructive beliefs, teacher self-efficacy, and self-efficacy via the effect of teachers' constructive beliefs. Looking at classroom disciplinary climate and teacher professional development separately, teachers in schools as stakeholders may achieve job satisfaction because of positive effect between them. Meanwhile, by affecting teacher self-efficacy through classroom disciplinary climate, teacher participation as stakeholders in school context can also indirectly influence job satisfaction.

### **5.4 Comparison the Changes in Three Models**

This section compares the changes of professional development and self-efficacy effects in Model A, B and C. It is to check whether professional development and self-efficacy have the significant and positive influence on job satisfaction even after controlling for teacher's personal background and school organisational background.



**Table 20** Comparison the effect of professional development on job satisfaction among three models

		Mode A (A)		Model B (A+ Personal)		Model C (A+ School)	
		<i>Est.</i>	<i>P</i>	<i>Est.</i>	<i>P</i>	<i>Est.</i>	<i>P</i>
<b>TEFFPROS on TJOBSATS</b>		0.120	0.000	0.120	0.000	0.062	0.002
<b>Direct Effect</b>	TCONSBS	0.075	0.000	0.078	0.000	0.042	0.024
	TCDISCS	0.189	0.000	0.192	0.000	0.146	0.000
<b>Indirect Effect</b>	TEFFPROS on TCONSBS	0.005	0.140	0.006	0.170	0.001	0.412
	TEFFPROS on TCDISCS	0.008	0.028	0.008	0.023	<b>0.002</b>	<b>0.225</b>

**Table 21** Comparison the effect of self-efficacy on job satisfaction among three models

		Mode A (A)		Model B (A+ Personal)		Model C (A+ School)	
		<i>Est.</i>	<i>P</i>	<i>Est.</i>	<i>P</i>	<i>Est.</i>	<i>P</i>
<b>TSELEFFS on TJOBSATS</b>		0.155	0.000	0.153	0.000	0.092	0.000
<b>Direct Effect</b>	TCONSBS	0.075	0.000	0.078	0.000	0.042	0.024
	TCDISCS	0.189	0.000	0.192	0.000	0.146	0.000
<b>Indirect Effect</b>	TSELEFFS on TCONSBS	0.008	0.028	0.017	0.007	<b>0.004</b>	<b>0.086</b>
	TSELEFFS on TCDISCS	0.044	0.000	0.038	0.000	0.024	0.000
	TSELEFFS on TEFFPROS	0.010	0.004	0.010	0.003	<b>0.002</b>	<b>0.374</b>
	TSELEFFS on TEFFPROS TCONSBS	0.005	0.140	0.001	0.178	0.000	0.511
	TSELEFFS on TEFFPROS TCDISCS	0.001	0.067	0.001	0.054	0.000	0.458

Table 20 and Table 21 show the significant and direct or indirect effect of professional development, self-efficacy on teachers' job satisfaction based on Model A existed after taking into account for the differences in teacher's personal and school organizational background characteristics. The significant, positive relations in direct effect among three models are the same. All of the changes in two tables focus on indirect effect, and only in the school climate. The changes include the effect of the classroom disciplinary climate on job satisfaction by affecting the teachers' professional development; the effect of teachers' constructive beliefs on job satisfaction by influencing self-efficacy; the effect of teachers' professional development on job satisfaction by impacting the self-efficacy. The relations change from significant and positive indirect effect to no significance.

## **5.5 Summary of Model Results**

### **Professional development has a direct and indirect effect on teachers' job satisfaction.**

Whether or not personal background or school context factors are considered, professional development has a significant positive direct impact on job satisfaction. Meanwhile, teachers' constructive beliefs and classroom disciplinary climate have the same effect on teachers' job satisfaction by affecting professional development respectively. However, the effect of classroom disciplinary climate on job satisfaction by affecting professional development eliminated in the school context. Considering teachers' characteristics and school factors, gender, teacher co-operation and participating school activities among stakeholders have a significant indirect positive effect on teachers' job satisfaction through professional development. Work experience has an indirect positive effect on job satisfaction through professional development by affecting classroom disciplinary climate.

### **Self-Efficacy directly and indirectly influences teachers' job satisfaction.**

Self-efficacy always has a significant positive direct effect on job satisfaction. Excluding the school context factors, professional development, constructive beliefs and classroom disciplinary climate show the significant positive indirect effect on job satisfaction by affecting self-efficacy. However, the indirect effect of constructive beliefs has emerged after influencing self-efficacy by affecting the professional development and ultimately positively impact on job satisfaction in the school context. Besides, the factors of age, working experience, teacher co-operation and teacher-student relations through self-efficacy positively affect job satisfaction. The factors of working years, teacher-student relations, and participation among stakeholders positively

impact on job satisfaction through self-efficacy by affecting classroom disciplinary climate. Gender factors positively affect job satisfaction through self-efficacy by the effect of professional development. Age has a positive effect through self-efficacy by affecting constructive beliefs, but, working experiences show the negative effect on job satisfaction through self-efficacy by affecting constructive beliefs.

**Gender factors affect teachers' job satisfaction.** Gender has a significant positive direct effect on job satisfaction. Meanwhile, the indirect effects of gender also exist. Gender indirectly and positively influences job satisfaction by impacting teachers' professional development and through self-efficacy by affecting teachers' professional development separately.

**The role of Age is in teachers' job satisfaction.** Age significantly, positively and directly influence job satisfaction. It has an indirect and positive effect through self-efficacy to affect job satisfaction. Nonetheless, when considering teachers' constructive beliefs, the effect of age on job satisfaction changed. It shows that age negatively and indirectly affects job satisfaction both through constructive beliefs and through self-efficacy by impacting on constructive beliefs.

**Teacher Working Years effect on job satisfaction.** The factors of years working as a teacher in total show negative direct effect on job satisfaction. However, with the effect of classroom disciplinary climate, working experience has a positive indirect effect on job satisfaction. The years are working as teaching profession indirectly and positively affect job satisfaction through classroom disciplinary climate by affecting self-efficacy, through classroom disciplinary climate by impacting on teacher professional development.

**Teacher Co-operation positively and directly affects job satisfaction.** Teacher co-operation positively and directly influence job satisfaction. It has positive and indirect impact on job satisfaction through teacher self-efficacy and professional development respectively.

**Teacher-student Relations affect job satisfaction.** The factor of Teacher-student relation states the positive direct effect on job satisfaction. Meanwhile, the indirect of it focuses on classroom disciplinary climate and teacher self-efficacy. Teacher-student relations indirectly and positively affect job satisfaction through classroom disciplinary climate, through teacher self-efficacy, and through self-efficacy by influencing classroom disciplinary climate.

**Participation among Stakeholders influence job satisfaction.** The factor of participation among stakeholders has a positive and direct effect on teachers' job satisfaction. The indirect effects of participation among stakeholders are achieved through classroom disciplinary climate or professional development. Besides, it positively affects teachers' job satisfaction through self-efficacy by impacting on classroom disciplinary climate.

## **6. Discussion**

### **6.1 Interpretation of the Findings and Relation to Research Question**

Three research question was proposed in the previous section, from the research results the questions could be answered.

The first question was about professional development and self-efficacy directly or indirectly affect teachers' job satisfaction. Both of them have the direct effect on Swedish teachers' job satisfaction. Meanwhile, they through teachers' constructive beliefs and classroom disciplinary climate indirectly influence job satisfaction teachers' job satisfaction without teachers' characteristics and school climate factors. In section 5.3, the detailed results from the subheadings "Professional development have a direct and indirect effect on teachers' job satisfaction" and "Self-Efficacy directly and indirectly influences teachers' job satisfaction" can be found.

The second question referred to teacher's characteristics lead to job satisfaction. Since the highest formal education level was shown no significance to any factors or constructs in the original model, it was not included in the final model. Thus, the results focused on gender, age and working experiences leading to job satisfaction. From the consequence, all three internal factors had a significant direct effect on job satisfaction. However, the difference was gender and age had a positive effect, but working experiences were negative to job satisfaction. That is to say, in Swedish lower secondary schools, the sense of satisfaction from the female and male teacher is different, the older teachers easily gains higher job satisfaction, a teacher who has more years working as a teacher in total will obtain lower job satisfaction. Meanwhile, these factors had indirect effects on teacher job satisfaction through various factors.

The third question was about school climate factors result in teachers' job satisfaction. Teacher co-operation, teacher-student relations and participation among stakeholder factors were examined by SEM. From the final result, all of them showed the direct and positive effect on job satisfaction. Meanwhile, they also had indirect effects on teacher job satisfaction through other factors.

Another sub-question was the comparison result from without considering any additional factors, only regarding teacher characteristics factors and only taking into account school

climate factor. How is the effect of professional development and self-efficacy on job satisfaction change? In the section 5.2.5 and table 20 & 21, the result showed the direct effect always existed. Nonetheless, some indirect effects altered from significance to inexistence.

## **6.2 Comment on the Findings**

Some of the results of this study are within expectations, and some are beyond expectation. The expected results but rarely mentioned in previous studies included that gender and professional development had a direct positive effect on teachers' job satisfaction, teacher-student relations had a positive effect on self-efficacy, self-efficacy can be the result of age. Importantly, working experience had a negative effect on teachers' job satisfaction in this study.

The unexpected findings were from some no significant or negative effect. Gender had no relations to teacher self-efficacy, gender and working years had no significance to teachers' constructive beliefs, and age had a negative direct effect on constructive beliefs. In other words, gender and working experience will not cause their constructive beliefs' change, and the older teacher had lower constructive beliefs. Constructive belief is based on the teachers' belief and personality traits, why there are no relations between gender/working experiences and constructive beliefs? Why do older Swedish teachers have lower constructive beliefs? Do the school factors have a strong impact on teachers' constructive beliefs in classroom climate? These questions cannot be explained in this research.

## **6.3 Findings in Relation to Background Information and Research Purpose**

Integrate the results from each question, it can be concluded that the school play a more significant role in teachers' job satisfaction than the individual. In the school context, teacher collaboration, effective professional development, teacher-student relations improvement, better classroom disciplinary climate are beneficial to promoting job satisfaction. As mentioned in introduction part, the report from Swedish Teachers' Union *Sweden Needs More Teachers* (2015) proposed the higher salary, teacher autonomy, better career opportunities, a combined strategy from government and organisations and professional skills development. The results verify the validity of some proposed policies. Although the data investigation of this research in 2011, the problem of lower teacher satisfaction and the higher turnover rate has not been resolved by Swedish schools in recent years.

## **6.4 Comparison with Previous Research Findings**

Compared with previous research, this study adds more independent variables to examine the relations to teachers' job satisfaction, including not only personal factors but also school factors. It has also been found that school factors have greater impact on career satisfaction than individual factors. The study confirmed some results of the previous research, and also fill the research gaps and put forward some new findings.

### **6.5 The utility of the Study**

The study based on the analysis of teachers' job satisfaction in Swedish lower secondary school. The results may be only meaningful to secondary school teachers or Swedish teachers. It is suggested to analyse specific issues based on actual conditions and context.

## **7. Conclusion**

This study set out to examine the effect of professional development and self-efficacy on job satisfaction of teachers who work at the lower secondary schools in Sweden. Six single items and seven complex-scale items as the independent and mediating variables were investigated the significance to job satisfaction. The overall purposes are to understand the reason for lower job satisfaction from Swedish teachers.

### **7.1 Summary of Research Methods and Findings**

Statistical Package for the Social Sciences (SPSS) Version 25.0 was used for data management and path analyses was carried out with the Mplus Version 7.4 (Muthén & Muthén, 1998-2012). Three path analysis models were utilised to describe the relationships among independent, intermediate and dependent variables. The first major finding is professional development and self-efficacy directly affect teachers' job satisfaction and through teachers' constructive beliefs and classroom disciplinary climate indirectly influence job satisfaction, no matter considering teachers' characteristics and school climate factors. Compared to personal factors, the school environment has a greater impact on teachers' career satisfaction; this is the second significant findings.

### **7.2 Implications for the Field of Practice**

The evidence from this study suggests that by strengthening career professional development programmes is one way to promote teachers' sense of self-efficacy belief and job satisfaction in Swedish lower secondary. School principals should provide various type of professional support, such as induction activities, mentoring and coaching, peer observation and feedback, teacher collaboration, and so on. At the same time, it is noticed that the sense of job satisfaction from male and female teachers are different, schools should offer diverse teacher professional development policies based on gender differences.

### **7.3 Contribution of the Study**

These findings enhance our understanding of indirect impact factors of professional development and self-efficacy that affect teachers' job satisfaction. By exploring teacher's characteristics and school climate, the findings fill the vacancies of previous correlative research about constructive beliefs, gender, teacher-student relations effect on job satisfaction.



Meanwhile, the research supplement the content about Sweden's research on teachers' job satisfaction and provide support to the policies introduced by Swedish Teachers' Union.

#### **7.4 Limitations of the Research Undertaken**

As mentioned the limitations in section 1.2.6, two aspects of limitation from data resources and analysis process in this thesis. Although the valid, reliable and large-scale Swedish data from OECD-TALIS 2013, the representations are still the small part of the Swedish teacher from lower secondary school. Second, the time of data collection is in seven years ago; school maybe provide several supports to teacher professional development opportunities or other policies to promote teachers' job satisfaction. Seven years later has passed, the result may not reflect the sense from teacher in 2018 and explain all the problems. This thesis utilised path-analysis model was carried out by Mplus (Muthén & Muthén, 1998-2012) to describe and examine the relations between each variable. However, this methods did not integrate the individual level and school level together. The findings cannot be concluded from the result of the combination of teacher characteristics and school climate.

Another, this study only investigate professional development, self-efficacy, personal characteristics and school climate whether had a direct or indirect impact on teachers' job satisfaction. It did not examine to what extent the detailed effect on job satisfaction. For example, the research only showed gender affected job satisfaction, but not to provide to what extent the effect is existing.

#### **7.5 Recommendations for Further Research**

It is therefore important for researchers to investigate the Swedish teachers' job satisfaction based on a new database from TALIS 2019, which will be published in the next year. The researchers can focus on comparing the influencing factors in job satisfaction between TALIS 2013 and TALIS 2019, checking professional development and self-efficacy whether still affect job satisfaction as well as re-examining the controversial variables gender, working experiences have effect teachers' job satisfaction.

## Reference

- Adams, JS. (1963). Toward an understanding of inequity. *Journal of Abnormal and Social Psychology*, 67(5):422-436.
- Anderson, C. S. (1982). The search for school climate: A review of the research. *Review of Educational Research*, 52(3), 368-420.
- Adler, E., & Clark, R. (2007). *How it's done: An invitation to social research*: Cengage Learning.
- Åhlander, V. L., Rydell, R., & Löfqvist, A. (2011). Speaker's comfort in teaching environments: voice problems in Swedish teaching staff. *Journal of Voice*, 25(4), 430-440.
- Allodi, M. W. (2010). Goals and values in school: A model developed for describing, evaluating and changing the social climate of learning environments. *Social Psychology of Education*, 13(2), 207-235.
- Akiri, A. A. (2014). Teachers' Career Satisfaction and Students' Academic Performance in Delta Public Secondary Schools. *Journal of Educational and Social Research*, 4(1), 267–272. <https://doi.org/10.5901/jesr.2014.v4n1p267>
- Alwin, D. F., & Hauser, R. M. (1975). The decomposition of effects in path analysis. *American Sociological Review*, 40(1), 37-47.
- Amos, TL., Pearson, NJ., Ristaw, A. & Ristaw, L. (2008). *Human resource management*. (3rd ed.). Cape Town: Juta & Co.
- Armstrong, M. (2006). *A handbook of human resource management practice (10 Edition)* London, Kogan Page Publishing, p. 264.
- Arvidsson, I., Håkansson, C., Karlson, B., Björk, J., & Persson, R. (2016). Burnout among Swedish school teachers—a cross-sectional analysis. *BMC public health*, 16(1), 823.
- Ashton, P. T., & Webb, R. B. (1986). *Making a difference: Teachers' sense of efficacy and student achievement*. New York: Longman.
- Avalos, B. (2011). Teacher professional development in teaching and teacher education over ten years. *Teaching and Teacher Education*, 27(1), 10-20.
- August, L., & Waltman, J. (2004). Culture, climate, and contribution: Career satisfaction among female faculty. *Research in Higher Education*, 45(2), 177–192. <https://doi.org/10.1023/B:RIHE.0000015694.14358.ed>
- Ayele, D. (2014). *Teachers' job satisfaction and commitment in general secondary schools of Hadiya Zone, in southern nation nationality and people of regional state*. Jimma University, Institute of Education and Professional Development Studies.

- Bailey, K. M., Curtis, A., Nunan, D., & Fan, D. (2001). *Pursuing professional development: The self as source* (Vol. 63): Heinle & Heinle Boston, MA.
- Bandura, A. (1978). Reflections on self-efficacy. *Advances in Behavioral Research and Therapy*, 1, 237-269.
- Bandura, A., 1997. *Self-Efficacy: The Exercise of Control*. Freeman, NY.
- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological review*, 84(2), 191.
- Barlow, J., & Antoniou, M. (2007). Room for improvement: the experiences of new lecturers in higher education. *Innovations in Education and Teaching International*, 44(1), 67-77.
- Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personality Psychology*, 44, 1–26.
- Barrick, M. R., & Mount, M. K. (1993). Autonomy as a moderator of the relationships between the Big Five personality dimensions and job performance. *Journal of Applied Psychology*, 78(1), 111.
- Battistich, V., Solomon, D., Watson, M., & Schaps, E. (1997). Caring school communities. *Educational psychologist*, 32(3), 137-151.
- Behari-Leak, K. (2017). New academics, new higher education contexts: a critical perspective on professional development. *Teaching in Higher Education*, 22(5), 485-500.
- Benne, N., Wise, C., Woods, P., & Harvey, J. (2003). *Distributed leadership: A review of literature*: Nohingham, UK: Naonal College for School Leadership.
- Black, S. (2004). *Stroking stressed-out teachers*. *Education Digest*, 69(5), 28-32.
- Bland, J. M., & Altman, D. G. (1996). *Statistics notes: measurement error*. *Bmj*, 313(7059), 744. doi:10.1136/bmj.312.7047.1654
- Bogler, R. (2001). The influence of leadership style on teacher job satisfaction. *Educational administration quarterly*, 37(5), 662-683.
- Bollen, K.A., 1989. *Structural Equations with Latent Variables*. Wiley, New York
- Borman, G., & Dowling, M. (2008). Teacher attrition and retention: A meta-analytic and narrative review of the research. *American Educational Research Association*, 78(3), 367-409.
- Borton, W. (1991). *Empowering teachers and students in a restructuring school: A teacher efficacy interaction model and the effect on reading outcomes*. Paper presented at the annual Meeting of the American Educational Research Association, Chicago.

- Bredeson, P. V., & Johansson, O. (2000). The school principal's role in teacher professional development. *Journal of In-Service Education*, 26(2), 385–401. <https://doi.org/10.1080/13674580000200114>
- Brown, T. A. (2014). *Confirmatory factor analysis for applied research*: Guilford Publications.
- Butler, D. L., Lauscher, H. N., Jarvis-Selinger, S., & Beckingham, B. (2004). Collaboration and self-regulation in teachers' professional development. *Teaching and Teacher Education*, 20(5), 435-455.
- Butt, G., Lance, A., Fielding, A., Gunter, H., Rayner, S., & Thomas, H. (2005). Teacher job satisfaction: Lessons from the TSW Pathfinder Project. *School Leadership and Management*, 25(5), 455-471.
- Cano, J., & Miller, G. (1992). A Gender Analysis Of Job Satisfaction, Job Satisfier Factors, And Job Dissatisfier Factors Of Agricultural Education Teachers. *Journal of Agricultural Education*, 33(3), 40–46. <https://doi.org/10.5032/jae.1992.02040>
- Caprara, G. V., Barbaranelli, C., Borgogni, L., Petitta, L., & Rubinacci, A. (2003a). Teachers', school staff's and parents' efficacy beliefs as determinants of attitude toward school. *European Journal of Psychology of Education*, 18, 15–31.
- Caprara, G. V., Barbaranelli, C., Borgogni, L., & Steca, P. (2003b). Efficacy beliefs as determinants of teachers' job satisfaction. *Journal of Educational Psychology*, 95, 821–832.
- Celep, C. (2000). The correlation of the factors: The prospective teachers' sense of efficacy and beliefs, and attitudes about student control. *National FORUM of Teacher Educational Administration and Supervision Journal*. ERIC ED451157.
- Cavallera, G.; Passerini, A.; Pepe, A. (2013). "Personality and gender in swimmers in indoor practice at leisure level". *Social Behaviour and Personality*. 41 (4), 693–704. doi:10.2224/sbp.2013.41.4.693.
- Cheung, F. M.; Vijver, F. J. R. van de; Leong, F. T. L. (2011). "Toward a new approach to the study of personality in culture". *American Psychologist*. 66, 593–603. doi:10.1037/a0022389.
- Chong, W. H., & Kong, C. A. (2012). Teacher collaborative learning and teacher self-efficacy: The case of lesson study. *The journal of experimental education*, 80(3), 263-283.
- Cerit, Y. (2009). The effects of servant leadership behaviours of school principals on teachers' job satisfaction. *Educational Management Administration and Leadership*, 37(5), 600–623. <https://doi.org/10.1177/1741143209339650>

- Coale, A. J., & Hoover, E. M. (2015). *Population growth and economic development*. Princeton University Press.
- Cochran, William G. (1952). "The Chi-square Test of Goodness of Fit". *The Annals of Mathematical Statistics*. **23**: 315–345.
- Cohen, L., Manion, L., & Morrison, K. (2017). *Research methods in education (8th)*, Routledge.
- Coladarci, T. (1992). Teachers' sense of efficacy and commitment to teaching. *The Journal of Experimental Education*, 4(40), 323-337.
- Collie, R. J., Shapka, J. D., & Perry, N. E. (2012). School climate and social–emotional learning: Predicting teacher stress, job satisfaction, and teaching efficacy. *Journal of Educational Psychology*, 104(4), 1189-1204. doi: 10.1037/a0029356
- Cornelius-White, J. (2007). Learner-centered teacher-student relationships are effective: A meta-analysis. *Review of Educational research*, 77(1), 113-143.
- Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, 78(1), 98-104. doi:10.1037/0021-9010.78.1.98.
- Costa, P.T. Jr.; Terracciano, A.; McCrae, R.R. (2001). "Gender Differences in Personality Traits Across Cultures: Robust and Surprising Findings". *Journal of Personality and Social Psychology*. 81 (2), 322–331. doi:10.1037/0022-3514.81.2.322.
- Cousins, J., & Walker, C. (1995b). Predictors of educators' valuing of systemic inquiry in schools. *Canadian Journal of Program Evaluation*, Special Issue, 25–35.
- Creswell, J. W. (2018). *Research design: qualitative, quantitative, and mixed methods approaches (5ed.)*, SAGE
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *psychometrika*, 16(3), 297-334. doi:10.1007/bf02310555.
- Crossman, A. and Harris, P. (2006) 'Job Satisfaction of Secondary School Teachers', *Educational Management Administration & Leadership*, 34(1), 29–46.
- D'Agostino, R. (2017). *Goodness-of-fit-techniques*: Routledge.
- Demirtas, Z. (2010). Teachers' job satisfaction levels. *Procedia - Social and Behavioral Sciences*, 9, 1069-1073.
- Desimone, L. M., Porter, A. C., Garet, M. S., Yoon, K. S., & Birman, B. F. (2002). Effects of professional development on teachers' instruction: Results from a three-year longitudinal study. *Educational evaluation and policy analysis*, 24(2), 81-112.
- DeVellis, R. F. (2016). *Scale development: Theory and applications* (Vol. 26), 109-110. Sage publications.109-110

- Dinham, S., & Scott, C. (1998). A three domain model of teacher and school executive career satisfaction. *Journal of educational administration*, 36(4), 362-378.
- Dinham, S., & Scott, C. (2000). Moving into the third, outer domain of teacher satisfaction. *Journal of Educational Administration*, 38(4), 379 - 396.
- Dorozynska, A. (2017). Teacher job satisfaction in primary schools: the relation to work environment.
- Doyle, M. (1997). Beyond life history as a student: Preservice teachers' beliefs about teaching and learning. *College Student Journal*, 31, 519-532.
- Earl, L. M., & Timperley, H. (2008). *Professional learning conversations: Challenges in using evidence for improvement*. Dordrecht: Springer.
- Easterlin, R. A. (1967). Effects of population growth on the economic development of developing countries. *The Annals of the American Academy of Political and Social Science*, 369(1), 98-108.
- Edmonson, S. (2006). Role ambiguity. *Encyclopedia of educational leadership and administration*. Thousand Oaks, Calif: Sage.
- Edwards, J. L., Green, K. E., Lyons, C. A., Rogers, M. S., & Swords, M. E. (1998). *The effects of cognitive coaching and nonverbal classroom management on teacher efficacy and perceptions of classroom culture*. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.
- Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods*, 12(1), 1-22.
- Ellmin, R. (1995). *Job satisfaction and decentralization: The effects of systemic change on Swedish comprehensive school teachers from 1988 to 1993*.
- European Commission. (2010). *Teachers' professional development: Europe in international comparison: An analysis of teachers' professional development based on the OECD's teaching and learning international survey (TALIS)*, Luxembourg: Office for Official Publications of the European Union, 2010.
- Fallon, F. (2016). *Writing Up Quantitative Research in the Social and Behavioral Sciences*. Springer.
- Field, A. (2009). *Discovering statistics using IBM SPSS statistics*. Sage
- Fisher, D. L., & Fraser, B. J. (1991). School climate and teacher professional development. *South Pacific Journal of Teacher Education*, 19(1), 17-32.

- Fletcher, S., Strong, M., & Villar, A. (2008). An investigation of the effects of variations in mentor-based induction on the performance of students in California. *Teachers college record, 110*(10), 2271-2289.
- Forte, A. M., & Flores, M. A. (2014). Teacher collaboration and professional development in the workplace: A study of Portuguese teachers. *European Journal of Teacher Education, 37*(1), 91-105.
- Fuller, B., & Izu, J. (1986). Explaining school cohesion: What shapes the organizational beliefs of teachers. *American Journal of Education, 94*, 501-535.
- Ganser, T. 2000. "An ambitious vision of professional development for teachers". In: *NASSP Bulletin, 84*(618), 6-12.
- Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American educational research journal, 38*(4), 915-945.
- Geijsel, F. P., Slegers, P. J., Stoel, R. D., & Krüger, M. L. (2009). The effect of teacher psychological and school organizational and leadership factors on teachers' professional learning in Dutch schools. *The Elementary School Journal, 109*(4), 406-427.
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update (4th ed.)*. Boston: Allyn & Bacon.
- Ghaith, G., & Shaaban, K. (1999). The relationship between perceptions of teaching concerns, teacher efficacy, and selected teacher characteristics. *Teaching and Teacher Education, 15*(5), 487-496. [https://doi.org/http://dx.doi.org/10.1016/S0742-051X\(99\)00009-8](https://doi.org/http://dx.doi.org/10.1016/S0742-051X(99)00009-8)
- Ghiselli, E. E. (1973). The validity of aptitude tests in personnel selection. *Personnel psychology, 26*(4), 461-477.
- Glatthorn, A. (1987). Cooperative professional development: Peer-centered options for teacher growth. *Educational leadership, 45*(3), 31-35.
- Glatthorn, A. (1995). "Teacher development". In: Anderson, L. (Ed.), *International encyclopedia of teaching and teacher education (second edition)*. London: Pergamon Press.
- Glisson, C., & Durick, M. (1988). Predictors of job satisfaction and organizational commitment in human service organizations. *Administrative science quarterly, 61*-81.
- Gkolia, A., Belias, D., & Koustelios, A. (2014). Teacher's job satisfaction and selfefficacy: A review. *European Scientific Journal, ESJ, 10*(22).

- 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.
- Gordon, S. P. (2004). *Professional development for school improvement: Empowering learning communities*: Allyn & Bacon.
- Gourlay, L. (2011). 'I'd landed on the moon': a new lecturer leaves the academy. *Teaching in Higher Education*, 16(5), 591-601.
- Grabau, L. J., & Ma, X. (2017). Science engagement and science achievement in the context of science instruction: a multilevel analysis of US students and schools. *International Journal of Science Education*, 39(8), 1045-1068.
- Griffith, J. (2004). Relation of principal transformational leadership to school staff job satisfaction, staff turnover, and school performance. *Journal of educational administration*, 42(3), 333-356.
- Griva, E., Panitsidou, E., & Chostelidou, D. (2012). Identifying factors of job motivation and satisfaction of foreign language teachers: Research project design. *Procedia-Social and Behavioral Sciences*, 46, 543-547. <http://dx.doi.org/10.1016/j.sbspro.2012.05.157>
- Guion, R. M., & Gottier, R. F. (1965). Validity of personality measures in personnel selection. *Personnel Psychology*, 18, 135-164.
- Guskey, T. (1988). Teacher efficacy, self-concept, and attitudes toward the implementation of instructional innovation. *Teaching and Teacher Education*, 4, 63-69.
- Hackman, J. R., & Oldman, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, 16 (2), 250-279
- Halldén, K. (2008). The Swedish educational system and classifying education using the ISCED-97. *The International Standard Classification of Education (Isced-97): An evaluation of content and criterion validity in*, 15.
- Hargreaves, A. (1994). *Changing teachers, changing times: Teachers' work and culture in the postmodern age*: Teachers College Press.
- Harris, D. N., & Sass, T. R. (2011). Teacher training, teacher quality and student achievement. *Journal of public economics*, 95(7-8), 798-812.



- Harrison, D. (1980). *Meta-analysis of selected studies of staff development*. Unpublished Ph.D., University of Florida, FL.
- Hatchett, D. Y. (2010). *The impact of school culture, teacher job satisfaction, and student attendance rates on academic achievement of middle school students*. University of Louisville.
- Hattie, J. (2008). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.
- Heller, J. I., Daehler, K. R., Wong, N., Shinohara, M., & Miratrix, L. W. (2012). Differential effects of three professional development models on teacher knowledge and student achievement in elementary science. *Journal of Research in Science Teaching*, 49(3), 333-362.
- Henson, R. K. (2001). *Teacher self-efficacy: Substantive implications and measurement dilemmas*. Presented at the annual meeting of the Educational, Texas A & M University
- Herzberg, F. (1968). One more time: How do you motivate employees? *Harvard Business Review*, 65(5), 109-120.
- Herzberg, F., Mausner, B. & Snyderman, B.(1959). *The Motivation to Work*. New Jersey: Transaction Publishers.
- Hickson, C., & Oshagbemi, T. (1999). The effect of age on the satisfaction of academics with teaching and research. *International Journal of Social Economics*, 26(4), 537-544.
- Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling: Guidelines for determining model fit. *Articles*, 2.
- Hoque, K. E., Alam, G. M., & Abdullah, A. G. K. (2011). Impact of teachers' professional development on school improvement—an analysis at Bangladesh standpoint. *Asia Pacific Education Review*, 12(3), 337-348.
- Hough, L. M., Eaton, N., K., Dunnette, M. D., Kamp, J. D., & McCloy, R. A. (1990). Criterion-related validities of personality constructs and the effect of response distortion on those validities. *Journal of Applied Psychology*, 75, 581–595.
- Hoy, WK. & Miskel, CE. (1996). *Educational administration: theory, research, and practice*. (5th ed.). New York: McGraw-Hill.
- Hoy, W. K., & Sabo, D. J. (1998). *Quality middle schools: Open and healthy*. Thousand Oaks, CA: Corwin Press.
- Hu, L. t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, 6(1), 1-55.

- Hulin, C. L., & Judge, T. A. (2003). Job attitudes. In W. C. Borman, D. R. Ilies, & R. J. Klimoski (Eds.), *Handbook of psychology: Industrial and organizational psychology*, 255-276. Hoboken, NJ: Wiley.
- Ilies, R., & Judge, T. A. (2003). On the heritability of job satisfaction: The mediating role of personality. *Journal of Applied Psychology*, 88(4), 750
- Ingersoll, R. M. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American educational research journal*, 38(3), 499-534.
- Ingersoll, R. M. (2001). *Teacher turnover, teacher shortages, and the organization of schools* (No. Document R-01-1). Seattle, WA: University of Washington, Center for the Study of Teaching and Policy.
- Iqbal, A., Aziz, F., Farooqi, T. K., & Ali, S. (2016). Relationship between Teachers' Job Satisfaction and Students' Academic Performance. *Eurasian Journal of Educational Research*, 65, 335-344.
- Jacobsson, C., Pousette, A., & Thylefors, I. (2001). Managing stress and feelings of mastery among Swedish comprehensive school teachers. *Scandinavian Journal of Educational Research*, 45(1), 37-53.
- Jefferson Jr, T., Herbst, J. H., & McCrae, R. R. (1998). Associations between birth order and personality traits: Evidence from self-reports and observer ratings. *Journal of Research in Personality*, 32(4), 498-509.
- Judge, T. A., Bono, J. E., & Locke, E. A. (2000). Personality and job satisfaction: The mediating role of job characteristics. *Journal of Applied Psychology*, 85(2), 237.
- Judge, T. A., & Bono, J. E. (2001a). Relationship of core self-evaluations traits - Self-esteem, generalized self-efficacy, locus of control, and emotional stability - With job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology*, 86(1), 80-92. <https://doi.org/10.1037//0021-9010.86.1.80>
- Judge, T. A., Heller, D., & Mount, M. K. (2002). Five-factor model of personality and job satisfaction: A meta-analysis. *Journal of Applied Psychology*, 87(3), 530.
- Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001b). The job satisfaction - job performance relationship: A qualitative and quantitative review. *Psychological Bulletin*, 127(3), 376-407.
- Kaplan, D. (2008). *Structural equation modeling: Foundations and extensions* (Vol. 10): Sage Publications.
- Kagan, J., & Snidman, N. (2009). *The long shadow of temperament*. Harvard University Press.
- Kagan, J., & Snidman, N. (2009). *The long shadow of temperament*. Harvard University Press.

- Kett, N. E. (2014). *A Causal Analysis of the Relationship between Teacher Job Satisfaction and Student Achievement*.
- Kett, N. E., International, H., By-laws, P., Yang Hansen, K., Gustafsson, J.-E., Looney, J., ... Sykes, G. (2011). Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education*, 4(1), 1029–1038. <https://doi.org/10.1080/03004430.2017.1375482>
- Klassen, R. M., & Chiu, M. M. (2010). Effects on Teachers' Self-Efficacy and Job Satisfaction: Teacher Gender, Years of Experience, and Job Stress. *Journal of Educational Psychology*, 102(3), 741–756. <https://doi.org/10.1037/a0019237>
- Klassen, R. M., & Tze, V. M. (2014). Teachers' self-efficacy, personality, and teaching effectiveness: A meta-analysis. *Educational Research Review*, 12, 59-76.
- Kline, R.B. (2011), *Principles and Practice of Structural Equation Modeling (3rd edition)*, Guilford Press, New York.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling 2nd edition* Guilford press. New York.
- Kline, R. B. (2011). *Structural equation modeling: Guilford*. Press New York, NY.
- Kline, Rex (2011). *Principles and Practice of Structural Equation Modeling (Third ed.)*. Guilford.
- Kline, R. B., & Santor, D. A. (1999). Principles & practice of structural equation modelling. *Canadian Psychology*, 40(4), 381.
- Knox, J. A. (2011). *Teachers' Perceptions of Job Satisfaction and School Climate in an Era of Accountability: A Mixed Methods Study of Two High Schools on Tennessee's High Priority List*.
- Ko, J. & Sammons, P. (2012). *Effective teaching: A review of research. Executive summary report prepared for CfBT*. Oxford: University of Oxford, Department of Education.
- Konstantopoulos, Spyros. (2005). Trends of school effects on student achievement: Evidence from NLS: 72, HSB: 82, and NELS: 92. *Teacher College Record*, 108(12), 2550-2581.
- Ladd, H. F. (2009). Teachers' Perceptions of Their Working Conditions: How Predictive of Policy-Relevant Outcomes? Working Paper 33. *National Center for Analysis of Longitudinal Data in Education Research*.
- Lahey, B. B., McNealy, K., Knodt, A., Zald, D. H., Sporns, O., Manuck, S. B., . . . Hariri, A. R. (2012). Using confirmatory factor analysis to measure contemporaneous activation

- of defined neuronal networks in functional magnetic resonance imaging. *Neuroimage*, 60(4), 1982-1991.
- Läraryrbundet. (2017). *Absences Report from the Swedish Teacher Union*  
Res.cloudinary.com. Retrieved 30 April 2018, from  
[https://res.cloudinary.com/lararforbundet/image/upload/v1490618239/8da32ad8cd3847dc8f5d6eb1f1ce7beb/Fra\\_nvarorapporten\\_La\\_rarfo\\_rbundet\\_2017.pdf](https://res.cloudinary.com/lararforbundet/image/upload/v1490618239/8da32ad8cd3847dc8f5d6eb1f1ce7beb/Fra_nvarorapporten_La_rarfo_rbundet_2017.pdf)
- Leavy, P. (2017). *Research design: quantitative, qualitative, mixed methods, arts-based, and community-based participatory research approaches*, New York & London: The Guilford Press
- Leder, G.C., E. Pehkonen and G. Torner (eds.) (2003). *Beliefs: A hidden variable in mathematics education?* Dordrecht, the Netherlands: Kluwer.
- Leigh, A. (2010). Estimating teacher effectiveness from two-year changes in students' test scores. *Economics of Education Review*, 29(3), 480-488.
- Liu, X. & Ramsey, J. (2008). Teachers' job satisfaction: Analyses of the teacher follow-up survey in the United States for 2000-2001, *Teaching and Teacher Education*, 24, 1173-1184.
- Locke, E.A. (1976). *The nature and causes of job satisfaction*. In M.D. Dunnette (Ed.), *Handbook of industrial and organizational psychology*, 1297-1349. Chicago: Rand McNally.
- Louis, C., Lawrence, M. & Keith, M. (2011). *Research Methods in Education (7ed.)*, Routledge
- Lumpe, A., Czerniak, C., Haney, J., & Beltyukova, S. (2012). Beliefs about teaching science: The relationship between elementary teachers' participation in professional development and student achievement. *International Journal of Science Education*, 34(2), 153-166.
- Mahmood, A., Nudrat, S., & Asdaque, M. M. (2011). Job satisfaction of secondary school teachers: A comparative analysis of gender, urban and rural schools. *Asian Social Science*, 7(8), 203.
- Malmberg, L.-E., Hagger, H., & Webster, S. (2014). Teachers' situation-specific mastery experiences: teacher, student group and lesson effects. *European Journal of Educational Psychology*, 29(3), 429-451.
- Marsick, V. J., & Watkins, K. E. (2001). Informal and incidental learning. *New directions for adult and continuing education*, 2001(89), 25-34.
- Maslow, A. H. (1959). Cognition of being in the peak experiences. *The Journal of Genetic Psychology*, 94(1), 43-66.

- Ma, X., & MacMillan, R. B. (1999). Influences of workplace conditions on teachers' job satisfaction. *The journal of educational research*, 93(1), 39-47.
- Meagher, T. (2011). An investigation of the relationships of teacher professional development, teacher job satisfaction, and teacher working conditions.
- McCrae, R. R. (2002). NEO-PI-R data from 36 cultures: Further Intercultural comparisons. In R. R. McCrae & J. Alik. (Eds.), *The Five-Factor model of personality across cultures*, 105–125. New York: Kluwer Academic Publisher.
- McCrae, R. R. & Costa, P. T. (1990). *Personality in adulthood*. New York: The Guildford Press.
- Miller, M. D., Brownell, M. T., & Smith, S. W. (1999). Factors that predict teachers staying in, leaving, or transferring from the special education classroom. *Exceptional Children*, 65(2), 201-218.
- Minor, L. C., Onwuegbuzie, A. J., Witcher, A. E., & James, T. L. (2002). Preservice teachers' educational beliefs and their perceptions of characteristics of effective teachers. *The Journal of Educational Research*, 96, 116-127.
- Muijs, R. D., & Reynolds, D. (2001). Teachers' beliefs and behaviors: What really matters. *Journal of Classroom Interaction*, 37, 3–15.
- Miskel, C., McDonald, D., & Bloom, S. (1983). Structural and expectancy linkages within schools and organizational effectiveness. *Educational Administration Quarterly*, 19, 49–82.
- Mullis, I. V., Martin, M. O., Ruddock, G. J., O'Sullivan, C. Y., Arora, A., & Erberber, E. (2005). *TIMSS 2007 Assessment Frameworks*. TIMSS & PIRLS International Study Center. Boston College, 140 Commonwealth Avenue, Chestnut Hill, MA 02467.
- Muthén, L.K. & Muthén, B.O. (1998-2012). *Mplus User's Guide*. Los Angeles, CA: Muthén & Muthén.
- Mykletun, R. J. (1985). Work stress and satisfaction of comprehensive school teachers: An interview study. *Scandinavian Journal of Educational Research*, 29(2), 57-71.
- Newmann, F. M., King, M. B., & Youngs, P. (2000). Professional development that addresses school capacity: Lessons from urban elementary schools. *American Journal of Education*, 108(4), 259-299.
- Nicholls, G. (2005). New lecturers' constructions of learning, teaching and research in higher education. *Studies in Higher Education*, 30(5), 611-625.
- Nir, A. E., & Bogler, R. (2008). The antecedents of teacher satisfaction with professional development programs. *Teaching and Teacher Education*, 24(2), 377–386. <https://doi.org/10.1016/j.tate.2007.03.002>

- O'Brien, G.E. (1983) *'Locus of Control and Retirement'*, in H.M. Lefcourt (ed.) *Research in Locus of Control: Vol. 3*. New York: Academic Press
- OECD. (1999). *Classifying Educational Programmes. Manual for ISCED-97 Implementation in OECD Countries - 1999 Edition*. *Oecd*, 67.
- OECD. (2012). *Education at a Glance 2012: OECD Indicators*, OECD, Paris
- OECD (2013), *PISA 2012 Assessment and Analytical Framework: Mathematics, Reading, Science, Problem Solving and Financial Literacy*, OECD, Paris.
- Ofsted (2006), *The initial training of further education teachers: findings from 2004/05 inspections of courses leading to national awarding body qualifications*.
- Oshagbemi, T. (2000). Gender differences in the job satisfaction of university teachers. *Women in Management Review*, 15(7), 331–343.
- Ostroff, C. (1992) 'The Relationship Between Satisfaction, Attitudes, and Performance: An Organizational Level Analysis', *Journal of Applied Psychology*, 77, 963–74.
- Pfannamstiel, J., Seltzer, D., Yarnell, V., & Lambson, T. et al. (2000). *Study of professional development practices and early childhood education in Kansas*, Kansas State Department of Education, Kansas 66612-1182.
- Pas, E. T., Bradshaw, C. P., & Hershfeldt, P. a. (2012). Teacher- and school-level predictors of teacher efficacy and burnout: identifying potential areas for support. *Journal of School Psychology*, 50(1), 129-145.
- Perie, M., & Baker, D. P. (1997). *Job satisfaction among America's teachers: Effects of workplace conditions, background characteristics, and teacher compensation* (Statistical Analysis Report No. NCES 97-471). Washington, DC: National Center for Education Statistics.
- Poekert, P. E. (2012). Teacher leadership and professional development: Examining links between two concepts central to school improvement. *Professional Development in Education*, 38(2), 169-188.
- Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological bulletin*, 135(2), 322.
- Posnanski, T. J. (2002). Professional development programs for elementary science teachers: An analysis of teacher self-efficacy beliefs and a professional development model. *Journal of Science Teacher Education*, 13(3), 189-220.
- Rebollo, I. (2006). No Two Alike: Human Nature and Human Individuality [Book Review]. *Twin Research and Human Genetics*, 9(5), 703.

- Reeves, P. M., Pun, W. H., & Chung, K. S. (2017). Influence of teacher collaboration on job satisfaction and student achievement. *Teaching and Teacher Education*, 67, 227–236. <https://doi.org/10.1016/j.tate.2017.06.016>
- Reilly, R. R., & Chao, G. T. (1982). Validity and fairness of some alternative employee selection procedures. *Personnel psychology*, 35(1), 1-62.
- Richardson, V. (1996). The role of attitudes and beliefs in learning to teach. In Sikula, J., Buttery, T.J., & Guyton, E. (Eds.) *Handbook of research on teacher education*, 102-119. New York: Simon & Schuster Macmillan.
- Richter, D., Kunter, M., Klusmann, U., Lüdtke, O., & Baumert, J. (2011). Professional development across the teaching career: Teachers' uptake of formal and informal learning opportunities. *Teaching and Teacher Education*, 27(1), 116-126.
- Rimm-Kaufman, S.E., Storm, M.D., Sawyer, B.E., Pianta, R.C., & LaParo, K. (2006). The teacher belief q-sort: A measure of teachers' priorities and beliefs in relation to disciplinary practices, teaching practices, and beliefs about children. *Journal of School Psychology*, 44, 141-165.
- Roeser, R., Arbreton, A., & Anderman, E. (1993). *Teacher characteristics and their effects on student motivation across the school year*. Paper presented at the annual meeting of the American Educational Research Association, Atlanta
- Ross, J., & Bruce, C. (2007). Professional development effects on teacher efficacy: Results of randomized field trial. *The journal of educational research*, 101(1), 50-60.
- Ross, J. A. (1992). Teacher efficacy and the effect of coaching on student achievement. *Canadian Journal of Education*, 17, 51–65.
- Rosenblatt, Z. (2001). Teachers' Multiple Roles and Skill Flexibility: Effects on Work Attitudes. *Educational Administration Quarterly*, 37(5), 684-708.
- Rothmann, S., & Coetzer, E. P. (2003). The big five personality dimensions and job performance. *SA Journal of Industrial Psychology*, 29(1), 68-74.
- Schmitt, D. P.; Realo, A.; Voracek, M.; Allik, J. (2008). "Why can't a man be more like a woman? Sex differences in Big Five personality traits across 55 cultures". *Journal of Personality and Social Psychology*. 94 (1), 168–182. doi:10.1037/0022-3514.94.1.168.
- Schumacker, R. E., & Lomax, R. G. (2004). *A beginner's guide to structural equation modeling* (2nd ed.). London: Routledge.
- Scott, C. and Dinham, S. (2003) 'The Development of Scales to Measure Teacher and School Occupational Satisfaction', *Journal of Educational Administration*, 41(1): 74–86.

- Scott, M. (2004). *Perceptions of Fundamental Job Characteristics and their level of Job Satisfaction*. Mississippi State University Extension Service Agents: Unpublished Masters' Thesis State University.
- Shepherd, D. A., Zacharakis, A., & Baron, R. A. (2003). VCs' decision processes: Evidence suggesting more experience may not always be better. *Journal of Business venturing*, 18(3), 381-401.
- Singh, K., & Billingsley, B. (1996). Intent to stay in teaching: Teachers of students with emotional disorders versus other special educators. *Remedial and Special Education*, 17(1), 37-47.
- Smith, T. M., & Ingersoll, R. M. (2004). What are the effects of induction and mentoring on beginning teacher turnover? *American educational research journal*, 41(3), 681-714.
- Snow-Renner, R. and P. Lauer. (2005). *Professional development analysis*, McREL 2005 Research Synthesis.
- Skaalvik, E. M., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. *Journal of educational psychology*, 99(3), 611.
- Skaalvik, E. M., & Skaalvik, S. (2011). Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education*, 27(6), 1029-1038.
- Skolverket, (2018). For children and young people aged 7-15 Comprehensive school and recreation centresl. *Omsvenskaskolan.se*. Retrieved 30 April 2018, from <http://www.omsvenskaskolan.se/media/1085/engelska-grundskolan.pdf>
- Soto, C. J.; Gosling, Potter (Feb 2011). "Age differences in personality traits from 10 to 65: Big Five domains and facets in a large cross-sectional sample". *Journal of Personality and Social Psychology*. 100 (2), 300–348.
- Specht, J., Egloff, B., & Schmukle, S. C. (2011). Stability and change of personality across the life course: The impact of age and major life events on mean-level and rank-order stability of the Big Five. *Journal of personality and social psychology*, 101(4), 862.
- Speck, M. & Knipe, C. (2005) *Why can't we get it right? Designing high-quality professional development for standards-based schools(2nd ed.)*. Thousand Oaks: Corwin
- Spector, P.E. (1997). *Job satisfaction: Application, assessment, causes and consequences*. Thousand Oaks, CA: SAGE.



- Spirtes, P., Richardson, T., Meek, C., Scheines, R., & Glymour, C. (1998). Using path diagrams as a structural equation modeling tool. *Sociological Methods & Research*, 27(2), 182-225.
- Srivastava, S.; John, O. P.; Gosling, S. D.; Potter, J. (2003). "Development of personality in early and middle adulthood: Set like plaster or persistent change?". *Journal of Personality and Social Psychology*. 84 (5), 1041–1053.
- Stajkovic, A. D. & Luthans, F. (1998). "Self-efficacy and work-related performance: A meta-analysis". *Psychological Bulletin*. 2, 240–261. doi:10.1037/0033-2909.124.2.240.
- Staub, F. C., & Stern, E. (2002). The nature of teachers' pedagogical content beliefs matters for students' achievement gains: Quasi-experimental evidence from elementary mathematics. *Journal of educational psychology*, 94(2), 344.
- Steenkamp, J.-B. E., & Baumgartner, H. (1998). Assessing measurement invariance in cross-national consumer research. *Journal of consumer research*, 25(1), 78-90.
- Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate behavioral research*, 25(2), 173-180.
- Stein, M. K., & Wang, M. C. (1988). Teacher development and school improvement: The process of teacher change. *Teaching and Teacher Education*, 4(2), 171-187.
- Sweden Needs More Teachers, 2015. *Teachers' Union*, Retrieved 30 April 2018, from [https://res.cloudinary.com/lararforbundet/image/upload/v1461681678/bfa2618d702a6b0db9f18a4670bdc5a5/rapport\\_1\\_rarbrist\\_slutversion150424.pdf](https://res.cloudinary.com/lararforbundet/image/upload/v1461681678/bfa2618d702a6b0db9f18a4670bdc5a5/rapport_1_rarbrist_slutversion150424.pdf)
- TALIS. (2013a). TALIS 2013 Results: An international perspective on teaching and learning. OECD Publishing, Prs. Retrieved 12 May 2018, from [http://www.istruzione.it/allegati/2014/OCSE\\_TALIS\\_Rapporto\\_Internazionale\\_EN.pdf](http://www.istruzione.it/allegati/2014/OCSE_TALIS_Rapporto_Internazionale_EN.pdf)
- TALIS. (2013b). *TALIS 2013 Conceptual framework*. OECD Publishing, Prs. Retrieved 12 May 2018, from [http://www.oecd.org/education/school/TALIS%20Conceptual%20Framework\\_FINAL.pdf](http://www.oecd.org/education/school/TALIS%20Conceptual%20Framework_FINAL.pdf)
- TALIS. (2013c). *TALIS 2013 Technical report*. OECD Publishing, Prs. Retrieved 12 May 2018, from <http://www.oecd.org/education/school/TALIS-technical-report-2013.pdf>
- Tang, T. L.-P., & Talpade, M. (1999). Sex differences in satisfaction with pay and co-workers: Faculty and staff at a public institution of higher education. *Public Personnel Management*, 28(3), 345-349.

- Taasoobshirazi, G., & Wang, S. (2016). The performance of the SRMR, RMSEA, CFI, AND TLI. *Journal of Applied Quantative Methods*, 11(3), 31–41.
- Taylor, B. M., Pearson, P. D., Peterson, D. S., & Rodriguez, M. C. (2005). The CIERA school change framework: An evidence-based approach to professional development and school reading improvement. *Reading Research Quarterly*, 40(1), 40-69.
- Taylor, D., & Tashakkori, A. (1995). Decision participation and school climate as predictors of job satisfaction and teachers' sense of efficacy. *The Journal of Experimental Education*, 63, 2 17-230.
- Tett, R. P., Jackson, D. N., & Rothstein, M. (1991). Personality measures as predictors of job performance: a meta-analytic review. *Personnel psychology*, 44(4), 703-742.
- Tett, R. P., & Burnett, D. D. (2003). A personality trait-based interactionist model of job performance. *Journal of Applied Psychology*, 88(3), 500.
- Thompson, E.R. (2008). "Development and validation of an international English big-five mini-markers". *Personality and Individual Differences*. 45 (6). 542–548.  
doi:10.1016/j.paid.2008.06.013.
- Tran, V. D., & Le, M. T. L. (2015). School environment factors as predictors for teachers' teaching efficacy, teacher stress and job satisfaction. *International Education Research*, 3(2), 28-46. <http://dx.doi.org/10.12735/ier.v3i2p28>
- Trull, T. J.; Geary, D. C. (1997). "Comparison of the big-five factor structure across samples of Chinese and American adults". *Journal of Personality Assessment*. 69 (2), 324–341. doi:10.1207/s15327752jpa6902\_6. PMID 9392894.
- Tschannen-Moran, M., Hoy, A. W., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational research*, 68(2), 202-248.
- Tschannen-Moran, M., & McMaster, P. (2009). Sources of self-efficacy: Four professional development formats and their relationship to self-efficacy and implementation of a new teaching strategy. *The Elementary School Journal*, 110(2), 228-245.
- Vroom, V.H. (1964). *Work and motivation*. New York: John Wiley and Sons, Inc.
- Wang, J.C. & Wang, X.Q. (2012). *Structure equation Modelling: Application using Mplus*. Published by John Wiley & Sons, Ltd.
- Warhurst, R. P. (2008). 'Cigars on the flight-deck': new lecturers' participatory learning within workplace communities of practice. *Studies in Higher Education*, 33(4), 453-467.
- Weiss, E. M. (1999). Perceived workplace conditions and first-year teachers' morale, career choice commitment, and planned retention: A secondary analysis. *Teaching and Teacher Education*, 15(8), 861-879.

- Weller, S. (2011). New lecturers' accounts of reading higher education research. *Studies in Continuing Education*, 33(1), 93-106.
- Whiteford, P. (1990). *Differences between teachers who have and have not taught continuously during the first five years after graduation*. Chicago, IL.: Paper presented at the annual meeting of the American Educational Research Association,.
- Woolfolk Hoy, A., H. Davis and S.J. Pape. (2006). "Teacher knowledge and beliefs", in P. A. Alexander and P.H. Winne (eds.), *Handbook of educational psychology (2nd ed.)*, 715–737. Mahwah, NJ: Lawrence Erlbaum Associates.
- Wolters, C. A., & Daugherty, S. G. (2007). Goal structures and teachers' sense of efficacy: Their relation and association to teaching experience and academic level. *Journal of Educational Psychology*, 99, 181–193.
- Wood, C., Farmer, M. D., & Goodall, D. (2016). Changing professional identity in the transition from practitioner to lecturer in higher education: an interpretive phenomenological analysis. *Research in Post-Compulsory Education*, 21(3), 229- 245.
- Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist*, 34(6), 806-838.
- Wyse, S. E. (2011). *Quantitative Research* (Vol. 1). Retrieved from <https://www.snapsurveys.com/blog/qualitative-vs-quantitative-research/>
- Xia, J., Izumi, M., & Gao, X. (2015). School Process and Teacher Job Satisfaction at Alternative Schools: A Multilevel Study Using SASS 2007–08 Data. *Leadership and Policy in Schools*, 14(2), 167-203.
- Yu, C.-Y. (2002). *Evaluating cutoff criteria of model fit indices for latent variable models with binary and continuous outcomes* (Vol. 30): University of California, Los Angeles Los Angeles.

## Appendix A. Teacher Questionnaire

(Source from Organisation for Economic Co-operation and Development OECD-Teaching and Learning International Survey TALIS 2013)

### Background Information

*These questions are about you, your education and the time you have spent in teaching. In responding to the questions, please mark the appropriate choice(s) or provide figures where necessary.*

**1. Are you female or male?**

- TT2G01 <sub>1</sub> Female  
<sub>2</sub> Male

**2. How old are you?**

- TT2G02 *Please write a number.*  
□□□ Years

**3. What is your current employment status as a teacher?**

*Please consider your employment status for all of your current teaching jobs combined.  
Please mark one choice.*

- TT2G03 <sub>1</sub> Full-time (more than 90% of full-time hours) → **Please go to Question [5].**  
<sub>2</sub> Part-time (71-90% of full-time hours)  
<sub>3</sub> Part-time (50-70% of full-time hours)  
<sub>4</sub> Part-time (less than 50% of full-time hours)

**4. Why do you work part-time?**

*Please mark one choice.*

- TT2G04 <sub>1</sub> I chose to work part-time.  
<sub>2</sub> There was no possibility to work full-time.

**5. How many years of work experience do you have?**

*Please round up to whole years.*

- TT2G05A a) □□□ Year(s) working as a teacher at this school  
TT2G05B b) □□□ Year(s) working as a teacher in total  
TT2G05C c) □□□ Year(s) working in other education roles (do not include years working as a teacher)  
TT2G05D d) □□□ Year(s) working in other jobs

**9. Across all your [**<ISCED level x> classes/classes where most students are 15 years old**] at this school, how many are special needs students?**

*<Special needs students cover those for whom a special learning need has been **formally identified** because they are mentally, physically, or emotionally disadvantaged. [Often they will be those for whom additional public or private resources (personnel, material or financial) have been provided to support their education.]>*

Please mark one choice.

- TT2G09 <sub>1</sub> None  
<sub>2</sub> Some  
<sub>3</sub> Most  
<sub>4</sub> All

**10. What is the highest level of formal education you have completed?**

Please mark one choice.

- TT2G10 <sub>1</sub> **<Below ISCED Level 5>**  
<sub>2</sub> **<ISCED Level 5B>**  
<sub>3</sub> **<ISCED Level 5A>**  
<sub>4</sub> **<ISCED Level 6>**

**11. Did you complete a **<teacher education or training programme>**?**

Please mark one choice.

- TT2G11 <sub>1</sub> Yes  
<sub>2</sub> No

**12. Were the following elements included in your formal education or training?**

Please mark one choice in each row.

		Yes, for all subject(s) I teach	Yes, for some subject(s) I teach	No
TT2G12A	a) Content of the subject(s) I teach .....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
TT2G12B	b) Pedagogy of the subject(s) I teach .....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
TT2G12C	c) Classroom practice (practicum, internship or student teaching) in the subject(s) I teach .....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>

**13. In your teaching, to what extent do you feel prepared for the elements below?**

Please mark one choice in each row.

		Not at all	Somewhat	Well	Very well
TT2G13A	a) Content of the subject(s) I teach .....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G13B	b) Pedagogy of the subject(s) I teach .....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G13C	c) Classroom practice in the subject(s) I teach .....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>

**16. During your **most recent complete calendar week**, approximately how many 60-minute hours did you spend **in total** on teaching, planning lessons, marking, collaborating with other teachers, participating in staff meetings and on other tasks related to your job at this school?**

*A 'complete' calendar week is one that **was not shortened by breaks, public holidays, sick leave, etc.** Also include tasks that took place during weekends, evenings or other off classroom hours.*

*Round to the nearest whole hour.*

- TT2G16   Hours

**17. Of this total, how many 60-minute hours did you spend on teaching during your most recent complete calendar week?**

Please only count actual teaching time.

Time spent on preparation, marking, etc. will be recorded in Question [18].

TT2G17   Hours

**25. Considering the professional development activities you took part in during the last 12 months, to what extent have they included the following?**

Please mark one choice in each row.

		Not in any activities	Yes, in some activities	Yes, in most activities	Yes, in all activities
TT2G25A	a) A group of colleagues from my school or subject group .....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G25B	b) Opportunities for active learning methods (not only listening to a lecturer) .....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G25C	c) Collaborative learning activities or research with other teachers .....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G25D	d) An extended time-period (several occasions spread out over several weeks or months) .....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>

**Your Teaching in General**

**32. We would like to ask about your personal beliefs on teaching and learning. Please indicate how strongly you agree or disagree with each of the following statements.**

Please mark one choice in each row.

		Strongly disagree	Disagree	Agree	Strongly agree
TT2G32A	a) My role as a teacher is to facilitate students' own inquiry. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G32B	b) Students learn best by finding solutions to problems on their own. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G32C	c) Students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G32D	d) Thinking and reasoning processes are more important than specific curriculum content. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>

**41. How strongly do you agree or disagree with the following statements about this <target class>?**

Please mark one choice in each row.

		Strongly disagree	Disagree	Agree	Strongly agree
TT2G41A	a) When the lesson begins, I have to wait quite a long time for students to quiet down. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G41B	b) Students in this class take care to create a pleasant learning atmosphere. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G41C	c) I lose quite a lot of time because of students interrupting the lesson. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G41D	d) There is much disruptive noise in this classroom. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>



## School Climate and Job Satisfaction

**44. How strongly do you agree or disagree with these statements as applied to this school?**

Please mark one choice in each row.

		Strongly disagree	Disagree	Agree	Strongly agree
TT2G44A	a) This school provides staff with opportunities to actively participate in school decisions. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G44B	b) This school provides parents or guardians with opportunities to actively participate in school decisions. ..	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G44C	c) This school provides students with opportunities to actively participate in school decisions. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G44D	d) This school has a culture of shared responsibility for school issues. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G44E	e) There is a collaborative school culture which is characterised by mutual support. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>

**45. How strongly do you agree or disagree with the following statements about what happens in this school?**

Please mark one choice in each row.

		Strongly disagree	Disagree	Agree	Strongly agree
TT2G45A	a) In this school, teachers and students usually get on well with each other. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G45B	b) Most teachers in this school believe that the students' well-being is important. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G45C	c) Most teachers in this school are interested in what students have to say. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G45D	d) If a student from this school needs extra assistance, the school provides it. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>

**46. {Finally, }we would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?**

Please mark one choice in each row.

		Strongly disagree	Disagree	Agree	Strongly agree
TT2G46A	a) The advantages of being a teacher clearly outweigh the disadvantages. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G46B	b) If I could decide again, I would still choose to work as a teacher. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G46C	c) I would like to change to another school if that were possible. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G46D	d) I regret that I decided to become a teacher. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G46E	e) I enjoy working at this school. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G46F	f) I wonder whether it would have been better to choose another profession. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G46G	g) I would recommend my school as a good place to work. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G46H	h) I think that the teaching profession is valued in society. ..	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G46I	i) I am satisfied with my performance in this school. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>
TT2G46J	j) All in all, I am satisfied with my job. ....	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>

## **Appendix B. Detailed Information about Mplus Model Inputs.**

According to the requirements of Mplus language, several required and optional commands need to input into Mplus. This study contained six commands that were title, data, variable, analysis, model and output.

The TITLE command was to write the name of two models as the research content *path analysis of teachers' job satisfaction Model A, Model B, Model C* respectively. After data management, a *dat.* format file was created by SPSS and provided it in DATA command. Besides simple indices and complex scale indices, the variables of school id (IDSCHOOL), teacher id (IDTEACH) and teacher final weight (TCHWGT) contained in the VARIABLE command. In this study, the option of USEVARIABLE, MISSING, CLUSTER and WEIGHT were also in VARIABLE command. The USEVARIABLES option is used to select a subset of the variables to be in the analysis and for merging (Muthén & Muthén, 1998-2012). In the Model A, the indices of TCDICSC, TCONSBS, TSELEFFS, TJOBSATS, TEFFRPOS were selected. The indices of TEFFRPOS and TSELEFFS were as core dependent variables in one relationship as well as were the independent variables to assess TJOBSATS. In other words, TEFFRPOS and TSELEFFS can be regarded as input factors and output factors based on the IPO model. The dependent variables of teachers' background (TTG2G01, TT2G02, TT2G05B) in the Model B and the school climate variables (TCOOPS, TSCTSTUDS, TSCSTAKES) were added separately based on the command of Model A.

The MISSING option is used to identify the values in the dataset that are treated as missing or invalid (Muthén & Muthén, 1998-2017). In the merged data, the missing value was replaced by 9998. The CLUSTER is used to identify the variables in the dataset that contains clustering information (Muthén & Muthén, 1998-2017). The Sweden data were from 186 schools, to make sure less variation of the teacher work in a same or different environment that the CLUSTER variable IDSCHOOL were utilised. The WEIGHT option is used to identify the variables that contain sampling weight information (Muthén & Muthén, 1998-2017), the indicator of TCHWGT was used to account for the unequal selection probabilities of the observations in the TALIS 2013 Sweden data.

The COMPLEX analysis type was utilised in the ANALYSIS command. The reason for selecting complex type rather than general type was to adjust bias in the analytical process. If



underestimating the standard error in the research, the test result will be an error. The maximum likelihood estimation (MLR) (Kline, 2011; Muthén and Muthén, 1998-2012) can be used to avoid the bias resulting from the estimator for non-normal outcomes in SEM. The MODEL command of the Model A had three statement settings for testing regression: TJOBSATS, TSELEFFS and TEFFPROS. The first statement was to evaluate the direct effect of teacher constructivist beliefs, classroom disciplinary climate, self-efficacy and professional development (TCDISCS, TCONSBS, TSELEFFS, TEFFRPOS) on teachers' job satisfaction (TJOBSATS). The second and third statements were to assess the indirect relationship between dependent variables and independent variables. The variables of teachers' professional development, constructivist beliefs and classroom disciplinary climate were related to self-efficacy, thus, to test how TEFFPROS, TCDISCS and TCONSBS affected TSELEFFS. Meanwhile, teacher interpersonal beliefs and instructional climate in the classroom were related to professional development. The third statement was to investigate the regression between TCDISCS, TCONSBS and TEFFPROS. The MODEL command of the Model B contained another statement to examine the effect of teacher characteristics (TT2G01, TT2G02 and TT2G05B) on teacher constructivist beliefs, classroom disciplinary climate, self-efficacy and professional development and teachers' job satisfaction (TCDISCS, TCONSBS, TSELEFFS, TEFFRPOS and TJOBSATS). Moreover, Model C added the statement of teacher co-operation, teacher-student relations and participation among stakeholders (TCOOPS, TSCTSTUDS and TSCSTAKES) by Model A three statements, which to assess the impact on TCDISCS, TCONSBS, TSELEFFS, TEFFRPOS and TJOBSATS. Due to investigate the indirect effect of dependent variables on teachers' job satisfaction, the command of MODEL INDIRECT added in the statement. Mplus 7.4 (Muthén and Muthén, 1998-2012) was used for the estimation and testing all of the model statements.

**Mplus input for Model A:**

TITLE: path analysis of teacher's job satisfaction and effecacy

DATA: FILE IS Sweden\_workingfile.dat;

VARIABLE:

NAMES ARE IDSCHOOL IDTEACH TT2G01 TGEGR  
TT2G02 TT2G03 TT2G04 TT2G05A TT2G05B TT2G05C TT2G05D TT2G06  
TT2G09 TT2G10 TT2G11 TT2G12A TT2G12B TT2G12C TT2G13A  
TT2G13B TT2G13C TT2G16 TT2G17 SECLSS SEINSS  
SEENGs TSELEFFS TJSENVs TJSPROS TJOBSATS TSCSTAKES

```
TSCTSTUDS TCDISCS TCONSBS TCEXCHS TCCOLLS TCOOPS
TEFFPROS TPDPEDES TPDDIVS PPDACT TCHWGT;
USEVARIABLE = TCDISCS TCONSBS TSELEFFS TJOBSATS TEFFPROS;
MISSING IS ALL (9998);
CLUSTER=IDSCHOOL;
WEIGHT=TCHWGT;
ANALYSIS:
  TYPE=COMPLEX;
  ESTIMATOR=MLR;
MODEL:
  TJOBSATS ON TCDISCS TCONSBS TSELEFFS TEFFPROS;
  TSELEFFS ON TEFFPROS TCDISCS TCONSBS;
  TEFFPROS ON TCDISCS TCONSBS;
  TCDISCS WITH TCONSBS@0;
OUTPUT: STDYX;
MODEL INDIRECT:
  TJOBSATS IND TCDISCS;
  TJOBSATS IND TCONSBS;
  TJOBSATS IND TEFFPROS;
```

**Mplus input for Model B:**

```
TITLE:      path analysis of teacher's job satisfaction and efficacy
DATA:      FILE IS Sweden_workingfile.dat;
VARIABLE:
  NAMES ARE IDSCHOOL IDTEACH TT2G01 TGEGR
  TT2G02 TT2G03 TT2G04 TT2G05A TT2G05B TT2G05C TT2G05D TT2G06
  TT2G09 TT2G10 TT2G11 TT2G12A TT2G12B TT2G12C TT2G13A
  TT2G13B TT2G13C TT2G16 TT2G17 SECLSS SEINSS
  SEENGs TSELEFFS TJSENVs TJSPROs TJOBSATS TSCSTAKES
  TSCTSTUDS TCDISCS TCONSBS TCEXCHS TCCOLLS TCOOPS
  TEFFPROS TPDPEDES TPDDIVS PPDACT TCHWGT;
USEVARIABLE = TT2G01 TT2G02 TT2G05B TCDISCS TCONSBS TSELEFFS
  TJOBSATS TEFFPROS;
```

```
MISSING IS ALL (9998);
CLUSTER=IDSCHOOL;
WEIGHT=TCHWGT;
ANALYSIS:
  TYPE=COMPLEX;
  ESTIMATOR=MLR;
MODEL:
  TCDISCS TCONSBS TSELEFFS TJOBSATS TEFFPROS ON TT2G01 TT2G02
  TT2G05B;
  TJOBSATS ON TCDISCS TCONSBS TSELEFFS TEFFPROS;
  TSELEFFS ON TEFFPROS TCDISCS TCONSBS;
  TEFFPROS ON TCDISCS TCONSBS;
  TCDISCS WITH TCONSBS@0;
OUTPUT: STDYX;
MODEL INDIRECT:
  TJOBSATS IND TCDISCS;
  TJOBSATS IND TCONSBS;
  TJOBSATS IND TEFFPROS;
  TJOBSATS IND TT2G01;
  TJOBSATS IND TT2G02;
  TJOBSATS IND TT2G05B;
```

**Mplus input for Model C:**

```
TITLE:      path analysis of teacher's job satisfaction and effecacy
DATA:      FILE IS Sweden_workingfile.dat;
VARIABLE:
  NAMES ARE IDSCHOOL IDTEACH TT2G01 TGEGR
  TT2G02 TT2G03 TT2G04 TT2G05A TT2G05B TT2G05C TT2G05D TT2G06
  TT2G09 TT2G10 TT2G11 TT2G12A TT2G12B TT2G12C TT2G13A
  TT2G13B TT2G13C TT2G16 TT2G17 SECLSS SEINSS
  SEENGS TSELEFFS TJSENVS TJSPROS TJOBSATS TSCSTAKES
  TSCTSTUDS TCDISCS TCONSBS TCEXCHS TCCOLLS TCOOPS
  TEFFPROS TPDPEDES TPDDIVS PPDACT TCHWGT;
USEVARIABLE = TCDISCS TCONSBS TSELEFFS TJOBSATS TEFFPROS
```

TCOOPS TSCTSTUDS TSCSTAKES;

MISSING IS ALL (9998);

CLUSTER=IDSCHOOL;

WEIGHT=TCHWGT;

ANALYSIS:

TYPE=COMPLEX;

ESTIMATOR=MLR;

MODEL:

TCDISCS TCONSBS TSELEFFS TJOBSATS TEFFPROS ON TCOOPS

TSCTSTUDS TSCSTAKES;

TJOBSATS ON TCDISCS TCONSBS TSELEFFS TEFFPROS;

TSELEFFS ON TEFFPROS TCDISCS TCONSBS ;

TEFFPROS ON TCDISCS TCONSBS;

TCDISCS WITH TCONSBS@0;

OUTPUT: STDYX;

MODEL INDIRECT:

TJOBSATS IND TSCSTAKES;

TJOBSATS IND TSCTSTUDS;

TJOBSATS IND TCOOPS;

TJOBSATS IND TCDISCS;

TJOBSATS IND TCONSBS;

TJOBSATS IND TEFFPROS;