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A PSYCHOLOGICAL EXPLORATION OF THE CONTEMPORARY TEACHER ROLE IN ENGLAND: A FOCUS ON MOTIVATION, TEACHING SATISFACTION, AND STRESS EXPERIENCES, OF SECONDARY SCHOOL TEACHERS.

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A thesis submitted to the University of Huddersfield in partial fulfilment of the requirements for the degree of Doctor of Philosophy

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TABLE OF CONTENTS

Contents

4

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I would like to dedicate this thesis to my late father, Joseph Francis Mellor, who sadly passed away at the start of my PhD study. Knowing that he would be truly proud of my accomplishment has helped to keep me motivated at times when I have felt overwhelmed.

Love you always dad x

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ABSTRACT

Background and purpose – The teacher role is dynamic and complex, with both individual and structural factors influencing the teaching experience. The target orientated culture of contemporary education can have a negative impact on teachers' motivation and satisfaction at work. It is a challenge for teachers to remain effective in role in times of educational change, which pose a threat to satisfaction and may induce stress for teachers. The secondary school level specifically, has noted a variety of reforms, which alongside managing the changing nature of the classroom environment, may influence the teacher role in a negative way. The purpose of this study was to explore motivation, satisfaction, and stress experiences of secondary school teachers in England.

Design and method –An online quantitative survey, which included measures of motivation, satisfaction, and stress, collected data from a representative sample of secondary school teachers (N=1288). In part one of the study, structural equation modelling was applied to explore the relationships between factors of Self Determination Theory and teaching satisfaction, while controlling for specified covariates. In part two of the study, hierarchical moderated regression analysis was conducted to explore teaching satisfaction as a moderator in relationships between stressors and a variety of stress manifestations, in line with the Job Demands-Resources framework.

Results –In part one of the study, only perceived competence was found to be significantly related to teaching satisfaction in both samples. In part two of the study, for females reporting low levels of satisfaction, significant relationships were found between emotional stress and both work-related stressors and professional distress. For males with low satisfaction levels, discipline/motivation stressors were significantly related with both cardiovascular and behavioural stress manifestations. A significant relationship was found between professional distress and emotional manifestations of stress in female teachers with high levels of satisfaction. Significant relationships between professional investment and emotional, fatigue, and cardiovascular manifestations were shown for male teachers reporting high levels of teaching satisfaction.

Conclusion – Teaching competence is related to teaching satisfaction at the secondary school level. It is recommended that future studies focus specifically on factors which may contribute to teachers' perceived competence within role, including appropriate classroom management techniques and effective teaching pedagogies. It is recommended that future research on teacher stress should be based on assessing male and female teachers independently. It is proposed that schools should consider targeting the reported sources of teacher stress and should further target teachers' satisfaction in role. Schools and policy makers need to come together to devise professional development opportunities for teachers. Additional research is needed to guide the direction of professional development initiatives in secondary schools. The implementation of competency strategies would enhance satisfaction in role, and may further contribute to reducing teacher stress.

Originality/value – This is the first known research to specifically focus on the moderating role of teaching satisfaction on relationships between stressors and manifestations of stress in secondary school teachers in England. Female teacher stress is predominantly psychological, whilst male teacher stress is experienced at a biopsychosocial level. The employed advanced statistical procedures, together with a large sample, contribute to the validity of findings. Perceived teaching competence is the more prominent need in relation to teaching satisfaction.

LIST OF ABBREVIATIONS

A	Cronbach's Alpha
ANOVA	Analysis of Variance
AUT	Autonomy
B	Unstandardised Regression Weight
BM	Behavioural Manifestations
BPNW	Basic Psychological Needs at Work
B	Standardised Regression Weight
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CI	Confidence Interval
CM	Cardiovascular Manifestations
COM	Competence
CoP	Community of Practice
CPD	Continued Professional Development
Df	Degree of Freedom
DfE	Department for Education
DM	Discipline/Motivation
DV	Dependant Variable
EBacc	English Baccalaureate (performance measure)
EM	Emotional Manifestations
EYFS	Early Years Foundation Stage (of education)
F	F-ratio
FM	Fatigue Manifestations
FTE	Full Time Employed
GCSE	General Certificate of Secondary Education
GM	Gastronomical Manifestations
HSE	Health and Safety Executive
IV	Independent Variable
JD-R	Job Demands- Resources
KS1	Key Stage 1 (primary level education)
KS2	Key Stage 2 (primary level education)

LEA	Local Education Authority
LSS	Life Satisfaction Scale
M	Mean
M	Moderating variable
ML	Maximum Likelihood
N	Reference to number of participants in total sample
n	Reference to only a portion of the sample
NC	National Curriculum
NHS	National Health Service
Ofsted	Office for Standards in Education
p	P-value (indicates significance)
PD	Professional Distress
PI	Professional Investment
PLC	Professional Learning Community
PRP	Performance Related Pay
QTS	Qualified Teacher Status
r	Pearson correlation coefficient
R^2	R squared
REL	Relatedness
RMSEA	Root-Mean-Square Error of Approximation
SD	Standard Deviation
SDT	Self Determination Theory
SE	Standard Error
SEM	Structural Equation Model
SPSS	Statistical Package for the Social Sciences
SREP	Sciences School Research Ethics Panel
SWB	Subjective Wellbeing
TLI	Tucker Lewis Index
TM	Time Management
TSI	Teacher Stress Inventory
TSS	Teaching Satisfaction Scale
UK	United Kingdom
VIF	Variance Inflation Factor

WS	Work-related Stress
X	Predictor variable
Y	Outcome variable
χ^2	Chi-square

LIST OF TABLES

15

LIST OF FIGURES

16

Copyright statement

Joanne Vaughan

18

CHAPTER 1

Introduction

1.1 Chapter introduction

This chapter provides background and contextual insight to the thesis aims and objectives which are related to exploring psychological needs, teaching satisfaction, and stress experiences, of secondary school teachers in England. A detailed overview of the contemporary education system is provided; this includes a consideration of the different levels of education, the modern teacher workforce, the role of the teacher, and relevant educational policies and initiatives. Such legislation has guided contemporary education, teacher practice and has advocated learner achievement expectations. A structured framework and attainment culture can have an adverse impact on teacher wellbeing (Glenville-Cleave & Boniwell, 2012). Conversely, in a facilitating environment, the school has the potential to act as a therapeutic community to its members by fostering healthy growth and providing satisfaction (Timms & Brough, 2013). Consequently, an overview of relevant healthy growth and satisfaction factors is presented. The chapter concludes with an overview of the aims, objectives and research questions of the thesis, along with an outline of the thesis structure.

1.2 The education system in the United Kingdom/England

Each country within the United Kingdom (England, Northern Ireland, Scotland and Wales) has separate educational systems which are overseen by different governments. In England, the UK Government is directly responsible for teaching and teacher practice. Education in Scotland, Wales and Northern Ireland is governed by the Scottish Government, the Welsh Government and the Northern Ireland Executive respectively. Education is currently compulsory for all children aged five and over (aged four and over in Northern Ireland). There are five distinct educational stages: early years, primary level, secondary level, Further Education (FE) and Higher Education (HE) (Gov.UK, 2012). The focus of this thesis is on secondary school education in England, and consequently the remainder of this chapter is focussed on the English education system.

The education system has seen constant changes in government legislation. Furthermore, understanding such changes contributes to the understanding of the contemporary teaching role, both with regards to teaching practice and also with acknowledgement of the potential implications this may have for teachers. In order to provide additional clarity for the reader, relevant educational Acts, policies and initiatives are tabulated and summarised in Table 1.1 and further discussed throughout this chapter.

Table 1.1

Summary of key educational Acts, policies and initiatives cited within this chapter

Year	Act or policy	Educational initiative
1974	Health and Safety at work Act	Introduced to ensure a positive working environment and safety for all employees in all work contexts.
1988	National Curriculum (NC)	This details specific areas for study and learner expectations to ensure consistency across the different levels of education
1992	Higher Education Act	This allowed former polytechnics and other higher educational institutions to be designated as universities
1992	Office for Standards in Education (Ofsted)	The aim of this regulatory body is to ensure quality and standards within educational settings
2000	Initial introduction of the Academies Programme	The primary objective was that of replacing poorly performing schools
2002	Expansion of the Education Act	To include the Early Years Foundation Stage (EYFS) in England and Wales
2003	Every Child Matters	Initiative for children and young people in England and Wales (following the death of Victoria Climbié)
2004	The Children's Act	Developed to ensure multiagency working. It states that every child, regardless of background and circumstance: • Be safe • Be healthy • Enjoy and achieve • Make a positive contribution • Achieve economic wellbeing
2009	Further Education (FE)	Overseen by new department for Business, Innovation and Skills

		(some education for 14-19 year olds still remains under the Department for Education)
2010	Expansion of the Academies Act	To permit publicly funded schools to apply for academy status (converter schools)
2010	English Baccalaureate (EBacc)	This is a performance measure which recognises achievement at grade C or above in the General Certificate in Secondary Education (GCSE) examinations in the following subjects: • Mathematics • English • Science • A modern foreign language • History or geography
2013	Performance Related Pay (PRP) in teaching	The aim of this initiative was to reward the best performing teachers
2015	Increase in the leaving age for students in compulsory education.	The age was increased meaning that all children must now remain in compulsory education or training until they are 18 years old (this was previously 16 years)
2016	Progress 8 and Attainment 8	Introduced to measure progress from the end of primary education to the end of secondary education, and attainment in eight specified areas: • Mathematics • English • Three EBacc subjects • Three additional subjects
2017	Grading reforms of the General Certificate of Secondary Education (GCSE) examinations	Grades now range from 1-9 (with 9 being the highest) as opposed to grades of A*-U. The intention of the reform was to better discriminate student achievement.

1.2.1 Early years and primary level education in England

Early years provision provides pre-school education for children aged three to five years and is generally delivered in nursery settings or in nursery classes within primary schools. The Education Act (2002) extended the National Curriculum for England to further include Early Years Foundation Stage (EYFS) education. In addition to a nursery phase, primary level education in England is typically made up of two additional distinct elements: infant and junior. The former covers children from age five to seven/eight years and is referred to as Key Stage 1 (KS1), and the latter covers children up to age eleven/twelve years (Key Stage 2, KS2). Such distinction is not made at the primary level in Scotland and Northern Ireland. The aim of primary education is to provide basic numeracy and literacy skills to all children, along with providing foundations in science and additional subjects (Gov.UK, 2012). Students make the transition from primary education to secondary level education at the age of 11.

1.2.2 Secondary school level education in England

Secondary schools in England consist of students from ages 11 to 16 years, or 18 years in cases where advanced or further education is offered. Secondary schools comprise several types of schools, including comprehensive schools, grammar schools, and academies. Comprehensive schools typically cater for local children and admittance to such schools is primarily based on demographic factors. By contrast, grammar schools admit students on the basis of demonstrated ability. Most academies are secondary schools. Initially introduced in 2000, the academy programme has expanded through the Academies Act (2010) (Gov.UK, 2010). Academy schools comprise two different types of academisation; converter and sponsored. In the former, school governors apply for academy status. Many grammar schools have converted to academy status in order to be independent of Local Education Authority (LEA) control. In the latter, schools are placed under the control of an academy sponsor by the Government if they are considered to be underperforming (National Union for Teachers, 2017). Academies are schools which are funded directly by the Department for

Education (DfE) and are independent of the local authority (National Union of Teachers, 2017a). Consequently, there is less emphasis on adhering to initiatives such as the National Curriculum, and more focus on Progress 8 and Attainment 8 (refer to section 1.5.3).

There were 6,273 academy schools in England in 2016 which denotes an increase of 863 schools compared to data for 2015. Academy schools accounted for 44 per cent of the teacher workforce and represented 28 per cent of all schools at the time of the census (DfE, 2016; DfE, 2017). The academy scheme is in the early stage of development nationally and consequently the impact that this will have on various factors of the teaching experience is not currently established. In addition, academies have the flexibility to set their own agenda, determine teacher salaries and change the school calendar. This current trend towards the academisation of schools marks a fragmentation of the existing education system in England.

Students, at age 16, are entered for external examination at the end of compulsory secondary level education. In England, Wales and Northern Ireland, this typically relates to the General Certificate of Secondary Education (GCSE), and Standard Grades in secondary schools in Scotland (Gov.UK, 2012). Such grades are considered a Level 2 qualification, with Level 3 achieved at post-16. Level 3 qualifications are now also taught in school settings in addition to be offered in college contexts. Level 3 qualifications include Advanced level (A levels), General National Vocational Qualification, higher level (GNVQ) and Exedel (formerly BTEC) (Gov.UK, 2012).

1.2.2.1 Raising the participation age
The Government increased the legal leaving age for students in 2015 and consequently all individuals must remain in some form of compulsory education or training until the age of 18 (students could exit compulsory education at 16 years of age prior to the introduction of this new legislation) (Gov.UK, 2012). The rationale for the new legislation was based on several government reports. The Department of Education (2011) reported that in

2009, 3.8% of sixteen year olds were not in education, employment or training (NEET). The NEET figure increased to 7.2% for seventeen year olds and 16.7% at eighteen years. The raising of the participation age was due to many young people being unable to find employment in the current economy as the number of unskilled jobs has decreased.

In addition, it was found that being out of education, employment or training between 16-18 years of age had negative consequences in later life: this including, teenage pregnancy, poor health, criminal record, and lower pay (Gov.UK, 2011). The increase in participation age was consequently proposed as beneficial, both to the individual and to the wider economy. Conversely, it has been advised that there are potential issues which should be considered. Woodin, McCulloch and Cowan (2013) suggest that there may be insufficient alternative provisions to cater for those individuals who would have otherwise exited education at 16 years, resulting in enrolment on unsuitable courses. Similarly, whilst the 14-19 years provision has promoted partnerships between schools and other training providers, Higham and Yeomins (2011) argue that the majority of the responsibility is still placed upon schools. The impact that this may have on secondary schools in England, and individual staff, remains undetermined.

1.2.3 Further education and higher education

Further education (FE) refers to education which is typically post-compulsory and is generally related to vocational education and training. The delivery of such education is offered in schools, colleges, and other educational/training institutions in the UK. FE is distinct from secondary education in subject focus, although for some children aged fourteen to nineteen, FE serves as an alternative to the traditional academic pathway. More recently, some forms of higher education are taught in FE contexts following the introduction of the Higher Education Act in 1992 (Gov.UK, 2012). Higher education (HE) refers to education above that of a level three qualification. Most often, this includes Degrees and higher Certificates/Diplomas. HE also incorporates post-graduate qualifications such

as Masters and Doctorate degree programmes. The delivery of HE is typically within universities in the UK (Gov.UK, 2012)

The following sections of this chapter pertain to the education sector and teachers in England as this is the primary focus of this thesis. Most notably, this relates to the teacher workforce and compulsory educational provisions within school contexts. Where appropriate, attention is given to the secondary school level to highlight the factors which are of relevance to the analyses detailed in later chapters of this thesis.

1.3 School workforce

The number of teachers working within the primary school sector in England has increased by 1.1%, from 220 thousand in 2015 to over 222 thousand in 2016. There has also been an increase noted for assistant teachers and support staff, 1.8% and 0.8% respectively (DfE, 2016; DfE, 2017). Whilst the primary education sector has increased in employee numbers, recent statistics show that this is not the case for other sectors of education (DfE, 2017). The number of secondary school teachers in England has fallen by 1.3%, from 211 thousand in 2015 to 208 thousand in 2016 (DfE, 2016; DfE, 2017).

Female staff accounting for 80% of the school workforce in England; this includes 74% of full time employed (FTE) teachers, 91% of teaching assistants and 82% of support staff (DfE, 2017). This would suggest that teaching, along with other jobs roles within the school setting, is typically a female orientated career. The influence of the feminisation of the education system remains a topic of debate. de Zeeuw et al. (2014) did not observe an influence of teacher's gender on classroom behaviour and achievement. In contrast, Carrington, Tymms and Merrell (2008) found that students identify more with a same-gender teacher and are consequently more focussed in the classroom. Research by Sansone (2017) reported similar findings. In addition, it was suggested that female teachers perceived boys as more challenging which could impact their motivation for learning and subsequent achievement. Given that girls continue to outperform boys on achievement across all educational levels (DfE, 2018), it could be argued that the dominance of female staff within schools is therefore influential to student achievement. Whilst there is less gender diversity in the secondary school level compared to primary level, 63% and 85% respectively, female teachers still dominate the school workforce (DfE, 2017). Within the secondary school level, 27.8% of females work part time compared with 9% of male teachers (DfE, 2017).

In addition to teachers, other staff members have an important part in ensuring a positive learning environment within school. The role of teaching

assistants (TAs) and support staff within school is to work collaboratively with teachers to promote inclusive learning for students with a variety of special needs. The impetus for inclusion is a key focus of contemporary education and consequently TA and support roles diversify in reaction to presented needs within school (Chambers & Chambers, 2015). The multifaceted nature of such roles include enabling access to provision for those with additional learning needs, supporting physical disability and dealing with disruptive behaviour in the classroom (Clark & Visser, 2016). Therefore it is concerning that a reduction of 4% in teaching assistants is noted with numbers falling from 52 thousand in 2015 to 50 thousand in 2016. At the same time, a decrease in the number of support staff in the secondary school sector has also fallen by 1.6%, from 101 thousand in 2015 to 100 thousand in 2016 (DfE, 2016; DfE 2017). Consequently, the impact of the decreasing TA and support staff numbers may have negative implications for the most vulnerable students. This may also adversely impact the teacher role as they become less supported with managing students' additional needs.

1.4 Teaching in contemporary education in England

The majority of teachers in England will hold a teaching qualification and have qualified teacher status (QTS). QTS asserts that the individual has achieved the necessary skills and competencies to teach effectively (DfE, 2017a). Unlike most comprehensive and grammar schools, independent schools and academies have the flexibility of employing staff without this qualification. The percentage of FTE teachers that do not have QTS also varies by school level, 3.4% of teachers in all nursery/primary schools do not have QTS, compared with 6.2% in all secondary schools (DfE, 2017). There are varying routes to becoming a teacher in England, including apprenticeship options, training within a school, and university courses. Most training routes allow the individual to obtain qualified teacher status (QTS) (DfE, 2017a). In addition, teachers must also be proficient in both English and mathematics. All schools are subject to inspections of teaching standards by the Office for Standards in Education (Ofsted) to ensure quality teaching of provision (Gov.UK, 2012a).

The contemporary teaching role is multifaceted and includes identifying student needs, planning sessions, maintaining an enabling environment for learning, assessing work, providing feedback, and ensuring quality (Hirst, 2006; Gravells, 2011). Brookfield (2006) suggests that for many teachers, the primary concern is to ensure their students acquire a predetermined body of knowledge and required skills to pass achievement measures. Similarly, a more recent study by Kelly, Dorf, Pratt and Hohmann (2014), comparing teacher roles in England and Denmark, found that teachers in England utilised a coaching style role to develop learners' knowledge and skills. It was found that this was predominantly directed towards target attainment. This research also found that teachers in England presented more structured lessons and often attempted to micro-manage student learning. One potential explanation of this could be due to the prescribed initiatives and attainment targets that guide teaching practice in England. This is explored further in subsequent sections of this chapter.

1.4.1 Continued professional development (CPD)

A major aspect of teaching across all areas of the education system in England is that of learning and development. Polk (2006, p.23) states,

'…not only do teachers teach and students learn, but teachers must also learn as students do. It is the teachers' responsibility to grow as practitioners and stay current in their field'.

Lewis and Zibrarass (2013) suggest that professional development enables effective performance. Whilst there is no single definition of 'teacher development', the concept is subsumed in contemporary teaching practice. Within an academic year, a mandatory five days are dedicated to staff development and training across all school settings, the content of which is dictated by the individual school. Evans (2002) suggests that teacher development comprises two distinct elements: attitudinal (this includes intellectual and motivation) and functional (improving professional performance). It is generally accepted that an important part of a teacher's development is to ensure that knowledge is current (Polk, 2006). In addition to subject specific knowledge, this includes the need to be aware of evolving legislation and codes of practice as relevant to the profession (Gravells, 2011). The British Council's (2015) framework for continued professional development sets out guidelines for optimising educational opportunities; this includes, managing learning, promoting inclusivity, employing effective pedagogies and integrating Information and Communication Technology (ICT). Teachers' views on CPD support is an important part of the professional role, with many indicating that observing the teaching of fellow colleagues is beneficial to improving their own practice (Sturman et al., 2005). This can be linked to behavioural principles such as modelling (Bandura, 1997). Race (2014) further confirmed that assuming the role of both observer and the observed is perceived as beneficial in promoting effective teaching practice.

The establishment of reciprocal relationships between teachers in the school environment can contribute to professional development by means of

collaborative knowledge exchange (Wong, 2010); this collaborative approach is often referred to as a professional learning community (PLC). Stoll, Bolam, McMahon, Wallace, and Thomas (2006) suggest that PLCs facilitate the development of new skills and pedagogical practice which contribute to teachers' competence and confidence. Related research suggests that well-developed PLCs have a positive impact on both teaching practice and the consequential achievement of learners (Vescio, Ross & Adams, 2008).). This standpoint relates to earlier perspectives on communities of practice (CoP), which involves mutual engagement, joint enterprise and shared repertoire (Lave & Wenger, 1991; Wenger, 1998). The CoP framework has often been considered with reference to the school environment (Forbes & Skamp, 2016). In this sense, the school context has the potential to facilitate teacher wellbeing by providing a community which can serve as a therapeutic tool in permitting positive learning experiences. Conversely, factors such as differences in pay, lack of time for collaborative working, and pressure to meet demands, may hinder collegial relationships in a negative way (Wragg, 2002).

1.5 Educational initiatives and reforms in education

Borko (2004) suggests that the effectiveness of educational initiatives and related reforms rely on teachers and their ability to implement such changes within the classroom environment; this is often linked to CPD. Consequently, an exploration of the educational initiatives relevant to the secondary school level is necessary to better understand how these may impact the teaching role, and furthermore how this may wider impact the education of learners. Such initiatives include monetary rewards for teachers, regulatory bodies, restructuring of the curriculum design, and, most recently, reforms to the grading systems; these are explored in the following sections of this chapter.

1.5.1 Performance related pay and quality assurance

Traditionally, teachers have been paid according to a national pay scale which ensured consistency across the workforce. Performance related pay (PRP) in teaching came into effect from September 2013. This was implemented in order to allow schools to reward the best performing teachers (DfE, 2013), although not all schools offer PRP. It was suggested that this may enhance quality of provision within schools. However, it is argued that PRP encourages teachers to work in a more isolated way rather than sharing valuable expertise (Wong, 2010). The impact of PRP is that the benefits of collaborative working, both for teachers and student experience, may be reduced. Chamberlin, Wragg, Haynes and Wragg (2002) identified that a disadvantage of PRP is that it creates competitiveness and can negatively impact collegial rapport. On the other hand, it has been postulated that PRP has the potential to motivate teachers within the school setting through the principle of reward. From the latter viewpoint, PRP may enhance quality in teaching. The current position of the appropriateness of PRP in teaching remains a topic of debate. In relation to promoting quality assurance in education, the secondary school level, along with other areas of education for children and young people, has experienced educational reforms including the introduction of regulatory bodies such as Ofsted. The role of Ofsted is to inspect all schools once in every four years to ensure consistency and quality within education (GOV.UK, 2017b). For many teachers, the issue of

accountability for providing quality teaching can have a negative effect on their teaching experience (Plowright, 2007).

1.5.2 Curriculum design

An educational curriculum sets the expected framework for educational institutions. The implementation of the National Curriculum (NC) in 1988 provided a set of compulsorily subjects and standards to ensure all children learn the same content and work towards the same standards (Gov.UK, 2014); this included core subjects (English, Science and Mathematics) and foundation subjects (a Modern Foreign Language, History, Geography, Technology, Music, Art, and Physical Education). In addition, there is a programme of student testing at 5, 7, 11, and 14 years of age. Prior to this, schools could develop their own curricula. The justification for the NC was to ensure equality in learning, a balance in knowledge, and to better prepare learners for work/further study.

The delivery and implementation of the NC relies extensively on the interpretation of the school and arguably more on the subjective interpretation of this by the teacher (Young, 1998). Furthermore, it has been suggested that such a common curriculum dictates the nature of knowledge and specifies values which may not be the same across different socioeconomic areas and cultures (Kelly, 2004). In response, several reforms to the curriculum have taken place, including the introduction of Advanced Subsidiary (AS) levels for seventeen year olds in 2001, lowering of the pass mark for the test at age eleven in 2003, and the introduction of vocational pathways of study. It is suggested that continual curriculum reforms and educational initiatives are placing increasing demands on an already intensive teacher workload (Glenville-Cleave & Boniwell, 2012). As a consequence of such change, teachers must be appropriately updated to practice effectively in order to meet with the expectations of their role; much of the training offered to teachers during CDP days, focuses on addressing curriculum design and reforms.

1.5.3 Reforms and initiatives in secondary schools

The introduction of the English Baccalaureate (EBacc) performance measure in 2010 was to assess student achievement on GCSE examinations. Specifically, this recognises attainment at grade C or above in Mathematics, English, Science, history or geography, and a modern foreign language (DfE, 2013a). It has been argued that the EBacc devalues certain subjects, such as the Arts, and thus questions the holistic nature of education now offered to students (Gregory, 2017). Statistics for 2016 show 65.7% of teachers were delivering EBacc subjects. Furthermore, 60.4% of all teaching hours were focussed on the EBacc (DfE, 2017), suggesting an emphasis on prescribed initiatives and targets in contemporary secondary school settings.

Progress 8 and Attainment 8 (introduced in 2016) have again presented teaching professionals with guidelines and measurements to ensure optimal performance. The former represents learner progress from the end of primary education to the end of secondary education. The latter relates to performance across eight specified subjects (Mathematics, English, three subjects which meet the Ebacc, and a further three subjects). Progress 8 and Attainment 8 contribute to performance tables and schools are rewarded accordingly (DfE, 2017b). Research has noted that many teachers perceive performance tables as the least useful form of data (Sturman, Lewis, Morrison, Scott, Smith, Styles, Taggart, & Woodthorpe, 2005). Furthermore, it is argued that the drive to adhere to suggested achievement targets means that teachers are continuing to exhaust their resources in an attempt to succeed. As a result, many teachers are more focussed on ensuring learners pass prescribed tests rather than focussing on facilitating independent learning and promoting more holistic knowledge.

In 2017, reforms to the GCSE grading system were implemented: instead of grades ranging from A* to U, they now range from 9 to 1, with 9 being the highest grade. The rationale for this change was to better discriminate student achievement. English language, English literature and Mathematics examinations were trialled using the new grading system in 2017; this is applicable to all subjects from 2018 (Gov.UK, 2017a). Stock

(2017) argues that this is not an effective reform as the number of students achieving a grade 9 will be determined statistically. The impact of this most current reform on teacher practice is yet to be determined. Nonetheless, this provides another example of change within secondary level education which teachers must adapt to. This may also hold wider implications as employers will need to be aware of the new grading system in order to ensure that the employee is suitable for a given position.

1.6 The impact on teacher satisfaction

The dynamic state of the contemporary education system, with its continual reforms, increased expectations and associated challenges may negatively impact the teacher role and teaching satisfaction within educational setting (Klassen, 2010). This section outlines some of the effects of these changes, with a comprehensive discussion provided in chapter 2 of this thesis.

1.6.1 The impact of job dissatisfaction and unsatisfied needs

The current dominant focus on raising standards, improving practice and meeting with departmental and institutional demands has relevance to understanding job (dis)satisfaction within the teaching profession. In addition to teacher absenteeism and attrition (Avis et al., 2011), teacher dissatisfaction is also linked to student performance and motivation (Moe, Pazzaglia & Ronconi, 2010), This highlights the need to better understand relevant aspects of the teaching experience from the perspective of the teacher. The now target driven culture along with additional challenges, such as adapting to change, are associated with poorer health outcomes and increasing levels of job dissatisfaction (Schwarzer & Hallum, 2008). Fink (2003) proposed that overload in the teacher role is often the unintended consequence of changing policy and legislation which may result in negative health and wellbeing. Orr (2012) suggests that increasingly pressurised working environments do not promote the recognition of potential teacher needs. This may include the need for autonomy or flexibility within the teaching role. These may be a contributory factor to the negative experiences reported by teachers as practice is driven by structured guidelines. While the individual needs of learners are incorporated into legislation, for example, 'Every Child Matters' (Gov.UK, 2003), the needs of teachers are not necessarily recognised. The aforementioned legislation contributed to the development of the Children's Act in 2004 to ensure the wellbeing and safety of all children and young people in England and Wales.

1.6.2 The need for autonomy, competence and relatedness

Grenville-Cleave and Boniwell (2012) suggest that educational initiatives impact on teacher autonomy and indicate that, as a result, teachers have significantly lower perceived control over their practice than do other non-teaching professionals. This perceived lack of control may promote an adverse impact on health (Sturman et al., 2005). Teaching professionals are managing a multitude of prescribed expectations within their daily roles. With this in mind, it may be considered that there is a need for teachers to be reflective of their practice and adaptable to the changing and diversifying needs of learners within the classroom environment (Jarvis, Holford & Griffin, 2003). However, it is suggested that the strict governing guidelines in the education system make autonomous teaching and flexibility within the classroom a challenge (Grenville-Cleave & Boniwell, 2012). When teachers feel unable to manage the challenges of their role, this can lead to negative health outcomes. In addition to a negative impact on individual health, the emotional and psychological costs involved with meeting institutional demands may also be a barrier to developing rapport with students. This may be a concern for schools as it has been suggested that the interaction between teacher and student is the most critical in ensuring student achievement (Brill & McCartney, 2008). Research by Jephcote, Salisbury and Rees, (2008) and Orr and Simmons (2011) note that many teachers work with learners beyond the allocated timetabled hours to ensure optimal performance. Ball (2008) further reported that it is not uncommon for teachers to fail to have an adequate break during their working day due to work demands. Whether this is the commitment of the individual teacher to ensure that learners meet their potential, or whether this is indicative of the pressure to meet with prescribed measurement standards, remains unclear.

1.6.3 Stress outcomes

It is evident within the associated literature that there is diversity within the teaching experience, both in relation to recognised stressors and the impact these may have on teacher satisfaction. Consequently, it is important for employers to conduct appropriate risk assessments for work related stress. Stress prevention and intervention strategies are typically defined as

forms of primary, secondary, and tertiary levels. Primary intervention, including job redesign, increasing autonomy, and changes at the organisational level are viewed as preventative and consequently considered to be the most effective (Cartwright & Cooper, 2005; Cox et al., 2000a). Secondary levels are more involved with stress management, and tertiary level strategies deal with pre-established stress-related issues. A criticism of risk assessment is that they are uniform to a given institution. Consequently, they may be biased due to assessment reflecting what is expected as a potential stressor/risk which may not reflect the organisational environment (Lewis & Zibarass, 2013).

Wellbeing at work and employee health is governed by the Health and Safety at Work Act (1974) (HSE, 2017), developed as a protective initiative to ensure a positive work environment, which could further foster satisfaction at work. Despite the intentions of this Act, the magnitude of added responsibilities placed on teachers as a consequence of school-based management and prescribed initiatives has been reported to promote stress experiences and work-related illness within the teacher workforce (Tucker, 2010). Statistics for the 2015/16 academic year, show that over half (52%) of all teachers in England had at least one period of sickness absence (DfE, 2017). Whilst this statistics does not detail specific illnesses, the Health and Safety Executive (2016) report that stress is the most prevalent factor for teacher absence. In addition to adapting to change, issues such as student behaviour (Carrington et al., 2008), workload (Schwarzer & Hallum, 2008), and time management (Ball, 2008), have been suggested as contributory to stress. A plethora of health/illness related research has centred on investigating teacher stress and is outlined further in chapter 2 of this thesis.

In summary, the satisfaction of teachers may be threatened by the complexities subsumed within the contemporary teacher role. Not only do teachers have to ensure quality of learning, maintain standards and achieve prescribed targets, they also have to be adaptable to the changing needs of learners. The challenge to effectively manage such tasks, often means that their own needs may not be met, resulting in lack of motivation,

dissatisfaction and stress. Consequently, research to assess the relationship between teacher needs and satisfaction is warranted. Furthermore, detailed exploration of factors which contribute to teacher stress in contemporary education may serve to highlight areas for future consideration in order to promote the health and wellbeing of teachers in school.

1.7 Purpose and rationale of this thesis

This section provides information on the overall purpose and focus of this thesis, including the specific research questions and intentions of the investigations detailed in later chapters. In addition, a brief overview of the content for each chapter is provided.

1.7.1 Statement of problems

The education system in England is in a constant state of change. Evolving legislation and the introduction of new educational initiatives are continuing to pose a challenge to the contemporary teacher role. The consequences of such overarching guidelines and expectations have been shown to influence teachers and can negatively impact on motivation and satisfaction. Specifically, secondary school level education has been shown to encompass a multitude of dynamic factors which contribute to retention and attrition, resulting in the reduction of professionals within the secondary school. Whilst the decline in the teacher workforce at the secondary school level may be considered small, the impact that this may have on student performance and learner experience remains unclear. The decline in TAs and support staff ultimately means that teachers are adopting the role of both educator and pastoral advisor. The impact is that additional demands are being incorporated into the teacher workload, often resulting in dissatisfaction.

In exploring the teacher experience it can be deduced that the factors of motivation and needs, teacher satisfaction, and stress, each have an influence on the teacher role. The consequence of dissatisfied teachers can impact on the wider socio-economic climate such as sick pay and the need for on-going recruitment of staff to deliver effective education. Moreover, it is evident that the impact is noted at a macro level, providing further justification for the need to better understand the factors which are relevant to satisfaction for teachers working in secondary schools. Negative health outcomes, specifically stress, are recognised as a consequence of challenges in

contemporary teaching. A multitude of factors are proposed as contributing to teacher stress in contemporary times. Issues of ensuring standards and managing challenging behaviour add to the teacher role, potentially resulting in adverse health outcomes.

1.7.2 Aims, objectives and thesis questions

The overall aim of this thesis is to explore the contemporary teacher role from a psychological perspective, specifically focussing on motivation, satisfaction, and stress experiences of teachers working in the secondary schools in England. A secondary aim is to explore the potential therapeutic nature of the school environment.

The specific objectives are to:

- Operationalise the variables of interest; motivation, satisfaction, and stress, to test what factors are instrumental to secondary school teacher satisfaction and manifestations of stress
- Develop a questionnaire to measure the variables of interest
- Collect a representative sample of data from secondary school teachers in England
- Assess the relationship between teachers' psychological needs and their satisfaction at work
- Assess the factors which cause teacher stress and the specific manifestations of stress
- Assess the impact of teaching satisfaction on teacher stress
- Make recommendations for improving teaching practice
- Make recommendations for future research based on findings obtained

In order to address the aims and objectives of the thesis, two empirical investigations (chapters 4 and 5) answer the following research questions:

1. Is there a relationship between motivation and satisfaction at work?

2. Can the school context offer a therapeutic environment for teachers?

3. Is there a significant difference between male and female teachers with regards to factors explored?

4. Can the concept of teaching satisfaction serve as an effective moderator/personal resource in the teacher stress experience?

To answer the research questions, the study includes two parts, which together contribute to the thesis focus. The first part explores psychological needs/motivation and their relationship with satisfaction in male and female teacher samples, with a focus on the therapeutic potential of the school context; this answering questions 1, 2, and 3. The second part explores the ability of teaching satisfaction to impact the stress experience of teachers, focussing on potential differences between male and female teachers; this answering questions 3 and 4.

1.7.3 Significance of study

This is the first known research to offer a multifaceted understanding of motivation and needs, satisfaction, and stress experiences of teachers working within the secondary school level in England. To date, no other research has explored the relatedness of satisfaction and motivation in teaching. In addition, the ability of satisfaction to influence professed teacher stress has not been previously examined. Furthermore, the research detailed in this thesis provides explicit consideration of potential disparities between male and female secondary school teachers in England.

The employment of advanced statistical procedures offers a robust evaluation of aspects of the contemporary teaching role in light of the

specified experiential factors. This provides the most accurate measures of the relationships explored. Consequently, the analyses detailed in later chapters provide a comprehensive account of the teacher role with a specific focus on needs and motivation, satisfaction, and stress, along with an appreciation of the therapeutic potential of the school environment. The thesis is theoretically sound; the analyses undertaken are based on existent theory. The theory which underpins the analysis undertaken in chapter 4 is Self-Determination theory (Deci & Ryan, 2000). The Jobs Demand-Resources framework (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007) and the biopsychosocial perspective (Engel, 1980) guide the focus in chapter 5. Furthermore, the analyses are based on large samples, giving further credibility to the findings which offer a unique contribution to knowledge.

1.7.4 Organisation of thesis

This thesis is organised into six chapters which together contribute to the overall purpose of this work. Chapter 1 has contextualised the contemporary education system in England, with the remaining chapters contributing to a multifaceted understanding of the teaching experience of secondary school teachers.

Chapter 2 presents a narrative overview of the concepts, models, and theories which are relevant to the later empirical chapters. In addition, related literature and research studies are presented and discussed. This chapter provides the rationale for the overall aims and objectives of the thesis and the specified research questions, providing substance to the studies conducted.

Chapter 3 presents the research design relevant to the analyses conducted within this thesis. Detailed information on the participants, sampling technique, and analytical procedures are outlined; this facilitating the reader's understanding of the specific quantitative method employed. The software packages used to analyse the data for each analysis is also described within this chapter.

Chapter 4 presents the first part of the study which explored the personal motivation of teachers. Specifically, the focus of the chapter is based on the factors of Self Determination Theory (autonomy, competence, and relatedness) (Ryan & Deci, 2000) and their relationship with teaching satisfaction (Ho & Au, 2006), while controlling for covariates (age and years of teaching practice). This was necessary to establish if an association between motivation and satisfaction within the professional role is apparent, answering research questions one, two and three.

Chapter 5 presents the second part of the study which assessed the moderating role of teaching satisfaction on the relationships between sources of stress within teaching (time management, work-related stressors, discipline and motivation, professional distress, and professional investment) and the outcomes/manifestations of stress (emotional, fatigue, cardiovascular, gastronomical and behavioural). This was achieved by the application of the Jobs Demand-Resources framework (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007) to provide the foundations for exploring teaching satisfaction as a personal resource, answering research questions three and four.

Chapter 6 offers a comprehensive discussion of the findings from each part of the study in light of the thesis aim, objectives, and specified research questions. Within this section, the strengths and limitations of the empirical investigations are discussed and directions for future research and teaching practice are provided. The chapter concludes with an offering of the contribution to knowledge made by this thesis.

1.8 Chapter summary

This chapter has provided an introduction to the contemporary school context in England with a specific focus on the secondary school level. This has provided the foundations for the empirical investigations detailed in later chapters. The ever changing nature of the teaching profession, dictated by overarching legislations, changes in curriculum design and assessment, and teacher expectations, has been highlighted. In addition, the evolving role of the teacher, the need for adaption and flexibility, and the likelihood of adverse outcomes as potential consequences of such change have been considered. Given what has been discussed throughout this chapter, it is clear that the factors of motivation, satisfaction, and stress, are relevant to the contemporary teacher role. The overall aims, research questions, and objectives have been clearly defined in order to explore the needs and motivation, satisfaction, and stress experiences, of teachers working within the secondary school level in England. These are further discussed in the following chapter.

CHAPTER 2

Literature Review

2.1 Chapter introduction

This chapter provides a succinct overview of the relevant psychological, educational, and occupational health literature in relation to the development and contemporary conceptualisations of the concepts of interest; motivation, needs and wellbeing, stress, and satisfaction. A scoping review explores the key concepts across a breadth of existing knowledge without the requirement to involve an in-depth assessment of the quality of primary studies (Arksey & O'Malley, 2005). There is an overlap and association of these topic relevant concepts, notably there are recognised associations between satisfaction, stress, and motivation for teachers.

2.2 Literature review method

The scoping review is underpinned by Arksey and O'Malley's (2005) framework which provides a rigorous exploration of literature by proposing five stages to guide the process of review; (1) identifying the research question, (2) searching for relevant studies, (3) selecting studies, (4) charting the data, and (5) collating, summarising, and reporting results.

2.2.1 Identifying the research question

Arksey and O'Malley (2005, p.23) suggest that the research question should be broad to permit 'breadth of coverage'. The focus of the review is therefore on the contemporary teacher role. The developed review question is:

How does motivation, satisfaction, and stress, impact the teacher role?

2.2.2 Identifying relevant studies

A structured literature search to ascertain the existing knowledge base was undertaken. The objective was to access relevant evidence in a systematic way, to determine the key contemporary literature around the primary areas of interest. The review consequently focussed on teacher stress, motivation in teaching, needs within the professional role, and satisfaction with the job. In order to retrieve relevant studies, a number of databases were accessed via Summon, a university based search engine. The databases accessed included Web of Science, Psychinfo, Pubmed and CINAHL. These databases are relevant to material published within social, health and behavioural sciences. Search terms were established and Boolean operators 'AND' and 'OR' were activated to establish search strings; Teachers AND motivation OR satisfaction OR stress. The review was limited to articles published after the year 2000 in order to attain a contemporary review and theoretical discussion. This date also aligns with the introduction of the Academies Programme, which has influenced the modern education system in England. A high number of articles were retrieved using this strategy. Relevant titles were retained in an endnote library database. A full list of inclusion and exclusion criteria is provided in Table 2.1.

2.2.3 Study selection

Using the key search descriptors, 2328 articles were retrieved. The purpose of the study selection stage was to screen for irrelevance and 'eliminate studies that do not address the central research question' (Arksey & O'Malley, 2005, p.25). Guided by the inclusion and exclusion criteria (see table 2.1), results were limited to articles more appropriate to the focus of the thesis. All conference abstracts, letters and commentaries, and none peer reviewed articles were removed, further reducing the number of returns. Abstracts were then screened to establish the relevance of the articles to the specified areas of interest. Following removal of duplicates, articles were read in full if they met the topic criteria, were written in English, were peer reviewed, and either provided detail of empirical work or theoretical position. A manual search was also conducted and was informed from articles retrieved via the initial database search. Articles are cited where their content was deemed appropriate to thesis context or contributed to an empirical or theoretical critique, all where the content would contribute to answering the review question. The process for article selection followed the Preferred Reporting of Items for Systematic Reviews Meta-Analyses statement (PRISMA) (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009). The process for article selection is illustrated in Figure 2.1.

2.2.4 Charting the data

Following study selection, 39 articles were considered appropriate for review. The next stage of the scoping review was to chart the data (Arksey & O'Malley, 2005). Summaries of the articles were developed to show author(s) and date, sample, research design and study focus, any underpinning theoretical frameworks, and key findings. Detail of included articles is provided in Table 2.2.

Table 2.1

Inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Time period	From 2000	Studies published before 2000
Language	English Language Studies	Studies not written in English
Article type	Peer reviewed empirical and theoretical position articles	Non- peer reviewed empirical and theoretical position articles, conference papers, commentaries and letters
Discipline	Psychology	Other disciplines
Focus	Satisfaction, stress, needs, or motivation, AND teaching	Articles where the focus was on other concepts AND/OR not on teaching
Sample and population	Teachers	Other members of the school workforce
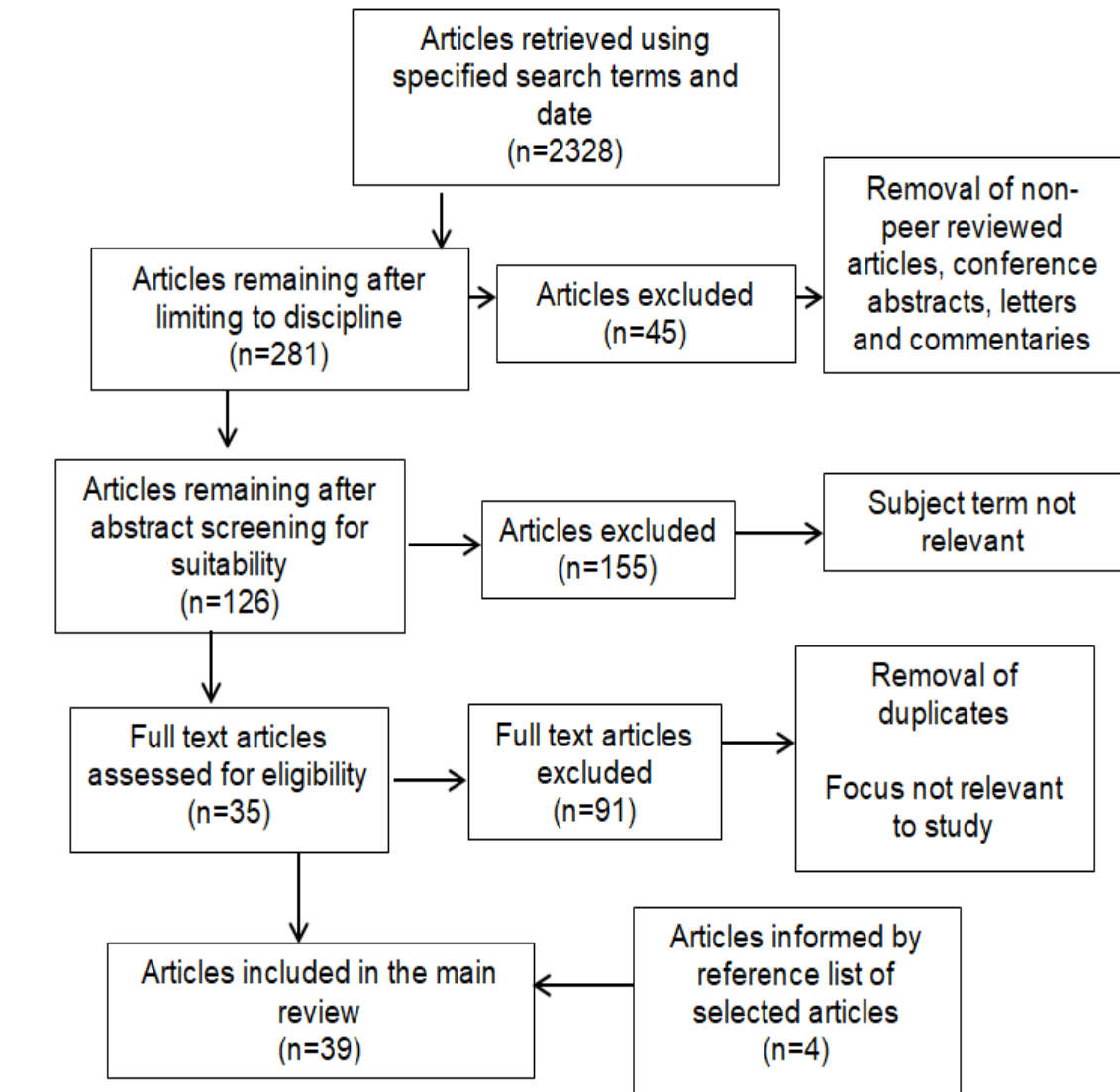
Figure 2.1 PRISMA (literature search)

Table 2.2

Summary of key literature

Author(s) and date	Participants	Design and focus	Theoretical frameworks	Findings
Alhija, F. N. A. (2015)	Teachers N=425	Quantitative design Examine the effect of personal and job characteristics on level of stress, and perception of effectiveness of cognitive, behavioural and emotional coping	No specific theory Relates to stress and coping	Effects of gender, experience, school level and culture on levels of stress caused by some stressor categories was significant The degree to which teachers believe in the effectiveness of some coping strategies was significant
Aloe, A. M & Shisler, S. M & Norris, B. D., & Nickerson, A. B (2014a)	Teachers 21 independent samples	Quantitative design Conduct a meta-analysis of student behaviour and teacher burnout.	No theory specified Relates to behaviour and burnout	Relationship between student behaviour and teacher burnout is moderate Relationship changes on burnout dimensions
Aloe, A. M., Amo, L. C., & Shanahan, M. E. (2014)	Teachers 16 independent studies	Quantitative design Explore evidence for classroom management self-efficacy in relation to the three dimensions of burnout: meta-analysis	No theory specified Relates to burnout	Significant relationship between classroom management self-efficacy and the three dimensions of burnout, suggesting that teachers with higher levels of efficacy are less likely to experience the feelings of burnout.
Anghelache, V. (2015)	Teachers N=150	Quantitative questionnaire design Examine potential correlations between job satisfaction and motivation of teachers teaching career	No theory specified	Teachers require a high initial level of motivation, but in time, job satisfaction tends to decline Teachers have certain professional expectations, which if not achieved, results in decreased job satisfaction
Antoniou, A.	Primary and	Quantitative design	No specific	Sources of stress referred to problems in interaction with students,

S., Polychroni, F., & Vlachakis, A. N. (2006)	secondary school teachers N=493	Explore sources of occupational stress and the professional burnout, with emphasis given to gender and age differences	theory Relates to stress and gender	lack of interest, low attainment and student behaviour Female teachers experienced significantly higher levels of occupational stress for interaction with students and colleagues, workload, students' progress and emotional exhaustion. Younger teachers experienced higher levels of burnout, emotional exhaustion and disengagement from the profession.
Avis, J., Wright, C., Fisher, P., Swindell, S., & Locke, A. (2011)	Pre-service and in-service teachers	Focus groups, qualitative design Explore teachers' understanding of well-being and health and the way this informs understandings of teaching practice	No theory specified	Pre-service teachers have not yet developed a fully politicised notion of teaching.
Bentea, C. C., & Anghelache, V. (2012)	Teachers N=122	Quantitative design Test potential differences in job satisfaction by gender, the professional position, and the dominant needs.	No theory specified	No differences between males and females in overall job satisfaction Satisfaction is affected by the level of continuous training Job satisfaction influenced by the intensity of the needs of achievement and affiliation
Bernard M. E. (2016)	S1. N=850 primary and secondary school teachers S2. N=140 teachers, N=26 retired teachers	Quantitative design S1. Provided validity data on the Teacher Irrational Belief Scale S2. Explore irrational beliefs and teacher stress	Ellis' theory of REBT	S1. Factor analysis resulted in four distinct factors: Self-downing, Authoritarianism, Demands for Justice, and Low Frustration Tolerance S2. Retired teachers scored higher on sub-scales of Self-downing and Low Frustration Tolerance than teachers still teaching
Crossman, A., & Harris, P. (2006)	N=233 secondary school teachers	Quantitative questionnaire design Examine job satisfaction among secondary school teachers in different types of secondary school.	No theory specified Relates to satisfaction	Teachers in independent and privately-managed schools have the highest satisfaction levels Teachers in foundation schools have the lowest satisfaction. No significant difference by age, gender and length of service.

Fokkens-Bruinsma, M., & Canrinus, E. T. (2012)	N=130 pre-service teachers	Longitudinal, quantitative questionnaire design Investigated motives of pre-service teachers to profession investment, involvement, and commitment	Factors Influencing Teaching Choice theory	Most important motive for becoming a teacher was the belief in teaching abilities. The least important motive was perception of teaching as a fall back career.
Fokkens-Bruinsma, M., & Canrinus, E. T. (2014)	Secondary teachers N=168 Primary teachers N=53	Survey design Investigate if motivation is relevant to pre-service teachers' engagement to the profession	Factors Influencing Teaching Choice theory	Most important motive was working with children and adolescents Teaching as a fall back career was the least motive
Geving, A. M. (2007)	Teachers N=186 Supervisors N=77	Quantitative design Explore student behaviours associated with teacher stress and determine the types of teacher behaviours that may elicit these stressful student behaviours	No specific theory Relates to stress concept	Teacher stress most strongly associated with student lack of effort Teacher behaviours were correlated with students' behaviours of coming to class unprepared Data provided by different sources show fewer significant correlations with student behaviour and teacher behaviour
Grenville-Cleave, B., & Boniwell, I. (2012)	Teachers N= 150, non-teachers N= 148 Quantitative N=222 females, 76 males. Qualitative, N= 6	Mixed method, on-line quantitative survey and semi=structured interviews Focus on perceived control and wellbeing	Links to Locus of control and self-efficacy No specific theory utilised to underpin research	Teachers' perceived control and well-being were significantly lower than those of non-teachers (quantitative) Four themes related to control: autonomy, authenticity, connection to others and resilience (qualitative). Similarities between professions in terms of need for control Teachers value connections more highly and non-teachers value objectivity and independence more highly Non-teachers are better prepared to deal with change than teachers.
Griva, K., & Joekes, K. (2003)	UK Secondary school teachers N=166	Quantitative questionnaire design Investigate the relationship between the components of the	Karasek model of stress, Job-demands	UK teachers were considerably worse off than their European colleagues on all outcome measures Job demand was the most consistent predictor for outcomes.

	N=2017 European teachers	Karasek model and burnout, somatic complaints and job satisfaction in teachers		Control and social support had less predictive power. The inclusion of other job aspects significantly added varying degrees to the explained variance of the outcomes
Guglielmi, D., Bruni, I., Simbula, S., Fraccaroli, F., & Depolo, M. (2016).	Teachers N= 557	Quantitative questionnaire design Examine work engagement across age groups ad resources which foster engagement.	Bakker and Demerouti (2008) work engagement model	Engagement varies between different teacher age groups Older teachers value recognition of competence Younger teachers are motivated by collegial interactions and development opportunities
Hong, J. Y. (2012)	N= 7 current teachers N= 7 leavers	Qualitative design, semi-structured interviews Explore differences between leavers and stayers in terms of the process of their resilience responses.	No specific theory	Leavers and stayers had intrinsic interests in working as a teacher Both groups identified challenges such as classroom management and effective delivery of lessons Leavers showed weaker self-efficacy beliefs than stayers stayers often reported their strategies to prevent them from being burned out
Jephcote, M., Salisbury, J., & Rees, G. (2008)	Teachers N=27	Qualitative approach, semi-structured interviews Explore teacher role	No specific theory but links in part to Vygotsky ZPD	Teachers experience pressures within the role Teachers emotional labour Teachers prioritise needs of learners
Jepson, E., & Forrest, S. (2006)	Teachers N=95	Quantitative design Explore the influence of behaviour, personal achievement strivings, occupational commitment, gender and nature/experience of teaching on perceived workplace stress	No specific theory Relates to stress	Positive relationship between Type A behaviour, personal achievement strivings, and perceived stress. Relationship between perceived stress and occupational commitment was negative.
Kersaint, G.,	N=51	Quantitative design	Ajzen's Theory	Family issues are of greatest concern to all teachers

Lewis, J., Potter, R., & Meisels, G. (2007)		Explore leaving intentions of teachers, and reason for leaving in those who quit the profession	of Planned Behaviour	Leavers place more emphasis on the time they are able to spend with their families than do stayers.
Klassen, R. M. (2010)	Teachers N=921	Quantitative design Focus on teachers' collective efficacy, job stress, and job satisfaction and the mediating effect of collective efficacy on the relationship between job stress and job satisfaction	No theory specified but relates to efficacy (Bandura)	Higher levels of stress from workload and student misbehaviour for females TSE for student discipline mediated the influence of job stress from student misbehaviour on job satisfaction
Klassen, R. M., & Chiu, M. M. (2010)	Teachers N=1430	Quantitative design, SEM Examine the relationships among teachers' years of experience, gender and teaching level, instructional strategies, classroom management, and student engagement, job stress and job satisfaction	Links to self-efficacy (Bandura)	Experience (of teacher) showed nonlinear relationships with all three factors of self-efficacy Female teachers had greater workload stress, greater classroom stress from student behaviours, and lower classroom management self-efficacy Those with greater classroom management self-efficacy or greater instructional strategies self-efficacy had greater job satisfaction.
Klassen, R. M., Chong, W. H., Huan, V. S., Wong, I., Kates, A., & Hannok, W. (2008).	Teachers Study 1: Survey N=502 Study 2: Interview N=24	Mixed method design to explore secondary teachers' motivation beliefs	Bandura (self-efficacy) Teachers' Sense of Efficacy	Teachers' self- and collective efficacy are significantly correlated with perceptions of academic climate sources of individual motivation were encouragement from administrators and colleagues, past experience and feedback from students
Kyriacou, C. & Kunc, R. (2007)	Secondary school teachers N =28	Email questionnaire, Explore beginning teachers' experiences of teaching.	No specific theory	Most positive factor was pleasure from student success Most negative factor was workload

Marshik, T., Ashton, P.T., & Algina, J. (2017)	N=10,395 students and teachers	Quantitative design Test relationships of teachers' and students' psychological need satisfaction, and students' reading achievement	Self-determination theory	Teachers reporting low teacher autonomy are less likely to support student autonomy, compared to those with high work autonomy Teachers' support of student autonomy and students' perception of academic competence were positively related to students' reading achievement
McCormick, J., & Barnett, K. (2011)	Teachers N=416	Quantitative design To propose and test some hypothesised relationships between stress attribution domains and burnout dimensions.	Attribution theory to stress	Most variance was at the individual level, supporting the view that the stress and burnout were psychological phenomena Centrality of stress attributed to student misbehaviour in predicting each of the three burnout dimensions Stress attributed to personal failings also negatively predicted personal accomplishment.
Moe, A., Pazzaglia, F., & Ronconi, L. (2010)	Teachers N=399	Quantitative design, SEM Explore interplay between strategies and praxis with positive affect and self-efficacy in relation to job satisfaction	No theory specified but relates to efficacy beliefs	Mediating role of both positive affect and self-efficacy beliefs in the relationship between teaching strategies/praxes and job satisfaction.
Naderi Anari, N. (2012)	Teachers N=29 males N=55 females	Quantitative survey design Examine relationships for emotional intelligence with job satisfaction, and organisational commitment. Examine the role of gender and age	No theory specified Relates to satisfaction	Positive significant relationship between emotional intelligence and job satisfaction, between emotional intelligence and organisational commitment, and between job satisfaction and organisational commitment. Gender differences only found with females reporting higher emotional intelligence.
Popov, S., & Popov, S. (2015)	N=140 teachers N= 26 retired teachers	Quantitative questionnaire design Explore teacher beliefs and assess stress	Relates to Ellis' theory of REBT	Retired teachers scored higher on sub-scales of Self-downing and Low Frustration Tolerance compared to continuing teachers
Reilly, E., Dhingra, K., and Boduszek,	Teachers N=121	Quantitative design Explore the role of teaching self-efficacy, perceived stress, self-esteem, and demographic	No specific theory Relates to job satisfaction	Perceived stress was found to explain unique predictive variance, with high levels of occupations stress related to low levels of job satisfaction

D. (2014)		characteristics		
Roth, G., Assor, A., Kanat-Maymon, Y., & Kaplan, H. (2007)	N=132 female teachers and 1,255 students	Quantitative questionnaire design Examine teachers' experience of autonomous motivation for teaching and its correlates in teachers and students	Self-determination theory	Autonomous motivation for teaching was associated positively with teachers' sense of personal accomplishment and negatively with emotional exhaustion Teachers' self-reported autonomous motivation for teaching promoted students' self-reported autonomous motivation for learning
Rots, I., Kelchtermans, G., & Aelterman., A. (2012)	N=12 student teachers	Qualitative–interpretative research Questionnaire design Focus on the processes and factors that most powerfully affect student teachers' job motivation	Conceptually links to 'teacher thinking'- Symbolic interactionism	Student teachers' have a need to develop a socially recognised sense of professional competence Issue: dealing with social and cultural working conditions in schools
Serrano, M. A., Moya-Albiol, L., & Salvador, A. (2008)	Teachers N=35	To explore heart rate and perceived stress between male and female teachers.	No theory specified Relates to stress	Heart rate and perceived stress was not significantly correlated Males had higher levels of heart rate than females
Skaalvik, E, M., & Skaalvik, S. (2011)	Teachers N=2569	Quantitative design Explore the relationships between school context variables and teachers' feeling of belonging, emotional exhaustion, job satisfaction, and motivation to leave the profession	Links made to SDT	All context variables were related to job satisfaction and motivation to leave the teaching profession (value consonance, supervisory support, relations with colleagues, and relations with parents, time pressure, and discipline problems).
Skaalvik, E, M., & Skaalvik, S. (2014)	Teachers N=2569	Quantitative design Explore if teacher self-efficacy and teacher autonomy are independently associated with job	No theory specified Relates to autonomy,	Autonomy and self-efficacy are independent predictors of job satisfaction, engagement, and emotional exhaustion

		satisfaction, engagement, and emotional exhaustion	efficacy and satisfaction	
Skaalvik, E, M., & Skaalvik, S. (2016)	Teachers N=523	Quantitative design, SEM Explore how potential stressors predicted teachers' experiences of emotional stress, teacher self-efficacy, emotional exhaustion, engagement in teaching, and motivation to leave the profession.	No specific theory Discusses stress and efficacy theories	Different potential stressors predict emotional exhaustion, engagement, and motivation through different psychological processes. Two key explanations for motivation to leave teaching: 1) time pressure via emotional stress and exhaustion and 2) lack of supervisory support and trust, low student motivation and value conflicts via lower self-efficacy
Timms, C. & Brough, P. (2013)	N=312 teachers from non-government schools	Compare theoretical frameworks of work engagement Cross sectional and longitudinal, Multiple regression analyses	Self-determination theory Job demands-resources model	SDT provided the more compelling explanation for work engagement Some evidence for a contribution of the psycho-social work environment (supporting the JD-R model) in teachers' work engagement or burnout. The two theoretical perspectives are compatible.
Wilkesmann, U., & Schmid, C. J. (2014)	Professors N=2,061	Online surveys (quantitative) Explore contextual factors which influence intrinsic and related modes of internalised teaching motivation	Self-determination theory	Support for SDT Intrinsic teaching motivation is facilitated by social relatedness, competence, and partly by autonomy
Wilson, J. H. (2008)	Teachers N=39 Students N=1495	Quantitative survey design Examine relationships among professors' attitudes toward students, immediacy behaviours, job satisfaction, and student outcomes	No specific theory Relates to satisfaction	Liking students was not related to job satisfaction students were capable of intuiting their teacher's attitude toward them, even when immediacy behaviours offered inconsistent information
Wininger, S, R., & Birkholz, P, M. (2013)	N=126 college teachers	Questionnaire via email. Quantitative design Examine relationships between the utilisation of feedback with job	Self-determination theory	Self-assessment was the most utilised source of instructional feedback Job satisfaction was significantly correlated with basic psychological needs

		satisfaction and psychological needs satisfaction		

2.2.5 Collating, summarising and reporting the results

The results of the scoping review are presented in subsequent sections of this chapter. The findings have been mapped to the concepts relevant to the thesis; motivation, satisfaction, and stress. This permits a narrative overview of existent literature, without requirement for detailed quality assessment of research, as proposed by Arksey and O'Malley's (2005) framework. This chapter also presents seminal sources and related studies outside of the search to compliment discussion. Topic focused contemporary literature is provided to contextualise the development of key concepts.

2.3 Motivation

A number of perspectives have contributed to the understanding of the motivation concept. Whilst offering different explanations, it is useful to consider the approaches as complementary rather than explicitly contradictory; this arguably provides a more encompassing account into aspects of experience in a variety of contexts (Feldman, 2015). A summary of key approaches is provided in Table 2.3 and discussed in subsequent sections.

Table 2.3

Perspectives of motivation (Adapted from Feldman, 2015 p.293)

Instinctual	Drive	Arousal	Incentive	Cognitive	Needs hierarchy
Individuals are born with pre-programmed instincts to ensure survival	When a biological necessity is deficient, a drive is produced to motivate individual	Optimum level of stimulation required. Individuals act to increase or reduce level as appropriate	Behaviour is directed toward seeking a form of reward	Motivation is directed by thoughts, beliefs and expectations	Individuals are motivated to satisfy lower order needs before higher needs can be met

2.3.1 Theoretical perspectives of motivation

Early studies of motivation were guided by the instinctual standpoint suggesting inborn behaviour patterns to ensure survival. However, there is the lack of consensus related to the amount of primary instincts, and the inability of this perspective to adequately explain learned behaviour, which by definition is not instinctual (Feldman, 2015).Nonetheless, some contemporary theorists and researchers still favour the underpinning premise, specifically those which are concerned with evolution and the importance of genetic inheritance (Neuberg, Kenrick, & Schaller, 2011). Similarly, drive theory suggested that individuals have basic biological drives and that behaviour is motivated by the need to fulfil these. Alternative approaches have suggested that individuals are motivated to act in order to increase or reduce arousal so that it is at an appropriate level (Feldman, 2015). As the required arousal level will diversify between individuals, it is proposed that this provides an explanation of motivation in respect of different behaviours, such as risk taking (Hsueh-Liang, Wei-Chieh & Cheng-Yu, 2008). Conversely, incentive approaches suggest that behaviour is directed toward attaining external rewards. It has been suggested that internal drives work together with external rewards in a push-pull nature (Feldman, 2015). Consequently, rather than being contradictory, drives and incentives may work together in motivating behaviour (Berridge, 2004). From a behavioural standpoint, motivation is directed explicitly by external rewards and the social context via reinforcement principles and operant conditioning, opposing innate explanations of motivation (Skinner, 1963).

From a cognitive perspective, motivation is directed by thoughts, feelings, and expectations, and how these are individually perceived and processed. In contrast to other perspectives, this viewpoint draws a distinction between motivations as guided by intrinsic or extrinsic cues; this determined by the individual. From a social cognitive standpoint, motivation assumes reciprocal determinism between three key components; personal beliefs (cognitive), the environment (social)

and individual behaviour (Bandura, 1977a). It is postulated that these work together to guide motivation, and consequently changes in one of the components will influence the other two (Kamla, Davies-Brezette & Larsen, 2006).The final explanation of the motivation concept relates to individuals having specific needs which they are motivated to fulfil. Much of the thinking around motivation and needs is derived from the humanistic approach in psychology and draws attention to subjective wellbeing (Fischer, 2003; Schneider, Bugental & Pierson, 2001). Opposing the objective and deterministic viewpoint of approaches such as psychodynamic and behaviourist, the humanistic stance is based on appreciating the importance of subjective experience in which the individual has a responsibility to strive towards personal growth (Schneider et al., 2001; Glassman & Hadad, 2009).

2.3.2 Motivation and Maslow's hierarchy of needs

Maslow's theory (1970) provides a juxtaposition of biological and growth motivation. The hierarchy serves to illuminate how some needs take priority over others and is generally presented as a pyramid, as shown in Figure 2.2.
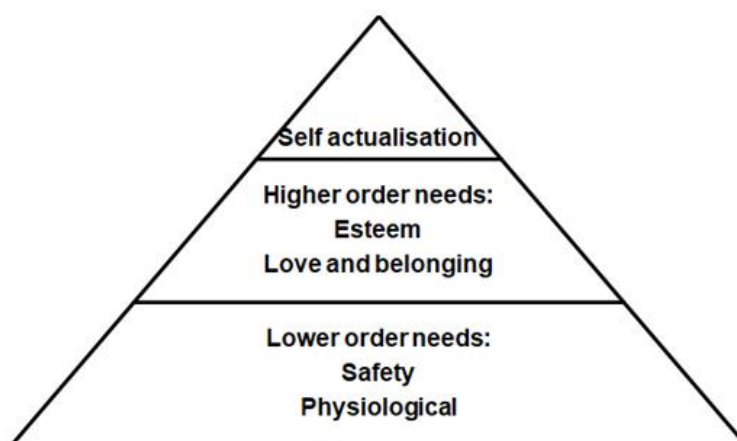
Figure 2.2 Visual representation of Maslow's hierarchy of needs

The base of the pyramid relates to basic needs, or lower order needs, which Maslow claimed must be initially satisfied (physiological and safety); thus individuals are motivated to satisfy such needs before higher order needs can be met. Higher order needs are psychological and include the need for belonging and love, and esteem. It is considered that if the specified needs are met, the individual will achieve their full potential; this is termed, self -actualisation (Taormina & Gao, 2013). Maslow proposed that the hierarchy of human needs is universal and can be employed to explain motivation in a multitude of contexts. Taormina and Gao (2013) note that work provides money for food and shelter (lower level needs) and can foster working relationships and provide status (higher order needs). In an application to teaching, interacting with colleagues and learners could satisfy the need for belonging, and facilitating learners to obtain educational targets could promote esteem. In this sense, the teacher would be motivated and experience optimal wellbeing as a consequence of needs satisfaction. However, as highlighted in chapter one, for many teachers, additional factors within the contemporary teaching environment may adversely impact on the wellbeing and achievement of their full potential. In the field of education, this theory has often been employed to facilitate the understanding of learner needs within the school setting. Many aspects of teacher training relate to understanding the varying needs of learners within schools and how such needs should be recognised and incorporated into pedagogy and educational practice (Kidd & Czerniawski, 2010). This is further guided by education Acts, outlined in chapter one, which contribute to directing teaching practice to meet learner needs (Gov.UK, 2003).

A criticism of the hierarchy of needs framework is the emphasis on individual needs and values, which may not hold relevant in all communities. For example, research found that in a collectivist culture, such as China, the hierarchy differs from Maslow original model, with 'belonging' recognised as a basic need and 'actualisation' being recognised as a consequence of meeting societal needs (Gambrel &

Cianci, 2003). Nonetheless, Maslow's hierarchy of needs has also influenced other approaches to motivation, for example, Ryan and Deci (2000) have considered human needs in terms of psychological wellbeing, and have consequently devised a theory of self-determination to illuminate the role of motivation.

2.3.3 Self Determination Theory

Self Determination Theory (SDT) is a broad framework of motivation, development, and wellbeing, and relates to three basic psychological needs; autonomy, competence, and relatedness. Similar to drive theory, it proposes that needs are innate and gives primacy to the core psychological needs (Ryan & Deci, 2000). SDT acknowledges the social conditions that can enhance or impede different types of motivation. In this sense, while needs are considered innate, they can be influenced by external conditions. Consequently, this approach may be viewed as advantageous in comparison to other perspectives which are not as encompassing (Deci & Ryan, 2008). Formal SDT comprises six-sub theories which each address a particular facet of motivation (Deci & Ryan, 2017):

1. *Cognitive Evaluation Theory (CET)* relates to intrinsic motivation and illustrates the important roles of autonomy and competence in facilitating intrinsic motivation.
2. *Organismic Integration Theory (OIT)* relates to various forms of extrinsic motivation. Higher internalisation of extrinsic motivation is related to autonomous behaviour. This theory also appreciates the social setting which can promote or hinder the internalisation and supports relatedness and autonomy.
3. *Causality Orientations Theory (COT)* is concerned with three styles of orientation; autonomy orientation (individual acts out of interest and value), control orientation (focus on rewards and approval) and amotivated/impersonal orientation (categorised by anxiety related to competence)

4. Basic Psychological Needs Theory (BPNT) focuses on psychological needs and their association with health and wellbeing. It is considered that wellbeing and optimal functioning is founded on autonomy, competence, and relatedness. The context is thus recognised as supporting or preventing wellbeing.

5. Goal Contents Theory (GCT) recognises the differential impact of extrinsic and intrinsic goals and the consequential impact on wellbeing. These are often contrasted and it is considered that the latter is more associated with wellbeing.

6. Relationships Motivation Theory (RMT) posits that relationships are essential in providing satisfaction of the need for relatedness. It is considered that quality relationships can further support the need for autonomy and competence.

2.3.3.1 Evaluation of SDT

There is considerable support for SDT throughout the literature in relation to teaching (for example, Timms & Brough, 2013; Wininger & Birkholz, 2013; Wilkesmann & Schmid, 2014). The application of the SDT framework can be utilised to promote an understanding of teacher needs in relation to both motivation and wellbeing; specifically the needs for autonomy, competence, and relatedness within the teacher role. When needs are met within the school environment, this promotes wellbeing for teachers (Timms & Brough, 2013). This is of paramount importance to teachers' individual health, and is further beneficial to students. For example, there is evidence to suggest that teacher wellbeing can indirectly impact students' socio-emotional adjustment and academic attainment (Roth, Assor, Kanat-Maymon, & Kaplan, 2007).

SDT proposes a full appreciation of goal-orientated behaviour and wellbeing which is facilitated by the context, thus allowing for individual variation (Ryan & Deci, 2000). In this sense, motivation relies on both intrinsic and extrinsic factors advocated by the focus on both

the content and the process. Several other theories do not advocate this stance and instead are founded on either the process or the content of motivation. Content theories, such as that of Maslow (1970), assume that individuals have the same set of needs and are compelled toward satisfaction. It is considered that when the needs of teachers are not met within the school environment, this can have implications on job satisfaction and wellbeing (Klassen et al., 2008). By contrast, process theories deal with 'how' motivation in the workplace occurs in relation to the job meeting individual expectations (Kian, Yusoff & Rajah, 2014).

2.3.3.2 Needs and wellbeing

The wellbeing concept has a diverse history and continues to invite competing perspectives (Dodge, Daly, Huyton & Sanders, 2012). The two primary approaches to defining wellbeing are the hedonic tradition and the eudaimonic tradition. The former involves constructs such as positive affect, happiness and life satisfaction; attainment of pleasure and avoidance of pain. The latter is centred on human development and positive psychological functioning, such as meaning and achieving subjective potential (Joshanloo & Ghaedi, 2009).

It is generally agreed that wellbeing is a multifaceted and dynamic construct (Diener & Ryan, 2009), and in an effort to offer an encompassing definition, Dodge et al. (2012, p.230) considered wellbeing as, 'the balancing point between an individual's resource pool and the challenges faced'. McDowell (2010) suggests that wellbeing is not an absolute concept but is subjective and relative. While some researchers continue to attempt to define wellbeing, others have instead focused on specific professed dimensions. For example, researchers have explored perceived indicators of wellbeing, or factors which restrict it (Elovainio, Heponiemi, Jokela, Hakulinen, Presseau, Aalto, & Kivimäki, 2015). In relation to SDT and wellbeing, Ryan and Deci (2001, p7) state,

'SDT posits that satisfaction of the basic psychological needs typically fosters SWB (subjective wellbeing) as well as eudaimonic well-being….

…in SDT research, we have typically used SWB as one of several indicators of well-being. However, we have at the same time maintained that there are different types of positive experience and that some conditions that foster SWB do not promote eudaimonic well-being…'

From this perspective, individuals are thus motivated to achieve personal growth and subjective wellbeing. Conditions which may foster SWB can include the school context (Ryan & Deci, 2001). Research into teacher wellbeing is relatively new to the research arena (De Pablos-Pons et al., 2013).

2.3.4 Motivation and teaching

Motivation in teaching can be understood within the SDT framework, for example, Split, Koomen and Thijs, (2011) suggest that the fulfilment of relatedness positively contribute to intrinsic motivation in teaching. Similarly, research exploring contextual factors within the work setting which facilitate intrinsic teaching motivation, offered support to the SDT framework; however, it was found that whilst intrinsic teaching motivation is facilitated by social relatedness and competence, it is only partly facilitated by autonomy (Wilkesman & Schmid, 2014). These findings further indicate the importance of teacher needs within school.

A study of pre-service teachers' motivation for pursuing a career in the teaching profession found that working with children and adolescents was an important motive for both intended primary and secondary school teachers (Fokkens-Bruinsma & Canrinus, 2014).Similarly, Guglielmi, Bruni, Simbula, Fraccaroli, and Depolo (2016) found that younger teachers are driven by interactions with

colleagues in school, and development opportunities. This could be aligned with the need for relatedness as advocated by both Maslow and SDT. Rots, Kelchtermans, and Aelterman (2012) noted the importance of understanding how teaching motivations are shaped and constrained by early experiences of the teaching role during teaching training, with attention given to the need to develop a sense of professional competence. This was further evidenced in research by Fokkens-Bruinsma and Canrinus (2012) which found that the belief in the ability to teach effectively is the most dominant motive for becoming a teacher. It has also been shown that work engagement is related to the recognition of teaching competence, and is most noted in older teachers (Guglielmi et al., 2016).

Roth, Assor, Kanat-Maymon and Kaplan (2007) found that autonomous motivation for teaching was associated positively with teachers' sense of personal accomplishment and negatively with emotional exhaustion. It was further shown that autonomous learning was associated with teachers' autonomous motivation. More recent research has confirmed this association, showing that when teachers are autonomous within their professional practice, this has a positive benefit to student learning and achievement (Marshik, Ashton & Algina, 2017). However, other research has found that job control was not associated with psychological wellbeing or physical health, which may suggest that not all teachers need autonomy in their role (Griva & Joekes, 2003).

In addition to needs attainment, teacher motivation has been shown to be related to job satisfaction (Fokkens-Bruinsma & Canrinus, 2012). Research investigating the potential relationship between teacher motivation and job satisfaction found that teachers have a set of professional expectations and if these are not achieved, job satisfaction will be reduced. It was further found that teachers require a high initial level of motivation but that job satisfaction decreases over time (Anghelache, 2015).

2.4 Job satisfaction in teaching

Job satisfaction has been defined as 'a pleasurable emotional state which results from the appraisal of one's job as achieving or facilitating one's job values' (Locke, 1969 p.316). However, this definition is focussed on the individual and does not necessarily accommodate the variance in the social context or the diversity of institutional environments, yet was used in some of the research reviewed (for example Federici, 2013). Establishing if job values are intrinsic, extrinsic or a combination of the two can be challenging. External practices may be intertwined in the individual's value process and susceptibility to health and wellbeing outcomes. Research which has considered structural factors, such as type of school, as being an important predictor of job satisfaction, found that teachers in independent and privately-managed schools have the highest levels of satisfaction (Crossman & Harris, 2006). Consequently, the current trend towards the academisation of schools in England, as outlined in chapter one, may influence the satisfaction of teachers in a positive way.

2.4.1 Perspectives of job satisfaction in teaching

Despite potential issues regarding definition, job satisfaction is a useful concept in understanding potential health outcomes within the teaching context and has been further considered in associated research which has explored absenteeism, recruitment and retention (Crossman & Harris, 2006; Avis, Wright, Fisher, Swindell, & Locke, 2011).To date, several perspectives of satisfaction have been proposed to enhance understanding of the relationship to teachers and the potential impact of satisfaction on aspects of the teacher experience at the individual level, and the further consequences on a macro-level scale. Exploring the concept of job satisfaction with specific reference to teachers can help explain teaching experiences in contemporary education.

2.4.1.1 Job satisfaction as an attitude

Job satisfaction can be appropriately understood in relation to the employees' attitude toward their job role and their feelings about their working environment. Research by Naderi Anari (2012) suggested that job satisfaction is positively associated with the level of commitment to the organisation. Furthermore, satisfaction was not based on gender or age, suggesting that the relationship between organisational commitment and satisfaction is relevant to all employees. Similarly, Bentea and Anghelache (2012) did not find any difference between male and female teachers with regards to job satisfaction.

2.4.1.2 Job satisfaction as a need

As individual variation in reported satisfaction is apparent, it may be more appropriate to understand satisfaction in terms of needs. Research by Wininger and Birkholz (2013) found that job satisfaction within the teaching role was significantly related to the fulfilment of all three psychological needs as depicted by SDT. Whilst these findings support the SDT framework in its entirety, related research has considered the factors of this theory independently in relation to satisfaction within the teacher role. It is shown that control is related to autonomy, with research reporting that teachers' perceived control and well-being are lower than those of non-teachers (Grenville-Cleave & Boniwell, 2012). Whist the need for autonomy in teaching has been recognised as important (Roth et al., 2007), the research findings may reflect the restrictive nature of the contemporary school context.

The ability to meet the demands of the job is relevant to understanding the experience of satisfaction within the teacher role. However, research by Moe et al. (2010) found that teaching effectively does not in itself guarantee satisfaction, proposing that positive affect and self-efficacy are needed for job satisfaction to be experienced. Thus, being competent in the role may not be enough to ensure satisfaction. The school context and job satisfaction is mediated through

individuals' sense of belonging and emotional exhaustion (Skaalvik & Skaalvik, 2011).There appears to be a juxtaposition of needs, satisfaction and wellbeing in the teacher experience. It has been recognised that the establishment of positive teacher-student relations may promote satisfaction at work. However, it has been considered that the emotional and psychological costs involved in establishing such relatedness can have a negative impact upon health and wellbeing, and may also impact adversely on the satisfaction of teachers within their role (Avis et al., 2011; Jephcote et al., 2008).

2.4.3 Teaching satisfaction

A distinction can be made between viewing the working role as a 'job' compared to considering the role as an on-going career. Dahling and Lauricella (2017) emphasised this distinction using SDT as a theoretical framework to explore job design and subjective career success. This echoes earlier findings reported by Shaver and Lacey (2003) which suggested that the focus on job satisfaction holds relevance to the immediate environment whereas, by contrast, the focus on career satisfaction is more related to a holistic sense of fulfilment and on-going growth. Job and career satisfaction distinctions are appropriate to distinguish between satisfaction with the job and satisfaction with the teaching profession.

The importance of teaching satisfaction to enhancing learning has promoted the development of the teaching satisfaction scale, (TSS), (Ho & Au, 2005). TSS aims to explore the experience of satisfaction by drawing not only on Locke's (1969) earlier definition of job satisfaction, but by also incorporating aspects of life satisfaction (Diener et al., 1985). From this perspective, satisfaction is more aligned to understanding teaching as a way of being. It is not always evident in research whether the focus on satisfaction is assessing job or career satisfaction, it may be that this is dependent upon the interpretation of the concept by the participants involved. Nonetheless, it is clear that

dissatisfaction within the professional role has implications which extend beyond the micro-level.

2.4.4 Macro-level consequences

The cost of dissatisfaction with teaching can also have a negative impact on students. When teachers are dissatisfied within their professional role, they are less motivated and this impacts adversely on students' educational experience (Roth et al., 2007; Moe, Pazzaglia, & Ronconi, 2010). Absenteeism and attrition are recognised behavioural consequences of teacher job dissatisfaction, which may also negatively impact student learning in a negative way (Avis et al., 2011; Jephcote et al., 2008). Consequently, research which can elaborate on the related factors of dissatisfaction may promote necessary interventions, both to optimise the learning experience of students and to further enhance the teacher role.

The UK Health and Safety Executive (2007) highlight psychosocial stressors such as job demands, personal support, and relationships as potential risk factors for a variety of health issues including anxiety, depression, fatigue and heart disease. It is reported that the demands of work can be the cause of much reported stress (NHS, 2017a). Recent statistics highlight the highest rates of work stress are consistently in the public sector of the economy, with the teaching profession falling within the higher stress category. Stress is reported as the predominant cause of work-related illness in the education sector (HSE, 2016). Stress viewed as chronic, is perhaps most appropriate to the understanding of job-related stress (Ogden, 2007). Cox et al. (2007) consider that stress is a world-wide phenomenon with the potential to affect individuals within all occupational contexts.

2.5 Stress

A review of the stress literature recognises contributions from the biomedical stance alongside the appreciation of the role of psychology to contribute to a contemporary conceptualisation. Research to date has considered stress as a physiological response, an adverse emotional experience, and a negative cognitive state. Much research has considered stress as a combination of these features whilst also incorporating related social factors (Gianakos, 2002).

2.5.1 Overview of the stress concept

Early work on the stress concept in relation to health outcomes centred on the notion of the individual being a passive part of this process. This was based on the assumption that when faced with imminent danger or a heighten sense of threat, the sympathetic nervous system becomes aroused. Consequently, stress was conceptualised as an adaptive reaction (Cannon, 1932). Building on Cannon's work, Selye (1956) proposed three stages of the stress process: sympathetic nervous system activation and non-specific mobilisation, resistance phase, and a stage of exhaustion. Whilst considered more developed, it is argued that the issue of cause and effect become confused. Consequently, Humphrey (2005) suggests that while being itself, stress is also the cause of itself and the outcome of itself. Additional criticisms of the early biological conceptualisations include the assumption that the physiological response is uniform despite the effects of stress being experienced at varying degrees (McGonagle & Kessler, 1990). Despite these criticisms, physiological elements of stress continue to be explored, albeit using more refined approaches which appreciate the impact of wider influences, for example psychoneuroimmunology (Azar, 2001).

In a move away from solely physiological explanations, Holmes and Rahe (1967) suggested that naturally occurring life events have cumulative effects on individuals. However, similar criticisms of viewing

the individual as passive are made. It is further suggested that an event, such as a change of job, may be viewed as negative by one individual, but considered a positive event by another (Ogden, 2007). Moos and Swindle (1990) consider that life events should not be viewed in isolation but should be recognised as on-going and potentially chronic. Consequently, it is argued that individuals' appraisals of potential stressors should be recognised in order to better understand the concept of stress.

Psychology was introduced to enhance the understanding of the stress experience, recognising the individual as an active part of the stress process. Lazarus and Folkman's (1980) transactional theory of stress provide an explanation for stress responses based on cognitive appraisal. This appraisal is based on two factors, the threat to the individual (primary appraisal) and the individual assessment of the threat (secondary appraisal), with the stages generally occurring simultaneously. Although widely accepted as a superior model to earlier approaches, it is considered that the transactional viewpoint is potentially difficult to conceptualise and evaluate (Mark & Smith, 2008).

2.5.1.1 The biopsychosocial approach to stress

Whilst the biomedical viewpoint emphasises the experience of stress as being a change in the normal physiological or biochemical functioning, it is currently recognised that this provides a reductionist account of the overall stress experience (Ogden, 2007). It is suggested that stress can be understood as a feeling of being under too much mental or emotional pressure and this can have implications on feelings, cognitions and behavioural responses (NHS, 2017). From a holistic standpoint, the application of Engel's (1980) biopsychosocial perspective recognises the inclusion of physiological and psychosocial elements which contribute to the stress experience. Guided by this perspective, stress is understood as the interaction between biological, psychological and social factors. This approach permits the

appreciation of stress experiences to involve biopsychosocial consequences in an attempt to offer more encompassing account of stress outcomes; thus, stress may have not only biopsychosocial causes, but also biopsychosocial consequences. A visual representation of the biopsychosocial model is provided in Figure 2.3.
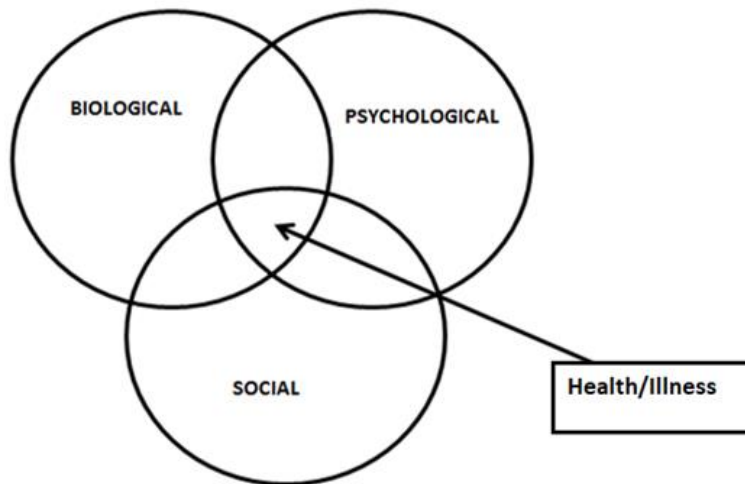
Figure 2.3 Biopsychosocial model of health/illness (Engel, 1980).

2.5.2 Stress at work

In line with Engel's (1980) model, external environmental influences, such as the workplace, are recognised as potential stressors with the related consequences involving physiological, biochemical, psychological and behavioural changes (Aloe et al., 2014; Antoniou et al., 2006; Klassen, 2010). Lazarus (1991) suggests that stress management initiatives within the workplace are often unsuccessful if they are based on the assumption that all individuals are the same. Furthermore, appropriate stress management may be limited by available resources, experience of management staff, or a general failure to fully appreciate individual diversity in the stress experience (Lewis & Zibarass, 2013).

Although it is recognised that occupational stressors exist, not all individuals employed within the same work context experience the same degree of stress in relation to a given stressor, nor do these potential stressors affect all employees (Alhija, 2015).Consequently, it is a challenge for researchers to encapsulate a measure of stress in its full complexity and this can be seen by the varying applications of stress measures used in research designs (refer to Table 2.2). Furthermore, the complexity of the stress concept holds relevant to understanding the effectiveness of strategies which seek to manage issues of stress within the workplace.

2.5.3 Theoretical perspectives of stress in the workplace

Early theories of stress in the workplace focussed on the (mis)match between the working environment and the worker, suggesting that the employee's skills should match the demands of the job role (French, 1973). However, the person-environment fit model has been criticised due to the emphasis on static and stable relationships which does not appreciate the changing nature of work stress and the continual interactions that take place between the worker and the work environment (Lazarus, 1991). Later perspectives such as the Demands-Control model (Karasek, 1979) offered an interactional approach to understanding work stress, focussing on the structural aspects of the worker's interactions with the occupational context. Supported by research on teachers, it was shown that high job demands and low job control are related to burnout (Griva & Joekes, 2003). However, the assumption that a high level of job control is desirable may not account for individuals with a low sense of self-efficacy, as control may be perceived as a stressor. Cox et al. (2000) argue that the conceptualisation of demand in this model is primarily based on a set workload which does not necessarily represent additional demands of the modern job roles. Furthermore, factors including relationships with colleagues and communication are not incorporated into this perspective. It has also suggested that the model cannot account for

individual differences in the susceptibility to recognised work stressors and consequent diversity in health outcomes for those with the same levels of job demand and control (Mark & Smith, 2008). Ultimately the sole focus on workload does not capture the true nature of work stress, its origins, maintenance, and constant change.

An alternative approach to understanding stress within the workplace is offered by models that represent a transactional viewpoint. These approaches place emphasis on the dynamic relationships between the working environment and related health outcomes, focussing on related cognitive and emotional factors. Cox et al. (2000) proposed a similar transactional model to Lazarus and Folkman (1980) but offered a more explicit focus on stress within the workplace. The inclusion of a feedback component, a more defined structure and greater emphasis on diverse work-related influences may be considered more advantageous. This framework recognises that individual differences, such as appraisal and resilience, in reactions to work stressors may have a mediating or moderating role in determining outcomes in occupational health. However, whilst potentially a more useful model, because of the recognition of individual diversity between workers, the complexity of the model's design may make it difficult to empirically test, with similar criticism to earlier transactional viewpoints (Mark & Smith, 2008).

2.5.3.1 Job Demands-Resources perspective

In an attempt to develop and expand the knowledge of occupational stress, more recent models have been proposed which seek to encapsulate the complexities of the job role and individual differences while also offering a more parsimonious design, for example, the Job Demands-Resources model (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007; Demerouti, Bakker, Nachreiner & Schaufeli, 2001). This model draws upon previous models of work related stressors but takes a more flexible approach by recognising that a variety of potential buffering factors may influence stress experiences.

The inclusion of physical and social factors facilitates a more accurate reflection of the working role than is achieved via models where demands are representative only of the associated prescribed workload (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007). Resources from this perspective can relate to micro and macro elements, and moderating factors have informed contemporary research in work related stress and occupational health. For example, research by Tremblay and Messervey (2011) provided support for the buffering role of personal resources in this framework. Using compassion satisfaction as a moderator in a sample of military chaplains, it was shown that compassion satisfaction had a partial moderating effect on the relationship between job demands and job strain. Similarly, Opie and Henn (2013) demonstrated the ability of the psychological concept of conscientiousness to moderate the relationship between job demands and work engagement in a sample of working mothers. Other researchers have also supported the design of the Job Demands-Resources framework to explain work motivation and engagement in teaching (Timms, Brough, & Graham, 2012; Brough & Pears, 2004). Such research promotes new avenues for adopting this design to explore the impact of different psychological concepts and their impact on relationships between job stressors/demands and outcome factors.

2.5.4 Stress in teaching

The teaching profession specifically is one of the most studied occupations in the literature on work related stress (Klausman et al., 2008). As there is no agreed definition of the stress concept, research has noted conflicting findings in relation to attributions for stress experiences within the teacher role. However, this increase in teacher stress research reflects a growing concern with this issue (Popov & Popov, 2015).

Teaching is frequently considered to be an emotionally-charged profession, with teachers often experiencing a high level of stress within

their professional role (Hong, 2012; Klassen, 2010). Teacher stress is generally defined in terms of unpleasant negative emotions derived from the job role. A multitude of factors, including time management, professional investment, and discipline issues, have been found to contribute to stress outcomes for teachers (refer to section 2.5.4.1). These occupational pressures have been reported as potential sources of burnout (emotional exhaustion, including low energy and chronic fatigue, resulting from long-term occupational stress) (Maslach, Jackson & Leiter 1996); this reflects the factors as proposed by the biopsychosocial perspective (Engel, 1980). An analysis of 16 independent studies suggested that burnout affects teachers across the school spectrum, with relationships found between classroom management self-efficacy and the three dimensions of burnout (Aloe, Amo & Shanahan, 2014). Burnout is often due to the high demands of the modern teaching role, and has been suggested as a contributory factor in prompting teachers to leave the profession (Wilson, 2008). The high number of teachers leaving the job is not limited to the United Kingdom with issues of attrition noted in the United States (Hong, 2010), Norway (Roness, 2011) and China (Changying, 2007). Nonetheless, current statistics for 2016 in England show that the percentage of teachers who entered the profession remained slightly higher than the number of teachers who chose to leave (10.1 % and 9.9 % respectively) (DfE, 2017).

2.5.4.1 Sources of stress in teaching

Causes of work related stress are also consistent over time with factors such as workload, lack of support, and organisational change as the primary causative factors. The Health and Safety Executive (2017) describe six key factors which can lead to stress for teachers if not correctly managed; demands, control, support, relationships, role and change; these are now outlined.

The demand for multitasking in response to overload has been recognised as likely to result in stress outcomes (HSE, 2016). Research over the past two decades has found workload as a contributory factor to stress outcomes in the teacher population (Kyriacou, 2001; Klassen & Chui, 2010; Alhija, 2015, & Bernard, 2016). This suggests teacher workloads is an on-going issue and may be reflective of continual changes in legislation, initiatives and teacher practice. Interview data obtained by Grenville-Cleave and Boniwell (2012) found that teachers struggled to cope with the added volume of non-teaching tasks, such as paperwork and data collection, which often occur in response to educational reforms. It has been suggested that not all teachers are given appropriate time to effectively plan lessons, and that this lack of availability further may impact the teaching experience in a negative way (Sturman et al., 2005). There appears to be a significant relationship between time pressures and exhaustion, which may induce distress (Skaalvik & Skaalvik, 2016).

Teaching is often promoted as a rewarding profession which offers career prospects and development opportunities (DfE, 2014). However, for many teachers the prospect of advancement is often viewed as unlikely which can serve as a contributory factor in dis-engagement with the job. A large scale study found that older and more experienced teachers were less inclined to view senior/management positions as a possibility within their career (Sturman et al., 2005). This suggests that they are potentially less professionally invested in their role. In contrast, younger teachers rated the status of the teaching profession more highly. Furthermore, women in the workplace may not receive the same level of respect and advancement as their male counterparts which may contribute to stress, and potentially induce a negative sense of wellbeing (Brown, 2010).

A plethora of research on the teaching experience highlights that teachers value positive and enabling relationships with colleagues, managers, and students in the school environment (Grenville-Cleave &

Boniwell, 2012; Sturman et al., 2005). Several theoretical standpoints advocate the need for relatedness and belonging as a fundamental human need (Maslow, 1970; Ryan & Deci, 2000). When such relationships are not facilitating, this promotes negative emotions which can result in stress experiences. Split, Koomen and Thijs (2011) advocate that the association between discipline issues and teacher stress is most appropriately understood from a relationship perspective, whereby the relatedness with students is the most relevant factor. Research on teachers' attributions for stress found that student (mis)behaviour is important to the development and maintenance of stress within the school context, with the majority of variance at the individual level; this suggesting that stress is a psychological phenomenon largely influenced by one's ability to effectively cope with the presented classroom environment (McCormick & Barnett, 2011). Similarly, it has been found that unmotivated students are a main source of stress for teachers (Geving, 2007). A meta-analysis conducted by Aloe et al. (2014a) into teacher burnout, found that the greatest effect was noted for the relationship between student misbehaviour and emotional exhaustion in teachers.

2.5.4.2 Teacher stress for males and females

Comparisons between male and female teachers have been frequently explored in relation to understanding stress experiences within school. Research on teacher stress has often found that female teachers report significantly higher levels of stress from student misbehaviour than do male teachers (Klassen & Chui, 2010; Klassen, 2010). Similarly, it has been found that female teachers experience higher levels of stress in relation to work-related factors (Antoniou, Polychroni, & Vlachakis, 2006). It is shown that in comparison to male teachers, females evaluate seeking social support more highly in promoting a positive working environment, and reducing stress (Alhija, 2015). Social support can be instrument, informational, or emotional and may serve to provide reassurance, this is achieved in a meaningful

social context and is established as part of a reciprocal relationship (Pestonjee & Pandey, 2013); this can be related to effective PLCs (as outlined in chapter 1).

Differences between male and female teachers are likely to be influenced by conflicting roles and social norms. Research suggests that the elevated work stress experienced by females is potentially a result of higher role conflict between family and professional commitments (Greenglass & Burke, 2003; Klassen & Chui, 2010). For example, females reported greater time investment in childcare and household task than males, thus providing further support (O' Laughlin & Bischoff, 2005). Family commitments are a source of such potential conflict which may negatively influence health outcomes and impact the wellbeing and job satisfaction of teachers. Research by Kersaint, Lewis, Potter and Meisels (2007) also reported that one of the main reasons cited for leaving the teaching profession was to spend more time with family; this was specifically relevant for female teachers. It is further shown that more female teachers work part time than male teachers, which may be indicative of role conflict (DfE, 2017). Conversely, whilst there are recognised differences between male and female teachers, not all studies have concurred with this finding. For example, Jepson and Forest (2006) and Reilly, Dhingra and Boduszek (2014) found no differences between males and females with regards to professed teacher stress.

Many studies of stress reactivity have often been studied using the acute stress paradigm in highly controlled and artificial settings (Ogden, 2007). However, the lived experience of work-related stress occurs in the naturalistic setting of the workplace environment and is consequently most noted via the application of self-report measures to assess its prevalence (Kyriacou, 2001). Most research on teacher stress is based on data obtained from self-reporting, either through the use of a questionnaire (for example, Klassen & Chui, 2010) or during interviews (for example, Jephcote et al., 2008). However, results of a

real-time data study which measured teachers' heart rate during the course of the school day found higher levels of heart rate for male teachers than female teachers, suggesting they may be more stressed (Serrano, Moya-Albiol & Salvador, 2008). Results from self-report measures typically indicate that women are more stressed than men which may reflect psychological changes. Work stress is stereotypically classified as a female issue and consequently this may influence the likelihood of males reporting experiences of stress (Page et al., 2013, p453); for example, one female participant stated,

'We get the male ego problem, where we don't want to admit we've got a problem, because 'real' men don't get problems, and it takes a lot of coaxing to get them to admit it'

2.5.5 Consequences of stress

The National Health Service (NHS) (2017) report that stress related health problems account for up to one in five visits to a General Practitioner. Extensive literature supports the link between prolonged stress experiences and negative health outcomes, with both physical and psychological consequences recognised. As previously presented, stress is best understood using a holistic framework which encapsulates biological, psychological and social factors (Engel, 1980). Such factors not only contribute to promoting stress but they are also noted as potential consequences of experiencing stress.

Stressors have the potential to impact negative consequences on the teacher, but this can have wider implications. Teachers who experience high levels of burnout typically assign less value to relationships with learners. Furthermore, the consequence of teacher absenteeism due to disengagement and health issues means that many students are being taught by supply staff that may not have subject knowledge and/or qualifications (Brill & McCartney, 2008; National Union of Teachers, 2017b; Glenville-Cleave & Boniwell, 2012). Given

that the importance of the teacher-student relationship has been well documented (for example, Marshik et al., 2017; Geving, 2007), using supply staff can potentially reduce student achievement, and impact on a schools performance table and Ofsted rating. The impact of stress has been shown to increase the quitting intentions of teachers. With regards to the economic consequence, Brill and McCartney (2008) highlight the cost involved in seeking, employing and inducting new teachers; such activities surrounding recruitment and training impact the educational budget. When considering the impact of stress as noted throughout various studies, it is necessary to consider what motivates teachers, both in the daily role and in terms of attrition and retention.

2.6 Review limitations and gaps in the literature

Whilst the scoping review has provided a broad overview of the concepts of interest in relation to teachers, there a number of limitations. First, the search parameters may have failed to capture relevant articles. However, these parameters were considered necessary in order to control the number of returns, and for returns to be in line with the focus of the thesis (Arksey & O'Malley, 2005). Second, the articles reviewed were not assessed for methodological rigor and quality; instead the review has highlighted related literature that has used a range of different methods and research designs to explore the concepts of interest. Consequently, the extent of literature on the specified concepts has been assessed, and the scoping review has enabled gaps in existing knowledge to be identified for further exploration (Khalil et al., 2016).

It is shown that there are divergent findings in existent literature in relation to the most dominant need in the teacher role (Wininger & Birkholz, 2013; Fokkens-Bruninsma & Carinus, 2012; Rots et al., 2012). Satisfaction and motivation in teaching is most appropriately understood as a dual psychological concept and an intrinsic vocational need (Skaalvik & Skaalvik, 2011). Therefore, investigating the relationships that exist between needs and satisfaction is necessary to determine the most relevant factors that could promote a positive teaching experience. Having reviewed the related literature, SDT has been the underpinning perspective to exploring motivation and needs in many studies, and consequently this framework is appropriate to guide further comparative investigations.

The first empirical part of the study (chapter 4) explores the potential relationship between factors of Self Determination Theory (Ryan & Deci, 2000) (autonomy, competence, and relatedness) and teaching satisfaction, and is specifically related to answering research

question 1; 'Is there a relationship between motivation and satisfaction at work?'. The ability of the school to facilitate a positive environment to meet teacher needs is further considered in order to answer research question 2: 'Can the school context offer a therapeutic environment for teachers?'. This is necessary as it is recognised that unsatisfied needs can adversely impact on the teacher role and result in stress (for example, Griva & Joekes, 2003).

Stress has been found to have biopsychosocial consequences and teachers who are satisfied in role may be less likely to experience negative outcomes (Klassen, 2010; Aloe et al., 2014). Existent literature has found various aspects of the school environment, such as workload and student behaviour, also contribute to teacher stress (McCormick & Barnett, 2011; Klassen & Chui, 2010, Alhija, 2015). In exploring and confirming the contributory factors which relate to stress in the secondary level teacher population, supportive interventions and guidelines can be developed to enhance positive teaching experiences, heighten professional satisfaction, and improve the quality of teaching across school settings. Specifically, the second empirical part of the thesis (chapter 5) explores the association of proposed stressors and stress manifestations, and the role that satisfaction has on these potential associations. This is ultimately the consideration of research question 4: 'Can the concept of teaching satisfaction serve as an effective moderator/personal resource in the teacher stress experience?'. To date, no other research has used the JD-R framework in this way to explicitly assess the ability of satisfaction to influence the stress experiences of teachers (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007; Demerouti, Bakker, Nachreiner & Schaufeli, 2001).

Additionally, as it is shown that there are potential differences between male and female teacher in relation to the concepts of interest, motivation and needs (Bentea & Anghelache, 2012), satisfaction, and stress (Antoniou et al., 2006; Klassen & Chui, 2010), it is necessary that the study also incorporates a gender focus in its research design. This

links to research question 3 and is relevant to both parts of the study: 'Is there a significant difference between male and female teachers with regards to the factors explored?'. The proposed study with its two empirical parts will therefore contribute to ascertaining a comprehensive understanding of the role of motivation, satisfaction, and stress, in secondary level teaching in England.

2.7. Chapter summary

This chapter has reviewed theoretical models and approaches to the concepts of motivation, satisfaction, and stress. Whilst initially presenting the relevant concepts independently, it has been clearly shown that these are highly interrelated and hold importance for our psychological understanding of satisfaction, motivation, and stress, in secondary level teaching. The scoping review however, has highlighted the complexity of understanding these concepts and how they apply to the contemporary secondary level school context, and considered the macro-level implications. Gaps in the existing knowledge base are established, providing the rationale for the study; the design and conduct of such is detailed in subsequent chapters.

Chapter 3

Method

3.1 Chapter introduction

This chapter provides the rationale for choosing a quantitative survey design to explore the psychological needs, motivation, satisfaction, and stress experiences of secondary school teachers in England. The chosen sampling method is detailed alongside further sample characteristics. The chosen measures are outlined, detailing their appropriateness for the study and their reliability and validity. In addition, the analytical procedures adopted are explained and a discussion of the specific software programmes used for data analysis is provided. It is important to note that the study design and conduct was guided by the British Psychological Society ethical guidelines (BPS, 2009) and the study achieved ethical clearance from the University of Huddersfield, School of Human and Health Sciences, prior to its commencement. Issues of particular ethical significance are detailed towards the close of the chapter

3.2 Aims, objectives, and research questions

In order to meet the aims and objectives of the study, which broadly explore needs, motivation, satisfaction, and stress, in contemporary secondary level teaching, and to answer the research questions presented in section 1.7.2, an appropriate research design needed to be selected. Choosing a research design that met the aims of the study required consideration of epistemology, ontology, theoretical perspectives, and methods and methodologies (Crotty, 1998).The thesis is based on a cross-sectional survey which is embedded in the quantitative paradigm. A visual representation of the research design is provided in Figure 3.1, and further outlined in subsequent sections of this chapter.

• Epistemology	•Objectivism
• Theoretical Perspective	•Contemporay positivism (post-positivism)
• Methodology	•Survey research
• Methods	•Quantitative Survey •Statistical analysis
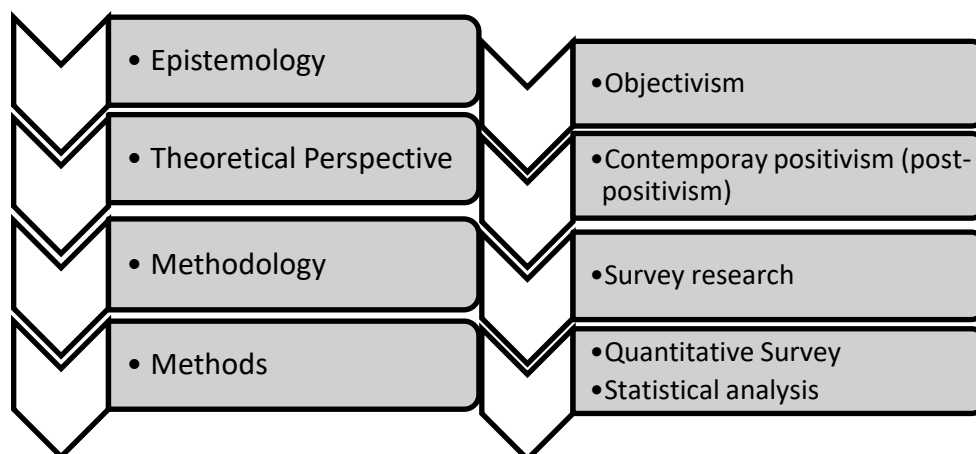
Figure 3.1. The 'four elements' (Crotty, 1998).

3.3 Epistemology and theoretical perspective

The research undertaken as part of this thesis is broadly based on an objectivist epistemology. Objectivism asserts that phenomena exist as meaningful entities and as such can be explored through scientific research in order to achieve objective truth and meaning (Crotty, 1998). Bryman (2004) suggests that objectivism is a classic way of conceptualising organisations, stating that organisations have a reality that is external from the individuals who inhabit it. The broad theoretical stance employed to guide the study is one of positivism; positivism is thus embodied in an objectivist epistemology. Positivism takes the view that there is a measurable reality and this can be investigated empirically (Elliot, Fairweather, Olsen & Pampaka, 2016). Statistical techniques are central to positivist research (Carson et al., 2001), and are utilised within this thesis. With reference to the current study, a post-positivist stance is employed; contemporary positivism refers to 'probability rather than certainty, claims a certain level of objectivity rather than absolute objectivity, and seeks to approximate the truth' (Crotty, 1998 p.29).

The chosen approach contrasts with an interpretive epistemology in which reality is relative and multiple, and meaning is socially constructed. The latter approach is focussed on subjective meaning making and is typically aligned with the qualitative paradigm; the aim is to interpret meaning rather than make generalisations based on research findings (Carson et al., 2001). As the current study design is based on utilising existing theoretical frameworks (Self-Determination theory, Ryan & Deci, 2000; Job Demands-Resources model, Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007; Demerouti, Bakker, Nachreiner & Schaufeli, 2001), and in order to assess the specified relationships and to answer the research questions, a quantitative approach was considered the most appropriate. This further permits comparison of the research findings with existent literature (Coolican, 2009). The majority of studies reviewed as part of this thesis also employed a quantitative design (refer to Table 2.2). A limitation of

the quantitative design is that responses cannot be elaborated upon; quantitative research focuses on the 'what' rather than the 'why' (Elliot, Fairweather, Olsen & Pampaka, 2016).

3.4 Methodology

There are several ways in which data can be obtained, such as interviews, observations, and surveys, each offering different advantages and limitations; research aims guide this selection (Bryman, 2004). Interviews and observations are useful to capture in-depth data, but are often restricted to smaller samples (Howitt & Cramer, 2017). Survey research is multifaceted and versatile in the differing depth and breadth of information which can be explored and captured, and can be used to investigate the characteristics, behaviours, or opinions of a group (Gobo & Mauceri, 2014). Survey research can incorporate open questions which are useful to explore meaning making and lived experiences, informed generally by theoretical and epistemological positions which are aligned with the qualitative paradigm (Andres, 2012). Alternatively, survey research can involve using items which generate numerical data to develop theoretical models, explore theoretical frameworks, or permit comparative studies (Coolican, 2009 ;Gobo & Mauceri, 2014).

Approaches to survey data collection can be either longitudinal or cross sectional. Longitudinal approaches permit researchers to establish causal relationships and note specific changes over time (Howitt & Cramer, 2017). In contrast, cross-sectional research provides results which are descriptive in nature (Field, 2013); the latter is relevant to the current research design. Such data can then be utilised to explore or confirm associations between the independent and dependant variables of interest. However, as cross-sectional designs do not permit causal relationships to be confirmed, it may be more appropriate to consider these as predictor variables and outcome variables (Field, 2013). Cross-sectional designs are often employed to test existing theoretical models and have the added benefits of being relatively inexpensive. Generally, attrition rates for cross-sectional designs are lower than those for longitudinal studies (Gobo & Mauceri, 2014; Coolican, 2009).

3.5 Methods

The study detailed within this thesis is based on the quantitative approach. The specific method utilised is a structured, closed-question, survey which has been analysed using the quantitative techniques of linear moderated regression analysis and latent variable modelling (these are outlined further in subsequent sections of this chapter). The structured, closed-question survey was selected as the most appropriate method in allowing the collection of a large data set to meet the aims and objectives of the study, thus answering the research questions (refer to 1.7.2). A cross-sectional approach to data collection was considered appropriate to obtain the required data; this method was also used in many of the studies reviewed in chapter 2, but many of these did not use as large a sample or such advanced methods of analysis.

3.6 Materials

In order to undertake the study, several materials were required. Specifically, a tool (survey) was needed to capture relevant data, and specialised software was required for data analysis. To meet some of the ethical requirements of the study, study information sheets and consent forms were also required.

3.6.1 Information sheet and consent form

An information sheet was created and this outlined the purpose of the study, including the area of interest, how to complete the questionnaire and the general expected completion time. The information sheet detailed the governing ethical principles that were appropriate to the study (see appendix 1). The form ensured that participants were fully informed of the study aim, their role in the study, and how collected data would be utilised. A paper version of the consent form was initially developed (see appendix 2), and used for the pilot study. The electronic version of the survey, as used for the final study, contained the same information sheet, but consent was obtained by the participant clicking the consent option (see appendix 3).

3.6.2 Measures

The online survey developed for this thesis had four sections. The first section captured the demographics of participants, with the subsequent sections including existing validated measures (Teacher Stress Inventory (TSI), Basic Psychological Needs at Work Scale (BPNW) and Teaching Satisfaction Scale (TSS). Permission to use the measures within the study was granted from the representative authors of each measure (see appendices 4, 5, and 6). The survey is detailed below:

3.6.2.1 Demographics

A demographic section was developed to enable participant characteristics to be obtained:

1. Male/female
2. Age
3. Years of teaching practice
4. Area of teaching: Primary/secondary/other

Participants were asked to state if they are male or female as the study was centred on exploring potential disparities between male and female secondary school teachers. In addition, participants were asked to provide their age and years of teaching practice, as these were to be explored as covariates. Area of teaching was requested to ensure a representative response; this confirming that it had been completed by a secondary school teacher and had not been redistributed outside the intended sample.

3.6.2.2 Teacher Stress Inventory (Fimian, 1984).

The Teacher Stress Inventory (TSS) is a 49-item instrument of occupational stress which incorporates 10 sub-scales that together relate to teacher stress, with 5 sub-scales assessing potential sources of stress (time management, work-related stressors, professional distress, discipline and motivation and professional investment) and 5 sub-scales assessing manifestations of occupational stress (emotional, fatigue, cardiovascular, gastronomical and behavioural). Scores for all sub-scales are rated on a 5 point Likert scale:

1= no strength; not noticeable

2 = mild strength; barely noticeable

3 = medium strength; moderately noticeable

4 = great strength; very noticeable

5 = major strength; extremely noticeable

Questions on the measure:

TIME MANAGEMENT

1. I easily over-commit myself.
2. I become impatient if others do things to slowly.
3. I have to try doing more than one thing at a time.
4. I have little time to relax/enjoy the time of day.
5. I think about unrelated matters during conversations.
6. I feel uncomfortable wasting time.
7. There isn't enough time to get things done.
8. I rush in my speech.

WORK-RELATED STRESSORS

9. There is little time to prepare for my lessons/responsibilities.
10. There is too much work to do.
11. The pace of the school day is too fast.
12. My caseload/class is too big.
13. My personal priorities are being shortchanged due to time demands.
14. There is too much administrative paperwork in my job.

PROFESSIONAL DISTRESS

15. I lack promotion and/or advancement opportunities.
16. I am not progressing in my job as rapidly as I would like.
17. I need more status and respect on my job.
18. I receive an inadequate salary for the work I do.
19. I lack recognition for the extra work and/or good teaching I do.

DISCIPLINE AND MOTIVATION

I feel frustrated...

20. ...because of discipline problems in my classroom.
21. ...having to monitor pupil behavior.
22. ...because some students would better if they tried.
23. ...attempting to teach students who are poorly motivated.
24. ...because of inadequate/poorly defined discipline problems.

25. ...when my authority is rejected by pupils/administration.

PROFESSIONAL INVESTMENT

26. My personal opinions are not sufficiently aired.

27. I lack control over decisions made about classroom/school matters.

28. I am not emotionally/intellectually stimulated on the job.

29. I lack opportunities for professional improvement.

EMOTIONAL MANIFESTATIONS

I respond to stress...

30. ...by feeling insecure.

31. ...by feeling vulnerable.

32. ...by feeling unable to cope.

33. ...by feeling depressed.

34. ...by feeling anxious.

FATIGUE MANIFESTATIONS

I respond to stress...

35. ...by sleeping more than usual.

36. ...by procrastinating.

37. ...by becoming fatigued in a very short time.

38. ...with physical exhaustion.

39. ...with physical weakness.

CARDIOVASCULAR MANIFESTATIONS

I respond to stress...

40. ...with feelings of increased blood pressure.

41. ...with feeling of heart pounding or racing.

42. ...with rapid and/or shallow breath.

GASTRONOMICAL MANIFESTATIONS (*see comment at end)

I respond to stress...

43. ...with stomach pain of extended duration.

44. ...with stomach cramps.

45. ...with stomach acid.

BEHAVIORAL MANIFESTATIONS

I respond to stress...

46. ...by using over-the-counter drugs.

47. ...by using prescription drugs.

48. ...by using alcohol.

49. ...by calling in sick.

* Whilst the term *'gastronomical manifestations'* may be synonymous with other terms such as 'gastric stress symptoms' or 'gastric outcomes', the terminology 'gastronomical manifestations' is maintained through this thesis as this represents the exact wording on the measure employed. The reader is advised to be mindful of this when reading the related results section and discussions.

The TSI measure was developed from the experiences of public school teachers in the United States. It was suggested that in order to assess the sub-scales, responses can be summed and divided by the number of items to achieve a mean score for that sub-scale. A total stress score can be then be achieved by summing the means of each subscale total and dividing the this by 10; higher scores indicating a higher level of total stress.

The measure has been further validated in other studies (for example, Fimian & Fastenau, 1990). It has also been translated and validated cross-culturally; examples include Greece and Turkey (Kourmousi, Darviri, Varvogli, & Alexopoulos, 2015; Erdiller & Doğan, 2015). Furthermore, in order to ensure avoidance of sensitisation to stress, Fimian (1984) suggested that the measure should be termed 'Teachers Concern Inventory' when administered; this was adopted in the survey design.

3.6.2.3 Basic Psychological Needs at Work Scale (Deci, Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001; Ilardi, Leone, Kasser, & Ryan, 1993; Kasser, Davey, & Ryan, 1992).

The Basic Psychological Needs at Work scale (BPNW) is a work-related self-report instrument to measure the degree to which the needs for autonomy, competence, and relatedness, are satisfied at work. The measure consists of 21 items which are scored on a 7-point Likert scale (no specific wording is applied to the markers for scoring 2, 3, 5 or 6) and the participant rates how true each statement is on the scale:

1	**2**	**3**	**4**	**5**	**6**	**7**
Not at all true			Somewhat true			Very true

Questions on the measure:

1. I feel like I can make a lot of inputs to deciding how my job gets done
2. I really like the people I work with
3. I do not feel very competent when I am at work.
4. People at work tell me I am good at what I do.
5. I feel pressured at work.
6. I get along with people at work.
7. I pretty much keep to myself when I am at work.
8. I am free to express my ideas and opinions on the job.
9. I consider the people I work with to be my friends.
10. I have been able to learn interesting new skills on my job
11. When I am at work, I have to do what I am told.
12. Most days I feel a sense of accomplishment from working
13. My feelings are taken into consideration at work.
14. On my job I do not get much of a chance to show how capable I am.
15. People at work care about me.
16. There are not many people at work that I am close to.
17. I feel like I can pretty much be myself at work.
18. The people I work with do not seem to like me much.

19. When I am working I often do not feel very capable.

20. There is not much opportunity for me to decide for myself how to go about my work.

21. People at work are pretty friendly towards me.

The measure has been used extensively throughout occupational health research (Deci, Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001; Ilardi, Leone, Kasser, & Ryan, 1993; Kasser, Davey, & Ryan, 1992) and has been further validated in cross cultural populations, including France and Canada (Brien, Forest, Mageau, Boudrias, Desrumaux, Brunet & Morin, 2012).

3.6.2.4 Teaching Satisfaction Scale (Ho & Au, 2006).

The measure comprises of 5 items which together create a total teaching satisfaction score. Ho and Au (2006) suggest that the TSS is a global measure of teaching satisfaction, with higher scores reflecting higher levels of teaching satisfaction. The items are rated using a 5-point Likert scale:

1= strongly disagree

2 = disagree

3 = neither disagree or agree

4 = agree,

5= strongly agree

Questions on the measure:

1. In most ways, being a teacher is close to my ideal

2. My conditions of being a teacher are excellent

3. I am satisfied with being a teacher

4. So far I have got the important things I want as a teacher

5. If I could choose my career over, I would change almost nothing

The Teaching Satisfaction scale (TSS) was developed based on the Life Satisfaction Scale (Diener, Emmons, Larsen, & Griffin, 1985) and was defined using Locke's(1969, p.316) definition of job satisfaction 'pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating one's job values'. The items contained within this measure have been adapted from the Life Satisfaction Scale, for example, Ho and Au (1985 p.177) state, 'an item of the LSS is "In most ways, my life is close to my ideal." This item is modified as "In most ways, being a teacher is close to my ideal'. This perspective aligns with the hedonic stance on motivation and is focussed on teachers' effective responses and attitudinal reactions (Joshanloo & Ghaedi, 2009).

The measure was initially validated on a sample of primary and secondary school teachers in Hong Kong and was shown to have a positive correlation with self-esteem and a negative association with psychological and teacher stress (Ho & Au, 2006).

3.6.3 Software for statistical analyses

Different types of software are utilised for a range of different statistical research designs and the current study required three specific software packages, which are now described:

3.6.3.1 Statistical package for the social sciences (IBM SPSS Statistics)

IBM SPSS Statistics is a software package used for the purpose of conducting analyses on quantitative data sets. The analyses of the study detailed in the in this thesis was conducted using version 22. In contrast to some other software programmes, an advantage of SPSS is that it permits basic data manipulation and statistical procedures without the need to understand the complex language of the software programme (Ward, 2013). It is further beneficial in allowing the user to obtain meaningful insights from data and permits a variety of statistics to be calculated (Field, 2013; IBM, 2017). SPSS has been utilised for the research contained within this thesis in order to conduct descriptive analyses, assess ANOVAs and to perform a moderated regression

analysis. However, whilst this programme is advantageous in its ability to permit such tests, for more advanced forms of statistical analysis, alternative software (or add-ons) may be necessary; for example when the researcher wishes to perform latent variable modelling (IBM, 2017). This programme was used for both parts of the study.

3.6.3.2 IBM SPSS AMOS

This software is an extension of the basic SPSS programme and can fit structural equation models (IBM, 2017). IBM SPSS AMOS (specifically Amos Graphics) allows data files to be imported from SPSS. The programme uses the data to build graphical models which display proposed associations between latent variables. It allows the user to specify, estimate and evaluate the data in accordance with the theory under investigation. SPSS AMOS permits simultaneous testing of factors and paths within a specified model. Kline (2010) suggests that it is important to specify the version utilised as these may have different competencies and may employ slightly varied methods for the purpose of analysis; SPSS AMOS 22 was used for part 1 of the study.

3.6.3.3 ModGraph

When conducting a moderated regression analysis in SPSS it is not possible to plot significant interactions in a simplified way. ModGraph is a programme to compute cell means for the graphical display of moderation analyses. Version 3 of the programme was shown to be a more accurate predictor than the previous version (Jose, 2013). Data used in the ModGraph programme is taken from the SPSS output of the moderated regression analysis and the user inputs the unstandardized regression coefficient (B) and the β for the interaction term and the constant. The program computes equations that produce cell means necessary for graphical display of the interactions. ModGraph is then able to compute simple slopes for the specified relationships at low, medium, and high levels (1 SD below the mean, mean, and 1 SD above the mean respectively) (Jose, 2013). ModGraph version 3 was used for part 2 of the study.

3.7 Procedure

In order to assess the appropriateness of the survey, it was necessary to conduct pilot testing prior to participant recruitment and data collection.

3.7.1. Pilot Study

Pilot testing enabled potential problems to be identified by seeking respondent feedback and through observation (Shaw, 2010). The aim of the pilot study was to ascertain: (1) how easily the survey was to complete from memory, (2) whether the time taken to complete the survey was within reasonable expectations, and (3) how likely it was for participants to complete the survey in totality. Pilot testing of the initial survey used a paper version only and was completed by eight teachers within the school setting.

Verbal feedback from the teachers demonstrated that the survey was comprehendible and consequently no amendments to the content or layout were needed. The average completion time was twenty minutes. Several teachers also commented that an online survey would be a preferable format. Consequently, an online version was created using Qualtrics (2017) (an online data collection tool). This was again tested on a representative pilot sample (n=5) to ensure that the online version was suitable for use.

3.8 Recruitment and consent

The recruitment process was purposeful in keeping with the research aims to explore aspects of the teaching experience. A multi-method approach was employed to recruit participants:

A full list of potential schools was obtained online by using the search term 'schools in England' (Gov.UK); this webpage details official statistical releases and is updated yearly Schools in England are organised into 150 local education authorities (LEAs): these are recognised within nine larger regions:

1. East of England (11 LEA's).
2. South East of England (19 LEA's).
3. South West of England (16 LEA's).
4. Yorkshire and Humber (15 LEA's).
5. North East of England (12 LEA's).
6. North West of England (23 LEA's).
7. East Midlands (9 LEA's).
8. Greater London (33 LEA's).
9. West Midlands (14 LEA's).

The next stage of this process was stratification based on regional area and LEAs within each region. A large number of schools from each LEA were selected to promote responses from teachers across England.

The corresponding website for each school selected was viewed in order to obtain a point of contact. Contact details for the head teacher were obtained; where this information was not provided on the school website, the first point of contact, typically reception/enquiries, was used. Emails were sent to the contact person for each selected school. The email contained the information sheet and a link to the online survey. The point of contact was politely asked to share the email with all teaching staff and encourage them to partake. A potential problem

with this process is that this indirect way of approaching teachers was influenced by the reliance of the point of contact to share the information. It may be that some schools were more willing to participate in academic research than others; this making it more likely that they would share the email and more responses would be obtained from that particular school. However, this was considered the most pragmatic way of obtaining a sample from the different LEA's.

The survey was administered electronically using Qualtrics (the link was included in the email). The survey was only displayed to participants who expressed an informed willingness to partake in the research; questions were only displayed after the teacher had clicked the consent button. Survey responses were continuously received over a two month period and this corresponds with the time taken to distribute the survey to all selected schools. This may suggest that participants were representative of the different geographical areas, although this was not explicitly recorded.

The non-probabilistic sampling technique employed is widely used for quantitative data collection, specifically as more contemporary research involves online data collection. The value of non-probability

'is that opt-in (non-probability) panels are not based on a single sampling method but rely on myriad varied sampling methods' (Baker et al., 2013, p91-92).

3.8.1 Participant characteristics

Participants were secondary school teachers (N= 1288) currently employed in the education sector in England (males n = 468, females n = 820). Participants ranged in age from 21 to 67 years (M = 41.35, SD = 10.85). Years of teaching practice for the whole sample ranged from 0 to 43 years (M = 13.57, SD = 9.86).

The characteristics of participants were also determined for male and female teachers independently:

:

Male participants (n = 468).In the male only sample, participants ranged in age from 21 to 66 years (M = 41.87, SD = 11.02). Years of teaching practice for the male sample ranged from 0 to 43 years (M = 14.29, SD = 10.24).

Female participants (n = 820). In the female only sample, participants ranged in age from 21 to 67 years (M = 41.00, SD = 10.72). Years of teaching practice for the female sample ranged from 0 to 43 years (M = 13.09, SD = 9.59).

3.9 Statistical analyses

Throughout the study detailed within this thesis different statistical analyses have been employed to analyse the collected data, and are now described:

3.9. 1 Pearson product-moment correlation

Correlation analysis is employed to assess the effect size (often referred to as 'strength') and direction of the linear relationship between variables; it is important to note that correlation does not imply causation (Howitt & Cramer, 2017). The Pearson product-moment correlation coefficient, r, is a parametric statistic which requires interval level or scale level data. Correlation also forms the basis of several multivariate calculations. It is the covariance of X and Y. As the covariance is standardised, the correlation coefficient lies between -1 and +1, whereby +1 indicates a perfect positive relationship (as one variable increases, the other variable increases by a proportionate amount) and -1 indicates a significant negative relationship (as one variable increases, the other variable decreases by a proportionate amount) (Field, 2013). When r ranges between .10 and .29, this indicates a small effect size (weak correlation); r ranges between .30 and .49 indicate a medium effect size (moderate correlation); r ranges above .50 indicate a large effect size (strong correlation) (Cohen, 1988).

3.9.2 Regression

Prior to conducting a regression analysis, it is appropriate to ensure no violation of the assumption of normality, linearity and homoscedasticity. It is further required that the correlations between predictors be considered. Generally, correlations that are weak or moderate indicate that multicollinearity is unlikely to be an issue and data is therefore suitable for regression analysis to be undertaken (Tabachnick & Fidell, 2007); in cases of strong correlations, examination of the Variance Inflation Factor (VIF) (value above 10 indicates possible multicollinearity) and Tolerance (value less than .10 indicates possible multicollinearity) statistics can determine if this is

within an acceptable range (Bowerman & O'Connell, 1990).The level of significant correlations are indicated using, * $p < .05$, ** $p < .01$, *** $p < .001$.

Linear regression analysis is a statistical process for estimating the relationships among variables. The specific type of regression analysis required is dependent upon the level of data and the overall purpose of the research study (Coolican, 2009). Multiple regression analysis explores the association between a set of independent variables (IV's) (these are referred to as predictors in regression analysis) and one dependant variable (DV) (referred to as outcome or criterion). Multiple regression analysis also details which variable is the strongest predictor and the amount of variance explained in the DV by all predictor variables (Field, 2013). Hierarchical multiple regression is a variant of the basic multiple regression procedure in which the researcher specifies a fixed order of entry for variables in order to control for the effects of covariates and to assess the overall model (Tabachnick & Fidell, 2007). However, as it may be suggested that the effects of a predictor variable (X) on a criterion (Y) variable may depend on a third variable (this is referred to as the moderator [M]), moderation analysis may be required to assess this (Baron & Kenny, 1986). The moderator can change the strength or direction of the relationship between X and Y. This technique was used in part 2 of the study (chapter 5).

3.9.2.1 Hierarchical moderated multiple regression

Before moderation analysis is undertaken, it is necessary to centre both X (predictor variable) and M (moderating variable) around the respective sample means and compute the cross product to create interaction terms. Centring is only for the unstandardised solution. The standardised solution was calculated and reported. Scores have to be z-scores to obtain standardised solution. Interaction refers to the effects of two variables multiplied together (Field, 2013). Centring reduces the

correlations between the interaction terms and the predictors in order that the effect of predictors can be distinguished from the interactions and to avoid multicollinearity. A meaningful zero-point for predictor and moderator variables is achieved by centring (Cohen, Cohen, West, & Aiken, 2003). In a hierarchical moderated regression analysis, data is inputted in stages (or steps). The first stage in the analysis involves testing for direct effects between the predictor variables and the outcome variable. The second stage is to include the interactions (of predictors and moderator) and covariates.

The amount of variance explained by each model is assessed for significance. Furthermore, in a hierarchal regression design, it is also important to investigate if the inclusion of the interaction terms and covariates (in step 2) make a significant contribution to the model; this is determined by looking at the R square change and the related value of significance (sig. F change). The F value provides information on the variance explained in the DV (outcome), with higher values represented more variance explained. The analysis of variance (ANOVA) details whether the overall model results in a significantly good degree of prediction of the outcome variable (Tabachnick & Fidell, 2007).

Significant moderator effects are investigated further. When the moderator is continuous, it is necessary to investigate its impact at different levels. Simple slopes are calculated for high levels of the moderator (one standard deviation above the mean), mean, and low levels of the moderator (one standard deviation below the mean). The results are presented graphically (Field, 2013) (see chapter 5 for examples).

3.9.3 Structural equation modelling (SEM)
Structural equation modelling is a multivariate statistical analysis technique that is used to analyse structural relationships; simultaneous analysis of structural relationships between multiple independent and

dependant variables can be achieved (McCallum & Austin, 2000). The application of SEM is commonly justified in the social sciences because of its ability to assign relationships between latent constructs from observable variables (Blunch, 2008). In chapter 4 of this thesis (part 1 of study), latent variables include autonomy, competence and relatedness which are inferred by items on measures used. In terms of appropriate terminology for SEM, independent variables are referred to as exogenous variables and dependant variables or mediating variables are referred to as endogenous variables (Byrne, 2013).

SEM is a confirmatory technique to test existing theory or conceptual framework. The purpose is not to determine if the theory is correct, but is to note its plausibility. SEM is made up of two stages (measurement model/level and structural model/level); it is a combination of factor analysis and path analysis (Blunch, 2008). The purpose of factor analysis is to investigate construct validity and dimensionality of measures. In the case of this thesis (part 1 of the study) the purpose was to confirm the factors which are identified in the standardised measures employed. Path Analysis is a technique of pictorially demonstrating the associations among observed variables in a path diagram. A benefit of path analysis is that it allows the direct, indirect, and total effect of one observed variable on another to be obtained. Additionally, whilst there is currently no consensus on how best to determine an appropriate sample size for SEM, it is generally agreed that the sample size should be large in order to provide sufficient statistical power and precise estimates (Westland, 2010); the related study detailed within this thesis utilised a large sample (N= 1288).

An important step in SEM is to investigate the construct validity of latent factors within the specified model; this part of the model assesses the relationship between indicators and latent factors. This is expressed as a regression coefficient as it is considered that the observed variable is regressed on the latent variable; this regression

coefficient is termed a factor loading. It is considered that multiple indicators of the latent factor are required in order to increase composite reliability (Bollen, 1989). All latent factors investigated as part of this study were indicated by several items.

In contrast to regression analysis (where only the DV has an error term), SEM is advantageous as error terms are applied to each indicator; this provides explicit estimates of error variance parameters for all latent factors within the specified model; in regression analysis independent variables are assumed to be modelled without error (Blunch, 2008). The factor loadings range from +/- 1 to 0, with higher factor loadings implying that the indicator is more representative of the latent construct. Factor loadings are expressed in terms of the variance in responses to the indicator which can be attributed to the latent factor, with the remaining variance considered to represent error variance (random or systematic error measurement). Comery and Lee (1992) propose that a factor loadings of .32 (10% variance explained) is poor, .45 (20% variance explained) is fair, .55 (30% variance explained) is good, .63 (40% variance explained) is very good and .71 or above (50%+ variance explained) is excellent. The covariance between observed indicators is also calculated. In this thesis, standard errors were not correlated, as suggested in previous research (for example, Boduszek, Shevlin, Mallet, Hyland & O'Kane, 2012; Bollen, 1989).

The type of estimation method employed was maximum likelihood (ML), which is considered reliable for large samples. It is a method of estimating the parameters of a statistical model given observations, by finding the parameter values that maximize the likelihood of making the observations given the parameters (Bollen, 1989). In order to test the theoretical model (the implied covariance matrix) against the actual model/data (the observed covariance matrix), the chi-square (χ^2) statistic can be utilised. The Chi-square statistic relates to the absolute fit of the specified model whereby a non-significant result reflects good model fit (Kline, 2010); essentially a non-

116

significant result implies no statistically significant difference between the actual covariance matrix and the model which has been specified to explain the covariance matrix. However, this can be sensitive to large samples and consequently alternative fit indices can be considered; the chi square statistic is still reported nonetheless (Kline, 2010).

In order to determine the fit of the specified model, incremental fit (relative fit) indices are considered. The Comparative Fit Indices (CFI, Bentler, 1990) and Tucker Lewis Index (TLI, Tucker & Lewis, 1973) are utilised as they indicate the level of fit between the data and the specified model compared to a null model in which no relationship exists. The values of CFI and TLI range from 0 to 1 (values above .90 indicate adequate fit and values above .95 indicate a good model fit) (Bentler, 1990; Hu and Bentler, 1999; Vandenberg, 2002). In addition to assessing the relative fit of the proposed model, it is also necessary to explore indices which demonstrate the level of error (measurement error/error variance) within the specified model. The Root-Mean-Square Error of Approximation (RMSEA) represents the square root of the average or mean of the covariance residuals; this is the differences between corresponding components of the observed and predicted covariance matrix. This fit statistic is employed as a supplement to the chi-squared statistic. The RMSEA provides confidence intervals for the point estimate with this set at 90%. When looking at the RMSEA statistic, zero represents a perfect fit, but the maximum is unlimited. It is suggested that RMSEA should be less than .08 (Browne & Cudeck, 1993) and ideally should be less than .05 (Stieger, 1990). Furthermore, it is considered that the upper confidence interval of the RMSEA should not exceed a value of .08 (Hu & Bentler, 1998).

In SEM, the measurement level and the structural level are estimated simultaneously, and is represented in diagrammatic form.

When observing the SEM model, square boxes (or rectangles) represent the observed variables. Attached to observed variables is an arrow which indicates an error term. It is important to note that observed variables which can be precisely measured do not include an error term. The latent factors in the model are represented by circles/ovals.

Directional relationships between variables are indicated via the use of single headed arrows; these are also referred to as paths. Arrows from the exogenous variable are directed toward the items (observed variables) which load onto the variable to represent regression (latent constructs are regressed on the items used to capture the latent factor). Exogenous variables (IVs) within the model are those which release the arrows but do not receive arrows. Arrows from the exogenous variables are directed toward the endogenous variable (DV) to indicate the direction of the relationship. As the endogenous variable is a latent factor, it both emits and receives arrows (e.g., mediators).

3.10 Ethical approval

Ethical approval for the study was gained from the Human and Health Sciences School Research Ethics Panel (SREP) at the University of Huddersfield in July 2014.

3.10.1 Ethical considerations and issues of rigour

The procedures employed followed appropriate guidance from the British Psychology Society (2009) and the University of Huddersfield (School of Human and Health Science).

Informed consent: Information on the study was provided to all potential participants to ensure that they were fully informed. After reading the details, participants were able to indicate their informed consent by clicking the 'consent' option on screen. The survey was only made visible to participants following the obtainment of their expressed consent. This was important to ensure that participants could anticipate the consequences of their research participation, especially as the topic of stress may be a sensitive issues. This contributed to ensuring protection from harm (BPS, 2009).

Voluntary Participation: No obligations were placed upon potential participants nor were any incentives offered to promote participation. Whilst incentives can often increase participation, this may incur response bias; the appropriateness of incentives remains undetermined (McGovern, Canning, & Bärnighausen, 2018). As participation was entirely voluntary, this can contribute to enhancing the validity of the findings.

Right to withdraw: Participants were also made aware that they had the right to opt out of answering a particular question if desired. They also had the right to withdraw from the research entirely by contacting the researcher. However, it was explicitly stated from the outset that complete withdrawal would not be possible after April 2015 (as it was assumed that data would be analysed by this point).

Anonymity: Participants were not required to provide their name or state any details which would allow them to be identified; only specified demographics (age, years of teaching practice, and area of teaching) were obtained. As anonymity promotes participation, this contributes to a better response rate which increases the validity and reliability of the responses (Coolican, 2009).

Confidentiality: Collected data was stored on a password protected laptop. Raw data was only available to the researcher and the supervisory team. All data and information is to be securely destroyed after a period of five years (in 2019/20). This is in keeping with BPS guidelines.

Support and availability of results: The researcher's contact details were provided so that participants could obtain further information if required. It was not possible to send a summary of the findings to all participants as they could not be individually identified (this is in keeping with ensuring anonymity). However, in ensuring good practice, all participants were informed that they could receive a copy of the research findings upon request by contacting the researcher (BPS, 2009).

Reliability and validity is further promoted in the study by the application of the measures used to assess participants. These measures are existent data collection tools which have been tested and standardised. This is also advantageous in permitting replication of the study design and allowing comparisons with existent literature (Howitt & Cramer, 2017).

3.11 Chapter summary

This chapter has provided details on the epistemology, theoretical perspective, methodology and methods of the study which is incorporated in this thesis. Specific information has been provided on the procedures, participants, measures and analytic procedures (including appropriate software programmes and consideration of issues of ethics and rigour) which are relevant to each part of the study. By offering such detail, this chapter has provided clarity which can enhance understanding in relation to the study method and conduct and will assist the interpretation of the result sections detailed for each part of the study reported in the following chapters of this thesis.

CHAPTER 4
Part 1: Motivation and satisfaction in secondary school teaching

4.1 Chapter introduction

This chapter presents the first empirical investigation of the thesis. The aim of this analysis was to explore the relationship between motivation, specifically Self Determination Theory (autonomy, competence, and relatedness) (Ryan & Deci, 2001), and satisfaction in a sample of teachers working in secondary schools in England (N= 1288). To achieve this aim, structural equation modelling was applied to provide a robust analysis of the data. Potential disparities between male and female teachers were also investigated. The findings are considered in line with the therapeutic community ideology to promote understanding of the school context to potentially foster satisfaction in teaching (Macdonald & Winship, 2016).

4.2 Rationale

It has been detailed throughout chapter 1 that continued educational reforms within the contemporary school context can negatively impact the teacher role (for example, Glenville-Cleave & Boniwell, 2012; Fink, 2003). Managing the changing nature of the classroom environment is often influenced by teachers' beliefs and personal motivation (Klassen et al., 2008). Esdar, Gorge and Wild (2016), highlight motivation as an important factor to individual satisfaction, wellbeing, and performance. Several factors have been reported to relate to teacher motivation, and much of the research reviewed in chapter 2 had explored the factors of SDT (refer to Table 2.2). The findings offer mix support for the factors of SDT in relation to satisfaction. Some findings show that autonomy, competence, and relatedness, are all related to teacher motivation and satisfaction (Wininger & Birkholz, 2013) whilst other results show that not all of these factors are significant (for example, Wilkesman & Schmid, 2014).

The concept of professional autonomy is a key concern within the contemporary educational system in England, and the department for Education (2010, p.8) states, 'what is needed most of all is decisive action to free our teachers from constraint and improve their professional status and authority'. It has been shown that autonomous teaching practice is related to autonomous learning in students, and is further beneficial to student achievement (Marshik, Ashton & Algina, 2017; Reeve & Jang, 2006; Brill & McCartney, 2008). However, continuous changes within education can reduce autonomous teaching; this is most notable at the secondary school level (Glenville-Cleave & Boniwell, 2012; Hargreaves & Shirley, 2009; Hargreaves, 2000); This may offer some explanation of why autonomy is not necessarily of paramount importance within the teacher role (Brookfield, 2006). Many teachers provide rigid and structured teaching sessions, which is often considered to be reflective of the teacher's aim to ensure that educational targets are achieved (Kelly, Dorf, Pratt & Hohmann, 2014). Alternative, it has been suggested that not all teachers need a high

level of control in their role to experience satisfaction (Griva & Joekes, 2003).

The development of professional competence is important to satisfaction and teachers must be proficient in their practice to meet the varying demands of the job (Rots, Kelchtemans & Aelterman, 2012; Stoll et al., 2006; Polk, 2006). Vitto (2003) suggests that approaches to learning which are relationship-driven promote student motivation and should be regarded as complimentary to meeting the demands of the role, rather than contradictory. When teachers are satisfied in role, this can impact positively on the experience of the learner. However, when the relatedness with students is not facilitating, it has been shown that this may influence the quitting intentions of teachers (Schwarzer & Hallam, 2008); the decline in the teacher workforce at the secondary school level in England (Department for Education, 2017), make this particular teacher population noteworthy of further study.

It has also been suggested that teachers seek support through meaningful interactions with colleagues (Stoll et al., 2006; Timms & Brough, 2013). Collaborative teacher working may increase confidence which promotes wellbeing and satisfaction, and can further contribute to enhancing knowledge. This may be made possible within the school setting which can foster a beneficial community to teachers (Huppert & Johnson, 2010; Vescio et al., 2008). Existent literature has also focussed on exploring teachers across different stages of their professional career, for example, Guglielmi, Bruni, Simbula, Fraccaroli, and Depolo, (2016) found that younger teachers were driven by the opportunity for collegial relationships and personal development. It was also shown that having the opportunity to demonstrate professional competency was more dominant in older teachers. Consequently, it may be most appropriate to explore needs and satisfaction in teaching with reference to teacher age and years of teaching practice.

It is recognised that contextual factors have the ability to facilitate self-determined teaching motivation and contribute to satisfying the needs for autonomy, competence, and relatedness (Roth 2007; Wagner & French, 2010). Related research has recognised the therapeutic potential of the primary school setting (Macdonald & Winship, 2016). Such research introduces new avenues for future research to utilise the therapeutic community ideology within educational settings. The context of the school may provide a platform for facilitating teacher wellbeing, positive functioning and the satisfaction of personal needs. As it has been shown that the innate needs as advocated by SDT (autonomy, competence, and relatedness) are applicable to the teaching domain, this theoretical framework is consequently suitable for further exploration. Consequently, Part 1 of the study seeks to explore the relationship between the factors of SDT and teaching satisfaction, with specific reference to teachers working in secondary schools in England.

The literature review highlighted a number of factors pertinent to the focus of the current study. Job satisfaction has been extensively explored with reference to teachers (Federici, 2013). The concept of job satisfaction is diverse and has been explored using a variety of measures (Crossman & Harris, 2006). Consequently, what constitutes satisfaction within the teacher role may be determined by the focus of the current study, with job satisfaction and teaching satisfaction potentially offering a different perspective. In addition, discrimination between viewing teaching as a job, and teaching as a career, is important given that the latter is more relevant to understanding teaching as an opportunity for growth and development which may promote personal satisfaction (Dahling & Lauricella, 2017). Therefore, it is necessary to explore satisfaction in teaching using a measure which encapsulates teaching as a career and which holds specific relevance to the intended sample. Identifying specific factors which relate to satisfaction will help inform future educational practice and policy to be better tailored for the interests of those within the school community.

Furthermore, in the current study, it is necessary to consider the potential diversity that may exist between male and female teachers as existent research has reported gendered findings. For example, Liu and Ramsey (2008) found that females experience less job satisfaction than males. Explanations of the diversity in satisfaction outcomes have typically included role conflict and student misbehaviour (Greenglass & Burke, 2003; Klassen & Chui, 2010). Alhija (2015) also found that female teachers report social support as more necessary in facilitating a positive working environment. Being satisfied with teaching is of paramount importance as it is recognised that teacher wellbeing and student wellbeing is interrelated (Roffey, 2012). It is noted that a positive school environment can foster healthy growth and provide satisfaction by permitting individual needs to be attained (Timms & Brough, 2013). A variety of individual differences may be recognised with regards to satisfaction and the factors which may contribute to, or indeed hinder, the aspects of satisfaction within the school context.
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4.3 Summary of method

4.3.1 Participants

Participants were 1288 secondary school teachers in England (males $n=$ 468, females $n=820$); refer to 3.8.1 for full participant characteristics.

4.3.2 Measures

A detailed description of the measures is provided in 3.6.2. The specific measures used in this part of the study are:

- Demographic Questions: male/female, age, and years of practice.

- Basic Psychological Needs at work Scale (Deci, Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001; Ilardi, Leone, Kasser, & Ryan, 1993; Kasser, Davey, & Ryan, 1992).

- Teaching Satisfaction Scale (TSS) (Ho & Au, 2006).

4.3.3 Procedure

Following a multi-staged recruitment process (see 3.8), and in compliance with ethical guidelines (see 3.10.1), data was collected using the online survey (Qualtrics, 2017). Sections 1, 3, and 4 of the survey incorporated the measures which were needed for part one of the study. These measures were relevant to answering research questions 1, 2, and 3 of this thesis:

1: Is there a relationship between motivation and satisfaction at work?

2: Can the school context offer a therapeutic environment for teachers?

3: Is there a significant difference between male and female teachers with regards to factors explored?

4.3.4 Analysis

Preliminary analysis was conducted in SPSS 22 (IBM, 2017) to ensure the suitability of data for structural equation modelling (SEM). Descriptive statistics and Pearson product-moment correlation coefficients were analysed for all continuous variables. The model of teaching satisfaction was specified and assessed in AMOS 22 (IBM, 2017) using SEM techniques (see Figure 4.1). SEM is a multivariate approach which employs a confirmatory approach to data analysis, permitting testing of a specified model (Kline, 2013). Simultaneous analysis of regression coefficients, means and variances was achieved through the application of SEM which involves a combination of both factor analysis and path analysis.

The first stage focussed on the measurement level; using confirmatory factor analysis (CFA) techniques, factor loadings were determined. The fit between the collected data and the specified model was assessed using goodness-of-fit indices: chi square, root-mean-square error of approximation (RMSEA; Steiger, 1990) with 90% confidence interval (90% CI), Tucker Lewis Index (TLI; Tucker & Lewis, 1973) and Comparative Fit Index (CFI; Bentler, 1990).

The second stage focussed on the structural level which relates to correlations between the defined variables; these are presented pictorially in a path diagram (Cohen & Cohen, 1983); refer to 3.9.3 for details on viewing the SEM model. SEM permitted simultaneous testing of the measurement level and structural level, promoting theory testing by verifying associations between observed and latent factors in the specified model (Bryne, 2013). The latent factors of Self Determination Theory (SDT) were autonomy, competence and relatedness. Teaching satisfaction was also a latent variable. Co-variables included in the model were participants' age and years of teaching practice.

The specified model was initially applied to the full sample of teachers to analyse the overall model fit; this incorporated all direct

paths from predictors (autonomy, competence and relatedness) and covariates (age and years of practice) to teaching satisfaction. This testing was then repeated on split samples in order to test the application of the model to male and female teachers independently.
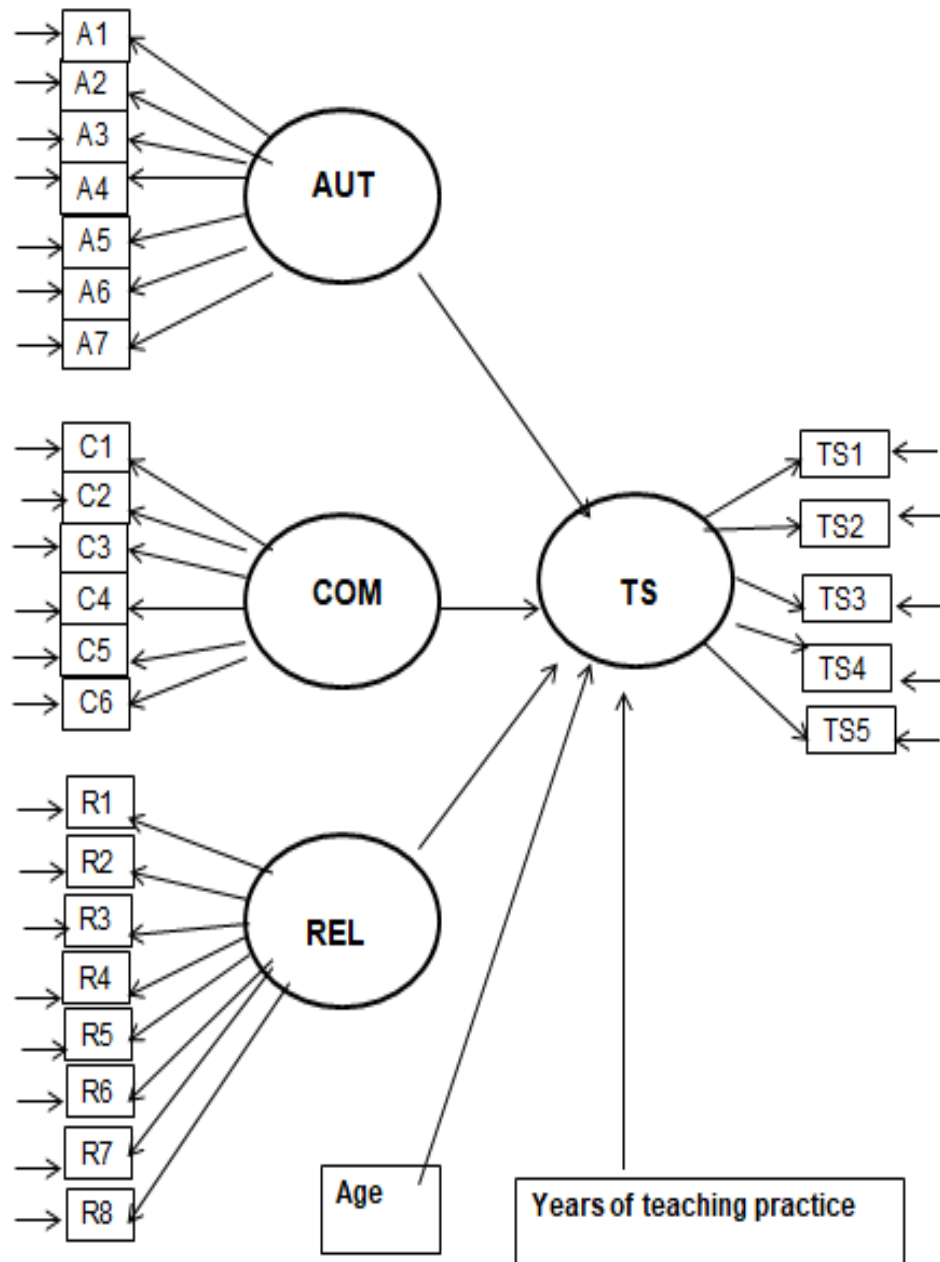
Figure 4.1. Structural equation model of teaching satisfaction.
AUT= Autonomy; COM= Competence; REL= Relatedness; TS =
Teaching Satisfaction

4.4 Results

The model was first tested on the full sample of teachers. This was then repeated on split samples to assess if the model could be fitted to a male only sample and a female only sample.

4.4.1 Descriptive statistics and correlations

Descriptive statistics including means (M), standard deviations (SD) and ranges for all variables are presented in Table 4.1, along with Cronbach's alpha reliability statistics for the measures used (Cronbach, 1951). Correlations between the continuous variables were assessed using Pearson product-moment correlation coefficient and are presented in Table 4.2. Age was found to be positively correlated with years of practice (r=.771), teaching satisfaction (r=.095), and autonomy (r=.084). Years of practice was positively correlated with teaching satisfaction (r=.153), autonomy (r=.135), and competence (r=.092). Teaching satisfaction was positively correlated with autonomy (r=.630), competence (r=.636), and relatedness (r=.286).

Table 4.1

Descriptive Statistics and Reliability of the Measures included in the study

Scale	M	SD	Range	Possible range	Chronbach's Alpha (α)
Autonomy	28.46	7.77	7 - 49	7 – 49	.82
Competence	29.06	6.35	7 - 42	6 - 42	.74
Relatedness	41.07	7.98	13 - 56	8 - 56	.84
Teaching satisfaction	15.44	4.96	5 - 25	5 - 25	.90

Table 4.2

Correlations between age, years of practice, teaching satisfaction, autonomy, competence, and relatedness

	Age	YP	TS	AUT	COM	REL
Age	-					
YP	.771**	-				
TS	.095**	.153**	-			
AUT	.084**	.135**	.630**	-		
COM	.021	.092**	.636**	.674	-	
REL	.006	.032	.286**	.504	.487	-

Note. YP = Years of Practice; TS = Teaching Satisfaction; AUT = Autonomy; COM = Competence; REL = Relatedness **p<.01.

4.4.2 Structural Equation Modelling (SEM)

The first step was to analyse the overall fit of the model which incorporates all direct paths from predictors (autonomy, competence and relatedness) and covariates (age and years of teaching practice) to teaching satisfaction.

The Chi-square statistic relates to the fit of the specified model whereby a non-significant result reflects good model fit (Kline, 2010). Comparative fit indices (CFI) and Tucker Lewis Index (TLI) indicates the level of fit between the data and the specified model compared to a null model in which no relationship exists (values above .90 indicate adequate fit), (Hu & Bentler, 1999). Root-mean-square error of approximation (RMSEA) relates to error within the model (Browne & Cudeck, 1989), with values less than .05 indicating a good fit, and values up to .08 indicating reasonable errors of approximation in the sample. These are presented in Table 4.3.

Table 4.3

Fit indices for the model of teaching satisfaction in the full sample and gender split samples.

	Full sample	Male sample	Female sample
χ^2	2119.12	1113.14	1384.12
df	337	337	337
p	<.05	<.05	<.05
CFI	.88	.85	.89
TLI	.85	.82	.87
RMSEA	.064	.070	.062
90% CI	.061/.067	.066/.075	.058/.065

Note. CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root-Mean-Square Error of Approximation; CI = Confidence Interval.

4.4.2.1 Full sample

In the full sample, the fit of the specified model indicated an acceptable model fit (X^2 (337) = 2119.12, p <.05, CFI=.88, TLI=.85, RMSEA=.061 [90% CI = .061/.067]. See Table 4.3.

At the measurement level, all observed variables were significantly correlated with the latent factor they represent (all values were p<.001). All regression weights ranged from β =.41 to β =.89, indicating moderate to strong correlations (see Table 4.4). The relationships between teaching satisfaction and the latent factors of SDT (autonomy, competence, and relatedness) were investigated while controlling for covariates (age and years of teaching practice).

A significant direct effect was noted for the relationship between competence and teaching satisfaction (β = .785, p<.001). All other predictors and covariates (autonomy, relatedness, age, and years of teaching practice) were not significantly associated with the outcome variable (teaching satisfaction) (see Table 4.5).

4.4.2.2 Male sample

In the male only sample, the fit of the specified model indicated an acceptable model fit (X^2 (337) = 1113.14, p <.05, CFI=.85, TLI=.82, RMSEA=.070 [90% CI = .066/.075]. See Table 4.3.

At the measurement level, all observed variables were significantly correlated with the latent factor they represent (all values were p<.001). All regression weights ranged from β =.38 to β =.90, indicating moderate to strong correlations (see Table 4.4). The relationships between teaching satisfaction and the latent factors of SDT (autonomy, competence, and relatedness) were investigated while controlling for covariates (age and years of practice).

137

A significant direct effect was noted for the relationship between competence and teaching satisfaction (β = .843, p<.001). All other predictors and covariates (autonomy, relatedness, age, and years of teaching practice) were not significantly associated with the outcome variable (teaching satisfaction) (see Table 4.5).

4.4.2.3 Female sample

In the female only sample, the fit of the specified model indicated an acceptable model fit (X² (337) = 1384.12, p <.05, CFI=.89, TLI=.87, RMSEA=.062 [90% CI = .058/.065]. See Table 4.3.

At the measurement level, all observed variables were significantly correlated with the latent factor they represent (all values were p<.001). All regression weights ranged from β =.47 to β =.89, indicating moderate to strong correlations (see Table 4.4). The relationships between teaching satisfaction and the latent factors of SDT (autonomy, competence, and relatedness) were investigated while controlling for covariates (age and years of teaching practice).

A significant direct effect was noted for the relationship between competence and teaching satisfaction (β = .736, p<.001). All other predictors and covariates (autonomy, relatedness, age, and years of teaching practice) were not significantly associated with the outcome variable (teaching satisfaction) (see Table 4.5).

Table 4.4

Measurement level of the SEM of teaching satisfaction

Variables	Full sample			Males			Females		
	β	B	SE	β	B	SE	β	B	SE
TSS1	.761***	1.00	-	.783***	1.00	-	.745***	1.00	-
TSS2	.764***	1.00	.040	.770***	.983	.063	.759***	1.011	.052
TSS3	.890***	1.206	.041	.899***	1.214	.064	.885***	1.208	.053
TSS4	.826***	1.027	.038	.811***	.969	.058	.834***	1.066	.050
TSS5	.760***	1.148	.046	.783***	1.134	.071	.746***	1.158	.061
AUT20	.636***	1.00	-	.656***	1.00	-	.628***	1.00	-
AUT17	.587***	.893	.051	.549***	.857	.085	.607***	.907	.063
AUT13	.753***	1.232	.058	.740***	1.236	.095	.762***	1.229	.072
AUT11	.456***	.704	.050	.384***	.593	.082	.489***	.749	.063
AUT8	.737***	1.172	.056	.695***	1.091	.088	.756***	1.204	.071
AUT5	.412***	.629	.049	.405***	.627	.082	.413***	.624	.061
AUT1	.761***	1.286	.060	.738***	1.222	.094	.775***	1.313	.076
COM19	.544***	1.00	-	.510***	1.00	-	.563***	1.00	-
COM14	.535***	1.008	.069	.535***	1.085	.128	.529***	.962	.082
COM12	.821***	1.464	.078	.849***	1.655	.153	.807***	1.374	.089
COM10	.590***	1.108	.071	.646***	1.267	.133	.557***	1.025	.084
COM4	.451***	.838	.065	.426***	.837	.116	.466***	.843	.079

COM3	.457***	.822	.063	.430***	.841	.115	.467***	.804	.075
REL21	.699***	1.00	-	.635***	1.00	-	.725***	1.00	-
REL18	.615***	.910	.047	.574***	.993	.098	.638***	.886	.053
REL16	.524***	1.166	.069	.423***	1.072	.137	.571***	1.201	.080
REL15	.740***	1.345	.058	.669***	1.321	.114	.765***	1.347	.067
REL9	.707***	1.364	.061	.636***	1.419	.128	.735***	1.331	.069
REL7	.446***	.956	.066	.425***	1.083	.138	.460***	.918	.076
REL6	.703***	.958	.043	.715***	1.141	.094	.698***	.889	.048
REL2	.800***	1.364	.055	.806***	1.589	.120	.798***	1.283	.061

Note. TSS = Teaching Satisfaction Scale; AUT = Autonomy; COM = Competence; REL = Relatedness

*** $p < .001$.

Table 4.5

Structural level of the proposed model of the relationship between teaching satisfaction, three factors of Self Determination Theory, years of teaching practice, and age.

Variables	Full sample			Males			Females		
	β	B	SE	β	B	SE	β	B	SE
AUT ->TSS	.040	.027	.056	.068	.051	.113	-.043	-.027	.065
COM ->TSS	.785***	1.009	.125	.843***	1.185	.254	.736***	.904	.144
REL -> TSS	-.037	-.030	.030	-.096	-.086	.054	.008	.005	.036
TY -> TSS	.047	.004	.004	.015	.001	.006	.075	.007	.004
Age-> TSS	.032	.003	.003	.033	.003	.005	.030	.002	.004

Note. TSS = Teaching Satisfaction; AUT = Autonomy; COM = Competence; REL = Relatedness; TY = Teaching Years.
* p < .05; ** p < .01; *** p < .001.

4.5 Discussion

This is the first known research to investigate the association between motivation, specifically the factors of Self-Determination Theory (autonomy, competence and relatedness) (Ryan & Deci, 2000), and teaching satisfaction (Ho & Au, 2006) in a sample of secondary school teachers in England. A model has been specified and tested using structural equation modelling (SEM). As an advanced statistical procedure, SEM has been used to identify relationships between the concepts of interest (Blunch, 2008). Furthermore, the large sample utilised is appropriate for promoting sufficient statistical power which further supports validity of the findings (Westland, 2010). The results of this study demonstrate that the structural model specified can be successfully applied to both male and female teachers working in secondary schools in England; refer to Table 4.3.

The covariates included in the model do not significantly relate to teaching satisfaction. This demonstrates that the age of the teacher and the years of teaching practice are not associated with teaching satisfaction in the sample. Unsurprisingly, the number of years of teaching practice will generally related to age; typically older teachers will have worked in this sector for longer. The lack of a significant association between age and teaching satisfaction, and between years of practice and teaching satisfaction within the current findings offers a different understanding to previous research which has noted differences across stages of teachers' careers, typically reporting a decrease in satisfaction over time (Guglielmi et al., 2016; Anghelache, 2015); this suggests that other factors may offer a more appropriate understanding of satisfaction in the teacher role.

4.5.1 Personal motivation and teaching satisfaction

With reference to the factors of SDT, only competence was shown to have a significant relationship with teaching satisfaction across all three samples (full sample; male sample; female sample);

refer to Table 4.5. Both autonomy and relatedness were not shown to be significantly related to teaching satisfaction. Consequently, previous research which has advocated that all factors of SDT relate to satisfaction (for example, Wininger & Birkholz, 2013) is not supported by the current study findings.

Given the target-orientated nature of contemporary education (as outlined in chapter 1), being competent in role is advantageous in achieving required outcomes (Roth et al., 2007). Competence motivation theory (Harter, 1978) suggests that individuals are motivated to partake in challenges and activities in which they feel competent. Thus, if teacher competence is well developed, they would be more engaged with teaching, which would link to satisfaction. As the results of the current study are based on teachers' self-reporting of competence, enhancing teacher's efficacy beliefs is important within educational settings (Bandura, 1997a); some existent literature reviewed in chapter 2 had explored the role of teacher self-efficacy beliefs (for example, Klassen 2008). Together, this demonstrates that it is necessary that schools facilitate self-efficacy and implement strategies which could enhance teacher competence and satisfaction.

In order to improve professional practice and to promote competence within the teacher role, it has been proposed that teachers should reflect on their practice. Reflection often serves as a useful tool in enabling teachers to become aware of their key skills whilst also highlighting potential areas for development (Zwozdiak-Myers, 2012). Jensen, Skibsted, and Christensen (2015) suggest that reflection to improve practice should not only be centred on classroom competencies but should also consider the teacher's competence in establishing and maintaining relationships within the school setting. This stance illuminates the association between competence and relatedness as a potential dual concept of relational competence.

It has been previously documented that positive relationships with colleagues contribute to teachers' sense of competence within a professional learning community (Owen, 2016). From this perspective, the significance of competence and its association with teaching satisfaction, as reported within the current study findings, may incorporate elements of such collegial relatedness. Therefore it may be that the needs as suggested by SDT are to some extent co-dependant; although descriptive statistics from the current study do not advocate a significant relationship between the two factors. Nonetheless, future research could seek to obtain teachers' perspectives on the impact of colleagues in promoting teaching ability in order to enhance knowledge and competence in the school context.

The findings of this research support the need for continuing professional development for teachers to aid proficiency within the professional role. This would ensure that teachers remain up to date with the evolving demands of the job and would contribute to competence and teaching satisfaction (Day & Gu, 2013: Lewis & Zibrarass, 2013). The results offer support to previous related research which has highlighted the importance of competency to promote job satisfaction (Stoll et al., 2006).

Whilst the relationship between relatedness and teaching satisfaction was not shown to be significant in the current study findings, previous research has noted the importance of such relationships within school (Sturman et al., 2005; Timms & Brough, 2013). However, the achievement culture of contemporary school settings can prevent the establishment and maintenance of effective relationships as teachers are focussed on meeting expected demands (Klassen et al., 2008). Alternatively it may be that additional factors such as performance related pay (as advocated in many schools) restrict s relationship building with colleagues (Wragg, 2002); this is currently speculative and was not explicitly explored within the current research design.

In relation to the non-significant relationship between autonomy and teaching satisfaction, several explanations of this finding could be deliberated. Grenville-Cleave and Boniwell, (2012) consider that innovative and autonomous teaching is restricted due to the structured framework of the schooling environment which dictates the programme and pace of study. In the target driven culture of the contemporary teaching role it may be that the school environment does not have the capacity to meet this psychological need, nor is it essential to ensure teaching satisfaction (Hargreaves & Shirley, 2009; Hargreaves, 2000). It would be of interest to explore if this is the case at other educational levels, such as in universities, where overarching guidelines are arguably less rigid; thus making it potentially more likely that autonomous teaching would be recognised (Wang & Hong, 2014). Although speculative at this point, such research may serve to recognise an association between autonomy and teaching satisfaction.

An alternative explanation for the non-significant result between autonomy and teaching satisfaction could be that job control within the teacher role may be unrelated to wellbeing and some teachers may prefer a predefined framework for teaching; this may relate to satisfaction for such teachers (Griva & Joekes, 2003). While such a standpoint may offer some support to the current study findings, this is of a minority, with much research in this area advocating the need for autonomous teaching to enhance satisfaction at work (Skaalvik & Skaalvik, 2014). Further research which is refined to explore teachers' views on the relationship between autonomy and teaching satisfaction may contribute to providing additional clarity in this area. Research which explicitly incorporates secondary school teachers would be advantageous with regards to the findings of the current study; this permitting comparative results. Development programmes which inspire innovative practice may permit greater teacher autonomy which could further contribute to teaching satisfaction. Such inclusions into a development strategy would further allow schools to act as a

therapeutic community by fostering motivation and positive emotions which would not only be of benefit to teachers but would also have positive effects on learners (Moe et al., 2010).

4.5.2 Therapeutic potential of the school

What is evident from the current study findings is the therapeutic potential of the school environment to facilitate satisfaction through facilitating the need for competence and teaching satisfaction to be achieved. When needs are met this contributes to individual wellbeing (Deci & Ryan, 2002).This standpoint aligns with the therapeutic ideology previously noted within the primary school context (Macdonald & Winship, 2016). The recognised association of competence and teaching satisfaction also demonstrates that the school setting is equally beneficial to both male and female teachers in England.

Building on these findings, further exploring more specifically the relationship between competence and satisfaction within the teaching role would be advantageous. Research to illuminate the factors which promote competence from a teacher perspective could potentially guide relevant training tailored to the needs of teachers. This may serve to explain how a teacher's ability to perform effectively can impact teaching satisfaction, which in turn may positively impact on the wellbeing of teachers. This would be further advantageous as the link between teacher wellbeing and student performance has been previously demonstrated (Roffey, 2012; Moe et al., 2010). Thus, the therapeutic potential of the school community is not limited to the micro level, but is beneficial on a more macro scale.

4.5.3 Male and female teachers

The current study findings indicate no differences between male and female secondary school teachers in England with regards to the relationships explored within the specified model. The relationship between competence and teaching satisfaction was significant in both

the male sample and the female sample. This suggests that competence is important to satisfaction for all teachers which may be considered advantageous when designing future training to enhance teaching practice and satisfaction within the professional role (Evans, 2002). In addition, no differences between male and female teachers were noted for the relationship between teaching satisfaction and autonomy, and between teaching satisfaction and relatedness, as both were shown to be non-significant. Further research into teachers views on autonomy and relationships within schools may enable understanding with regards to these factors.

4.5.3 Limitations

First, the application of self-report measures, reports teachers' perceived autonomy, competence, and relatedness within their role and this may not necessarily represent the views of others, such as managers, within the school. Given that the relationship between competence and satisfaction was shown to be significant for both males and females this is noteworthy of further exploration. An objective measure of competence based on supervisory report or measured performance may consequently contribute to enhancing knowledge on the relationship between competence and satisfaction at work.

Second, the findings cannot confirm whether teachers perceive that they experience autonomy and relatedness within their role in a general sense as this would potentially require a qualitative approach (Howitt & Cramer, 2017). It may be that teachers do experience autonomy and good relationships at work, but these may not be related to satisfaction. Research may therefore consider assessing this viewpoint independent of the teaching satisfaction concept.

Third, the teacher satisfaction concept was assessed using a one-dimensional measure which may not fully encapsulate the full complexity of satisfaction. Future research which could investigate the

potential factors of the teaching satisfaction concept may provide depth to the findings of the current analysis. Nonetheless, the measure of satisfaction utilised was appropriate in identifying teaching as a career-orient profession and was designed for explicit use with teachers. In using this measure, comparisons with existent literature which has also used it, is possible.

Finally, relatedness as measured within this study refers to 'people at work' and whilst this is intended to represent co-workers, it may be the case that some participants interpreted 'people' as students. With this in mind adaptation of the BPNW scale to specifically investigate 'teachers' as opposed to 'people' would provide further clarity to the results obtained. It may also be of benefit to explore the relationships with colleagues and the relationship with students as independent factors. Such divergence of the relatedness concept has been explored within previous research designs and has noted that both are of importance (Wininger & Birkholz, 2013).

148

4.6 Chapter summary

This chapter has presented the first empirical analysis of the thesis. A model was specified to explore the relationship between Self Determination Theory (Ryan & Deci, 2000) and teaching satisfaction (Ho & Au, 2006). A detailed discussion of the findings has been presented and offered a unique insight into motivation and satisfaction for teachers working in secondary schools in England.

In summary, for question one,
'Is there a relationship between motivation and satisfaction at work?'
The findings show there is a relationship between personal motivation and satisfaction for teachers working at the secondary school level in England, but only with reference to professional competency. The relationship between autonomy and teaching satisfaction was non-significant. This was also the case for the relationship between relatedness and teaching satisfaction.

In relation to question two,
'Can the school context offer a therapeutic environment for teachers?
The study has highlighted that the school context can offer a therapeutic environment to teachers, specifically in relation to permitting the need for competence to be obtained; this was shown with explicit reference to the relationship between competence and teaching satisfaction. It is suggested that the obtainment of needs relates to wellbeing (Ryan & Deci, 2001) and in this sense, the need to obtain competence has been recognised in the current study. The school setting can also facilitate satisfaction and it has been shown throughout this study that satisfaction relates most significantly to perceived competence. The findings have offered further support to the therapeutic ideology within school (Macdonald & Winship, 2016).

In relation to question three,

'Is there a significant difference between males and females with regards to factors explored?'

The results of the study demonstrated that there are no differences between male and female secondary school teachers with regards to the specified aspects of the teaching experience; the study focussed explicitly on the relationship between motivation and satisfaction in the school context. The relationship between competence and teaching satisfaction was shown to be significant for both male and female teachers, while the relationship between relatedness and satisfaction, and autonomy and satisfaction was not significant in both samples.

CHAPTER 5
Part 2: The moderating role of teaching satisfaction in the stress experiences of secondary school teachers

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5.1 Chapter Introduction

This chapter presents the second empirical investigation of the thesis. The aim of this analysis was to examine the moderating role of teaching satisfaction on the relationship between sources of teacher stress and the potential manifestations of stress in a sample of secondary school teachers (N= 1288). To achieve this aim, hierarchical moderated regression analysis was applied to provide a robust analysis of the data. A variety of potential sources of teacher stress were investigated with a focus on the associations these may have on different manifestations of stress from a biopsychosocial standpoint (Engel, 1980). Potential disparities between male and female teachers were also investigated. Teaching satisfaction was implicated as a personal resource for teachers in the Job Demands- Resources framework (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007; Demerouti, Bakker, Nachreiner & Schaufeli, 2001).

5.2 Rationale

Stress is the primary cause of work-related illness for individuals across all school sectors (HSE, 2015; Aloe, Amo & Shanahan, 2014). There has been a surge in research which has investigated a multitude of potential stressors within the school context (Klausman et al., 2008; Popov & Popov, 2015). Sources of teacher stress have often been reported to include workload, student misbehaviour, and time management issues (Alhija, 2015; Klassen & Chui, 2010; Kyriacou & Kunc, 2007; Sturman et al., 2005). Many teachers new to the profession reported the capacity of work to be unmanageable (Bettini et al., 2017). Furthermore, the reduction in the number of pastoral staff at the secondary school level in England may additionally contribute to teacher workloads (Vance, Pendergast, & Garvis, 2015; DfE, 2016).

Geving (2007) reported that unmotivated students are a major source of teacher stress. When students are not motivated, teachers have lower efficacy for teaching (Collie, Shapka, & Perry, 2012). Discipline issues within the classroom have also been reported to promote teacher stress (McCormick & Barnett, 2011). Research by Van den Berghe, Cardon, Tallir, Kirk, and Haerens (2016) noted a reciprocal relationship between students and teachers for classroom engagement. However, given that secondary school teachers often teach a variety of classes it can be difficult to establish such effective relationships. Nonetheless, teachers are under pressure to motivate challenging students in order to maximise achievement outcomes. Conversely, when teachers are stressed, they are less efficient in role which can impair the quality of the teaching provided to students (Wolgast, 2017). Given the target-orientated nature of the contemporary education section, as highlighted in chapter 1, this may further contribute to stress in teaching.

Time constraints often impact on relationship building within the school context (Wolgast, 2017). The need to relate with others is often considered an innate need which if not satisfied will contribute to negative wellbeing (Ryan & Deci, 2000). When stress in the workplace is not effectively managed this can lead to burnout, and it is suggested that when teachers experience burnout this negatively impacts the relationships with students (Cano-Garcia et al., 2005). This perspective continues to highlight the circularly nature of teacher- student relatedness which provides some understanding of stress maintenance in the school context.

When teachers are stressed they also become less invested in their job role. Hong (2012) noted that teachers who chose to leave the profession placed less value on the job and had lower efficacy beliefs than teachers who remain in the profession. Sturman et al. (2015) noted differences across teacher age groups, reporting that younger teachers place more value on the status of the teaching profession than older colleagues. This research into job investment and disengagement further demonstrated that lack of advancement may also be a potential indicator, and this was most noted for older teachers.

Throughout the literature reviewed (see Table 2.2), attention has also been given to potential differences between male and female teachers, both with reference to the sources of stress and the impact that such stressors may have on health outcomes. Existent literature has reported mixed results for teacher stress in males and females. Whilst several studies have shown that females are more stress due to discipline issues and workload (for example, Klassen & Chui, 2010), others have indicated no difference in stress outcomes between male and female teachers(Reilly, Dhingra, & Boduszek, 2014; Jepson & Forest, 2006). To further add to this complexity, a study focussing on the physiological measures of teachers, noted increased heart rate for male teachers which suggested elevated levels of stress (Serrano et al.,

2008). Further research to explore such potential differences in male and female teachers is warranted given the diversity in existing knowledge.

Research has also shown an association between stress and low levels of job satisfaction for teachers (Klassen, Usher & Bong, 2010). Dis-satisfaction with the job has also been related to student achievement (Moe et al., 2010), absenteeism, and attrition (Avis et al., 2011). The concept of job satisfaction has been extensively studied with regards to the teaching profession (Federici, 2013). Ho and Au (2006) suggest that teaching satisfaction is a unique concept which reflects a continued sense of satisfaction (refer to chapter 2).From this perspective, teaching satisfaction (or dis-satisfaction) may not necessarily be the outcome of stress, but may instead influence the relationship between potential stressors and stress outcomes within the school context.

Recent models of occupational stress, such as the Job Demands-Resources model (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007) aim to encapsulate the complexities of the modern teaching role while recognising individual differences in aspects of the teaching experience. From this perspective, job resources are the physical, psychological, social, or structural aspects of the job which reduce job demands and the associated biopsychosocial consequences, and which facilitate work goals and serve to stimulate psychological growth. Schaufeli and Bakker (2004) consider this as simultaneously representing wellbeing and negative health at work. In support of this standpoint, Hakanen, Schaufeli and Ahola (2008 p.224) further propose that the JD-R framework, 'may help to bridge the gap between "negative" and "positive" psychology'. This was based on research findings which noted job demands as primary indicators of negative health, and further noted that resources influence work engagement. Kyriacou (2001) suggests that teacher stress is the result of a relative lack of balance between demands and resources at school.

The demands of the modern teaching role are diverse and are both physical and psychosocial. In addition, resources may be both structural and/or individual (Mark & Smith, 2008). Adopting this viewpoint, a multitude of factors could be justifiably proposed as potential moderators in the relationship between job stressors and health outcomes for teachers. To date, no peer reviewed research has been found to investigate the moderating role of teaching satisfaction on the relationships between recognised sources of teacher stress (for example work-load, discipline issues, and professional distress) and biopsychosocial manifestations of stress. Given that teaching satisfaction has been proposed as a positive concept for growth and development, it may consequently serve as a personal resource in the JD-R framework. An exploration of such factors may promote a deeper understanding of teacher stress and may guide future practice and policy to ensure positive health outcomes for teachers within the school environment.

5.3 Summary of method

5.3.1 Participants

Participants were 1288 secondary school teachers in England (males $n=$ 468, females $n=$820); refer to 3.8.1 for full participant characteristics.

5.3.2 Measures

A detailed description of the measures is provided in 3.6.2. The specific measures used in this part of the study are:

- Demographic Questions: male/female, age, and years of practice.

- Teacher stress Inventory (Fimian, 1984).

- Teaching Satisfaction Scale (TSS) (Ho & Au, 2006).

5.3.3 Procedure

Following a multi-staged recruitment process (see 3.8), and in compliance with ethical guidelines (see 3.10.1), data was collected using the online survey (Qualtrics, 2017). Sections 1, 2, and 4 of the survey incorporated the measures which were needed for part two of the study. These measures were relevant to answering research questions 3 and 4 of this thesis:

3: Is there a significant difference between male and female teachers with regards to factors explored?

4: Can the concept of teaching satisfaction serve as an effective moderator/personal resource in the teacher stress experience?

5.3.4 Analysis

Typically scoring of the TSI involves summing results for stressors and manifestations to provide an overall stress score (Fimian, 1984). However for the purpose of this investigation, the scoring has been adapted. The rationale for this adaptation is to better explore specific relationships between stressors and outcomes in the teacher population. This permits a detailed understanding on the factors which are associated with stress, specifically in relation to a biopsychosocial perspective (Engel, 1980). To date, no known research has utilised this measure in this way.

Descriptive statistics, Pearson product-moment correlation coefficients and regression analysis were calculated using SPSS 22 (IBM, 2017). Preliminary analyses were conducted to ensure no violation of the assumption of normality, linearity and homoscedasticity. Additionally, the correlations between the predictor variables within each analysis were examined.

In order to test the moderating role of teaching satisfaction in the relationship between sources of teacher stress (time management (TM), work-related stressors (WS), professional distress (PD), discipline and motivation (DM), professional investment (PI)) and the different manifestations of stress, while controlling for age of participants and years of teaching practice, a hierarchical moderated multiple regression analysis (as the recommended method for investigating potential interaction effects (Cohen & Cohen, 1983)), was applied to the data. Significant interaction effects were investigated further using Modgraph 3.0 (Jose, 2013). Simple slopes were investigated for significant interactions. Only the standardized solution was reported.

For each manifestation, the analysis was firstly conducted on the full sample. This was then repeated on split samples in order to explore

potential differences in female and male teachers. The rationale for this sample split is based on previous research which has noted differences in stress experiences for male and female teachers (for example, Aloe et al., 2014). This will ensure that a more representative indication of potential aspects of stress for secondary school teachers is attained.

5.4 Results

Each manifestation of stress (emotional, fatigue, cardiovascular, gastronomical and behavioural) has been investigated independently.

5.4.1 Emotional Manifestations of stress

Descriptive statistics and correlations:

Descriptive statistics, including means (M), standard deviations (SD) and actual ranges are reported in Table 5.1 for age of participants, years of teaching practice, emotional manifestations of stress (EM), teaching satisfaction scores (TS), time management (TM), work stress (WS), professional distress (PD), discipline and motivation (DM) and professional investment (PI) scores. The descriptive statistics indicate that teachers generally scored around the mid-point on each measure. Cronbach's alpha reliability (Cronbach, 1951) and bivariate correlations between all continuous variables are also displayed in Table 5.1

Table 5.1

Descriptive statistics, correlations and reliability (emotional manifestations)

Variable	Age	TY	EM	TS	TM	WS	PD	DM	PI
Age	-								
Teaching years (TY)	.77***	-							
Emotional manifestation (EM)	-.06	-.07*	-						
Teaching satisfaction (TS)	.10**	.15***	-.40***	-					
Time management (TM)	-.16**	-.15***	.43***	-.30***	-				
Work stress (WS)	-.09**	-.10***	.45***	-.51***	.67***	-			
Professional distress (PD)	-.10***	-.16***	.30***	-.48***	.92***	.41***	-		
Discipline and motivation (DM)	-.14***	-.18***	.32***	-.42***	.26***	.36***	.33***	-	
Professional investment (PI)	-.05	-.11***	.38**	-.57***	.29***	.43***	.69***	.48***	-
Mean	41.35	13.57	13.78	15.44	28.26	22.62	14.23	15.47	9.76
Standard Deviation	10.85	9.86	5.85	4.96	5.45	5.71	5.52	6.53	3.90
Min-Max	21-67	0-43	5-25	5-25	9-40	6-30	5-25	6-30	4-20
Cronbach's alpha	N/A	N/A	.91	.90	.76	.89	.86	.92	.79

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

Correlations between predictor variables that were significant generally ranged from weak to moderate indicating that multicollinearity was unlikely to be a problem (Tabachnick & Fidell, 2007), see Table 5.1. The correlation between professional investment and professional distress was strong and reached a level that indicated a potential violation of multicollinearity (r=.69, p <.001). An inspection of the Tolerance and VIF statistics established that these levels were within acceptable ranges and on this basis it was decided to retain these two variables rather than collapse them into one. All predictor variables, except age, were statistically correlated with emotional manifestations of stress, which indicated that the data were suitably correlated with the outcome variable for examination through multiple linear regression to be reliable undertaken. Age was retained in the analyses due to previous research evidencing that age impacts stress experiences.

5.4.1.1 Moderated Regression Analysis (Full sample).

In the first step of hierarchical moderated multiple regression (Table 5.2), six predictor variables (teaching satisfaction, time management, work stress, professional distress, discipline and motivation, professional investment) were entered to test for direct effects on emotional manifestations of stress. This model (model 1) was statistically significant $F_{(6, 927)} = 65.79$, $p < .001$ and explained 30% of variance in emotional stress manifestations ($R^2 = .30$). All of the predictor variables, except professional distress, significantly contributed to the model. Results indicate that teachers reporting higher levels of time management stressors, professional investment stressors, work-related stressors and discipline and motivation stressors, experience higher levels of emotional stress manifestations. A negative correlation was observed for teaching satisfaction which implies that teachers with lower levels of teaching satisfaction experience higher levels of emotional stress. Professional distress was also negatively correlated with the outcome variable, although this relationship was not significant. Overall, time management had the

strongest relationship with emotional stress manifestations in this model

($\beta = .27$, $p < .001$).

Table 5.2

Hierarchical moderated regression model of emotional manifestation

Model	Variable	Full sample β (95% CI)	SE	Male β (95% CI)	SE	Female β (95% CI)	SE
1							
	Teaching satisfaction (TS)	-.17*** (-.24/-.10)	.04	-.13* (-.24/-.01)	.06	-.22*** (-.31/-.13)	.05
	Time management (TM)	.27*** (.17/.32)	.04	.22*** (.09/.33)	.06	.26*** (.17/.35)	.05
	Work stress (WS)	.12** (.04/.20)	.04	.09 (-.05/.21)	.07	.11* (.01/.22)	.05
	Professional distress (PD)	-.03 (-.11/.04)	.04	.02 (-.09/.14)	.06	-.06 (-.15/.04)	.05
	Discipline and motivation (DM)	.09** (.02/.15)	.03	.24*** (.14/.35)	.06	.01 (-.07/.09)	.04
	Professional investment (PI)	.14*** (.06/.23)	.04	.07 (-.07/.20)	.07	.18*** (.08/.29)	.05
2							
	Teaching satisfaction (TS)	-.16*** (-.23/-.09)	.04	-.12* (-.24/-.00)	.06	-.19*** (-.28/.10)	.05
	Time management (TM)	.25** (.17/.32)	.04	.26*** (.11/.34)	.06	.27*** (.17/.36)	.05
	Work stress (WS)	.13 (.04/.21)	.04	-.09 (-.04/.22)	.07	.11* (.00/.22)	.06
	Professional distress (PD)	-.02 (-.09/.06)	.04	.03 (-.09/.15)	.06	-.04 (-.14/.06)	.05
	Discipline and motivation (DM)	.08* (.01/.14)	.03	.21*** (.09/.33)	.06	.07 (-.06/.09)	.04
	Professional investment (PI)	.16*** (.07/.24)	.04	.12 (-.02/.26)	.07	.18*** (.08/.29)	.05
	TM x TS	.04 (-.03/.11)	.04	.05 (-.08/.17)	.06	.03 (-.05/.12)	.04
	WS x TS	-.11** (-.19/-.03)	.04	-.07 (-.20/.06)	.07	-.14** (-.24/-.04)	.05
	PD x TS	.09* (.02/.17)	.04	-.08 (-.20/.04)	.06	.22*** (.12/.32)	.05
	DM x TS	-.06 (-.12/.01)	.03	-.11 (-.22/.01)	.06	-.01 (-.09/.07)	.04
	PI x TS	.07 (-.01/.15)	.04	.18** (.05/.30)	.06	-.04 (-.15/.07)	.05
	Age	-.01 (-.07/.05)	.03	-.01 (-.08/.05)	.03	.02 (-.17/.21)	.09
	Teaching years	.05 (-.01/.11)	.03	.09 (-.00/.19)	.05	.02 (-.09/.13)	.06

Note: * *p* < .05; ** *p* < .01; *** *p* < .001

In the second step, interaction terms, coding interactions between teaching satisfaction and all five sources of stress (time management, work stress, professional distress, discipline and motivation, professional investment), were entered, while controlling for covariates (age and years of teaching practice).The incorporation of the interaction terms and covariates explained an additional 2% of variance (R^2 change = 02, $p < .05$) and this was statistically significant. The adjusted regression model (model 2) was significant and explained 32% of variance in emotional manifestations of stress scores $F_{(13, 920)}$ = 32.58, $p < .001$. Time management, discipline and motivation stressors and professional investment were all directly positively correlated with the outcome variable. Teaching satisfaction was negatively significantly correlated with the outcome variable. The relationship between interaction term 'work stress and teaching satisfaction' and emotional stress manifestations was statistically significant, indicating that the effect of work stressors on emotional stress is dependent upon the level of teaching satisfaction scores. In addition, the relationship between interaction term 'professional distress and teaching satisfaction' and emotional stress was also statistically significant, suggesting that the level of teaching satisfaction scores moderates the relationship between professional distress and emotional stress in the teacher sample (Table 5.2).

Simple slopes for the relationship between work stress and emotional stress and for the relationship between professional distress and emotional stress were investigated for low (-1 SD below the mean), medium (mean), and high (+1 SD above the mean) levels of teaching satisfaction. The simple slope for low levels (-1SD) of teaching satisfaction indicated a positive significant association between work stress and emotional stress, suggesting that work stress has a positive effect on emotional stress for teachers with low levels of teaching satisfaction (see Table 5.3 and Figure 5.1). With reference to professional distress, the simple slope for high levels (+1SD) of

teaching satisfaction indicated a positive significant association between professional distress and emotional stress whereas a significant negative association was observed for low levels (-1SD) of teaching satisfaction. The effect size for both low and high levels of teaching satisfaction were weak (-.10 and .09 respectively) (Cohen, 1988). The results suggest that professional distress has a significant effect on emotional stress manifestations and this effect was different for teachers with low and high levels of teaching satisfaction (see Table 5.3 and Figure 5.2).

Table 5.3

Simple slopes for moderating role of teaching satisfaction (TS)

Interaction terms	Simple slopes	Full sample		Males		Females	
		β	SE	β	SE	β	SE
Work stress x TS	High level of TS (+1 *SD*)	-.07	.05			-.11	.07
	Medium level of TS (*M*)	.04	.04			.03	.06
	Low level of TS (-1 *SD*)	.15**	.05			.18**	.07
Professional distress x TS	High level of TS (+1 *SD*)	.09*	.04			.20**	.06
	Medium level of TS (*M*)	-.01	.03			-.02	.05
	Low level of TS (-1 *SD*)	-.10*	.04			-.23***	.06
Professional investment x TS	High level of TS (+1 *SD*)			.20*	.08		
	Medium level of TS (*M*)			.06	.06		
	Low level of TS (-1 *SD*)			-.09	.07		

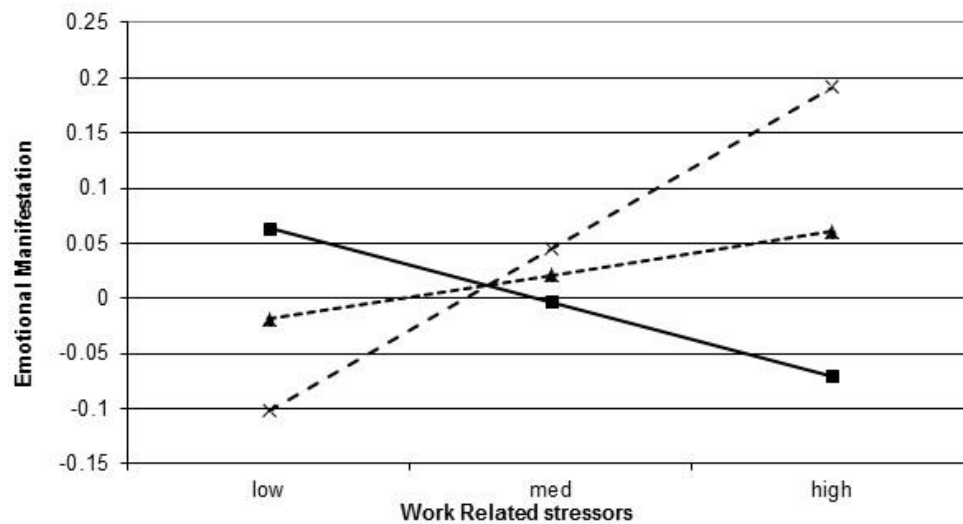*Note:* * $p < .05$; ** $p < .01$; *** $p < .001$

Figure 5.1
Interaction between work stress and teaching satisfaction in full sample

Note: solid line = high level of teaching satisfaction (+1SD); dotted line = medium level of teaching satisfaction (M); dashed line = low levels of teaching satisfaction (-1SD)

Figure 5.2
Interaction between professional distress and teaching satisfaction in
full sample

Note: solid line = high level of teaching satisfaction (+1SD); dotted line =
medium level of teaching satisfaction (M); dashed line = low levels of
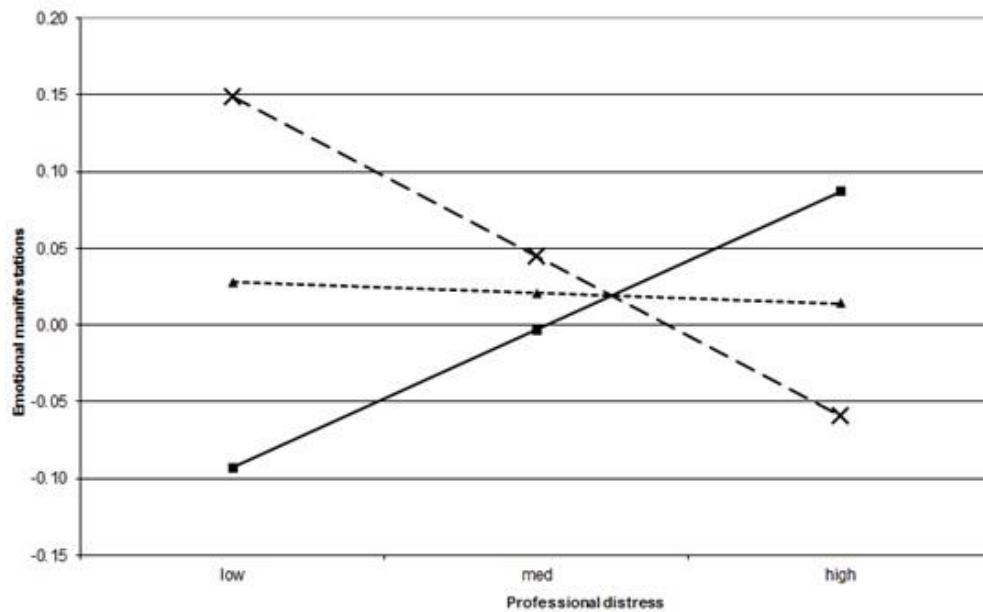teaching satisfaction (-1SD)

5.4.1.2 Moderated Regression Analysis (Male sample)

Model 1 (Table 5.2) was statistically significant F (6,330) = 25.92, p < .001 and explained 32% of variance in emotional stress manifestations (R² = .32). Time management and discipline and motivation had direct positive effects on emotional stress, with discipline and motivation recording the higher Beta value (β = .24, p <.001). Teaching satisfaction had a significant negative direct effect on the outcome variable, suggesting that teachers with lower levels of teaching satisfaction experience higher levels of emotional stress. Work stress, professional distress and professional investment did not significantly contribute to model 1.

The incorporation of the interaction terms and covariates explained an additional 3% of variance (R² change = 03, p <.05) and this is a statistically significant change. The adjusted regression model (model 2) was statistically significant and explained 35% of variance in emotional manifestations of stress scores F (13,334) = 13.44, p <.001. Time management and discipline and motivation stressors were both directly positively correlated with the outcome variable. Teaching satisfaction was negatively significantly correlated with the outcome variable. The relationship between interaction term 'professional investment and teaching satisfaction' was statistically significant; indicating that the effect of professional investment on emotional stress is dependent upon the level of teaching satisfaction scores (Table 5.2).

Simple slopes for the relationship between professional investment and emotional stress were investigated for low (-1 SD below the mean), medium (mean), and high (+1 SD above the mean) levels of teaching satisfaction. The simple slope for high levels (+1SD) of teaching satisfaction indicated a positive significant association between professional investment and emotional stress, suggesting that professional investment has an effect on emotional stress only for male teachers with high levels of teaching satisfaction (see Table 5.3 and

Figure 5.3). The effect size of this relationship was medium (.20) (Cohen, 1988).
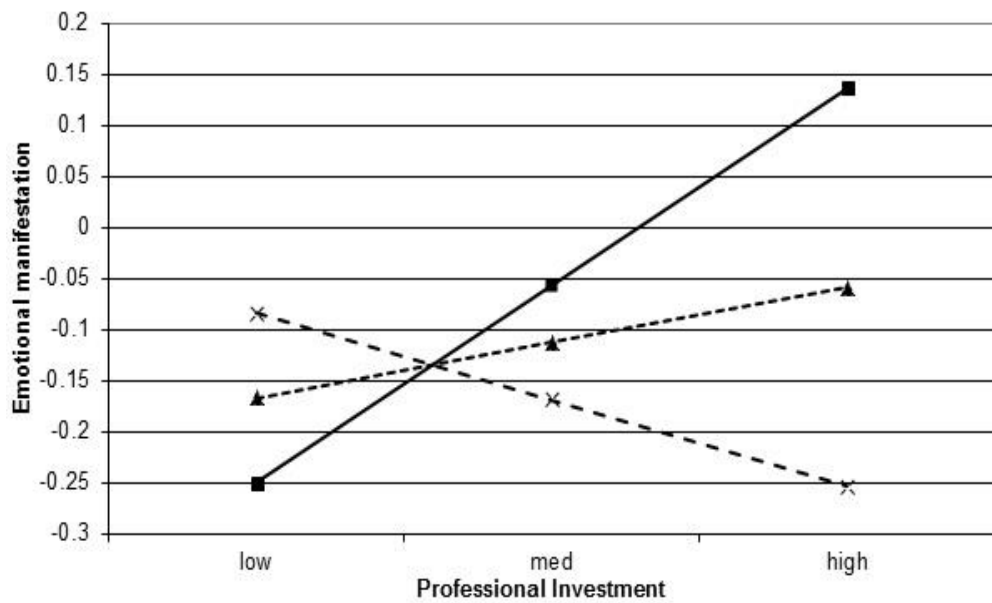
Figure 5.3
Interaction between professional investment and teaching satisfaction in male sample

Note: solid line = high level of teaching satisfaction (+1SD); dotted line = medium level of teaching satisfaction (M); dashed line = low levels of teaching satisfaction (-1SD)

5.4.1.3 Moderated Regression Analysis (Female sample)

Model 1 (Table 5.2) was statistically significant F (6, 586) = 41.19, p < .001 and explained 30% of variance in emotional stress manifestations (R^2 = .30). Positive direct effects were observed for time management, work stress and professional investment, with time management recording the highest Beta value (β = .26, p <.001). Teaching satisfaction had a significant negative direct effect on the outcome variable, suggesting that teachers with lower levels of teaching satisfaction experience higher levels of emotional stress. Professional distress and discipline and motivation did not significantly contribute to model 1.

The incorporation of the interaction terms and covariates explained an additional 3% of variance (R^2 change = .03, p <.05) and this was a statistically significant change. The adjusted regression model (model 2) was statistically significant and explained 33% of variance in emotional manifestations of stress scores F (13, 579) = 21.49, p <.001.

Time management, work-related, and professional investment stressors were both directly positively correlated with the outcome variable. Teaching satisfaction was significantly negatively associated with the outcome variable. The relationship between interaction term 'work stress and teaching satisfaction' and interaction term 'professional distress and teaching satisfaction' were both statistically significant, indicating that the effect of work stress and professional investment on emotional stress was dependent upon the level of teaching satisfaction scores (Table 5.2).

Simple slopes for the relationship between work stress and emotional stress and for the relationship between professional distress and emotional stress were investigated for low (-1 SD below the mean), medium (mean), and high (+1 SD above the mean) levels of teaching satisfaction. The simple slope for low levels (-1SD) of teaching

satisfaction indicated a positive significant association between work stress and emotional stress, suggesting that work stress had an effect on emotional stress only for teachers with low levels of teaching satisfaction. This effect size was small (.18) (Cohen, 1988) (see Table 5.3 and Figure 5.4). With reference to professional distress, the simple slope for high levels (+1SD) of teaching satisfaction indicated a positive significant association between professional distress and emotional stress whereas a significant negative association was observed for low levels (-1SD) of teaching satisfaction. The effect size for both low and high levels of teaching satisfaction were medium (-.23 and .20 respectively) (Cohen, 1988). Therefore, the result suggests that professional distress had a significant effect on emotional stress manifestations and this effect was different for female teachers with low and high levels of teaching satisfaction (see Table 5.3 and Figure 5.5).
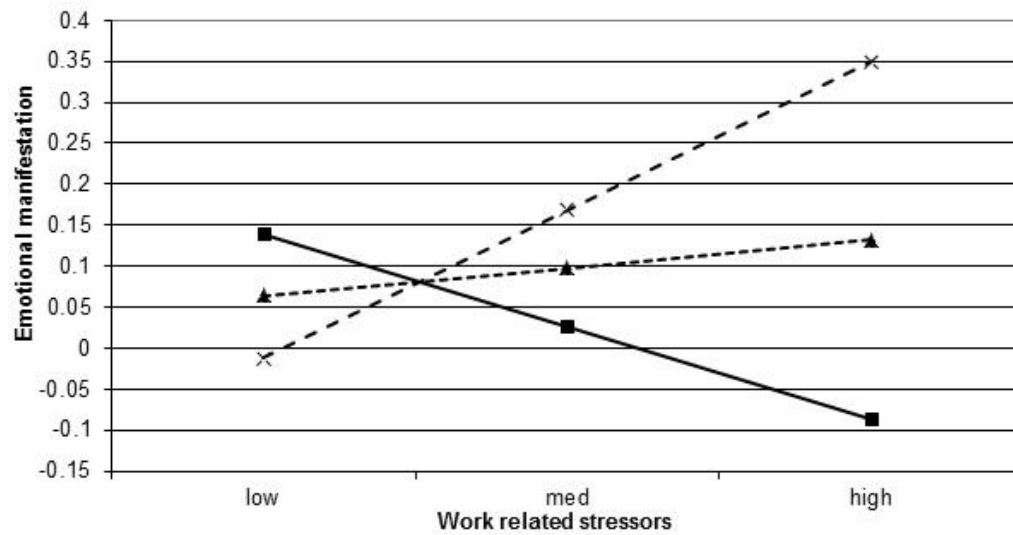
Figure 5.4
Interaction between work stress and teaching satisfaction in female
sample

Note: solid line = high level of teaching satisfaction (+1SD); dotted line =
medium level of teaching satisfaction (M); dashed line = low levels of
teaching satisfaction (-1SD)

Figure 5.5
Interaction between professional distress and teaching satisfaction in female sample

Note: solid line = high level of teaching satisfaction (+1SD); dotted line = medium level of teaching satisfaction (M); dashed line = low levels of teaching satisfaction (-1SD)
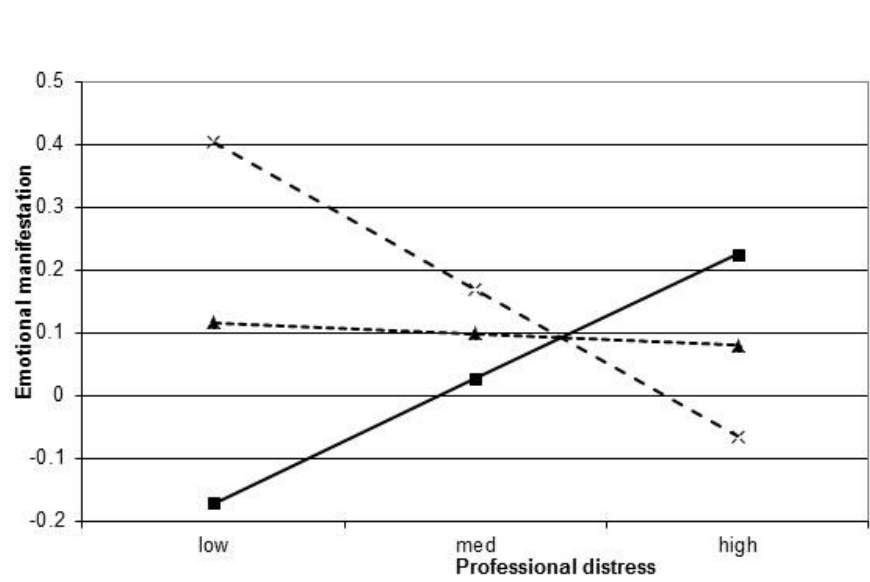
5.4.2 Fatigue Manifestations of stress

Descriptive statistics and correlations:

Descriptive statistics, including means (M), standard deviations (SD) and actual ranges are reported in Table 5.4 for age of participants, years of teaching practice, and fatigue manifestations of stress (FM), teaching satisfaction scores (TS), time management (TM), work stress (WS), professional distress (PD), discipline and motivation (DM) and professional investment (PI) scores. The descriptive statistics indicate that teachers generally scored around the mid-point on each measure. Cronbach's alpha reliability (Cronbach, 1951) and bivariate correlations between all continuous variables are also displayed in Table 5.4.

Table 5.4

Descriptive Statistics, correlations and reliability (fatigue manifestations)

Variable	Age	TY	FM	TS	TM	WS	PD	DM	PI
Age	-								
Teaching years (TY)	.48***	-							
Fatigue manifestation (FM)	-.09**	-.16***	-						
Teaching satisfaction (TS)	.05**	.15***	-.38***	-					
Time management (TM)	-.08**	-.15***	.41***	-.30***	-				
Work stress (WS)	-.04**	-.10***	.45***	-.51***	.67***	-			
Professional distress (PD)	-.04***	-.16***	.32***	-.48***	.29***	.41***	-		
Discipline and motivation (DM)	-.09***	-.18***	.36***	-.42***	.26***	.36***	.33***	-	
Professional investment (PI)	-.05	-.11***	.38***	-.57***	.29***	.43***	.68***	.48***	-
Mean	41.35	13.57	12.79	15.44	28.26	22.62	14.23	15.47	9.76
Standard Deviation	10.85	9.86	5.01	4.96	5.45	5.71	5.52	6.53	3.90
Min-Max	21-67	0-43	5-25	5-25	9-40	6-30	5-25	6-30	4-20
Cronbach's alpha	N/A	N/A	.80	.90	.76	.89	.86	.92	.79

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

Correlations between predictor variables that were significant generally ranged from weak to moderate indicating that multicollinearity was unlikely to be a problem (Tabachnick & Fidell, 2007), see Table 5.4. All predictor variables were statistically correlated with fatigue manifestations of stress, which indicated that the data were suitably correlated with the outcome variable for examination through multiple linear regression to be reliable undertaken.

5.4.2.1 Moderated Regression Analysis (Full sample).

In the first step of hierarchical moderated multiple regression (Table 5.5), six predictor variables (teaching satisfaction, time management, work stress, professional distress, discipline and motivation, professional investment) were entered to test for direct effects on fatigue manifestations of stress. This model (model 1) was statistically significant $F (6, 927) = 64.31$, $p < .001$ and explained 29% of variance in emotional stress manifestations ($R^2 = .29$). All of the predictor variables, except professional distress, significantly contributed to the model. Results indicate that teachers reporting higher levels of time management stressors, professional investment stressors, work-related stressors and discipline and motivation stressors, experience higher levels of fatigue stress manifestations. A negative correlation was observed for teaching satisfaction which implies that teachers with lower levels of teaching satisfaction experience higher levels of fatigue stress manifestations. Professional distress was also negatively correlated with the outcome variable, although this relationship was not significant. Overall, time management had the strongest relationship with fatigue manifestations in this model ($\beta = .20$, $p < .001$).

Table 5.5

Hierarchical moderated regression model of fatigue manifestation

Model	Variable	Full sample β (95% CI)	SE	Male β (95% CI)	SE	Female β (95% CI)	SE
1							
	Teaching satisfaction (TS)	-.10** (-.18/-.03)	.04	-.14* (-.24/-.01)	.06	-.10* (-.20/-.01)	.05
	Time management (TM)	.20*** (.12/.27)	.04	.20** (.07./30)	.06	.19*** (.10/.29)	.05
	Work stress (WS)	.16*** (.07/.24)	.04	.09 (-.04/.21)	.06	.17** (.07/.29)	.06
	Professional distress (PD)	-.02 (-.06/.10)	.04	.09 (-.03/.20)	.06	-.06 (-.11/.09)	.05
	Discipline and motivation (DM)	.15*** (.08/.21)	.03	.22*** (.11/.32)	.05	.12** (.04/.20)	.04
	Professional investment (PI)	.12** (.03/.20)	.04	.04 (-.10/.17)	.07	.16** (.05/.20)	.06
2							
	Teaching satisfaction (TS)	-.09* (-.16/-.02)	.04	-.12* (-.23/-.00)	.06	-.08 (-.18/.02)	.05
	Time management (TM)	.19*** (.11/.26)	.04	.19** (.07/.30)	.06	.19*** (.09/.26)	.05
	Work stress (WS)	.16** (.08/.25)	.04	.09 (-.04/.22)	.07	.18** (.07/.29)	.06
	Professional distress (PD)	.01 (-.07/.09)	.04	.06 (-.06/.18)	.06	-.02 (-.13/.08)	.05
	Discipline and motivation (DM)	.13*** (.07/.20)	.03	.23*** (.11/.34)	.06	.10* (.01/.18)	.04
	Professional investment (PI)	.13** (.04/.22)	.04	.06 (-.07/.20)	.07	.18** (.07/.29)	.06
	TM x TS	-.02 (-.09/.05)	.03	.03 (-.09/.15)	.06	-.05 (-.14/.03)	.04
	WS x TS	.01 (-.07/.09)	.04	-.08 (-.21/.04)	.06	.04 (-.06/.15)	.05
	PD x TS	.03 (-.05/.11)	.04	-.07 (-.19/.04)	.06	.11 (.00/.21)	.05
	DM x TS	-.01 (-.08/.06)	.03	.06 (-.06/.17)	.06	.-01(-.10/.07)	.04
	PI x TS	.-00 (-.08/.08)	.04	.14* (.02/.27)	.06	-.09 (-.20/.02)	.06
	Age	-.02 (-.08/.04)	.03	-.01 (-.07/.06)	.03	-.17 (-.36/.03)	.10
	Teaching years	-.06 (-.12/-.01)	.03	-.01 (-.01/.09)	.05	-.02 (-.13/.09)	.06

Note: * *p* < .05; ** *p* < .01; *** *p* < .001

In the second step, interaction terms, coding interactions between teaching satisfaction and all five sources of stress (time management, work stress, professional distress, discipline and motivation, professional investment), were entered, while controlling for covariates (age and years of teaching practice).The incorporation of the interaction terms and covariates explained an additional 3% of variance (R^2 change = 01, $p < .05$) and this was statistically non-significant. The adjusted regression model (model 2) was significant and explained 30% of variance in fatigue manifestations of stress scores $F_{(13, 918)}$ = 29.90, $p < .001$. Time management, work-related, discipline and motivation, and professional investment stressors were all directly positively correlated with the outcome variable. There were no significant interaction effects noted in the analysis for the full sample.

5.4.2.2 Moderated Regression Analysis (Male sample)

Model 1 (Table 5.5) was statistically significant $F_{(6,330)}$ = 25.15, $p < .001$ and explained 31% of variance in fatigue manifestations (R^2 = .31). Time management and discipline and motivation had direct positive effects on fatigue manifestations of stress, with discipline and motivation recording the higher Beta value (β = .22, $p < .001$). Teaching satisfaction had a significant negative direct effect on the outcome variable, suggesting that teachers with lower levels of teaching satisfaction experience higher levels of fatigue manifestations. Work stress, professional distress and professional investment did not significantly contribute to model 1.

The incorporation of the interaction terms and covariates explained an additional 3% of variance (R^2 change = 03, $p < .05$) and this was a statistically significant change. The adjusted regression model (model 2) was statistically significant and explained 33% of variance in fatigue manifestations of stress scores $F_{(13, 323)}$ = 12.21, $p < .001$. Time management and discipline and motivation stressors

were both directly positively correlated with the outcome variable. Teaching satisfaction was significantly negatively correlated with the outcome variable. The relationship between interaction term 'professional investment and teaching satisfaction' was significant, indicating that the effect of professional investment stressors on fatigue manifestations of stress was dependent upon the level of teaching satisfaction scores.

Simple slopes for the relationship between professional investment stressors and fatigue stress manifestations were investigated for low (-1 SD below the mean), medium (mean) and high (1 SD above the mean) levels of teaching satisfaction. The simple slope for high levels of teaching satisfaction indicated a positive significant association between professional investment and fatigue outcomes, suggesting that professional investment stressors had an effect on fatigue stress manifestations only for teachers with high levels of teaching satisfaction. This effect size was medium (.20) (Cohen, 1988) (see Table 5.6 and Figure 5.6).

Table 5.6

Simple slopes for moderating role of teaching satisfaction (TS)

Interaction terms	Simple slopes	Males	
		β	SE
		.	
Professional Investment x TS	High level of TS (+1 *SD*)	.20**	.08
	Medium level of TS (*M*)	.06	.07
	Low level of TS (-1 *SD*)	-.08	.05

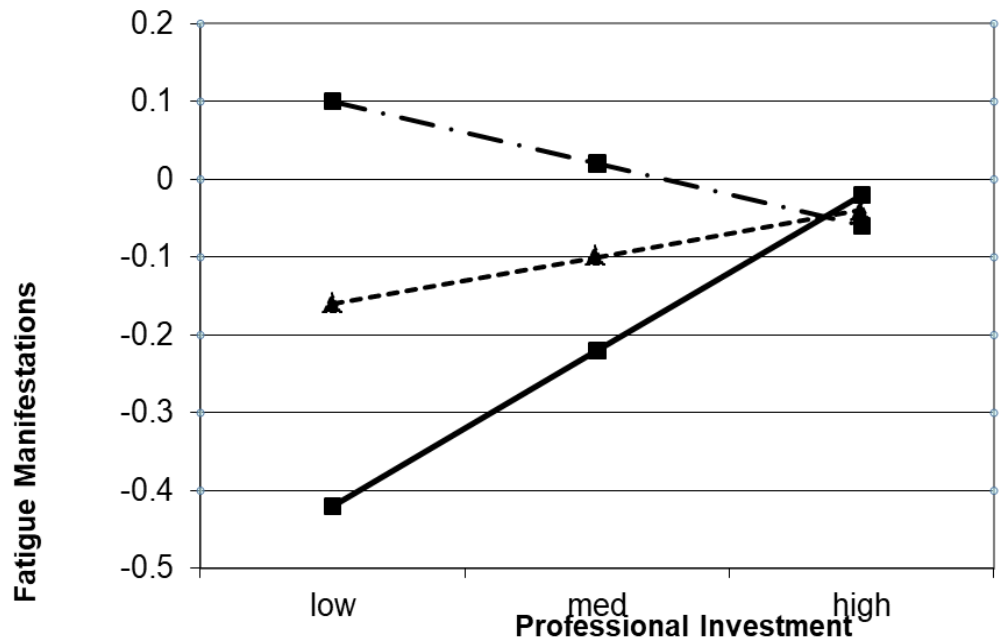Note: * *p* < .05; ** *p* < .01; *** *p* < .001

Figure 5.6
Interaction between professional investment and teaching satisfaction in male sample

Note: solid line = high level of teaching satisfaction (+1SD); dotted line = medium level of teaching satisfaction (M); dashed line = low levels of teaching satisfaction (-1SD)

5.4.2.3 Moderated Regression Analysis (Female sample)

Model 1 (Table 5.5) was statistically significant $F_{(6, 586)} = 38.07$, $p < .001$ and explained 28% of variance in fatigue manifestations ($R^2 = .28$). Positive direct effects were observed for time management, work stress and professional investment, with time management recording the highest Beta value ($\beta = .19$, $p < .001$). Teaching satisfaction had a significant negative direct effect on the outcome variable, suggesting that teachers with lower levels of teaching satisfaction experience higher levels of fatigue stress. Professional distress was the only predictor which did not significantly contribute to model 1.

The incorporation of the interaction terms and covariates explained an additional 2% of variance (R^2 change $= .02$, $p < .05$) and this was a statistically significant change. The adjusted regression model (model 2) was statistically significant and explained 32% of variance in fatigue manifestations of stress scores $F_{(13, 579)} = 18.92$, $p < .001$.

Time management, work stress, discipline and motivation, and professional investment stressors were all directly positively correlated with the outcome variable. There were no significant interaction effects noted in the analysis for the female only sample.

5.4.3 Cardiovascular manifestations of stress

Descriptive statistics and correlations:

Descriptive statistics, including means (M), standard deviations (SD) and actual ranges are reported in Table 5.7 for age of participants, years of teaching practice, cardiovascular manifestations of stress (CM), teaching satisfaction scores (TS), time management (TM), work stress (WS), professional distress (PD), discipline and motivation (DM) and professional investment (PI)). The descriptive statistics indicate that teachers generally scored around the mid-point on each measure. Cronbach's alpha reliability (Cronbach, 1951) and bivariate correlations between all continuous variables are also displayed in Table 5.7.

Table 5.7

Descriptive Statistics, correlations and reliability (cardiovascular manifestations)

Variable	Age	TY	CM	TS	TM	WS	PD	DM	PI
Age	-								
Teaching years (TY)	.48***	-							
Cardiovascular manifestation (CM)	-.02	-.01	-						
Teaching satisfaction (TS)	.05**	.15***	-.29***	-					
Time management (TM)	-.08**	-.15***	.34***	-.30***	-				
Work stress (WS)	-.04**	-.10***	.32***	-.51***	.67***	-			
Professional distress (PD)	-.04***	-.16***	.24***	-.48***	.29***	.41***	-		
Discipline and motivation (DM)	-.09***	-.18***	.25***	-.42***	.26***	.36***	.33***	-	
Professional investment (PI)	-.05	-.11***	.28***	-.57***	.29***	.43***	.68***	.48***	-
Mean	41.35	13.57	6.01	15.44	28.26	22.62	14.23	15.47	9.76
Standard Deviation	10.85	9.86	3.15	4.96	5.45	5.71	5.52	6.53	3.90
Min-Max	21-67	0-43	3-15	5-25	9-40	6-30	5-25	6-30	4-20
Cronbach's alpha	N/A	N/A	.87	.90	.76	.89	.86	.92	.79

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

Correlations between predictor variables that were significant generally ranged from weak to moderate indicating that multicollinearity was unlikely to be a problem (Tabachnick & Fidell, 2007), see Table 5.7. All predictor variables, except age and years of practice, were statistically correlated with cardiovascular manifestations of stress, which indicated that the data were suitably correlated with the outcome variable for examination through multiple linear regression to be reliable undertaken. Age and years of teaching practice were retained in the analyses due to previous research evidencing that these factors may impact stress experiences.

5.4.3.1 Moderated Regression Analysis (Full sample).

In the first step of hierarchical moderated multiple regression (Table 5.8), six predictor variables (teaching satisfaction, time management, work stress, professional distress, discipline and motivation, professional investment) were entered to test for direct effects on cardiovascular manifestations of stress. This model (model 1) was statistically significant $F_{(6, 927)} = 31.46$, $p < .001$ and explained 17% of variance in emotional stress manifestations ($R^2 = .17$). Teaching satisfaction, time management and discipline and motivation all significantly contributed to the model. Work stress, professional distress and professional investment did not make a significant contribution. Results indicate that teachers reporting higher levels of time management stressors and discipline and motivation stressors, experience higher levels of cardiovascular stress manifestations. A negative correlation was observed for teaching satisfaction which implies that teachers with lower levels of teaching satisfaction experience higher levels of cardiovascular manifestations of stress. Professional distress was also negatively correlated with the outcome variable, although this relationship was not significant. Overall, time management had the strongest relationship with cardiovascular stress manifestations in this model ($\beta = .23$, $p < .001$

Table 5.8

Hierarchical moderated regression model of cardiovascular manifestation

Model	Variable	Full sample β (95% CI)	SE	Male β (95% CI)	SE	Female β (95% CI)	SE
1							
	Teaching satisfaction (TS)	-.11** (-.19/-.03)	.04	-.11 (-.23/.02)	.06	-.12* (-.23/-.03)	.05
	Time management (TM)	.23*** (.15/.30)	.04	.23*** (.09/.34)	.06	.22*** (.12/.33)	.05
	Work stress (WS)	.04 (-.05/.13)	.05	.03 (-.11/.16)	.07	.04 (-.08/.16)	.06
	Professional distress (PD)	-.02 (-.06/.11)	.04	.09 (-.04/.21)	.06	-.01 (-.12/.10)	.06
	Discipline and motivation (DM)	.09** (.02/.16)	.04	.10 (-.02/.21)	.06	.09* (.00/.18)	.05
	Professional investment (PI)	.07 (-.02/.16)	.05	.07 (-.07/.21)	.07	.08 (-.04/.20)	.06
2							
	Teaching satisfaction (TS)	-.11 (-.19/-.03)	.04	-.10 (-.22/.02)	.06	-.11* (-.22/-.01)	.05
	Time management (TM)	.24*** (.16/.32)	.04	.23*** (.11/.36)	.06	.26*** (.15/.36)	.05
	Work stress (WS)	.05 (-.04/.14)	.05	.04 (-.10/.17)	.07	.04 (-.08/.16)	.06
	Professional distress (PD)	.04 (-.04/.12)	.04	.10 (-.03/.22)	.06	.01 (-.11/.12)	.06
	Discipline and motivation (DM)	.09* (.02/.16)	.04	.04 (-.08/.17)	.06	.10* (.01/19)	.05
	Professional investment (PI)	.08 (-.02/.17)	.05	.11 (-.03/.26)	.07	.07 (-.05/.19)	.06
	TM x TS	-.07 (-.15/.01)	.04	-.05 (-.18/.08)	.06	-.08 (-.17/.02)	.05
	WS x TS	-.02 (-.10/.07)	.04	.04 (-.09/.18)	.07	-.05 (-.16/.07)	.06
	PD x TS	-.01 (-.09/.08)	.04	-.12 (-.24/.00)	.06	.09 (-.03/.21)	.06
	DM x TS	-.04 (-.11/.03)	.04	-.18** (-.29/-.06)	.06	.01 (-.08/.11)	.05
	PI x TS	.04 (-.05/.13)	.04	.14* (.01/.27)	.07	-.05 (-.17/.07)	.06
	Age	-.01 (-.08/.05)	.03	-.03 (-.10/.04)	.03	.15 (-.07/.36)	.11
	Teaching years	.08 (.01/.15)	.03	.09 (-.01/.19)	.05	.01 (-.11/.13)	.06

Note: * p < .05; ** p < .01; *** p < .001

In the second step, interaction terms, coding interactions between teaching satisfaction and all five sources of stress (time management, work stress, professional distress, discipline and motivation, professional investment), were entered, while controlling for covariates (age and years of teaching practice).The incorporation of the interaction terms and covariates explained an additional 1% of variance (R^2 change = .01, p <.05) and this was statistically non-significant. The adjusted regression model (model 2) was significant and explained 18% of variance in cardiovascular manifestations of stress scores $F_{(13, 918)}$ = 15.91, p <.001. Time management and discipline and motivation were both directly positively correlated with the outcome variable. There were no significant interaction effects noted in the analysis for the full sample.

5.4.3.2 Moderated Regression Analysis (Male sample)

Model 1 (Table 5.8) was statistically significant $F_{(6,330)}$ = 14.38, p < .001 and explained 21% of variance in cardiovascular stress manifestations (R^2 = .21). Time management had a direct positive effect on cardiovascular manifestations of stress, recording a Beta value of .23 (β = .23, p <.001). All other predictor variables did not significantly contribute to model 1.

The incorporation of the interaction terms and covariates explained an additional 5% of variance (R^2 change = .08, p <.05) and this was a statistically significant change. The adjusted regression model (model 2) was statistically significant and explained 26% of variance in cardiovascular manifestations of stress scores $F_{(13,324)}$ = 8.65, p <.001. Time management was directly positively correlated with the outcome variable. The relationship between interaction term 'discipline and motivation and teaching satisfaction' and between interaction term 'professional investment and teaching satisfaction' was statistically significant, indicating that the effect of discipline and motivation and professional investment stressors on cardiovascular

manifestations of stress is dependent upon the level of teaching satisfaction scores (Table 5.8).

Simple slopes for the relationship between discipline and motivation and cardiovascular manifestations of stress were investigated for low (-1 SD below the mean), medium (mean), and high (+1 SD above the mean) levels of teaching satisfaction. The simple slope for low levels (-1SD) of teaching satisfaction indicated a positive significant association between discipline and motivation and cardiovascular manifestations of stress, suggesting that discipline and motivation has an effect on cardiovascular manifestations only for male teachers with low levels of teaching satisfaction (see Table 5.9 and Figure 5.7). The effect size of this relationship was medium (.20) (Cohen, 1988).

Table 5.9

Simple slopes for moderating role of teaching satisfaction (TS)-discipline/motivation

Interaction terms	Simple slopes	Males	
		β	SE
Discipline/ motivation x TS	High level of TS (+1 *SD*)	-.01	.09
	Medium level of TS (*M*)	.03	.06
	Low level of TS (-1 *SD*)	.20**	.07

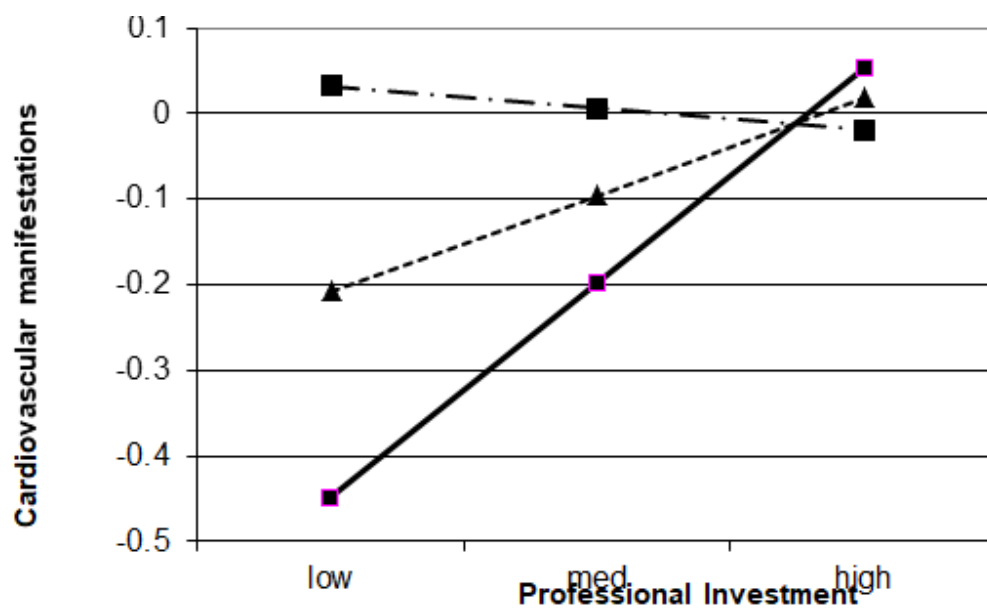*Note:* * *p* < .05; ** *p* < .01; *** *p* < .001
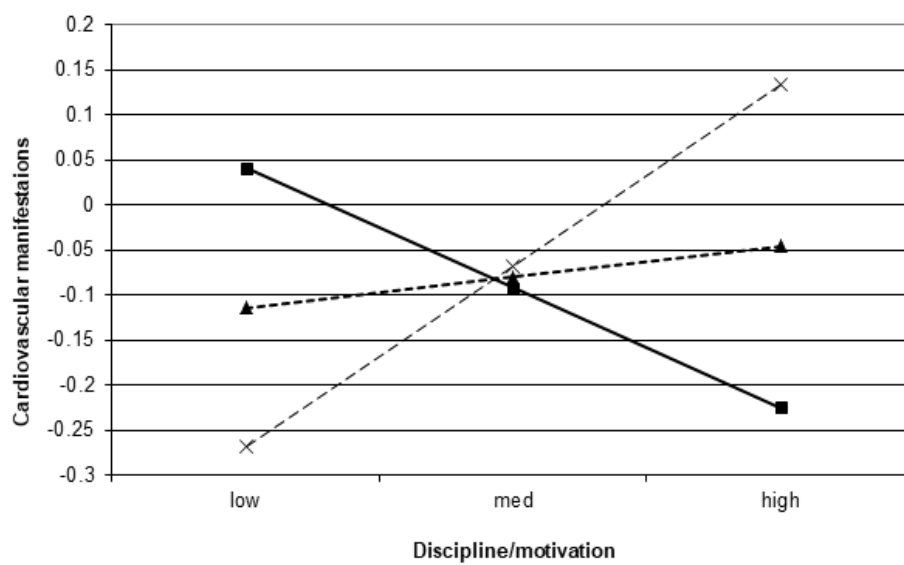
Figure 5.7
Interaction between discipline/motivation and teaching satisfaction in male sample

Note: solid line = high level of teaching satisfaction (+1SD); dotted line = medium level of teaching satisfaction (M); dashed line = low levels of teaching satisfaction (-1SD)

Simple slopes for the relationship between professional investment and cardiovascular manifestations of stress were investigated for low (-1 SD below the mean), medium (mean), and high (+1 SD above the mean) levels of teaching satisfaction. The simple slope for high levels (+1SD) of teaching satisfaction indicated a positive significant association between professional investment and cardiovascular manifestations of stress, suggesting that professional investment has an effect on cardiovascular manifestations only for male teachers with high levels of teaching satisfaction (see Table 5.10 and Figure 5.8). The effect size of this relationship was large (.25) (Cohen, 1988).

Table 5.10

Simple slopes for moderating role of teaching satisfaction (TS) - professional investment

Interaction terms	Simple slopes	Males	
		β	SE
Professional investment x TS	High level of TS (+1 *SD*)	.25**	.09
	Medium level of TS (*M*)	.11	.07
	Low level of TS (-1 *SD*)	-.03	.09

*Note: * p < .05; ** p < .01; *** p < .001*

Figure 5.8
Interaction between professional investment and teaching satisfaction in male sample

Note: solid line = high level of teaching satisfaction (+1SD); dotted line = medium level of teaching satisfaction (M); dashed line = low levels of teaching satisfaction (-1SD)

5.4.3.3 Moderated Regression Analysis (Female sample)

Model 1 (Table 5.8) was statistically significant F (6, 586) = 17.30.19, p < .001 and explained 15% of variance in cardiovascular stress manifestations (R^2 = .15). A positive direct effect was observed for time management which recorded a beta value of .22 (β = .22, p <.001) and for discipline/motivation stressors. Teaching satisfaction had a significant negative direct effect on the outcome variable, suggesting that female teachers with lower levels of teaching satisfaction experience higher levels of cardiovascular manifestations of stress. All other predictor variables did not significantly contribute to model 1.

The incorporation of the interaction terms and covariates explained an additional 2% of variance (R^2 change = .02, p <.05) and this was a statistically non-significant change. The adjusted regression model (model 2) was statistically significant and explained 17% of variance in cardiovascular manifestations of stress scores F (13, 579) = 9.04, p <.001.

Time management and discipline and motivation stressors were both directly positively correlated with the outcome variable. Teaching satisfaction was negatively significantly correlated with the outcome variable. There were no significant interaction effects noted in the analysis for the female only sample.

5.4.4 Gastronomical Manifestations of stress

Descriptive statistics and correlations:

Descriptive statistics, including means (M), standard deviations (SD) and actual ranges are reported in Table 5.11 for age of participants, years of teaching practice, and gastronomical manifestations of stress (GM), teaching satisfaction scores (TS), time management (TM), work stress (WS), professional distress (PD), discipline and motivation (DM) and professional investment (PI) scores. The descriptive statistics indicate that teachers generally scored around the mid-point on each measure. Cronbach's alpha reliability (Cronbach, 1951) and bivariate correlations between all continuous variables are also displayed in Table 5.11.

Table 5.11

Descriptive Statistics, correlations and reliability (gastronomical manifestations)

Variable	Age	TY	GM	TS	TM	WS	PD	DM	PI
Age	-								
Teaching years (TY)	.48***	-							
Gastronomical manifestations (GM)	-.01	-.01	-						
Teaching satisfaction (TS)	.05**	.15***	-.21***	-					
Time management (TM)	-.08**	-.15***	.22***	-.30***	-				
Work stress (WS)	-.04**	-.10***	.24***	-.51***	.67***	-			
Professional distress (PD)	-.04***	-.16***	.20***	-.48***	.29***	.41***	-		
Discipline and motivation (DM)	-.09***	-.18***	.17***	-.42***	.26***	.36***	.33***	-	
Professional investment (PI)	-.05	-.11***	.25***	-.57***	.29***	.43***	.68***	.48***	-
Mean	41.35	13.57	5.10	15.44	28.26	22.62	14.23	15.47	9.76
Standard Deviation	10.85	9.86	3.02	4.96	5.45	5.71	5.52	6.53	3.90
Min-Max	21-67	0-43	3-15	5-25	9-40	6-30	5-25	6-30	4-20
Cronbach's alpha	N/A	N/A	.84	.90	.76	.89	.86	.92	.79

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

Correlations between predictor variables that were significant generally ranged from weak to moderate indicating that multicollinearity was unlikely to be a problem (Tabachnick & Fidell, 2007), see Table 5.11. All predictor variables, except age and years of practice, were statistically correlated with gastronomical manifestations of stress, which indicated that the data were suitably correlated with the outcome variable for examination through multiple linear regression to be reliable undertaken. Age and years of teaching practice were retained in the analyses due to previous research evidencing that these factors may impact stress experiences.

5.4.4.1 Moderated Regression Analysis (Full sample).

In the first step of hierarchical moderated multiple regression (Table 5.12), six predictor variables (teaching satisfaction, time management, work stress, professional distress, discipline and motivation, professional investment) were entered to test for direct effects on gastronomical manifestations of stress. This model (model 1) was statistically significant $F_{(6, 927)} = 15.97$, $p < .001$ and explained 9% of variance in emotional stress manifestations ($R^2 = .09$). Time management stressors and professional investment were the only predictors which significantly contributed to the model. All other predictors did not make a significant contribution. Results indicate that teachers reporting higher levels of time management stressors and professional investment stressors, experience higher levels of gastronomical manifestations of stress manifestations. A negative correlation was observed for teaching satisfaction which implies that teachers with lower levels of teaching satisfaction experience higher levels of gastronomical manifestations, although this was not significant. Overall, professional investment had the strongest relationship with gastronomical manifestations in this model ($\beta = .15$, $p < .01$).

Table 5.12
Hierarchical moderated regression model of gastronomical manifestations

Model	Variable	Full sample β (95% CI)	SE	Male β (95% CI)	SE	Female β (95% CI)	SE
1							
	Teaching satisfaction (TS)	-.05 (-.13/.04)	.04	-.08 (-.21/.05)	.06	-.05 (-.16/.06)	.05
	Time management (TM)	.11* (.02/.19)	.04	.06 (-.07/.19)	.07	.12* (.02/.23)	.06
	Work stress (WS)	.07 (-.02/.17)	.05	.04 (-.11/.18)	.07	.08 (-.04/.21)	.06
	Professional distress (PD)	.01 (-.08/.09)	.04	.09 (-.05/.21)	.07	-.03 (-.15/.08)	.06
	Discipline and motivation (DM)	.02 (-.05/.10)	.04	.04 (-.09/.16)	.06	.02 (-.08/.11)	.05
	Professional investment (PI)	.15** (.05/.24)	.05	.14 (-.02/.28)	.08	.15 (.03/.28)	.06
2							
	Teaching satisfaction (TS)	-.01 (-.14/03)	.04	-.07 (-.20/.06)	.07	-.05 (-.16/.06)	.06
	Time management (TM)	.17** (.03/.20)	.04	.07 (-.06/.20)	.07	.14* (.03/.27)	.06
	Work stress (WS)	.07 (-.03/.16)	.05	.02 (-.12/.17)	.07	.08 (-.05/.20)	.07
	Professional distress (PD)	.02 (-.07/.10)	.04	.09 (-.04/.22)	.07	-.03 (-.14/.09)	.06
	Discipline and motivation (DM)	.03 (-.05/.10)	.04	.06 (-.04/19)	.07	.02 (-.04/.11)	.05
	Professional investment (PI)	.13** (04/.23)	.05	.10 (-.05/.26)	.08	.15* (.03/.28)	.07
	TM x TS	-.02 (-.10/.06)	.04	.02 (-.12/.16)	.07	-.03 (-.13/07)	.05
	WS x TS	.03 (-.06/.12)	.05	.05 (-.09/.19)	.07	.01 (-.11/.13)	.06
	PD x TS	.00 (-.09/.09)	.05	-.08 (-.21/.06)	.07	.06 (-.06/.19)	.06
	DM x TS	.00 (-.07/.08)	.04	-.01 (-.14/.11)	.06	.01 (-.10/.10)	.05
	PI x TS	-.04 (-.13/.06)	.05	.-.05 (-.19/.09)	.07	-.04 (-.17/.09)	.06
	Age	-.02 (-.09/.05)	.04	-.02 (-.09/.06)	.04	-.04 (-27/.19)	.11
	Teaching years	.06 (-.02/.13)	.04	.07 (-.03/.18)	.05	.06 (-.07/.19)	.06

Note: * *p* < .05; ** *p* < .01; *** *p* < .001

In the second step, interaction terms, coding interactions between teaching satisfaction and all five sources of stress (time management, work stress, professional distress, discipline and motivation, professional investment), were entered, while controlling for covariates (age and years of teaching practice).The incorporation of the interaction terms and covariates explained an additional 1% of variance (R^2 change = .01, p <.05) and this was statistically significant. The adjusted regression model (model 2) was significant and explained 10% of variance in gastronomical manifestations of stress scores $F_{(13, 918)}$ = 7.62, p <.001. Time management and professional investment were both directly positively correlated with the outcome variable. There were no significant interaction effects noted in the analysis for the full sample.

5.4.4.2 Moderated Regression Analysis (Male sample)

Model 1 (Table 5.12) was statistically significant $F_{(6,330)}$ = 6.93, p < .001 and explained 11% of variance in gastronomical manifestations (R^2 =.11). There were no significant direct effects recorded for any of the predictors in the male only sample. Teaching satisfaction had a negative direct effect on the outcome variable, although this was not significant.

The incorporation of the interaction terms and covariates explained an additional 2% of variance (R^2 change = 02, p <.05) and this was a statistically significant change. The adjusted regression model (model 2) was statistically significant and explained 13% of variance in gastronomical manifestations of stress scores $F_{(13,324)}$ = 3.69, p <.001. No significant direct effects were noted for any of the predictors. There were no significant interaction effects noted in the analysis for the male only sample.

5.4.4.3 Moderated Regression Analysis (Female sample)

Model 1 (Table 5.12) was statistically significant $F_{(6, 586)} = 9.34$, $p < .001$ and explained 9% of variance in gastronomical manifestations ($R^2 = .09$). A positive direct effect was observed for time management only, which recorded a Beta value of .12 ($\beta = .12$, $p < .001$). Teaching satisfaction had a significant negative direct effect on the outcome variable, although this was not significant. All other predictor variables did not significantly contribute to model 1.

The incorporation of the interaction terms and covariates did not add anything to the model. The adjusted regression model (model 2) was statistically significant and explained 9% of variance in gastronomical manifestations of stress scores $F_{(13, 579)} = 4.47$, $p < .001$. Time management and professional investment were both directly positively correlated with the outcome variable. There were no other significant direct effects in model 2 for any of the other predictors. There were no significant interaction effects noted in the analysis for the female sample.

5.4.5 Behavioural manifestations of stress

Descriptive statistics and correlations:

Descriptive statistics, including means (M), standard deviations (SD) and actual ranges are reported in Table 5.13 for age of participants, years of teaching practice, behavioural manifestations of stress (BM), teaching satisfaction scores (TS), time management (TM), work stress (WS), professional distress (PD), discipline and motivation (DM) and professional investment (PI) scores. The descriptive statistics indicate that teachers generally scored around the mid-point on each measure. Cronbach's alpha reliability (Cronbach, 1951) and bivariate correlations between all continuous variables are also displayed in Table 5.13.

Table 5.13

Descriptive Statistics, correlations and reliability (behavioural manifestations)

Variable	Age	TY	BM	TS	TM	WS	PD	DM	PI
Age	-								
Teaching years (TY)	.48***	-							
Behavioural manifestation (BM)	.04	.04	-						
Teaching satisfaction (TS)	.05**	.15***	-.30***	-					
Time management (TM)	-.08**	-.15***	.23***	-.30***	-				
Work stress (WS)	-.04**	-.10***	.27***	-.51***	.67***	-			
Professional distress (PD)	-.04***	-.16***	.27***	-.48***	.29***	.41***	-		
Discipline and motivation (DM)	-.09***	-.18***	.27***	-.42***	.26***	.36***	.33***	-	
Professional investment (PI)	-.05	-.11***	.29***	-.57***	.29***	.43***	.68***	.48***	-
Mean	41.35	13.57	6.29	15.44	28.26	22.62	14.23	15.47	9.76
Standard Deviation	10.85	9.86	2.30	4.96	5.45	5.71	5.52	6.53	3.90
Min-Max	21-67	0-43	4-20	5-25	9-40	6-30	5-25	6-30	4-20
Cronbach's alpha	N/A	N/A	.65	.90	.76	.89	.86	.92	.79

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

Correlations between predictor variables that were significant generally ranged from weak to moderate indicating that multicollinearity was unlikely to be a problem (Tabachnick & Fidell, 2007), see Table 5.13. All predictor variables, except age, were statistically correlated with behavioural manifestations of stress, which indicated that the data were suitably correlated with the outcome variable for examination through multiple linear regression to be reliable undertaken. Age was retained in the analyses due to previous research evidencing that this factors may impact stress experiences.

5.4.5.1 Moderated Regression Analysis (Full sample).

In the first step of hierarchical moderated multiple regression (Table 5.14), six predictor variables (teaching satisfaction, time management, work stress, professional distress, discipline and motivation, professional investment) were entered to test for direct effects on behavioural manifestations of stress. This model (model 1) was statistically significant $F_{(6, 927)} = 24.89$, $p < .001$ and explained 14% of variance in behavioural stress manifestations ($R^2 = .14$). Teaching satisfaction, time management and discipline and motivation all significantly contributed to the model. Work stress, professional distress and professional investment did not make a significant contribution. Results indicate that teachers reporting higher levels of time management stressors and discipline and motivation stressors, experience higher levels of behavioural stress manifestations. A negative correlation was observed for teaching satisfaction which implies that teachers with lower levels of teaching satisfaction experience higher levels of behavioural manifestations of stress. Overall, discipline and motivation had the strongest relationship with behavioural stress manifestations in this model ($\beta = .12$, $p < .001$).

Table 5.14

Hierarchical moderated regression model of behavioural manifestation

Model	Variable	Full sample		Male		Female	
		β (95% CI)	SE	*β* (95% CI)	SE	*β* (95% CI)	SE
1							
	Teaching satisfaction (TS)	-.11* (-.19/-.03)	.04	-.17* (-.28/-.03)	.06	-.08 (-.19/.19)	.05
	Time management (TM)	.10* (.02/.18)	.04	.09 (-.04/.21)	.07	.09 (.01/.20)	.05
	Work stress (WS)	.04 (-.05//13)	.05	-.06 (-.19/.09)	.07	.09 (-.03/.21)	.06
	Professional distress (PD)	.08 (-.01/.17)	.04	.11 (-.03/.22)	.06	.08 (-.03/.19)	.06
	Discipline and motivation (DM)	.12*** (.05/.19)	.04	.15* (.03/.27)	.06	.11* (.03/.20)	.05
	Professional investment (PI)	.07 (-.02/.16)	.05	.07 (-.08/.21)	.07	.07 (-.05/.19)	.06
2							
	Teaching satisfaction (TS)	-.11 (-.19/-.03)	.04	-.15* (-.27/.03)	.06	-.08 (-.19/.03)	.06
	Time management (TM)	.12** (.04/.21)	.04	.11 (-.02/.23)	.06	.14* (.03/.24)	.05
	Work stress (WS)	.04 (-.06/.13)	.05	-.05 (-.19/.09)	.06	.08 (-.05/.20)	.06
	Professional distress (PD)	.10* (.02/.19)	.04	.11 (-.02/.23)	.06	.10 (01/.22)	.06
	Discipline and motivation (DM)	.13*** (.06/.21)	.04	.12 (-.01/.25)	.06	.14** (05/.23)	.05
	Professional investment (PI)	.06 (-.03/.15)	.05	.09 (-.06/.24)	.07	.05 (-.08/.17)	.06
	TM x TS	-.06 (-.13/.02)	.04	.02 (-.12/.15)	.06	-.08 (-18/.01)	.05
	WS x TS	-.00 (-.09/.08)	.04	.02 (-.12/.16)	.06	-.02 (-.14/.09)	.06
	PD x TS	.02 (-.07/.10)	.04	-.11 (-.24/.01)	.05	.11 (-.01/.23)	.06
	DM x TS	-.02 (-.09/.05)	.04	-.14*(-.26/-.02)	.05	.03 (-.07/.12)	.05
	PI x TS	.-.01 (-.10/.08)	.05	.08 (-.06/.21)	.06	-.08 (-.20/.04)	.06
	Age	.02 (-.05/.09)	.03	.01 (-.06/.08)	.03	.17 (-.05/.39)	.11
	Teaching years	.11** (.04/.18)	.04	.09 (-.01/.19)	.04	.05 (-.07/.18)	.06

Note: * *p* < .05; ** *p* < .01; *** *p* < .001

In the second step, interaction terms, coding interactions between teaching satisfaction and all five sources of stress (time management, work stress, professional distress, discipline and motivation, professional investment), were entered, while controlling for covariates (age and years of teaching practice).The incorporation of the interaction terms and covariates explained an additional 2% of variance (R^2 change = .02, p <.05) and this was statistically significant. The adjusted regression model (model 2) was significant and explained 16% of variance in behavioural manifestations of stress scores $F_{(13, 918)}$ = 13.14, p <.001. Time management and discipline/motivation were directly positively correlated with the outcome variable. Years of teaching practice was also positively significantly related to the outcome variable. There were no significant interaction effects noted in the analysis for the full sample.

5.4.5.2 Moderated Regression Analysis (Male sample)

Model 1 (Table 5.14) was statistically significant $F_{(6,330)}$ = 9.89, p < .001 and explained 15% of variance in behavioural stress manifestations (R^2 = .15). Discipline and motivation had a significant direct positive effect on behavioural manifestations of stress, recording a Beta value of .15 (β = .15, p <.05). Teaching satisfaction had a significant negative direct effect on the outcome variable. All other predictor variables did not significantly contribute to model 1.

The incorporation of the interaction terms and covariates explained an additional 4% of variance (R^2 change = .04, p <.05) and this was a statistically significant change. The adjusted regression model (model 2) was statistically significant and explained 19% of variance in emotional manifestations of stress scores $F_{(13,324)}$ = 6.00, p <.001.. Teaching satisfaction was significantly negatively correlated with the outcome variable. There were no other significant direct effects. The relationship between interaction term 'discipline and motivation and

teaching satisfaction' was statistically significant, indicating that the effect of discipline and motivation on behavioural manifestations of stress is dependent upon the level of teaching satisfaction scores (Table 5.14).

Simple slopes for the relationship between discipline and motivation and behavioural manifestations of stress were investigated for low (-1 SD below the mean), medium (mean), and high (+1 SD above the mean) levels of teaching satisfaction. The simple slope for low levels (-1SD) of teaching satisfaction indicated a positive significant association between discipline and motivation issues and behavioural manifestations of stress, suggesting that discipline and motivation has an effect on behavioural stress manifestations only for male teachers with low levels of teaching satisfaction (see Table 5.15 and Figure 5.9). The effect size of this relationship was medium (.25) (Cohen, 1988).

Table 5.15

Simple slopes for moderating role of teaching satisfaction (TS)

Interaction terms	Simple slopes	Males	
		β	SE
Discipline/ motivation x TS	High level of TS (+1 *SD*)	-.02	.09
	Medium level of TS (*M*)	.11	.06
	Low level of TS (-1 *SD*)	.25**	.09

Note: * *p* < .05; ** *p* < .01; *** *p* < .001
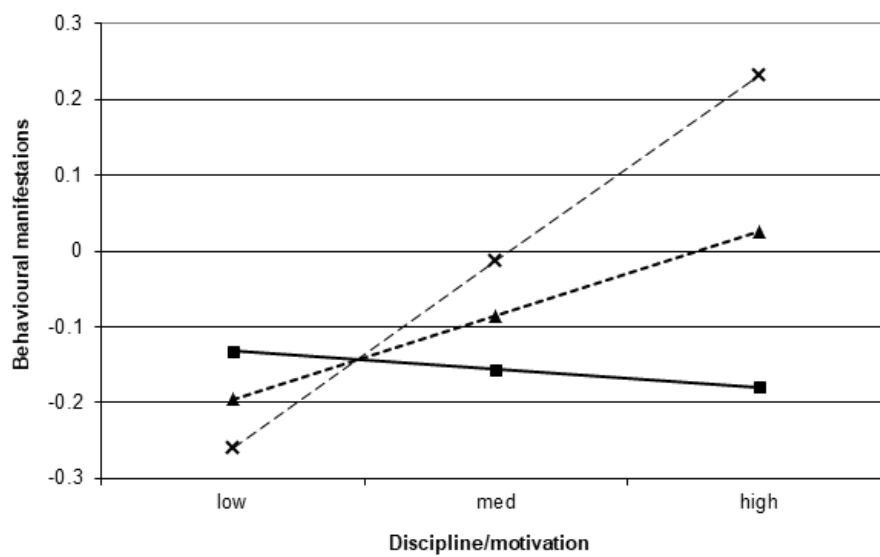
Figure 5.9
Interaction between discipline/motivation and teaching satisfaction in
male sample

Note: solid line = high level of teaching satisfaction (+1SD); dotted line =
medium level of teaching satisfaction (M); dashed line = low levels of
teaching satisfaction (-1SD)

5.4.5.3 Moderated Regression Analysis (Female sample)

Model 1 (Table 5.14) was statistically significant F (6, 586) = 15.33, p < .001 and explained 14% of variance in behavioural stress manifestations (R^2 = .14). A positive direct effect was observed for discipline and motivation only which recorded a beta value of .11 (β = .11, p <.05). Teaching satisfaction did not have a significant direct effect on the outcome variable. All other predictor variables, except discipline/motivation, did not significantly contribute to model 1.

The incorporation of the interaction terms and covariates explained an additional 2% of variance (R^2 change = .02, p <.05) and this was a statistically significant change. The adjusted regression model (model 2) was statistically non-significant and explained 16% of variance in behavioural manifestations of stress scores F (13, 579) = 8.66, p <.001.Time management and discipline and motivation stressors were both directly positively correlated with the outcome variable. There were no significant interaction effects noted in the analysis for the female only sample.

5.5 Discussion

This is the first known study to explore the factors of the TSI independently in a sample of secondary school teachers in England. Furthermore, no previous research has investigated the teaching satisfaction concept as a moderator in the relationships between sources of teacher stress and a range of biopsychosocial stress manifestations. The results show various significant direct relationships, and diverse moderator effects, between male and female teachers. Consequently, this study provides new insights into secondary school teachers' occupational stress and satisfaction in secondary level teaching. Findings suggest the need for further research to consider assessing male and female teachers independently.

Overall, results for the full sample have represented similar findings to those obtained in the female sample. The results between male and female teachers are diverse. Consequently, previous studies which have employed only a full sample design may have failed to adequately capture such varied complexities of stress within contemporary teaching. When considering the interaction effects, there was diversity in the findings between male and female teachers. For females the interactions of teaching satisfaction with both work-related stressors and professional distress impacts emotional manifestations only. For males the interactions of teaching satisfaction with professional investment stressors, and discipline/motivation stressors, impacts on a biopsychosical level (Engel, 1980); emotional, fatigue, cardiovascular and behavioural manifestations. These findings highlight the complex nature of stress within secondary school contemporary teaching. The significant interaction results of teacher stress are summarised in diagrammatic format in Figure 5.10 to promote clarity.

```
┌─────────────────────────────────┐
│ FULL SAMPLE                     │
│ Work-related stressors (low     │
│ TS)                             │
│ Professional distress (low TS)  │
└─────────────────────────────────┘

┌─────────────────────────────────┐
│ FEMALE                          │
│ Work-related stressors (low     │
│ TS)                             │
│ Professional distress           │
│ (low TS and high TS)            │
└─────────────────────────────────┘

┌─────────────────────────────────┐     ┌──────────────────────────────────┐
│ MALE SAMPLE                     │     │ Emotional stress manifestations  │
│ Professional investment         │     └──────────────────────────────────┘
│ stressors (high TS)             │
└─────────────────────────────────┘     ┌──────────────────────────────────┐
                                          │ Fatigue stress manifestations    │
┌─────────────────────────────────┐     └──────────────────────────────────┘
│ MALE SAMPLE                     │
│ Discipline/motivation           │     ┌──────────────────────────────────┐
│ stressors (low TS)              │     │ Cardiovascular stress manifestations│
└─────────────────────────────────┘     └──────────────────────────────────┘

                                          ┌──────────────────────────────────┐
                                          │ Behavioural stress                │
                                          │ manifestations                    │
                                          └──────────────────────────────────┘
```

Figure 5.10 Visual overview of interactions and stress manifestations for secondary school teachers

Previous research has identified a multitude of factors which may potentially promote stress within the school context and differences have been highlighted between individuals practicing within the same working environment (Alhija, 2015). The associations of negative health and wellbeing outcomes with both structural and individual factors have raised questions about the nature and dynamic of this potential relationship (Mark & Smith, 2008). Job satisfaction has been previously acknowledged as a useful concept in the exploration of professional practice and has often been employed to facilitate an understanding of the contemporary teaching role (Federici, 2013); however, it has been proposed that job satisfaction and teaching satisfaction represent distinct psychological concepts (Shaver & Lacey, 2003). In the first Part of the thesis' study (chapter 4), teaching satisfaction was explored in relation to factors which relate to teacher motivation .This second part (part 2) of the study explored the moderating role of teaching satisfaction as a unique factor/personal resource in the relationships between sources of teacher stress and biopsychosocial outcomes in the JD-R framework (Xanthopoulou, Bakker, Demeroti & Schaufeli, 2007). The results demonstrate that teaching satisfaction has a diverse moderating effect on some of the relationships explored, with differences between males and females evident throughout.

With reference to gastronomical manifestations of stress, positive direct relationships were demonstrated for some of the explored stressors for female teachers, although no significant interaction effects with teaching satisfaction were found. Nonetheless, results show that time constraints within the school context is an issue for female teachers. Effective time management has been previously identified as necessary to ensure teacher wellbeing at work (Sturman et al., 2005).In the male sample, no significant direct relationships with any of the explored stressors were identified, thus suggesting that these gastronomical stress manifestations are not highly prevalent for male teachers in secondary schools. As no interaction effects were found, the results for gastronomical manifestations of stress do not support the

idea that teaching satisfaction may act as a personal resource for secondary school teachers in the JD-R framework (Xanthopoulou, Bakker, Demeroti & Schaufeli, 2007). Contrary to these findings, the results from the additional analyses conducted show that teaching satisfaction did moderate the relationship between certain stressors and the other stress manifestations explored.

Behavioural manifestations of stress in the full and the male sample were initially found to be negatively related with teaching satisfaction; this showing that as satisfaction decreases, behavioural outcomes increase. Discipline/motivation stressors were found to have a direct relationship with behavioural manifestations across all three samples, although this was not significant for males after controlling for covariates. This corresponds with earlier findings, outlined in chapter 2, which have shown that teacher stress may be the result of student misbehaviour (Antoniou et al., 2006; McCormick & Barnett, 2011; Geving, 2007). Previous literature has also highlighted higher levels of stress for female teachers as a result of this stressor (Klassen, 2010; Klassen & Chui, 2010). However, in the current part of the study (part 2), the interaction effects show that this stressor is significantly related to the outcome variable in the male sample only, but only for those who report low levels of teaching satisfaction. Consequently, if teaching satisfaction was to increase, the impact of this stressor on behavioural manifestations of stress may be less prominent for males. Given that behavioural consequences include absenteeism (Wilson, 2008) this would further ensure better consistency and quality of teaching for students within school (Avis et al., 2011; Jephcote, 2008; Cano-Garcia et al., 2005). Current statistics for England show that 54 per cent of teachers had a least one period of sickness absence in the previous academic year, although specific details for males and females are not explicitly documented (DfE, 2017).

Results for cardiovascular manifestations of stress were similar to those obtained for behavioural manifestations, although some

differences were found. Time management stressors were significantly directly related with the outcome variable across all three samples, both before and after controlling for covariates. Issues of time management and stress outcomes have also been shown in related studies Skaalvik & Skaalvik, 2016; Sturman et al., 2005); although these have not explicitly addressed cardiovascular outcomes. Results from a real time data study have shown increased heart rate for male teachers, this further evidencing cardiovascular stress for males (Serrano et al., 2008). Discipline/motivation stressors were also directly significantly related to cardiovascular manifestations in the full sample and the female sample, but this was not found for male teachers. However, the interaction effects have shown a significant relationship between discipline/motivation stressors and cardiovascular manifestations of stress in the male sample for those teachers who reported low levels of teaching satisfaction; this highlighting the need to enhance satisfaction at work to reduce stress. Collie, Shapka and Perry (2012) have previously proposed that unmotivated students may lead to lower efficacy for teaching and suggest that this negatively impacts teaching satisfaction. This may offer some support to the findings obtained in this part of the study.

An alternative explanation of this finding could be due to negative teacher-student relatedness within the classroom. Relatedness is considered an innate need which if not fulfilled will impact negatively on wellbeing and health (Ryan & Deci, 2000; Maslow, 1970). Throughout the previous part of the study of this thesis (chapter 4), a significant association between relatedness and teaching satisfaction was not demonstrated, although as was discussed, this could be due to the measure employed (which did not explicitly capture teacher-student relatedness within school). Further exploration of this point was suggested in chapter 4, and may further serve to advance understanding with regards to the findings on teacher stress reported in this second part of the study.

The interaction between professional investment and teaching satisfaction was also significant for male teachers reporting high levels of teaching satisfaction. Although speculative at this stage, this may suggest that for male secondary school teachers who are otherwise satisfied in role, lack of opportunities for professional advancement and/or classroom control may contribute to stress. Hong (2012) reported that stress is a key factor to less investment in the job. Consequently the direction of this relationship is unclear; results from the current study can only confirm the association. The reported lack of control captured within the measurement of this particular stressor may be relevant to understanding cardiovascular stress manifestations as a consequence of the increasingly target driven culture currently dominating the school environment (Tucker, 2010). This pressurised culture arguably removes autonomy and control within teaching practice (Grenville-Cleave & Boniwell, 2012). The consequence of such an achievement focussed profession, as outlined in chapter 1, may be prompting an adverse impact on teachers' health.

The findings for fatigue manifestations have recognised significant correlations with time management, along with discipline/motivation stressors across all three samples. Work stress and professional investment stressors were not shown to be significantly related with fatigue stress manifestations for males, but were significant in the full and female samples. This again demonstrates the complexity of understanding teacher stress and the divergence between male and female teachers (Klassen, 2008; Antoniou et al., 2006). Similar to the results for cardiovascular stress, the interaction of professional investment and teaching satisfaction in the male sample was found for those reporting high levels of teaching satisfaction. Together these findings highlight the biological factors of stress for male teachers.

The most complex findings related to teachers' emotional stress manifestations. Initially time management was shown to be significantly

directly related with the outcome variable across all three samples. Work-related stressors and professional investment stressors were found to be significantly related with emotional manifestations for the full sample and the female sample, whereas discipline/motivation stressors were shown to be significantly associated with the outcome in the full and male sample. With the exception of the relationship between work stressors and emotional manifestations in the full sample, all other noted associations remained significant after controlling for covariates in the model. These findings demonstrate a variety of differences between males and females with regards to direct relationships between stressors and emotional stress. The findings offer support to previous research which has advocated such divergence (Page et al., 2013) and offers contradictory evidence to studies where no differences between male and female teachers were reported (Reilly, Dhingra & Boduszek, 2014; Jepson & Forrest, 2006).

An examination of the interaction effects revealed a significant association between professional investment stressors and emotional stress manifestations in the male sample for those reporting higher levels of teaching satisfaction. This finding aligns with those reported for cardiovascular and fatigue manifestations in the male sample. In addition, the results highlight a significant relationship between work-related stressors and emotional stress for female teachers who report low levels of teaching satisfaction. Alhija (2015) and Grenville- Cleave and Boniwell (2012) have previously highlighted workload as a major source of stress for teachers. As previously suggested, a potential interpretation of this finding may relate to the conflicting family and occupational roles for women (Klassen & Chui, 2010). Family issues have been previously reported as the greatest concern to teachers (Kersaint et al., 2007). Related research has found that work stress and family stress both impact each other (Thomas, Clarke & Lavery, 2003).The challenge of undertaking increasing workloads alongside family commitments may promote low levels of teaching satisfaction as women struggle to maintain a healthy work/home balance. Workforce

statistics showing that more females have opted for part-time employment may be indicative of attempts to deal with this role conflict (DfE, 2017).

Emotional stress manifestations such as feeling unable to cope (as captured by the employed measure) may further the suggestion of ineffective dual-role management (Alhija, 2015). However, as the current study design did not capture the parental status of the participants or their additional care/dependant commitments, these findings are speculative in relation to this conflict, although support can be sought from existing studies (Greenglass & Burke, 2003).Future research which explicitly considers parenthood/dependant responsibilities as a factor would be advantageous in order to explore this further.

The interaction between professional distress and teaching satisfaction on emotional stress provided both positive and negative associations depending on the level of reported teaching satisfaction in the female sample. Professional distress is significantly related positively to emotional stress manifestations for those with high levels of teaching satisfaction, and negatively for those with low levels of teaching satisfaction; the reason for this is currently unclear. Although speculative at present, a potential interpretation is that female teachers who are satisfied in role experience emotional stress due to a lack of respect and opportunities for promotion. In relation to hierarchical needs (Maslow 1970), recognition and esteem needs must be met in order for teachers to be motivated and achieve their potential. It has been previously reported that women in the workplace may not receive the same level of respect and advancement as their male counterparts (Brown, 2010). The acknowledgement that more women than men now work part-time may also have some influence on the professional progression rates. For those who are otherwise satisfied with their occupational role this may impact negatively on health and wellbeing outcomes.

The reported negative relationship between professional distress and emotional stress manifestations in female teachers may be a consequence of not striving for advancement and respect due to overall dissatisfaction within the professional role. Future studies should be refined to further investigate this particular stressor based on the diversity of the moderating effects of teaching satisfaction detailed throughout this part of the study. Future research which specifically incorporates the employment status of the teacher (full or part time) is necessary in light of the current findings.

Overall, the findings have implications for professional practice and teacher training within schools. In order to reduce secondary school teachers' stress manifestations it is necessary to consider the factors which promote positive organisational functioning so that efforts can be made to tailor interventions accordingly. In relation to the current results, it would be advantageous to consider the potential needs of male and female secondary school teachers independently.

Teaching satisfaction was found to have the potential to serve as a personal resource in buffering the effects of stressors on stress manifestations in some instances (Xanthopoulou, Bakker, Demeroti & Schaufeli, 2007). Reducing stress manifestations of secondary school teachers may further enhance the students' learning experience, and reduce teacher attrition (Hong, 2010; Roness, 2011; Changying, 2007). Future studies are warranted as the relationship between teacher wellbeing and student performance has been previously reported (Van den Berghe et al., 2016; Moe et al., 2010),

Comparative studies on different teaching populations, such as primary school teachers or higher education lecturers, are proposed, and may offer further information on the impact of stress in educational settings. Such research is needed to further validate the current findings and to obtain a deeper understanding of stress in the contemporary

teacher role. Exploration of male and female teachers independently is most appropriate based on current results. In addition, whilst the results obtained pertain to an English based sample, it is plausible that the findings may hold relevance cross-culturally. Further research which utilises samples from other countries would promote validation of the current findings for an international audience.

5.5.1 Limitations

Notwithstanding the strengths of this part of the study, a number of limitations can be identified.

First, the application of the self-report measure of stress may incur responses which either under-report or over-report the severity of stressors and manifestations. This could be due to factors such as social desirability and the reluctance of males to admit feelings of stress (Page et al., 2013). Nelson and Burke (2002) propose that gender roles, including acceptable attitudes and behaviours, are established through cultural socialisation, and this may offer an understanding of sex differences in stress experiences and coping styles; typically, masculinity is associated with rationality, competitiveness, and competent, whereas femininity is associated with passivity and emotionality. Consequently, expressing emotions and asking for help is congruent with a feminine role, and this may suggest that women are more likely to self-report stress (González-Morales., Rodríguez, & Peiró, 2010).

Second, the TSI (Fimian, 1984) incorporates Likert scales which are scored in the same direction, and consequently issues of response bias may be applicable (Howitt & Cramer, 2017). However, as this is a standardised measure, it was an appropriate choice for assessment, and permits comparative studies.

Third, as the study design was cross sectional in nature, causation of the recognised relationships cannot be confirmed. Whilst the TSI suggests that the sub-sections of the measure represent stressors and outcomes, a longitudinal design is needed to explicitly confirm this. Also, the data obtained reflects the respondents' perception at the time of survey completion which could be influenced by their personal feelings at that particular time point (Bryman, 2004).

Finally, as previously acknowledged in chapter 4, teacher satisfaction was assessed using a one-dimensional measure (Ho & Au, 2006). Although this measure was selected due to its specific relevance to the teacher population, it may be that the concept of teaching satisfaction is multi-dimensional and potentially better advocated in this way. Further investigation of teaching satisfaction is necessary to confirm this suggestion.

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5.6 Chapter summary

This chapter has presented the second part of the thesis' study. A detailed discussion of the findings obtained has been presented within this chapter and a model summarising the key findings has been developed. This has offered a unique insight into the moderating role of teaching satisfaction on the relationship between sources of stress in teaching and a range of stress manifestations for teachers working in secondary schools in England. It is evident that the level of teaching satisfaction is influential to stress experiences. Consequently, this investigation has been successful in answering the specified research questions.

In summary, for question three,

'Is there a significant difference between males and females with regards to factors explored?'

The results have reported differences between male and female secondary school teachers. This was shown for direct effects and interactions. For female teachers, interactions between 'work stressors and teaching satisfaction' and between 'professional distress and teaching satisfaction' were shown for emotional stress manifestations. For male teachers, the interaction between 'discipline/motivation and teaching satisfaction' was shown to influence cardiovascular and behavioural stress manifestations. Also, the interaction between 'professional investment stressors' and 'teaching satisfaction' was shown to influence fatigue and cardiovascular stress manifestations for males.

In relation to question four,

'Can the concept of teaching satisfaction serve as an effective moderator/personal resource in the teacher stress experience?'

The JD-R framework (Xanthopoulou, Bakker, Demeroti & Schaufeli, 2007) was used to investigate if teaching satisfaction could act as a moderator/personal resource for teachers. It has been found that teaching satisfaction does have an influence on the relationship between stressors and stress manifestations in some instances. It has been shown that there is no impact for gastronomical manifestations of stress as no significant interaction effects were reported. In all other relationships between stressors and manifestations, teaching satisfaction had a moderating effect. This effect was shown to be related to high levels of teaching satisfaction in some instances, and in low levels of teaching satisfaction in others.

Chapter 6

Conclusion

6.1 Chapter introduction

This chapter summarises the findings from both parts of the study, providing a comprehensive conclusion to the results obtained. The key strengths of the study are highlighted and potential limitations are acknowledged. This facilitates a critical understanding of the key points from each part of the study in relation to existing knowledge. The specific contributions to new knowledge are identified and explored in line with the overall aims and specified research questions. Potential implications for teaching practice, as relevant to secondary school teachers in England, are deliberated with the focus on enhancing the teacher role. Future research directions, based on the contributions of the study, are suggested in order to further promote understanding throughout the psychological, educational, and occupational health literature.

6.2 Key findings from the study

The overall aim of this thesis was to explore the contemporary teacher role from a psychological perspective, specifically focussing on motivation, satisfaction, and stress experiences, of teachers working within the secondary school level in England. A secondary aim was to explore the potential therapeutic nature of the school environment. The study encompassed two parts, which together contributed to meeting these aims, and was successful in answering the specified research questions. A visual representation of results is provided in Figure 6.1. Several key findings have emerged from the study:

- Perceived teacher competence is significantly related to teaching satisfaction for both male and female secondary school teachers

- The school environment has the potential to facilitate teachers' psychological needs

- The direct relationships between stressors and stress manifestations are different for male and female secondary school teachers

- Different levels of teaching satisfaction (high/low) moderates the relationships between stressors and manifestations differently for male and female teachers

- Teacher stress manifestations are psychological/emotional for female secondary school teachers, but are biopsychosocial for male secondary school teachers
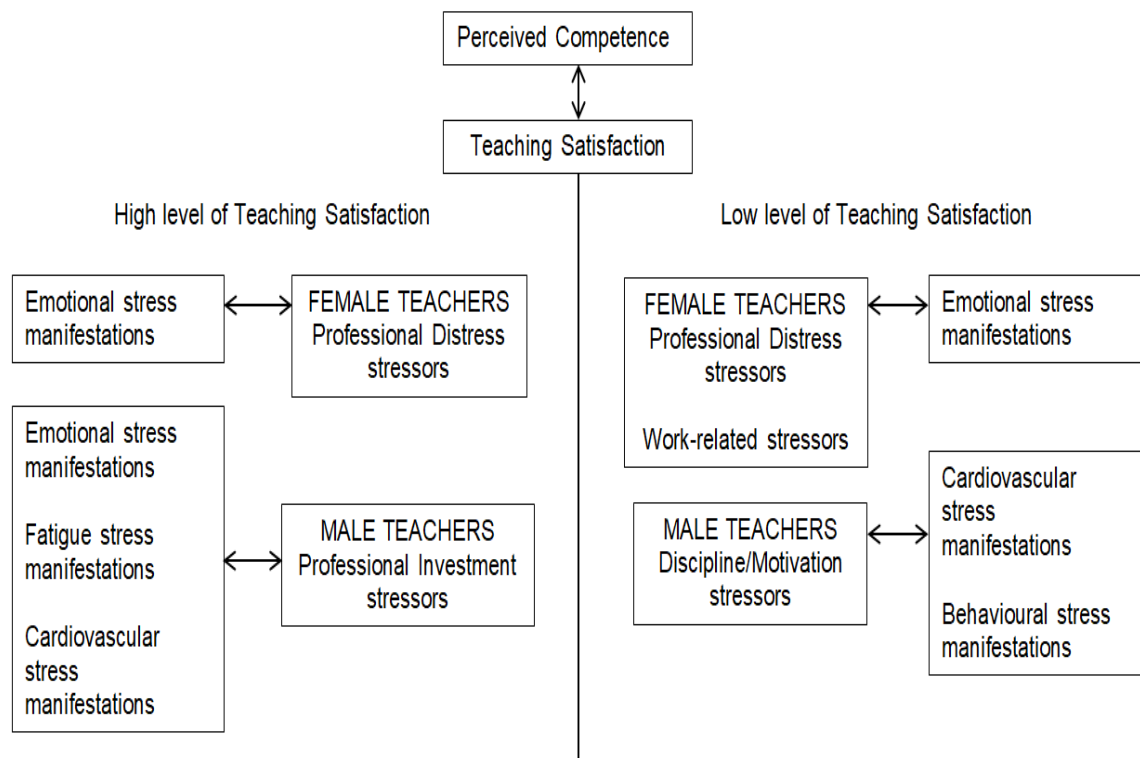
Figure 6.1 A visual representation of overall study findings (Part 1 and Part 2)

6.3 Implications for teaching practice and educational policy.

The results from both parts of the study are important for future secondary school teacher practice and educational policy. In considering future educational initiatives, it is necessary that the wellbeing of both teachers and learners are considered, especially given the prior acknowledgement of the importance of this relationship (Van den Berghe et al., 2016). As noted by Grenville-Cleave and Boniwell (2012), current educational initiatives impact on autonomous teaching and Orr (2011) identified that the many perceived sources of stress in contemporary educational practice, cultivates a pressurised environment for teachers and students alike.

Given that competence is significantly related to satisfaction, initiatives aimed at enhancing professional competency for teacher are warranted. Furthermore, initiatives which focus on competency building in a collaborative manner may further facilitate relatedness between teachers within the school context, contributing to motivation (Deci & Ryan, 2000). Enhancing relatedness and competence could be assisted via a therapeutic environment philosophy (MacDonald & Winship, 2016), for example through knowledge exchange activities, that offers support for teachers through periods of educational change and that facilitates opportunities for team teaching delivery and target meeting.

As specific relationships between stressors and manifestations have been shown for teachers reporting low levels of satisfaction (refer to Figure 6.1), efforts to enhance satisfaction could help alleviate these difficulties. As competence is significantly related to teaching satisfaction, strategies in schools should seek to promote competence in role and facilitate appropriate coping strategies for males and females (González-Morales., Rodríguez, & Peiró, 2010). Specifically, competency building to guide male teachers in effectively managing challenging behaviour in the classroom could be targeted at the school level. For females, strategies at the organisational level, such as recognising and praising good teaching, and demonstrating continued

230

respect, would help teachers to feel more valued in role. It may be further appropriate for schools to be mindful of potential conflicting work/home roles, most notably for females, and support teachers in their workloads (Alhija, 2015; Greenglass & Burke, 2003); this was deliberated in chapter 5.

For secondary school teachers reporting high levels of teaching satisfaction, issues of professional distress and professional investment need to be addressed, both within the school setting at the policy level. It appears that many teachers are stressed due to lack of progression in role and opportunities for professional development. Exploring opportunities for shared leadership positions would be advantageous, and would further contribute to promoting relatedness and collaborative working between teachers in schools.

Education and health policy makers need to come together to reduce stress in the workplace for secondary school teachers. This is necessary on an individual level and also beneficial for students (Moe et al., 2010). Stress reduction initiatives could facilitate tailored stress reduction interventions and continued professional development around recognising stressors and strains and encouraging positive coping approaches, whilst appreciating the potential of satisfaction to buffer such outcomes. Some teachers are dissatisfied in role because of perceived high workload and high role variability, which despite high levels of responsibility, appears to be out of their own remit of control.

Stakeholders however, still need to be mindful of the potential differences between males and females in relation to a variety of stressors that are moderated by different levels of teaching satisfaction. To this end, further research is needed to guide the design and implementation of specific practice changes and policy directives to ensure effective innovations for secondary school teachers.

6.4 Key strengths of the study

The key strengths of the study are summarised and are further elaborated throughout the chapter in order to demonstrate how they contribute to knowledge.

First, both parts of the study were founded on a robust methodological design which promotes validity and reliability (Howitt & Cramer, 2017). The application of advanced statistical procedures adds confidence to the results obtained. Part 1 utilised structural equation modelling and part 2 used hierarchical moderated regression analyses. This has permitted a more comprehensive understanding of aspects of the contemporary teacher role for the factors explored, which may not have been previously determined by earlier research.

Second, the use of an electronic data collection tool (survey) permitted a wider sample to be reached, and ensured participant anonymity. The findings are based on a large sample (N=1288) of secondary school teachers which enhances confidence in the findings (Coolican, 2009). This makes it more likely that the results reflect, and are representative of, secondary school teachers across different geographical areas in England.

Third, in contrast to previous studies which have explored teachers using only a full sample approach, both parts of the study have been advantageous in assessing potential disparity between male and female secondary school teachers in England. Whilst no differences between male and female teachers were reported in part 1 of the study, the findings of part 2 have reported several differences between males and females for stressors and stress manifestations. The moderating role of teaching satisfaction between stressors and manifestations was also shown to be different for males and females. This has allowed specific areas of teacher stress, which are potentially male or female specific, to be recognised, further contributing to knowledge.

6.5 Study limitations, controls, and directions

In order to promote a critical appreciation of the current study findings, several potential limitations have been previously discussed in earlier chapters; these and are summarised and reiterated here for consideration. The efforts to control these limitations are outlined:

- Self-reporting of factors

In part 1 of the study (chapter 4), it was acknowledged that the self-reporting of autonomy, competence, and relatedness by teachers is subjective and may not be supported by the view of others within the school, such as managers. Consequently, as the relationship between competence and teaching satisfaction was reported to be significant, objective measures of competence such as target attainment figures or supervisor report were suggested to compliment the findings.

Self-reporting has been previously criticised due to issues of potential response bias, in which participants may respond to items in a manner which they perceive to be socially desirable, or gender congruent (Bryman, 2004; Nelson & Burke, 2002; González-Morales., Rodríguez & Peiró, 2010). Specifically, when the topic is potentially sensitive, participants may be less willing to provide an honest response. In part 2 of the study (chapter 5), it was considered that answers may incur either under-reporting or over-reporting of the severity of stressors and manifestations. It is likely that females are more willing to self-report stress (Page et al., 2013). However, the assurance of anonymity may have promoted more truthful responses.

- Study design and establishing causation between factors

Responses collected in a cross-sectional way only detail the participant's perception at the time of questionnaire completion, which could be negatively or positively influenced by a variety of factors at that

given time point (Bryman, 2004).Furthermore, as both parts of the study have explored relationships between factors, any suggestion of causation, or direction of the results, cannot be assumed (Howitt & Cramer, 2017).

Part 1 of the study reported the significant relationship that exists between perceived competence and teaching satisfaction, but the direction of this relationship is not determined. In addition, the relationship between autonomy and teaching satisfaction, and between relatedness and teaching satisfaction, were both non-significant. However, this does not necessarily imply that these needs are not met within the school environment; the results only show that the concepts are not significantly related. It was proposed that future research consider assessing these psychological needs independent of the teaching satisfaction concept in line with a therapeutic community ideology (MacDonald & Winship, 2016).

In part 2 of the study, several significant relationships were found between different stressors and a variety of stress manifestations, which also varied between male and female teachers. Whilst it is likely that stressors create the manifestations reported (based on the wording of questionnaire items), this cannot be confirmed with absolute confidence; only a longitudinal design could assess this appropriately (Howitt & Cramer, 2017).

- Potential issues with the measures

In part 1 of the study, it was suggested that there may be ambiguity around interpretation of the relatedness concept. As the items for this factor related to 'people at work' it was proposed that this may have been interpreted as referring to students rather than colleagues. Consequently, further exploration of relatedness which assesses the impact of peers and students independently is encouraged for future

studies with teachers; previous research which has explored this standpoint has noted that both relationships are important (Wininger & Birkholz, 2013). Alternatively, the wording on the measure could be adapted to assess 'teachers' rather than 'people'. Despite this potential issue, the application of an existing validated measure (BPNW scale) permits comparative results with related research which has also collected data from its application.

In part 2 of the study, the TSI (Fimian, 1984) incorporates Likert scales which are scored in the same direction and so may incur biased responses (Coolican, 2009). Reverse scoring is typically advocated to decrease this error. However, this standardised measure is advantageous in permitting comparisons with other findings which have derived from its application (Gobo & Mauceri, 2014). It was also an appropriate choice for assessment given that it has been cross-culturally validated (for example, Kourmousi et al., 2015).

In addition, teacher satisfaction, as measured in both parts of the study, was assessed using a one-dimensional measure which may not fully encompass the potential multifaceted nature of the concept. It was however an appropriate tool for data collection as it was specific to the sample under investigation (Ho & Au, 2006). Further exploration of teaching satisfaction as a multifaceted concept has been proposed given the results obtained from both parts of the study.

- Recruitment process and geographical representation

Recruitment of participants initially relied on the cooperation of the first point of contact from each school to share the link to the survey. It is acknowledged some schools may have a more positive approach to research participation than others. However, the non-probability sampling procedure utilised was considered the most pragmatic way of obtaining data from teachers across different LEA's in England (Baker

et al., 2013). The current study findings cannot confirm or deny the likelihood of cluster responses from certain schools (Coolican, 2009). Future research using similar data collection techniques could add a question to capture the location of the participant to establish geographical representation to further enhance validity of findings.

6.6 Contribution to knowledge

In part 1 of the study, a unique theoretical model was specified and investigated using AMOS 22, which permitted the most comprehensive exploration of the proposed associations. This was the first known research to investigate the relationship between SDT (Ryan & Deci, 2000) and teaching satisfaction (Ho & Au, 2006) in a sample of secondary school teachers in England. This has highlighted competence as the only factor to be significantly related with teaching satisfaction for both male and female secondary school teachers. Consequential research directions based on the findings of part 1 have been previous highlighted in chapter four. This has included additional exploration of the factors which contribute to perceived competence in order to promote motivation in the teacher role. It was considered that the school environment has the ability to facilitate the attainment of this need.

A significant contribution comes from the findings obtained in part 2 of the study. This was the first known research to explore relationships between the factors of the TSI (Fimian, 1984) independently, whilst also considering the potentially moderating role of teaching satisfaction on such relationships. The adaptation of the scoring further marks a unique contribution to the current understanding of stress within teaching, showing the specific manifestations of stress in male and female teachers. Using a robust theoretical framework, notably the JD-R model (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007), this is the only research to have advocated teaching satisfaction as a potential resource for teachers. It has been shown that the stress experience is multifaceted and diverse findings were reported for male and female teachers. Following the results, a model was derived to provide a comprehensive overview of stress in contemporary teaching which details specific associations for male and female teachers. This again offers a contribution to knowledge by providing an explicit framework for future related studies to consider. Consequently, this

research has provided the most comprehensive understanding of the prevalent factors of sources and manifestations of teacher stress.

The advanced statistical techniques employed within both parts of the study further contribute to setting new standards for future research in the areas of psychology, education, and teacher health. The study design was also based on existent theoretical models. Part 1 of the study explored Self-Determination theory (Deci & Ryan, 2000) and applied structural equation modelling to the data. The Jobs Demand-Resources framework (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007) and the biopsychosocial perspective (Engel, 1980) supported the design in part 2, which was assessed using hierarchical moderated multiple regression.

Suggested implications for teaching practice at the secondary school level and related educational policy, as based on the findings of the study, further contributes to enhancing future knowledge; this has specifically included the factors of motivation, satisfaction, and stress.

6.6.1 Dissemination of knowledge
The findings of the study detailed within the thesis have been further disseminated.

6.6.1.1 Peer reviewed research
Study, Part 1:

Vaughan, J., Boduszek, D., & Rodriguez, A, M. (accepted for publication). 'The secondary school as a therapeutic community', *Therapeutic Communities: The International Journal of Therapeutic Communities, 39*(3). (ISSN: 0964-1866)

Study, Part 2:

Vaughan, J., Boduszek, D., & Rodriguez, A, M. (in preparation). 'Sources of teacher stress and emotional manifestations of stress: The moderating role of job satisfaction'.

6.6.1.2 Seminar

Overall summary of study, delivered to students enrolled on a Foundation Degree in Professional Practice in Health and Social Care (collaborative partners of Sheffield Hallam University).

Vaughan, J. (2017). 'Health and Wellbeing in the workplace'.

6.6.2 Research Plan

6.6.2.1 Basic psychological needs at work and their relationship with teaching satisfaction- A focus on Higher Education Lecturers

My Role: PI- responsible for data collection, analysis and dissemination activities.

Potential Funder: BA/Leverhulme small research grants (TBC- 2019)

Collaboration: Professor Daniel Boduszek (University of Huddersfield), Dr Alison Rodriguez (University of Leeds), and a user group.

Description: This project, using a mixed method design (survey and structural equation modelling, qualitative interview and focus groups and Framework analysis) will compare existent PhD data with new data exploring the psychological needs and staff satisfaction experience of HE lecturers.

6.6.2.2 Exploring the stress experiences of secondary school teachers: A qualitative approach

My Role: PI, responsible for data collection, analysis and dissemination activities.

Potential Funder: Richard Benjamin Trust (submission date: TBC- 2019)

Collaboration: Dr Alison Rodriguez (University of Leeds)

Description: Extension of PhD findings, exploring stress within the teaching profession. Specific focus on professional investment stressors for male teachers and work-related stressors and professional distress in females; these were shown to significantly relate to stress manifestations in the quantitative analysis.

6.7 Chapter Summary

This chapter has provided a comprehensive conclusion to the thesis and has offered a summary on the key findings from the study. A unique theoretical model was developed to assess motivation and satisfaction, and an original design was developed to assess stress in teaching. It has been shown that competence is related to teaching satisfaction for both male and female secondary school teachers in England. Furthermore, the complexities and divergence in teacher stress, with reference to the moderating role of teaching satisfaction, has been presented. It has been shown that different levels of teaching satisfaction moderate the relationships between stressors and manifestations differently for male and female teachers. Female teacher stress is predominantly psychological, whilst for male teachers, stress is biopsychosocial. The key implications for teaching practice at the secondary school level and related educational policy have been proposed. Future research directions have been suggested to further enhance psychological, educational, and occupational health literature. In relation to understanding the contemporary secondary school teacher role, the findings of the study provided a unique contribution to knowledge.

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APPENDICES

Appendix 1: Information sheet

Research

Teaching in contemporary society: a study exploring well-being, needs, stress, and job satisfaction in the teaching profession

You are being invited to take part in the above study. Before you decide to take part it is important that you understand why the research is being done and what it will involve. Please take time to read the following information carefully. Please do not hesitate to contact the researcher if there is anything that is not clear or if you would like more information.

What is the study about?

The purpose of this study is to explore the experience of teaching and to better understand what factors predict wellbeing, stress, and job (dis)satisfaction in the teaching profession.

Why I have been approached?

You have been asked to participate because you are currently working as a teacher.

Do I have to take part?

It is your decision whether or not you take part. If you decide to take part you will be asked to indicate consent at the start of the questionnaire. You will be free to withdraw your data without giving a reason (Please note that withdrawal is not possible after April 2015 as data will already have been analysed). A decision to withdraw at any time, or a decision to not take part, will not affect you in any way.

What will I need to do?

If you agree to take part in the research you will be required to complete a questionnaire. The questionnaire takes approximately 15/20 minutes to complete and requires you to respond to statements relating to your teaching experience. For example, you will be asked to idicate how strongly you (dis)agree with a presented statement by circling the appropriate response. The questions are designed to explore teacher concerns, teacher wellbeing and job satisfaction in the teaching profession.You have the right to choose not to answer a question without giving a reason.

Will my identity be disclosed?

The questionnaire does NOT require that you provide your name. Only details relating to your gender, age, qualifications and teaching area will be requested. All questionnaires are marked with an identification number which you can use to withdraw data at a later date if you so wish. Your identification number will be unique to you and will not be known by the researcher or any other participants.

The results of this research can be made available to you upon request. If you would like to receive a copy of the findings please email the researcher and these will be offered to you when complete.

Who can I contact for further information?

If you require any further information about the research, please contact the researcher on:

Name: Joanne Vaughan (PhD Researcher)

E-mail: joanne.vaughan@hud.ac.uk

Name: Dr Daniel Boduszek (Research supervisor)

E-mail: d.boduszek@hud.ac.uk

Name: Dr Alison Rodriguez (Research co-supervisor)

E-mail:a.m.rodriguez@hud.ac.uk   Thankyou.

Appendix 2: Consent form

CONSENT FORM

Teaching in contemporary society: a study exploring well-being, needs, stress, and job satisfaction in the teaching profession.

It is important that you read, understand and sign this consent form. Your contribution to this research is entirely voluntary and you are not obliged in any way to participate, if you require any further details please contact the researcher. If you are satisfied that you understand the information and are happy to take part in this project please put a tick in the box aligned to each sentence, print your name and sign below.

I have been fully informed of the nature and aims of this research   □
I consent to taking part in it
        □

I understand that I have the right to not answer a question without having to give a reason   □

I understand that I have the right to withdraw my data at any time before the deadline date   □
stated in the information sheet without giving any reason

I understand that the information collected will be kept in secure conditions for a period of   □
five years before being securely destroyed

I understand that my information will be used to inform the researcher's PhD thesis and   □
findings may be published in related journals or reports

I understand that my identity will be protected by the use of an identity number provided on   □
the questionnaire and no written information that could lead to my being identified will be included in any report.

Signed……………………………………..   Date…………………………….
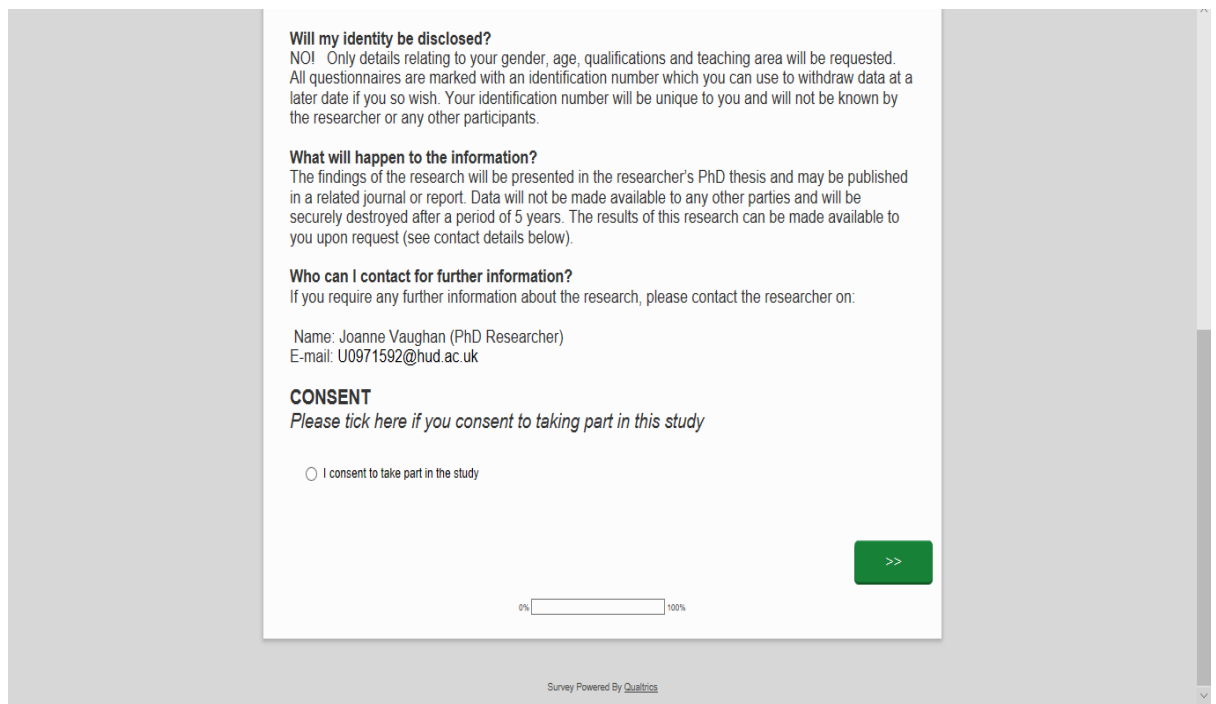
Print Name……………………………………………………………

Appendix 3: Email consent

ELECTRONIC QUESTIONNAIRE CONSENT

Consent for the electronic questionnaire was obtained by clicking the consent option (see below).

The questionnaire was only made available following informed consent. All information was the same as per the paper version (appendix 2)

Will my identity be disclosed?
NO! Only details relating to your gender, age, qualifications and teaching area will be requested. All questionnaires are marked with an identification number which you can use to withdraw data at a later date if you so wish. Your identification number will be unique to you and will not be known by the researcher or any other participants.

What will happen to the information?
The findings of the research will be presented in the researcher's PhD thesis and may be published in a related journal or report. Data will not be made available to any other parties and will be securely destroyed after a period of 5 years. The results of this research can be made available to you upon request (see contact details below).

Who can I contact for further information?
If you require any further information about the research, please contact the researcher on:

 Name: Joanne Vaughan (PhD Researcher)
E-mail: U0971592@hud.ac.uk

CONSENT
Please tick here if you consent to taking part in this study

○ I consent to take part in the study

>>

0% 100%

Survey Powered By Qualtrics

Appendix 4: Permission to use the Teachers Stress Inventory

Permission to use Teachers Stress Inventory.

Email sent to Fimian@InstructionalTech.net as requested (see above)

Appendix 5: Permission to use Basic Psychological Needs at Work scale (SDT)

Permission to use SDT (BPNW Scale)

Email of registration as requested (see above)

Appendix 6: Permission to use Teacher Satisfaction Scale

Permission to use Teaching satisfaction scale