Student Engagement: The Role of Teaching Within an Ecological

Model of Adolescent Development

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Submitted in fulfilment of the requirements for the research degree of Doctor

of Philosophy.

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5 May, 2017.

Author Note

This thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or been awarded another degree or diploma. No parts of this thesis have been submitted towards the award of any other degree or diploma in any other tertiary institution. No other person's work has been used without due acknowledgment in the main text of the thesis. The data utilised in study 3 was drawn from the International Youth Development Study. All research procedures reported in the thesis received the approval of the relevant Ethics Committees.

This thesis by publication comprises the original work of the author. In all published and submitted research studies the author was the Principal Investigator, contributed 50% or more, and planned and prepared the work for publication. Professor Sheryl Hemphill[1], Dr Jess Heerde[2], Assoc. Prof. Ken Smith[3], and Professor Peter Wilson[1] each contributed to the completion of all three studies reported in the thesis. Professor John Toumbourou[4] contributed to the completion of the longitudinal study reported in Chapter 10.

Date: 5 May 2017

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Research Outputs

Published peer review paper as chapter of thesis

Quin, D. (2017). Longitudinal and contextual associations between teacher-student relationships and student engagement: A systematic review. *Review of Educational Research*, 87, 345-387. doi: 10.3102/0034654316669434

Submitted peer review papers as chapters of thesis

Quin, D., Hemphill, S.A., & Heerde, J.A. (2016). Associations between teaching quality and secondary students' engagement in school. *Manuscript submitted for publication*.

Quin, D., Heerde, J.A., & Toumbourou, J.W. (2016). Teacher support within an ecological model of adolescent development: Predictors of school engagement. *Manuscript revised and re-submitted for publication*.

Invited presentations

Quin, D. (2015). *School versus student effects on student engagement and disengagement. A longitudinal study of Victorian adolescents*. Australian Association of Research in Education, Notre Dame University, Fremantle, Australia, December 2.

Quin, D. (2015). *The role of the teacher in student wellbeing and (dis)engagement: A study of Victorian secondary school students*. APS College of Educational and Developmental Psychologists, The University of Melbourne, Parkville, Australia, June 12.

Quin, D. (2015). *Teachers and non-academic outcomes. A study of secondary school students.* Professional development for teachers of a Victorian secondary school (school name withheld), Melbourne, Australia, August 15.

Abstract

Due to the short- and long-term benefits associated with better student engagement teachers, parents, and the broader community have sought to understand how best to improve students' engagement. Teachers and modifications to teaching, as a proximal factor to students' engagement, have been a focus of efforts to enhance engagement. Furthermore, ecological models of adolescent development assert that factors from the individual student, family, peer group, and community are likely to be influential in the development of adolescent outcomes, including student engagement. To date the empirical engagement literature has failed to consider the potential for factors from multiple contexts to concurrently influence student engagement. Further, studies of student engagement have been limited in that they have prioritised either traditional school-based indicators of engagement (i.e., academic grades, suspension, attendance, dropout) or students' subjective perspectives of engagement (i.e., psychological). These student perspectives are in response to the demands of school and encompass: i) a student's overt and less readily observable behaviours; ii) liking and enthusiasm for school; and iii) efforts to understand the prescribed curriculum.

The aims of the research were to: i) understand the extent to which teachers can improve students' engagement; ii) elaborate upon non-teaching factors that influence engagement and; iii) recommend teaching modifications that can be employed to improve students' engagement.

Three studies were undertaken to address the overall research aims. The first study was a systematic review of existing research. Thirty-three cross-sectional and 13 longitudinal studies that investigated associations between teacher-student

relationships and multiple indicators of engagement were synthesised. The second study, a self-report survey of 88 Year 7 students in Victoria, Australia, conceptualised teaching via self-determination theory. The students reported their perceptions of their teachers, family support, and individual factors including academic grades and mental health. Finally, a pre-existing dataset, from the International Youth Development Study was analysed. Adolescents ($n = 719$) were surveyed in Grade 10 and again in Grade 11 on a range of factors from the individual, school, family, peer, and community contexts.

In Study 1 (Chapter 6), results indicated that when students and teachers formed a high quality caring relationship students were more likely to have better academic grades, attendance, and psychological engagement. Students were also more likely to have reduced levels of disruptive behaviours, suspensions, and dropout. Study 2 (Chapter 8) presented results of hierarchical regression analyses. After controlling for individual and family factors, better quality teaching was uniquely associated with behavioural and emotional engagement. The discussion explored the need for an integrated model of teaching to improve students' engagement. The third and final study identified limits to teaching modifications within an ecological model of adolescent engagement. Specifically, Grade 10 teacher support was not a statistically significant predictor of Grade 11 engagement when factors from the individual, family, peer, and community were introduced to the analyses. It was proposed that prior individual educational experiences (i.e., academic grades and engagement) exerted a greater influence on high school engagement than short-term teaching modifications.

Overall, teaching remains a proximal factor to students' engagement. Students who experience high-quality caring relationships with their teachers and better classroom instruction and management were more likely to have better engagement. This was the case across both school-based and students' subjective indicators of engagement. However, limits to teaching exist. Prior educational experiences and factors from the family, peer, and community were statistically significant predictors of engagement in the ecological models presented.

Future research into engagement would benefit from longitudinal study designs that collect student-reported and school-based indicators of engagement at multiple time-points across the duration of a student's academic career. Moreover, theoretical models of engagement should seek to elaborate upon the likely bi-directional relationships between the current predictors and student engagement outcomes. Practical recommendations included a need to recognise the limits to teaching and a need to identify how precisely a student's engagement can be supported.

Chapter 1: Thesis Aim and Overview

The Melbourne Declaration states several aspirational goals for the improvement of education in Australia (Ministerial Council on Education Employment Training and Youth Affairs, 2008). The importance of these goals is exemplified by the statement: "As a nation Australia values the central role of education in building a democratic, equitable and just society— a society that is prosperous, cohesive and culturally diverse, and that values Australia's Indigenous cultures as a key part of the nation's history, present and future" (Ministerial Council on Education Employment Training and Youth Affairs, 2008, p. 4). The first section of this thesis (Chapter 2) outlines how, despite considerable efforts already to improve education in Australia, these efforts are somewhat limited by:

1) A narrow conceptualisation and measurement of education;

2) Minimal consideration of students' perspectives of their education;

3) A predominant view that teachers, on their own, can improve education.

It is the intention of this thesis to help build upon knowledge of how to improve education by broadening the conceptualisation and measurement of education, seeking students' perspectives of their education, and investigating the role that teachers have in improving education.

Before proceeding it is necessary to clarify and limit what is meant by education. For most people learning is a lifelong process and incorporates formal and informal education (Delors, 1996). Within Australia formal education extends from kindergarten (early childhood) to tertiary (adulthood). In between kindergarten and tertiary education, education is compulsory from 5 – 6 years until 15 – 17 years of

age, depending upon the state or territory (Austrade, 2016). It is these compulsory years, and specifically, the formal education that is undertaken in secondary schools, that is the focus of this research.

For over 30 years students who do not complete prescribed classwork, fail to comply with classroom behaviour expectations, have low school attendance, or dropout of school have been of concern (Newmann, 1981). When a student displays any combination of these behaviours they are described as lacking in engagement, or disengaged from their education (Henry, Knight, & Thornberry, 2012). Schools and education policy makers impose attendance and academic grade expectations upon adolescents and regularly record these outcomes (Australian Curriculum Assessment and Reporting Authority, 2015a). As will be expanded upon, the short- and long-term outcomes that have been linked to academic failure, disruptive behaviours, low attendance, and dropout dictate that efforts to reduce these school-based indicators of poor engagement should persist (Beaman, Wheldall, & Kemp, 2007; Belfield & Levin, 2007; Henry et al., 2012).

However, two limitations of these indicators of students' engagement exist. One, they are predominately negative. Two, they do not consider students' perspectives of their education. Consequently, it has been recognised that the measurement of engagement must include students' subjective perceptions of their education (Fredricks, Blumenfeld, & Paris, 2004; Fredricks & McColskey, 2012). This thesis builds on conceptualisations of engagement that recognise engagement as multi-faceted and encompasses negative and positive indicators of a students'

education. Moreover, the measurement of student engagement should be inclusive of school-based concerns and students' subjective perceptions of their education.

Thesis Overview

This research program, that investigated the development of students' engagement, is presented as a thesis by publication (Australian Catholic University, 2015). The publications are predominately student self-report empirical studies, informed by ecological theories of development (Bronfenbrenner & Morris, 2006) and the scientific discipline of psychology (American Psychological Association, 2008). Moreover, the constructs under investigation have long been of interest to students, teachers, schools, and broader society. The fields of psychology and education have each sought to define and understand the development of student engagement. However, insufficient consideration has been given to similarities and differences between traditional school-based measures of engagement and more recent psychology-based measures of engagement (M.-T. Wang & Degol, 2014). Consequently, the current educational psychology research sought to have both practical implications for the school-based practitioner and build upon existing research knowledge in the area of student engagement.

The main body of the thesis is divided into four sections (Figure 1). Chapter 2 elaborates upon the Australian education policy context, draws parallels with international education systems, and explains how students' perspectives of education have been overlooked. Furthermore, it is asserted that in the clamour to improve education, there has been insufficient consideration of factors, other than teachers, that can influence education. Chapter 3 and 4 are a narrative review of the existing

education and psychology literature. Chapter 3 provides an overview of how

education and student outcomes are measured, and why they are important. Chapter 4

presents an ecological model for understanding the development of student outcomes.

Chapter 5 describes the overarching research design and rationale for the three studies

conducted.

Introduction (Chapters 1 – 4)		Method (Chapter 5)	Results (Chapter 6 – 10)		Discussion (Chapter 11)
Overview	Review of policy context and existing literature	Methodological approach	Publications 1, 2, and 3	Interlinking chapters	Integration of the thesis
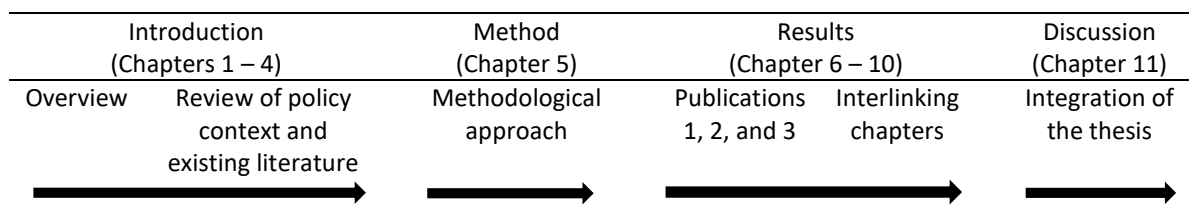
Figure 1. Thesis structure.

The first of three publications, a systematic review of teacher-student

relationships (TSRs) and student engagement is presented in Chapter 6. It was

reported that better quality TSRs predicted improved student engagement. The review

identified a need for future research, into student engagement, to investigate the

potential role of teaching instructional qualities, in addition to factors from the

individual, family, and peer contexts. Chapter 7 is an interlinking chapter. It describes

the need to incorporate a model of teaching that consists of not only TSRs, but also

teacher instructional characteristics. Furthermore, the potential influence of factors

from the individual, family, and peer contexts pointed to a need to apply an ecological

model to the development of student engagement. Chapter 8 is the second study,

submitted for publication. This cross-sectional study utilised a tripartite model of

teaching. A positive association, between student engagement and a combination of

TSRs and teacher instructional qualities was reported. Again, a short interlinking

chapter, Chapter 9 is provided between the studies for publication. The interlinking

chapter described the need for longitudinal data to investigate precursors to improved student engagement. The third and final study is presented in Chapter 10. This study longitudinally investigated the development of student engagement, with an ecological model of adolescence. The final chapter, Chapter 11, integrates the thesis as a whole. It discusses the reported positive associations between better quality teaching and multiple indicators of students' engagement. The implications for educational psychology theory and future research were discussed. Additionally, the potential implications for those wishing to improve students' engagement were explored.

Research Program Overview

Before designing an original research program, to address the research questions, it was necessary to clarify the research problem by "organizing, integrating, and evaluating previously published material" (American Psychological Association, 2010, p. 10). First, the literature review examined the current policy context for education in Australia. This section of the review was necessary because it has been recognised that the activities of schools are increasingly influenced by not just research but overarching political values (Lingard, 2010). The intention was to clarify how education in Australia is currently framed and identify potential inconsistences for further investigation. It was identified that there exists an overemphasis, by policymakers, upon academic grades and teachers. The second part of the literature review presented a synthesis of prior investigations and theoretical perspectives and alternatives to a narrow measurement of academic grades as the main outcome measure of education. This section of the review asserted that students'

subjective perspectives of their education are important. Furthermore, it was recommended that further research should investigate how to improve both traditional school-based measures of engagement and students' perspectives of engagement.

Subsequent to the review of student outcomes a further review was necessary to identify facilitators of these outcomes. Foremost was the need to clarify what is known about the role of teachers and teaching in improving student outcomes. Additionally, it is well established that adolescent development is influenced by multiple factors from the individual, family, peer, and community contexts (Bronfenbrenner & Morris, 2006; Chase, Warren, & Lerner, 2015). These factors, frequently referred to as risk and protective factors, can be seen to promote positive outcomes, or provide the circumstances for adverse outcomes (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004; Lippman, Ryberg, et al., 2014). This section of the review concluded that there exists a preponderance of theoretical and empirical literature that asserts that teachers are the pre-eminent factor to target when seeking to improve student outcomes. Moreover, ecological models theorise that multiple factors external to the teacher (i.e., from the individual, family, peer, and community contexts) exist that *could* influence students' engagement. However, there exists a lack of empirical literature to conclude that teachers can improve multiple student outcomes when factors, external to the teacher are modelled.

Having established a rationale and hypotheses for an original research program three empirical studies were conducted. Narrative reviews "can often include an element of selection bias" (Uman, 2011, p. 57). To overcome this potential limitation the first study planned was a systematic review. Subsequently, two original

studies were planned. Both original studies were designed to address prior limitations, identified from the narrative and systematic reviews of the literature. Both studies applied an ecological model to the development of multiple student outcomes and, in conjunction with the systematic review were designed to address the research questions. Finally, the major findings of the three studies were integrated in the Discussion. Overall implications for theory, practice and policy were elaborated upon.

Aims and Hypotheses

"Teachers need to be provided with contextualised support for their work with students from diverse backgrounds, support that goes beyond the "three Rs"" (Mockler, 2014, p. 139).

The large-scale research question was: How can teachers improve students' engagement in school? Before addressing this question it was necessary to define the outcome variable "education". Critically, this understanding needed to include students' and teachers' perspectives of education. It was not assumed that students' would be disinterested in their academic grades or school and societal expectations for their education. However, an inclusive approach, that recognised traditional school-based measures of engagement (Henry et al., 2012) and recent student-reported psychological engagement (Fredricks, Filsecker, & Lawson, 2016), was adopted when reviewing the literature to define the outcome variable, education.

Having reached an inclusive conceptualisation of education, measured by school and student-based indicators of engagement, a further review of the literature was required. Due to a need to move beyond simplistic bivariate models, such as the teacher → academic grades model, it was necessary to identify multiple independent

variables for analysis. It was expected that these could be placed into two related

groupings, i) teacher-related factors that have been reported to influence education

outcomes; ii) other, non-teacher, factors that have been reported to influence

education outcomes. Finally, it was necessary to generate a multivariate model for

testing in the current research program.

Thus, the proposed research program sought to apply an ecological model to

the development of multiple student outcomes. Figure 2 presents a modified version

of Bronfenbrenner's ecological model of development (Bronfenbrenner, 1979).
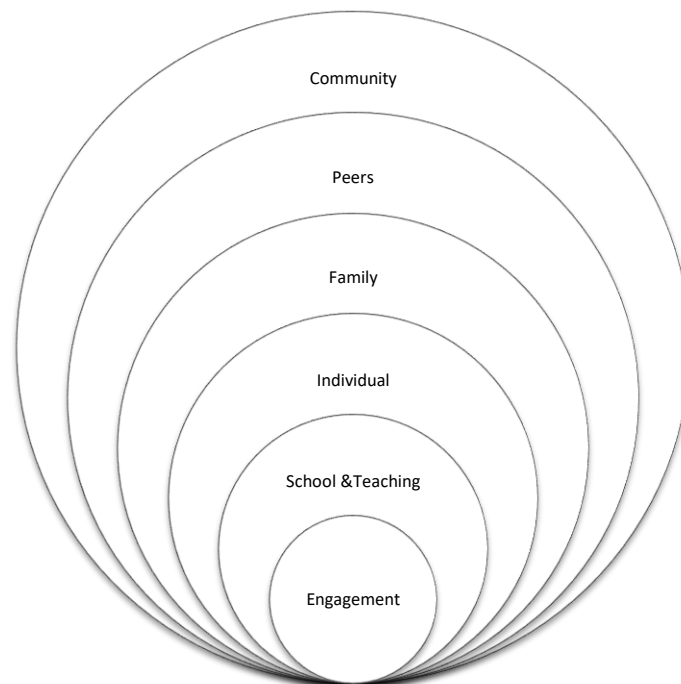
Figure 2. Ecological model of student engagement.

In this model teaching is ascribed as the facilitator (Skinner, Furrer,

Marchand, & Kindermann, 2008) between the individual student and his or her

engagement. The centrality of the teacher to facilitating student engagement, within

the context of school is explained by self-determination theory (Ryan & Deci, 2000;

Skinner & Pitzer, 2012). Thus, the role of the teacher as a modifiable and proximal factor to student engagement was tested. While likely bidirectional pathways are acknowledged (Chase et al., 2015), factors from each of the individual, school, family, peer, and community contexts were viewed as facilitators of student engagement (Skinner et al., 2008). Further, the measurement of multiple indicators of student outcomes was desirable. By simultaneously appraising school-based measures of student outcomes and students' subjective experiences, it was anticipated that the research program would contribute to a greater understanding of under what circumstances teachers can improve multiple aspects of students' education.

Consistent with the ecological model it was expected that non-teaching related factors from each of the individual, family, peer, and community would uniquely facilitate multiple student outcomes. Consequently, consideration was given to non-teaching related factors that improve student outcomes. It was also necessary to describe those dimensions of teaching that facilitate student outcomes.

Taken together, the thesis examined three main hypotheses:

1) That better teaching would be positively and uniquely associated with school-based and student-reported outcomes, in an ecological model of adolescent development.

2) That non-teaching factors, from the individual, family, peer, and community contexts, would make unique contributions to different school-based and student-reported student outcomes.

3) That within an ecological model of teaching, separate dimensions of teaching would be uniquely associated with school-based and student reported indicators of engagement.

Chapter 2: Review of Policy Context

Due to the recognised individual and societal benefits of participation in education, most countries, across the world, strive to provide a better education for their children (Belfield & Levin, 2007, p. 9). In Australia, in 2008 all state and federal education ministers were signatories to the goal of "improving educational outcomes for all young Australians" (Ministerial Council on Education Employment Training and Youth Affairs, 2008, p. 6). Because of the benefits of education, universal primary education is one of eight United Nations (UN) development goals (United Nations, 2015). Moreover, most countries across the world have made secondary education compulsory and developed countries, such as Australia, have raised the compulsory school age to 15 – 18 years (Lamb & Markussen, 2011; UNESCO Institute for Statistics, 2011).

Internationally, in response to negative education outcomes like class disruptions, student absences, academic failure, and dropout policies have been developed and implemented in schools to prevent poor *engagement*. Within Australia, all schools are expected to have a policy with guidelines for the prevention of problem behaviours, low attendance, academic failure, and dropout. These are often termed discipline or behaviour management policies (Australian Institute for Teaching and School Leadership, 2014). Interventions, guided by these policies, assume that the promotion of positive engagement will act as an "antidote" to school-based concerns such as disruptive behaviours, low attendance, and academic failure (Finn & Zimmer, 2012; H. M. Marks, 2000). The government of Victoria has mandated that all schools must have a policy "that articulates the expectations and

aspirations of the school community in relation to student engagement, including strategies to address bullying, school attendance and behaviour" (Australian Institute for Teaching and School Leadership, 2014; Department of Education and Training, 2016b).

The Victorian policy makes explicit use of the term *student engagement* which invites a positive consideration of what engagement is, other than merely the absence of negative student outcomes. Historically engagement promotion was understood as a potential response to dropout concerns (Christenson & Thurlow, 2004; Rosenthal, 1998; Rumberger, 1987). Much of this early work advocated that dropout prevention and engagement promotion would be best achieved from an ecological perspective. Building on this tradition, scholars have written extensively on understandings and definitions of student engagement (Appleton, Christenson, & Furlong, 2008; Fredricks et al., 2004; Fredricks et al., 2016; Jimerson, Campos, & Greif, 2003; Lawson & Lawson, 2013; Reschly & Christenson, 2012).

Despite a "conceptual haziness" (Reschly & Christenson, 2012), it is agreed that any definition of engagement must include students' subjective perspectives of their education and that it is multi-faceted. However, to date the pursuit of higher academic grades has been given almost exclusive priority without adequate consideration of the potential impacts upon or correlates with other aspects of students' engagement.

The Limitation of Academic Grades

While the long-term benefits of participation in education are unquestioned, less clear is what a "better" or "world-class" education encompasses (Levin, 2012).

Countries that have embraced standardised testing regimes such as Australia, the United States (US), and the United Kingdom have almost exclusively focused on numeracy and literacy grades, as the primary measure of a better education (Levin, 2012; Thompson, 2013). The measurement of academic grades is a well-established practice and the improvement of academic knowledge is an obvious goal for education (Levin, 2012). The long-term emphasis on the attainment of better scores on numeracy and literacy is in part due to well-established positive correlations between higher academic grades and career earnings (Levin, 2012).

In Australia, the importance of national, standardised assessment of academic grades is driven by recent Australian federal governments, that have placed education and so-called low performing schools as a national priority (Loughland & Thompson, 2016; Mockler, 2014). The stated intentions of high-stakes assessment of numeracy and literacy is, at face value, admirable: "to help drive improvements in student outcomes" (Australian Curriculum Assessment and Reporting Authority, 2016c). While some teachers have reported the benefits of attention to numeracy and literacy, they have also reported feeling restricted in their ability to tailor the curriculum to their students' behavioural, cognitive, and emotional needs (Thompson, 2013). Elsewhere, standardised assessment regimens have limited teachers ability to develop the whole child, despite a strong desire to do so (Sanderse, Walker, & Jones, 2015). For students this can mean that the development of so-called "non-academic" skills such as healthy relationships, physical and psychological wellbeing, perseverance, and creativity are at best ignored or worse, stifled (Duckworth & Yeager, 2015). Indeed, it is increasingly acknowledged that the narrow assessment focus on academic

grades has, unintentionally, narrowed the school curriculum, teaching methodologies, and broader societal expectations of what education should achieve (Hardy & Boyle, 2011; Levin, 2012; Thompson, 2013).

An immediate solution to the problem caused by high-stakes national assessments would be to cease the practice. A body of literature asserts that education outcomes are measured excessively (Hardy & Boyle, 2011). An alternative view is that the problem exists with what a test does or does not measure and the subsequent use of the results of the tests (Ravitch, 2010). The current research program adopts the latter view that measurement and assessment can improve education, on the proviso that it is used to support students' education (Falk, 2000). Moreover, due to observations that measurement can lead to a 'teach to the test' mentality (Thompson, 2013) it is essential to broaden understandings and measurement of education by redressing underdeveloped notions of how to improve non-academic outcomes.

The emphasis and subsequent narrowing of education is of concern because non-academic skills, not directly assessed by tests of numeracy and literacy, have been reported to be better predictors of adult outcomes, such as career earnings, depression, and likelihood of incarceration (Heckman & Kautz, 2012). While it is increasingly acknowledged that non-academic skills are important no consensus exists on what precisely non-academic skills encapsulates (Moore, Lippman, & Ryberg, 2015). For example, one definition of non-academic skills: "the personal attributes not thought to be measured by IQ tests or achievement tests" (Heckman & Kautz, 2013, p. 10), is notable for the need to distinguish from academic skills without clearly articulating what a non-academic skill is. This lack of clarity is problematic for

teachers who seek to improve non-academic skills. This is because the interventions that improve, for example, physical well-being (Strong et al., 2005) differ to interventions that improve socio-emotional skills (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Equally, for researchers there is a need to be specific about what precisely is being measured. The following chapter (Chapter 3) elaborates upon the conceptualisation of these constructs under investigation in the current research program. Notwithstanding this definitional limitation the authors note that the use of the term *skill* is important because it suggests that these skills are malleable and can be shaped in school (Duckworth & Yeager, 2015; Heckman & Kautz, 2013).

Are Students' and Teachers' Perceptions of Education Relevant?

An additional concern associated with the narrow measurement of academic grades is that it is driven by a top-down process, in which politicians and policy makers devise assessment systems, for a diverse range of purposes (Mockler, 2014). Teachers' views of education are infrequently sought (Thompson, 2013) and students' needs and views of their education are even less frequently sought. Whether it is intentional or not the overreliance upon numeracy and literacy assessments has led to the omission of the subjective experiences of students and teachers when evaluating education (Thompson, 2013). This is of concern because "information about a child's behavior, knowledge, attitudes, and values is more accurate if it comes directly from the child or adolescent" (Moore et al., 2015, p. 6). This is most notably the case for non-academic skills - the measurement of which is either time consuming for a third-party observer or fails to detect underlying emotions and cognitions (Appleton, Christenson, Kim, & Reschly, 2006).

The two interrelated problems of i) a narrow measurement of education and; ii) a lack of student and teacher and school input are not insurmountable. Numerous reliable and valid measures of non-academic outcomes that explicitly seek students' perspectives already exist (Moore et al., 2015). While school-based measures of student outcomes are more readily available, these are typically negative like academic failure, suspensions, absences, and dropout (Department of Education and Training, 2015; Henry et al., 2012). In the public clamour to embrace standardised assessments of numeracy and literacy (Lingard, 2010) these long-standing school-based concerns (Newmann, 1981) and students' perspectives have largely been ignored, outside of schools. This is a notable omission because both school-based measures of student outcomes and students' subjective reports are important predictors, in their own right, of longer-term vocational and well-being development goals (Henry et al., 2012; Moore et al., 2015).

In a recent review of non-academic (i.e., not academic grades or intelligence) skills it was recommended that policymakers, teachers, and researchers adopt a plurality of measures of child development. Moreover, the measures selected should be the "most valid measure for their intended purpose" and be derived from multiple informants (Duckworth & Yeager, 2015, p. 245). Pragmatically, the inclusion of "student voice" can assist in improving education (Mitra, 2004). However, for the current research program, a more fundamental principle was applied for seeking students' views of their education. As the people most affected by changes to their school, students should have the opportunity to contribute to those decisions. In his critique of current US education practices Giroux (2014) asserted: "schools have

increasingly become testing hubs that de-skill teachers and disempower students" (p.

351). Further, it has been suggested that this top-down approach to education is

threatening ideals of democracy and that it is only by seeking the views of students

and teachers that education can be democratic (Apple, 2011; Giroux, 2014).

By concurrently measuring multiple education outcomes it should be possible

to ascertain if new practices can improve education outcomes at multiple levels,

simultaneously. Therefore, before seeking to understand how to improve education

the current research program explicitly sought students' and teachers' perceptions of

education, when defining what a better education outcome is.

Teachers as Supermen and Women

The reductionist measurement and conceptualisation of education is matched

by the over-simplification of what can improve academic grades. This is best

exemplified by a statement made in 2012, by the then Australian Prime Minister,

"nothing matters more to the quality of a child's education than the quality of the

teacher standing in front of the class room" (Gillard, 2012). Subsequent federal

governments have pursued this emphasis on teachers, with the view to lifting results

in international and national standardised assessments of numeracy and literacy

(Australian Government, 2016). Skourdoumbis traced the origins of this approach to

influential private sector reports "that positions classroom teachers and their

instruction as the pivotal if not sole contributor to enhanced student achievement"

(Skourdoumbis, 2014, p. 413). Or, "if students and teachers are held to account they

will each work harder to achieve better results" (Lobascher, 2011, p. 9). This dynamic

has contributed to a neoliberal, market driven view of education in which teachers can

be seen as the only factor in improving, not only academic grades, but other less well articulated student outcomes (Darling-Hammond, 2013; Thompson, 2013). This reductionist view of education is summarised in Figure 3 and contrasts with a more comprehensive ecological model (Figure 2).

| Improved teacher quality | → | Improved academic grades | → | Better adult vocation and health |
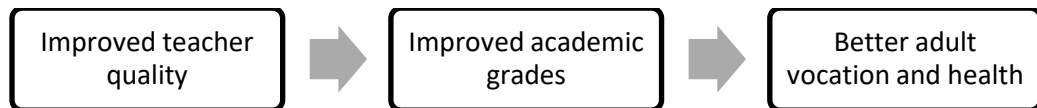
Figure 3. Simplified model of improved education.

Ecological models of development are supported by decades of research that has repeatedly demonstrated multiple influences on human development, including academic grades, vocational opportunities and physical and psychological wellbeing (Bronfenbrenner & Morris, 2006; Chase et al., 2015).

Despite valid arguments that schools and teachers are best placed to improve student outcomes, there is insufficient evidence to conclude that teaching modifications alone can improve students' academic or non-academic outcomes. Most importantly, before concluding that modifications to teachers or teaching can improve multiple student outcomes, it is necessary to understand under what circumstances teacher modifications can influence students' outcomes. Consequently, it is the intention of the current research program to be responsive to the existing focus on teachers in Australia. However, it is stated from the outset that teachers do not create education in isolation from the context around them. Further, students are not an empty vessel waiting to be filled.

Conclusion

Education systems throughout the world, including Australia, have sought to quantify *education.* Student engagement and increasingly the quality of teaching has been inferred from standardised tests of numeracy and literacy. Limitations of these inferences exist. These include a limited ability to develop students' non-academic outcomes, a lack of student voice, and reductionist approaches to teaching and their influence. There exists a gap in understandings of non-academic outcomes and how teachers can simultaneously improve academic grades and other less well-articulated outcomes.

Chapter 3: Review of Student Outcomes

The review of the education policy context (Chapter 2) identified that, within Australia, there has been insufficient examination of outcomes other than academic grades. Furthermore, the preceding chapter described a need for students' perspectives of their education to be investigated. First, this review chapter elaborates upon the importance of traditional school-based concerns, including academic grades. It then describes ways that students' perspectives of education have been theorised and empirically examined. The intention of this review of student outcomes was to refine the research variables under investigation and establish a rationale for the three studies conducted in the current research program.

At the outset it is important to distinguish between education outcomes and outcomes of education. As the research program uncovered, an education outcome is contested and far from easy to operationalise. This is in part due to the duration of a typical school education and developmental changes experienced over this time. For example, should an academic mark, received in Grade 3, be treated as an outcome at the time, or as a predictor of Grade 10 attendance? While education can be viewed as a process and accumulation of experiences (Reschly & Christenson, 2012; Rumberger & Rotermund, 2012) the education outcomes currently under investigation represent that students' experience at a point in time (Moore et al., 2015). Because of the centrality of an individual student to this measure a more precise description is a *student* outcome. Furthermore, for current purposes outcomes of education refers to processes and events, external to school, that can be seen to be influenced by student outcomes.

School-based Measures of Student Outcomes

In addition to academic grades, a range of school-based measures like disruptive behaviours, student absences, academic failure, and dropout, have been and remain long-term student outcome concerns (Balfanz, Herzog, & MacIver, 2007; Henry et al., 2012). These are termed *school-based* because teachers and schools have traditionally, and continue to be concerned by these outcomes (Newmann, 1981). Importantly, each of these student outcomes have been associated with poor student engagement or disengagement (Henry et al., 2012). Historically, these school-based indicators of students' outcomes have been of interest because of their role in the process of dropout or failure to complete school (Catterall, 1986; Finn, 1989).

Compared with their peers who complete school, students who dropout are more likely to experience diminished physical and mental health, have reduced career opportunities, and be involved in criminal behaviours (Belfield & Levin, 2007; Henry et al., 2012; L. Robinson & Lamb, 2012). Further, it is estimated that the social cost of not completing high school is in excess of $200,000 over the lifetime of each dropout (Belfield & Levin, 2007). Despite the long-term and well understood implications of dropout it has been suggested that too much focus is placed on dropout as a student outcome, and too little on earlier indicators of poor engagement in school (Bachman, Green, & Wirtanen, 1971). Further to this, each of disruptive behaviours, student absences, and academic failure all have been linked to a process of gradual *dis*engagement from school, culminating in dropout (Finn, 1989; Rumberger & Rotermund, 2012). A longitudinal study of dropout reported that while academic failure was the most important predictor of dropout, each of general

deviance (i.e., drug use, disruptive behaviours at school, participation in sexual activities) and low family socioeconomic status also predicted subsequent dropout. The authors recommended that multiple approaches to prevent dropout should be adopted (Newcomb et al., 2002).

The most overt indicator of diminished engagement is disruptive behaviours. These troublesome behaviours, defined as behaviours that interfere with a student's own learning, other students' learning and / or disrupts a teacher's ability to teach are typically low-level disruptions such as talking out of turn, hindering other students, and idleness (Beaman et al., 2007; Sullivan, Johnson, Owens, & Conway, 2014). International estimates suggest that the prevalence of students who exhibit disruptive behaviours ranges internationally from 15% to 20% (Beaman et al., 2007; Little, 2005).

Due to the mostly benign nature of any one disruptive behaviour and the high frequency that these behaviours occur, individual schools infrequently collate data of this nature. Instead suspension or exclusion from school, initiated by the school in response to a student's engagement, can be used as an indicator of problematic engagement (Henry et al., 2012). In Victorian high schools suspension rates of 5% for females and 12% for males have been reported (Hemphill, Plenty, Herrenkohl, Toumbourou, & Catalano, 2014), with similar rates in the US (Hemphill, Herrenkohl, et al., 2012) and England (Department for Education, 2015b). As a result of disruptive behaviours teachers report significant behavioural management challenges and loss of instruction time (Crawshaw, 2015; OECD, 2014b). In the longer term, students who were suspended in Grade 7 were more likely to experience suspension in Grade 9 and

participate in non-violent antisocial behaviours, above and beyond gender and family socioeconomic factors (Hemphill, Herrenkohl, et al., 2012). It has been proposed that one of the reasons for the unique deleterious effects of school suspension is because suspension diminishes exposure to positive adult relationships, including teachers, and increases exposure to antisocial relationships (Hemphill, Toumbourou, Herrenkohl, McMorris, & Catalano, 2006; Quin & Hemphill, 2014). Studies such as these utilised student self-report to survey a range of risk and protective factors known to influence adolescent outcomes.

The presence or absence of a student from school is less of a classroom behavioural management concern than disruptive behaviours, but is a particularly overt indicator of a students' engagement (Rumberger & Rotermund, 2012). Consequently, national and international education reporting agencies monitor school attendance data. For example, it was reported that, within Australian government schools, between 8% and 14% of 13 to 16-year old students were absent for at least half of a typical school day (Australian Curriculum Assessment and Reporting Authority, 2014). In England, using similar data classification methods, 5% of 11 to 18-year olds, in state-funded secondary schools, were reported absent. While in the US 24% of 13 to 14-year olds were absent for three or more days within a one-month period (National Center for Education Statistics, 2014). The concern is that students with higher rates of school absences were more likely to experience poor mental health outcomes and participate in problematic substance use (Kearney, 2008). Even the classmates of students who were chronically absent were more likely to have poorer academic grades (Gottfried, 2015).

Academic grades are also a well-established indicator of students' engagement (Balfanz et al., 2007; Henry et al., 2012). The Programme for International Student Assessment (PISA) reported that, in 2012, 28% of 15-year old students in Organisation for Economic Development (OECD) countries did not meet established standards in at least one of the core academic subjects (OECD, 2016). By definition, academic failure denotes that a student has failed to demonstrate the requisite standard in an area of the academic curriculum that is considered "essential for full participation in modern society" (OECD, 2014a, p. 23). The academic performance of Australian students (in terms of failure) was slightly better than the OECD average (24%). Alternatively, the national school data collection agency in Australia reported that 4% to 19% of 12 to 15-year old students did not meet the national minimum standards for one of the five numeracy and literacy standards (Australian Curriculum Assessment and Reporting Authority, 2015b). A comprehensive review reported that students with poor academic grades were more likely to use tobacco, alcohol, and other drugs, have poor nutrition, engage in sexually risky and violent behaviours, and have low rates of participation in physical activity (Bradley & Greene, 2013). Collectively, these adolescent health-risk behaviours were investigated due to their associations with youth and adult death, disability, and social problems (Kann et al., 2016).

Suspensions, high rates of absences, and academic failure have been aggregated into an "early warning system" (Balfanz et al., 2007; Department of Education and Training, 2015; Henry et al., 2012). While these warning systems have been predominately used to identify students at risk of school dropout they also

predicted a range of other negative outcomes of education. For example, students'

Grade 8 and 9 school records (i.e., suspensions, low attendance, academic failure)

were shown to predict increased participation in antisocial behaviours and

problematic substance use during young adulthood, after controlling for individual

and family factors (Henry et al., 2012). Moreover, the early warning index directly

predicted dropout, which in turn predicted poorer outcomes in young adults.

Students' Perspectives of Their Education

For reasons outlined, the reduction of disruptive behaviours, suspensions,

student absences, academic failure, and dropout remain an important prevention

focus. However, it is apparent that each of these school-based indicators of students'

outcomes provide minimal consideration of the students' subjective perspectives and

experiences of school (Fredricks & McColskey, 2012). It was observed over thirty

years ago, that students' subjective experiences can only be inferred from disruptive

behaviours, suspensions, student attendance, academic grades, and dropout (Mosher

& MacGowan, 1985). Moreover, while good academic grades is a positive student

outcome, other indicators like disruptive behaviours, suspensions, absences, academic

failure, and dropout fail to reflect positive adolescent outcomes (Lippman, Moore, et

al., 2014).

While rarely sought several reasons exist for seeking students' perspectives of

their education (Hamre & Cappella, 2015). As stated earlier, school-based measures

of students' outcomes can be improved by seeking students' voice (Mitra, 2004). But

more importantly, as asserted in the current research program, it is only when

students' subjective experiences are consistently and clearly measured can both

academic and non-academic outcomes be enhanced. It is suggested that one reason for the current lack of student input, in Australia, is due to inconsistencies and difficulties in the measurement of students' subjective experiences (Australian Institute for Teaching and School Leadership, 2014). However, PISA has recently commenced asking students' to report their education experiences, to complement traditional measures of attendance and academic grades (OECD, 2013). Within Australia, a *National School Opinion Survey*, that consists of 12 student-report questions was devised (Australian Curriculum Assessment and Reporting Authority, 2016b). Not all states and territories of Australia, including Victoria, have adopted this survey. Instead Victorian schools are required to complete and report upon the *Attitudes to School Survey* (Department of Education and Training, 2016a).

Unfortunately there exists a paucity of information regarding theoretical and psychometric underpinnings of the international, national, and state student surveys. This is potentially problematic as there is a need to distinguish between modifiable contextual factors and students' engagement (Reschly & Christenson, 2012). Moreover, it is unclear how these surveys reflect the multidimensional nature of engagement (Fredricks et al., 2016) and how the validity and reliability of these surveys compare to other student engagement measures (Fredricks & McColskey, 2012).

Notwithstanding the new student self-report, national attendance rates, academic grades, and dropout rates remain "key performance measures" of education in Australia (Australian Curriculum Assessment and Reporting Authority, 2015a). Consistent with this view national between-school comparisons for numeracy and

literacy scores, attendance, and Year 12 completion rates are readily available on the MySchool website (Australian Curriculum Assessment and Reporting Authority, 2016a). In contrast, results of any administered student self-report survey can only be obtained from school annual reports, located on individual school websites. This unequal treatment of students' perspectives has the potential to make the student survey appear tokenistic and reassert the dominance of a top-down approach to education (C. Robinson & Taylor, 2013).

When students' perspectives are sought it is possible to identify those who "make a psychological investment in learning. They try hard to learn what school offers. They take pride not simply in earning the formal indicators of success (grades), but in understanding the material and incorporating or internalizing it in their lives" (Newmann, Wehlage, & Lamborn, 1992, p. 3). In contrast, a large percentage of high school students have reported being bored at school (50% every day, 17% every class; Yazzie-Mintz, 2007), or that they lack an interest in, or do not enjoy school (Gorard & See, 2011). Further, teachers have long been troubled by student idleness or apathy (Little, 2005; Newmann, 1981; Sullivan et al., 2014).

Engagement: A Way Forward

A detailed illustration of students lacking what is sometimes termed *psychological engagement* (Newmann et al., 1992), comes from an ethnographic study of five students who achieved higher than average academic grades (Pope, 2001). These students were frequently not challenged and were "doing school" to the detriment of their positive values, interests, and wellbeing. Conner and Pope (2013) further elaborated upon the engagement of students with high academic grades and

reported that 84% ($N = 6{,}294$) lacked *full engagement*. Student and teacher reports of student boredom and apathy have led to the identification of a typical group of students who are present in class, behaviourally compliant, and completing the prescribed work, but lack full engagement.

This psychological engagement perspective recognises that a student's internal processes such as effort, interest, and enthusiasm are crucial to the acquisition of knowledge and participation in school (Newmann et al., 1992). Factors such as interpersonal relationships, mental health, and intelligence may influence engagement but they are not exclusively present in response to the demands of school. For example, a student may be experiencing depression and associated low engagement but the depression exists external to school. Similarly, a student can have a positive relationship with his or her teacher but have minimal interest in exerting the requisite effort required to master a learning concept.

As noted, students who achieve academic grades are more likely to subsequently experience a range of positive physical, psychological, and vocational outcomes (Bradley & Greene, 2013; Levin, 2012). However, studies of high academic achieving students and other studies that control for academic grades (M.-T. Wang & Peck, 2013) indicate that it cannot be assumed that a student with good grades will be precluded from having diminished mental health and poor quality relationships. Hence, the need to identify measures of students' outcomes other than academic grades.

In contrast to the negative outcomes associated with school-based measures of student outcomes, a range of positive outcomes have been reported, using student

self-report of psychological engagement (Lippman, Ryberg, et al., 2014). For example, Australian upper primary and lower secondary students (mean age = 11.9 years) with higher levels of self-reported engagement were more likely to have higher status occupations in adulthood, independent of academic grades and family socioeconomic status (Abbott-Chapman et al., 2013). In the US Grade 9 self-reported psychological engagement positively predicted college enrolment and negatively predicted Grade 11 depressive symptoms, after controlling for individual and family factors (M.-T. Wang & Peck, 2013).

A limited number of intervention studies have investigated self-reported engagement. One such study sought to improve primary (elementary) students' engagement (Hawkins, Guo, Hill, Battin-Pearson, & Abbott, 2001). The intervention consisted of teacher training (i.e., interactions with students, classroom instruction) and a curriculum that improved students' social skills. Students in the intervention group were more likely to have better self-reported engagement at age 18 years. Furthermore, students with better engagement were more likely to have lower levels of school misbehaviour, participation in crime, substance use, and participation in sexual activity (Hawkins et al., 2001). Also in the US, a program designed to "create positive relationships between students, families, and the school … for disengaged students" (p. 98) was reported to improve student attendance and teacher-reported engagement (Anderson et al., 2004).

Elsewhere longitudinal studies of student-reported psychological engagement, have described a bi-directional, positive association, with life satisfaction (A. D. Lewis, Huebner, Malone, & Valois, 2011), diminished substance use and antisocial

behaviours (M.-T. Wang & Fredricks, 2013), and improved academic grades (Chase, Hilliard, Geldhof, Warren, & Lerner, 2014). Finally, negative outcomes in response to declining levels of self-reported engagement over time have also been reported. Students' whose self-reported engagement declined over a 4-year period had the highest rates of delinquency, substance use, and depression in Grade 8 (Li & Lerner, 2011).

Student Engagement: The Meeting of Students' and Schools' Perspectives

Clouding the utility of student engagement, as a target for intervention into school-based concerns or the promotion of positive adolescent outcomes, has been a lack of clarity surrounding the conceptualisation and measurement of student and school-reported engagement (Fredricks et al., 2016). Research and practice that has relied upon school-based measures to identify students with low engagement (Department of Education and Training, 2015; Henry et al., 2012) has neglected the growing awareness of the importance of students' psychological engagement. Other research traditions more reliant upon students' psychological perspectives have contributed to a "fragmented literature, where scholars have tended to select measures from prior research without questioning the theoretical framework and construction definition" (Fredricks et al., 2016, p. 1).

To date research has not substantially addressed distinctions and similarities between school-based indicators of engagement and student-reported psychological engagement (M.-T. Wang & Degol, 2014). This has contributed to two, parallel, research focuses. First, intervention efforts seek to improve students' psychological engagement, in response to low engagement indicators such as disruptive behaviours,

absences, academic failure, and dropout (Finn & Zimmer, 2012). Second, from the promotion of psychological engagement it is expected that all students will improve their academic grades and a range of other positive behavioural and emotional outcomes (Li & Lerner, 2011). In this regard engagement has been presumed to be a continuum (Figure 4; Appleton et al., 2008; Lovelace, Reschly, Appleton, & Lutz, 2014). The expectation arising from the continuum perspective is that if a student can be supported to participate, enjoy, and value school then academic failure, and other negative outcomes will not occur.

Low engagement		**High engagement**
Disruptive behaviours		Full participation
Diminished attendance	$\longleftarrow \qquad \longrightarrow$	Enjoyment
Academic failure		Values
Dropout		

Figure 4. Continuum of students' engagement in school.

The limitation of the continuum perspective is that a student may energetically participate in school, with an absence of overt school-based concerns, but the involvement may have minimal educational value and therefore not enhance academic grades (Newmann, 1981). Finn's (1989) frustration self-esteem model provides an alternative possibility in which a student may value and even enjoy school. However, the school may not meet the student's learning or psychological needs and disruptive behaviours, absences, or academic failure eventuates. In this latter example, observation of disruptive behaviours could lead to the inference that a student does not value numerical or literacy skills. The problem with inferences of this nature is that it can lead to interventions that fail to address the underlying cause of the disruptive behaviour. Thus, it should not be assumed that a students'

engagement profile will be consistent across the dimensions of engagement measured, be they student self-report or overt, school-based indicators of engagement (Betts, 2012; Hospel, Galand, & Janosz, 2016).

Despite these differences, several points of agreement exist. First, students' engagement in school includes, but is not limited to observable behaviours and school-based concerns (Appleton et al., 2006). Consequently, student self-report and occasionally teacher report is the preferred method for understanding students' psychological engagement in school (Fredricks & McColskey, 2012). Second, students' engagement is multidimensional (Reschly & Christenson, 2012). Most typically, it is thought to consist of separate, but interrelated psychological processes that represent a student's actions, feelings, and thoughts in response to the requirements of participating in the activities of school (Fredricks et al., 2004; Reschly & Christenson, 2012). These engagement dimensions have been described variously as behavioural, emotional, cognitive, academic, and agentic (Fredricks et al., 2016).

The student-report measures used to date have varied considerably (Fredricks et al., 2016; Fredricks & McColskey, 2012). A review of 11 self-report measures of student engagement identified inconsistency in the conceptualisation and measurement of engagement (Fredricks & McColskey, 2012). For example, psychological engagement was represented as a unitary (Hafen et al., 2012; You & Sharkey, 2009), bi-dimensional (Li & Lerner, 2011), tri-patriate (Conner & Pope, 2013), or four-component (Reeve, 2012) construct. Further, a six-factor model (i.e., attentiveness, compliance, valuing, belonging, self-regulation, and cognitive strategy)

was grouped into a simplified three-factor model (i.e., behavioural, emotional, cognitive; M.-T. Wang, Willett, & Eccles, 2011). Notwithstanding this variability, it can be seen that it is possible to reliably measure student-reported psychological engagement (Fredricks & McColskey, 2012).

Perhaps a more fundamental problem for understandings of engagement has been studies that blurred the distinction between engagement and external facilitators such as relationships with teachers and peers (Appleton et al., 2006; Bond et al., 2007). One commonality, between traditional school-based indicators of engagement and more recent conceptualisations of student-reported engagement is that they are the manifestation of the interaction between the student and the student's context (Finn & Zimmer, 2012; Fredricks, 2015). The current research program recognises this commonality, defining engagement in school as the dynamic connection between the person (i.e., the student) and a given school-based activity (Russell, Ainley, & Frydenberg, 2005). This dynamic is expressed in both overt behaviour and inferred psychological processes.

Importantly, this conceptualisation suggests that a fit between the students' and schools' needs is sought (Eccles et al., 1993). Should a mismatch occur between the student and school then poor engagement ensues in the form of any combination of disruptive behaviours, absences, academic failure, dropout, diminished participation, dislike, or lack of interest.

Conclusion

While the dominant mode of measuring education and engagement involves the measurement of academic grades and to a lesser degree disruptive behaviours,

attendance, and dropout (Australian Curriculum Assessment and Reporting Authority,

2015b; Henry et al., 2012) there is a need to also consider students' self-reported

engagement (Fredricks & McColskey, 2012). Thus, when trying to understand how to

improve student outcomes, both traditional school-based engagement concerns (i.e.,

disruptive behaviours, attendance, academic grades, and dropout) need to be

individually and concurrently considered with students' perceptions of engagement

(Hospel et al., 2016).

Chapter 4: Review of Facilitators of Engagement

This chapter reviews theoretical and empirical research that has identified factors that can be modified to enhance adolescent outcomes. By synthesising the extant literature the intention was to provide a framework for the study of multiple indicators of students' engagement. It was anticipated, from the review of facilitators of engagement, that gaps in understandings of what may or may not influence students' engagement could be identified for further study.

Chapter 2 of this thesis asserted that the policy milieu surrounding improvements to education in Australia is limited to teachers and students. Unfortunately a restricted emphasis on students and teachers can ignore an existing body of evidence that has reported the concurrent influence of family, peer, and community (Lawson & Lawson, 2013). This is consistent with research, on a range of adolescent development outcomes, that has identified multiple influences from the individual, family, school, peer, and community contexts (Bond, Thomas, Toumbourou, Patton, & Catalano, 2000; Catalano, Hagerty, Oesterle, Fleming, & Hawkins, 2004; Chase et al., 2015; Lippman, Moore, et al., 2014). Positive youth development programs have successfully modified identifiable factors from multiple contexts to improve not just student, but adolescent outcomes (Catalano, Berglund, et al., 2004; Chase et al., 2015; Sinclair, Christenson, Lehr, & Anderson, 2003). Thus, further to the need to consider multiple indicators of engagement, there exists a need to consider the potential for unique influences on the development of these outcomes (Chase et al., 2015; Jimerson et al., 2003).

Ecological theories of development acknowledge that the factors within these contexts are dynamically interrelated (Bronfenbrenner & Morris, 2006). Importantly, for those seeking to improve students' engagement, factors or *facilitators* within these contexts are considered external to engagement and "are hypothesized to influence engagement" (Skinner et al., 2008, p. 766). The promise of students' engagement in school, therefore, is that it is theorised to be malleable and responsive to modifications, in not only the school context (Eccles, 2016) but also the individual, family, peer, and community contexts (Lawson & Lawson, 2013).

Individual Factors

While a student's gender is not modifiable it is an important student engagement consideration. When school-based indicators of students' engagement are examined males are more likely to have lower engagement than females. For example, males experience higher rates of suspension (Hemphill, Plenty, et al., 2014), and school dropout (L. Robinson & Lamb, 2012). Additionally, males were more likely to have poor academic grades (OECD, 2014a). Similar trends are apparent for student-reported psychological engagement (Lam, Jimerson, et al., 2012; M.-T. Wang & Eccles, 2012).

A student's age is also unable to be modified, but age-related differences in engagement are apparent. There is evidence to suggest that the rates of disruptive behaviours, suspensions, and low attendances typically increase to Year 10 and then plateau (Angus et al., 2009; Janosz, Archambault, Morizot, & Pagani, 2008; Ministry of Education, 2015). This decline in a school based indicator of engagement is consistent with student-reported engagement (Wylie & Hodgen, 2012). Elsewhere,

among a Finnish sample of adolescents, it has been reported that emotional

engagement, but not academic grades declined from Grade 9 to Grade 11 (M.-T.

Wang, Chow, Hofkens, & Salmela-Aro, 2015).

While age and gender are characteristics of an individual student that facilitate

engagement, it is not so clear if academic grades are a facilitator of engagement, an

indicator of engagement, or outcome of engagement (Reschly & Christenson, 2012).

The actions of education policy makers give the impression that academic grades are

an outcome of students' engagement in school (Lingard, 2010). Alternatively, strong

correlations between inherited cognitive ability and academic grades suggest, that at

least some portion of, academic grades should be considered an individual

characteristic, that influences engagement (Deary, Strand, Smith, & Fernandes, 2007;

Duckworth, Quinn, & Tsukayama, 2012; G. N. Marks, 2014; Plomin & Deary, 2015).

Longitudinal studies that utilise structural equation modelling, reported that academic

grades and perceptions of academic competence had bidirectional relationships with

students' psychological engagement (Chase et al., 2014; Li, Lerner, & Lerner, 2010).

Consequently, academic grades can be simultaneously a facilitator, indicator, and

outcome of engagement, dependent on one's perspective.

In addition to academic grades, increasingly, schools are required to

incorporate an awareness of and promote good student mental health (Suldo,

Gormley, DuPaul, & Anderson-Butcher, 2014; Weare & Nind, 2011). Much like

academic grades, student mental health can be viewed as an outcome of school

experiences (Bond et al., 2007). Consistent with this perspective, it was reported that

Grade 9 students with low emotional engagement or low overall engagement were

more likely to subsequently report depressive symptoms (M.-T. Wang & Peck, 2013).

Alternatively, student mental health has been viewed as an attribute of a student, or

group of students, that needs to be integrated with other traditional goals of education

(Atkins, Hoagwood, Kutash, & Seidman, 2010). Much like the role of academic

grades in the development of engagement, mental health is difficult to categorise as

either a facilitator or outcome. Developmental psychopathology research has termed

the phrase *developmental cascades* to represent the cumulative consequences of

interactions across many contexts (Masten & Cicchetti, 2010). For example, poor

mental health can diminish student engagement, which in turn, further diminishes a

student's mental health (Masten et al., 2005).

  Finally, of the individual factors that facilitate a student's engagement, prior

engagement has been reported to predict future engagement (Rumberger &

Rotermund, 2012; You & Sharkey, 2009). Hence the belief that dropout is an

accumulation of prior engagement experiences, rather than an isolated event

(Rumberger & Lim, 2008). Much like developmental cascades, longitudinal studies of

student-reported psychological and school-based measures of engagement provide

evidence for reciprocal pathways between both school and student report of

engagement (Chase et al., 2014; M.-T. Wang & Fredricks, 2013). Notwithstanding the

acknowledged bi-directional pathways between academic grades, engagement, and

mental health, when seeking to understand a student's engagement, at any one point

in time, it is necessary to incorporate an understanding of these factors.

Family, Peer, and Community Factors

A cursory examination of the expression *student engagement in school* could lead to the view that the student and perhaps the student's school are responsible for a student's engagement. However, it is an unwelcome reality that students from lower socioeconomic families are more likely to experience lower academic grades (G. N. Marks, 2014), be absent from school (Kearney, 2008), be suspended (Hemphill et al., 2010), dropout (Fall & Roberts, 2012), and report diminished psychological engagement (M.-T. Wang & Fredricks, 2013; You & Sharkey, 2009). Importantly, for low socioeconomic status families seeking to optimise educational opportunities, parent expectations and social support of education positively predict student engagement (Fall & Roberts, 2012; Sharkey, You, & Schnoebelen, 2008).

During adolescence the influence of family factors, such as parental support, are expected to diminish, and concurrently the normative role of peers is theorised to increase (Bronfenbrenner & Morris, 2006; Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995). While the relative contribution of the family and peer contexts may be undetermined (M.-T. Wang & Eccles, 2012), it is well established that students who affiliate with antisocial peers are more likely to experience a range of negative outcomes (Battin-Pearson et al., 2000; Hemphill et al., 2006). Specifically, students who reported a greater number of antisocial friendships were more likely to be disruptive at school (M.-T. Wang & Eccles, 2012), be suspended (Hemphill et al., 2006), have lower academic grades (Roeser, Eccles, & Sameroff, 2000), or dropout (Ream & Rumberger, 2008). In contrast, students with more prosocial friends were

more likely to report positive behaviours and better psychological engagement at school (M.-T. Wang & Eccles, 2012; You & Sharkey, 2009).

The influence of the community, external to school, in facilitating student engagement, has not been documented to the same extent as the role of family and peers (Eccles & Roeser, 2011). However, consistent with ecological theories of development (Bronfenbrenner & Morris, 2006), community effects on students' engagement have been reported. For example, students living in social housing (i.e., low socioeconomic status families) were more likely to complete grade 9 and 12, if their housing was in a community with an overall higher socioeconomic status (Martens et al., 2014). Elsewhere, students' positive perceptions of their neighbourhood predicted diminished disruptive behaviours and improved academic grades, but not psychological engagement (Bowen, Rose, Powers, & Glennie, 2008). Collectively, there exists considerable empirical and theoretical evidence to indicate that when seeking to improve students' engagement, a greater understanding of the concurrent facilitators in school family, peer, and community contexts should be sought.

School, Teachers and Teaching

Despite an awareness of engagement facilitators from the family, peer, and community context, for the most part, these are not readily modifiable by teachers and schools. Additionally, age and gender (individual factors) are obviously fixed and therefore not a suitable target for modification. This can lead to ineffective demands on students and teachers to improve engagement, without an awareness of broader societal issues (te Riele, 2012). In contrast, the school is more readily modified by the

main participants in school, the teachers and students. Perry (1908) was one of the first to articulate that: i) a school can modify it's culture and; ii) the school's culture influences students' engagement. Decades of school reform and empirical research has led to the understanding that modifications to the school context have great potential for improvements to students' engagement (Fredricks et al., 2016).

Today, a school's culture is referred to as school climate and a "positive school climate is associated with positive child and youth development, effective risk prevention and health promotion efforts, student learning and academic achievement, increased student graduation rates, and teacher retention" (Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013, p. 369). Within an ecological theory framework, for the student, the teacher is proximal (Sabol & Pianta, 2012). Thus, while school climate factors such as the quality of the built environment and school curriculum may influence a students' engagement (Thapa et al., 2013) and as outlined, factors external to the school also facilitate engagement, how the teacher interacts with the students is a pre-eminent influence on students' engagement. As discussed, ecological development theories (Bronfenbrenner & Morris, 2006; Catalano & Hawkins, 1996) emphasise multiple contextual influences. A commonality between these theories is the importance of the interactions between teachers and students (M.-T. Wang & Degol, 2016).

A theory specific to school and adolescence, stage environment fit theory, seeks to explain why teachers are so influential and students' engagement appears to decline in adolescence (Eccles et al., 1993). It is theorised that the decline is due to a poor fit between the student and the demands of the school context. Most notably, at

the time when adolescents seek increasing amounts of autonomy and self-determination, secondary schools frequently impose greater teacher control and adhere to an increasingly academic curriculum. Moreover, at this time, adolescents' relationships with adults are somewhat vulnerable as they begin to establish independence from their family (Eccles et al., 1993; Waters, Lester, & Cross, 2014).

In support of theoretical perspectives, empirical literature supports the notion that teachers and how they teach have an important role to play in the development of students' academic grades (Hattie, 2009; Slater, Davies, & Burgess, 2012). Research of this nature has led to efforts to understand what characteristics of a teacher influences students' engagement. However, it is argued that the focus of these efforts, have, for too long, focused on easily measured characteristics of a teacher, such as gender, experience, years of training, specific curriculum knowledge, and age, at the expense of a focus on how teachers teach (Ball & Forzani, 2009; Hiebert & Morris, 2012; Ingvarson & Rowe, 2008).

Hindering efforts to understand how teaching can improve students' engagement is a lack of a shared framework and an absence of recognised theoretical perspectives to guide teaching and research into how teachers can improve students' engagement (McDonald, Kazemi, & Kavanagh, 2013). This lack of a theory or framework has, at times, resulted in research that has collated a list of techniques that teachers can utilise in the classroom (Hattie, 2009; Roehrig et al., 2012), or a range of standards that teachers should demonstrate in their teaching (Australian Institute for Teaching and School Leadership, 2011). These moment by moment techniques, or behaviours, that a teacher can apply should continue to be a focus (Pianta, Hamre, &

Allen, 2012). But it is contended here and elsewhere that teachers, and consequently the enhancement of students' engagement, would most benefit from integrated theories, supported by empirical research, that guide overall teaching practice (McDonald et al., 2013).

One such theoretical perspective is self-determination theory (Deci, 2009). The theory states that all individuals desire a sense of autonomy, competence, and relatedness. When applied to the classroom, self-determination theory proposes that teachers should seek to create conditions in which: i) the classroom activities support the interests of the children (i.e., autonomy); ii) students feel competent to meet the behavioural and academic challenges of school (i.e., competence) and; iii) students perceive that their teacher is interested in and cares about them (i.e., relatedness; Roeser et al., 2000; Skinner & Belmont, 1993). Central to each of these three dimensions is the notion that the teacher should support the child. A contribution of a theory, such as self-determination theory, is that it provides more specific guidance, for teachers and researchers, than an all-encompassing description such as *teacher support.* For example, if a teacher provides too much autonomy support, the learning environment may become chaotic and the student may feel unsupported and have diminished engagement. Consequently, it is proposed that teachers should seek to achieve a balance between the dimensions (Skinner & Belmont, 1993).

In view of perspectives such as this and the previously outlined ecological theories of development, it is perhaps unsurprising that the ability of a teacher to form a positive relationship, with his or her students is one of the most powerful ways teachers can improve students' engagement (Hattie, 2009; Roorda, Koomen, Spilt, &

Oort, 2011). A theoretical review of teacher-student relationships (TSRs) and students' engagement described that students should perceive that their teacher supports, cares, accepts, respects, listens, and ultimately develops an interpersonal relationship with students (Martin & Dowson, 2009). In the first instance this interpersonal TSR meets the need for relatedness (Ryan & Deci, 2000).

However, the purpose of school and education is to fulfil more than a student need for relatedness. As outlined, schools and broader society measure students' academic grades, with the expectation that students will learn essential academic material. Therefore, the challenge for the teacher is to develop positive TSRs while simultaneously facilitating learning. Because:

> Adolescents' decision to engage in learning or not in the classroom depend in some measure on whether they feel able to meet the challenges presented them, whether they see purpose and value in classroom activities, and whether they feel safe and cared for by others in the setting (Roeser et al., 2000, p. 454).

This excerpt touches on the potential for the teacher's role to be contradictory. For the teacher is required to set challenges for academic learning and respond to the needs of all students, while simultaneously engendering a positive relationship with each individual. Martin and Dowson (2009) propose that via the underlying TSR, students make a connection to the "substance of what is taught" and "the instruction and teaching" (p. 346). Moreover, teachers can buffer against some of the challenges frequently inherent in school participation and learning activities (Furrer & Skinner,

2003, p. 158). Although the conceptualisation of TSRs is somewhat agreed upon (Roorda et al., 2011), the instructional aspect of teaching is less clear.

Empirical studies that have analysed the contribution of TSRs relative to other teaching instruction variables have yielded mixed results. For example, among Norwegian secondary school students, the teachers' provision of academic support, but not TSRs, had multivariate associations with diminished absences (Studsrød & Bru, 2012). Similarly, in the US, the ability of teachers to support secondary students' autonomy, but not TSRs, predicted better student-reported and observed engagement (Hafen et al., 2012). Also in the US, with a predominately Hispanic student sample, better quality TSRs was associated with *lower* academic grades and the instructional factor (academic press) was positively associated with academic grades (Dever & Karabenick, 2011). In a similar, bifactor, conceptualisation of teaching it was reported that, among students from Singapore, TSRs and behavioural control were complementary to improved student-reported psychological engagement (Nie & Lau, 2009). Moreover, students who reported higher levels of teacher control were less likely to misbehave at school. While TSRs did not have a statistically significant association with misbehaviour (Nie & Lau, 2009). Finally, three of four teaching related variables, TSRs, structure support, and provision of choice, were reported to positively predict each of students' behavioural and emotional engagement, but not cognitive engagement. The fourth variable, teaching for relevance, positively predicted emotional and cognitive engagement, but not behavioural engagement (M.-T. Wang & Eccles, 2013). This latter study was conducted in the US and surveyed students in Grade 7 and again in Grade 8.

With the exception of the paper by Dever and Karabenick (2011) each of these studies drew upon self-determination theory in their conceptualisation of teaching. Further, it was apparent that, although a TSR variable was consistently included, the number and conceptualisation of the instructional and classroom management factors varied considerably. Recently, two similar studies, one that relied on student-report (Downer, Stuhlman, Schweig, Martínez, & Ruzek, 2015) and the second, that observed teacher-student interactions (Hafen et al., 2015) concluded that a three-factor model of teaching was the best representation of how teachers support and interact with their students. While these studies didn't directly assess self-determination theory it was noted that the three derived factors, instructional support, classroom organisation, and emotional support overlap with each of autonomy, competence, and relatedness (Downer et al., 2015; Hafen et al., 2015). Within the limited research and uncertainty surrounding the conceptualisation of teaching it is apparent that any conceptualisation of teaching should incorporate both TSRs and instructional and classroom management characteristics.

Conclusion

Theories of adolescent development describe multiple concurrent influences on student engagement. Moreover, empirical research has documented the influence of one or two contexts on student outcomes. To assist policy makers, practitioners (i.e., teachers and school psychologists), and most importantly students what is needed is empirical research that elaborates upon what factors, from each the individual, school, family, peer, and community contexts, as shown in Figure 5, are best targeted to improve students' outcomes.

Context	Interaction between context and student	Indicators of engagement
Individual - prior education experiences - emotional regulation		*Psychological engagement* - students' subjective report of behavioural, emotional, and cognitive engagement
Family - learning resources and support - education expectations - quality of relationships	Teacher-student relationships	*Disruptive behaviours and suspensions*
Peer - education expectations - quality of relationships - pro vs' antisocial behaviours	Teaching instructional characteristics	*Attendance*
School - curriculum - policies and procedures - built environment		*Academic Grades*
Community - role models - pro vs' antisocial opportunities		*Dropout*

Figure 5. Model of context, teaching interactions, and students' engagement in school.

Chapter 5: Method

This chapter outlines the overall rationale for the methods selected to meet the research aims. Specific methodological details for each of the three studies is provided within the respective chapters. Primarily, the research questions are questions of causation and inference. For example, does better teacher support lead to improved student behaviour in the classroom? Questions of this nature are best suited to quantitative research methods (L. Cohen, Manion, & Morrison, 2011). Moreover, classes and schools are comprised of many students. The complexity of these students' multiple contexts, combined with the identified multiple indicators of engagement outcomes strongly suggest that quantitative methods are best suited to the research program.

Participants

Secondary school students were chosen as the target population for study. This is because of concerns with declining self-reported engagement in secondary school (Janosz, Archambault, Morizot, et al., 2008; Wylie & Hodgen, 2012). Secondary school teachers were also more likely, than primary school teachers, to be troubled by student disruptive behaviours (Beaman et al., 2007). Similarly, attendance has been reported to decline in secondary school (Attwood & Croll, 2006) and dropout rates increase dramatically in the later years of secondary school (L. Robinson & Lamb, 2012). Collectively, these trajectories of engagement suggest that secondary school and adolescence mark a transition in which students are at the very least less likely to conform to school and societal expectations. Arguably, of greater concern is that a large proportion of secondary students appear to lose interest or increasingly dislike

school (Yazzie-Mintz, 2007). This latter point assumes greater meaning when one calculates that, in a typical week, adolescents are required to spend up to 30% of their waking time at school.

Further to the need to address declining trajectories of engagement among secondary students, it was decided to only study secondary student outcomes because of two key structural differences between primary and secondary schools. One, in primary school, a solitary main teacher assumes responsibility for a class. In secondary school, students are taught by several subject teachers. Two, in secondary school, the curriculum becomes more theoretical and organised into distinct, independent subjects (UNESCO Institute for Statistics, 2012). The implication of these differences, for the current research program, is that primary and secondary students' perceptions of their teachers and engagement in school cannot be considered equivalent.

The narrative review identified that both school-based and student-report of engagement is of concern internationally. Ideally, to allow the anticipated findings of the current research program to be generalised to education systems across the world, the study sample would be drawn from these countries and education systems. The first study, a systematic review, was able to retrieve international papers. It was intended that, where possible, cross-national differences and limitations would be noted. Practical limitations dictated that the samples for the two original, empirical research studies were to be drawn from the researcher's state and country – Victoria, Australia. Within Victorian secondary schools, most students are aged between 12 and 18 years.

The Victorian education system consists of public, catholic, and independent schools and it was planned to sample students from all three sectors. A further division exists within Victorian government schools. Some students are eligible to attend specialist sport, academic, and arts schools. Additionally, schools that specifically cater for students with physical, emotional, and cognitive difficulties exist (Department of Education and Training, 2016c). Within these specialist schools, the behavioural, emotional, and academic expectations are different to the schools that the majority of Victorian students attend. As a consequence it was decided that students who attend these specialist schools would not be included in the current research program.

Before determining an appropriate sample size, the expected effect size was reviewed. In one of the most extensive syntheses of research on student outcomes the average effect size of any one variable on student outcomes was $d = 0.40$. For teacher effects, the average was $d = .20$ (Hattie, 2009). The author elaborated on these findings and described a desirable "hinge point" for any intervention as medium, or $d = 0.4$ effect. When seeking to detect a medium effect size with one independent variable (i.e., teaching) a minimum sample size of 55 is recommended (Field, 2013). The current research program sought to test teaching within an ecological model with multiple independent variables from the individual, family, peer, and community contexts. Therefore, a minimum sample size of approximately 80 to 120 participants was desirable (Field, 2013).

Measures

Self-report was the preferred method of data collection. This was for both theoretical reasons associated with the constructs to be measured and practical reasons. First and foremost, it is argued that valid measurement of psychological engagement can only be achieved via self-report (Appleton et al., 2006). Furthermore, it was desirable to prioritise student voice. This was due to concerns with research and school practices that diminish the subjective experience of students (C. Robinson & Taylor, 2013). Second, self-report survey can be an economical and efficient technique to gather data, that when sampled appropriately can allow the results to be generalised (L. Cohen et al., 2011). Finally, within Victoria, access to official, individual-level student outcomes is infrequently available for research purposes. This is due to differences between schools and school sectors (i.e., state, catholic, and independent) and their collation and provision of access to these records.

School-based measures. Broadly, the conceptualisations of school-based outcomes are well established and understood (Henry et al., 2012). However, the precise definitions and measurement of these outcomes varies considerably. Data on academic grades can be obtained from national standardised assessments (Australian Curriculum Assessment and Reporting Authority, 2015b; National Center for Education Statistics, 2013), official school records of teacher assigned grades (M.-T. Wang & Eccles, 2013), or student-report (Kuncel, Credé, & Thomas, 2005). Moreover, academic grades data can be derived from a solitary subject or a combination of several subjects. While student report of academic grades may be biased due to social desirability (Kuncel et al., 2005), adolescent self-report of

academic grades has been reported to have moderate validity (Kuncel et al., 2005;

Teye & Peaslee, 2015).

Within schools, absences are sometimes categorised into parent "authorised"

and "unauthorised" absences. However, a simple categorisation, such as this, fails to

distinguish between the complex reasons a student may be absent (Kearney, 2008).

Regardless of the reasons for a student absence, the presence or absence of a student

is an objective outcome that students and schools can report upon. Official school

records exist for student absences (Australian Curriculum Assessment and Reporting

Authority, 2015a). Currently there exists a dearth of literature that has sought to

assess the validity of student reported absences, against official school records. There

is reason to believe that students do not accurately report absences over a 30-day

period (Teye & Peaslee, 2015). Despite this, within Australia and the US, student self-

report has been utilised successfully in measures of attendance (Hemphill, Heerde, et

al., 2014).

A suspension results when a student is not permitted to receive the schools'

standard tuition for part of a day, a whole day, or multiple days (Department of

Education and Training, 2016b). Within Victorian schools, suspension data is

recorded, but unlike academic grades and attendance, it is not made available to the

public (Youth Affairs Council of Victoria, 2016). Validation between student self-

report and official school records of suspension has been rarely conducted. However,

in research that has utilised student-report of suspension the suspension rates reported

were similar to other states in Australia that make suspension data available to the

public (Hemphill, Plenty, et al., 2014). Consequently, there is reason to believe that, much like attendance, students are somewhat accurate in their report of suspension.

School dropout or Year 12 graduation rates are also not made publicly available in Australia (Lamb, 2011). Instead schools record retention data. That is "the number of full-time students in Year 12 in a given calendar year divided by the number of students who were in the first year of secondary school when that Year 12 cohort commenced secondary school (Lamb, 2011, p. 326). This definition of dropout is different to other countries such as Canada and England. In these countries a dropout is an adolescent who is not enrolled in education or work (Lamb & Markussen, 2011). Again, validation of student self-report of dropout is limited. However, there is reason to believe that adolescents are accurate in their report of dropout (Kelly et al., 2015).

Students' subjective outcomes. While it is possible to measure psychological engagement via teacher report or third-party observation (Fredricks & McColskey, 2012), psychological engagement is best measured via student report (Appleton et al., 2006). In a review of measures of psychological engagement it was concluded that, "overall, the psychometric information on these measures suggests that student engagement can be reliably measured through self-report methods" (Fredricks & McColskey, 2012, p. 777). These measures were either devised specifically for the study conducted, or adapted from other instruments already in use. Most commonly students were asked to respond on a Likert scale, to multiple items, thought to represent students' engagement. While the precise conceptualisations of engagement differed, it is generally agreed that psychological engagement is multidimensional and

any measure of psychological engagement should seek to capture these dimensions (Fredricks et al., 2016).

Others have commented that measures of student engagement have, at times, not been clearly distinguished from related constructs such as school belonging, connectedness, attachment, or bonding (Jimerson et al., 2003). This is exemplified by self-report measures of psychological engagement that have included teacher and family support as dimensions of student engagement (Carter, Reschly, Lovelace, Appleton, & Thompson, 2012). It is recognised that divisions between facilitators and indicators of engagement is as yet unresolved (Fredricks, 2015). However, the current research program conceptualised factors such as relationships with teachers, family, peers, and community as external to engagement and therefore as potential facilitators (Lam et al., 2014; Skinner & Pitzer, 2012). This separation is essential when seeking to empirically study the development of engagement (Skinner & Pitzer, 2012). An international study (12 countries) of student-reported engagement provided empirical support for this perspective (Lam et al., 2014). Correlations between a three-dimensional model of student-reported psychological engagement and facilitators from the school, family, and peers were moderate. The authors concluded that "researchers are therefore able to investigate the contextual factors that may contribute to student engagement" (Lam et al., 2014, p. 226). In the absence of any consensus on a measure of students' engagement, it was necessary to carefully inspect the items of declared measures of engagement before adoption and use in the current research program.

Measures of context. In contrast to the contested nature of student

engagement, the contexts that are proposed to facilitate adolescent development,

including student engagement, are well established (Chase et al., 2015; Glaser, Horn,

Arthur, Hawkins, & Catalano, 2005). For example, the *Communities That Care* youth

survey has identified separate risk and protective factors from each of the individual,

school, family, peer, and community contexts (Glaser et al., 2005). The *Communities*

That Care survey was designed to be administered to adolescents in a 50-minute

school class and it was reported to have good psychometric properties, appropriate for

predicting a range of adolescent outcomes (Arthur, Hawkins, Pollard, Catalano, &

Baglioni, 2002). Similarly, an intervention study, that sought to improve students'

engagement, reported that partnerships with individual students, the school, families,

peers, and the community should be formed to improve engagement (Sinclair et al.,

2003).

Ideally the validity of measures, such as the *Communities That Care* survey

(Glaser et al., 2005), would be confirmed via concurrent measures. This is because

discrepancies may exist between adolescents' self-report of context and responses

from parents, siblings, friends, and teachers (Fan et al., 2006). In contrast to this

viewpoint, ecological theory asserts that the subjective experiences of context, as

experienced by the person living in that environment, should be emphasised

(Bronfenbrenner & Morris, 2006). Despite misgivings surrounding concurrent

validity of adolescent self-report of context, for over 20 years, when adolescents have

reported upon multiple contexts (i.e., individual, family, school, peers, and

community) the self-report data has been used to accurately predict a range of

physical health, emotional wellbeing, violence, substance use, and sexual behaviours (Arthur et al., 2002; Jessor, Turbin, & Costa, 1998; Resnick et al., 1997). More recently and specific to education and student engagement, adolescent self-report of multiple contexts has explained statistically significant portions of variance across multiple indicators of engagement (Kelly et al., 2015; M.-T. Wang & Eccles, 2012; You & Sharkey, 2009). Collectively these studies of adolescent problem behaviours, health, and student engagement suggest that adolescent self-report of contexts can have good predictive validity.

Research Design and Causation

With the pressure to improve student outcomes there exists a push to apply "gold standard" research evidence (Hempenstall, 2006). Often, gold standard research is interpreted as research that employs experimental or randomised control trials (Thomas, 2016). However, for philosophical and practical reasons, research into student outcomes rarely utilises random assignment of students into control and experimental groups (Cook, 2007). In discussing the limitations of randomised control trials in education Thomas (2016) wrote that they "prove inadequate to assess the heavily person-infused therapies of a person-centered field" (p. 400).

Some have taken this perspective further and suggested that empirical research can contribute little to teaching practice (Weaver, 1998). While others argue that "multiple forms of inquiry" should be used to address the many influences upon education and adolescents (Thomas, 2016, p. 395). It is this latter perspective that informs the current research design.

It would not be ethical or practical to systematically vary teaching practices between students. Consequently, the present research design was non-experimental. The data collected for the two original studies was self-report. Rather than attempt to aspire to the often overstated ideals of experimental research (Thomas, 2016) the current research design acknowledges potential limitations surrounding causality conclusions. Analyses of the data sought to make inferences about the associations between the variables under investigation. These inferences would be explained and situated within the pre-existing education and psychology literature, both theoretical and empirical.

Chapter 6: Longitudinal and Contextual Associations Between Teacher–Student

Relationships and Student Engagement: A Systematic Review

Unspoken in the Introduction, provided in Chapter 1, was the potential for research to be selectively cited or oversimplified for undefined purposes. The same principle could apply to the earlier narrative review. While every endeavour was made to objectively review the extant literature on student outcomes and the development of these outcomes, it is possible that the researcher introduced subjective bias into the review (Uman, 2011). In order to minimise bias it has become accepted practice, across a broad range of research disciplines, to conduct a systematic review to minimise potential researcher bias (Tranfield, Denyer, & Smart, 2003).

In the United States, What Works Clearinghouse has developed guidelines for conducting systematic reviews, tailored to education research (What Works Clearinghouse, 2014). However, for the current research program the guidelines were overly restrictive in that they require the omission of non-experimental research. Instead, as recommended by the American Psychological Association (American Psychological Association, 2008) the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Moher, Liberati, Tetzlaff, & Altman, 2009) was followed. Therefore, the first study, in the current research program, was a systematic review conducted using the PRISMA protocol.

The following article was published in the peer reviewed journal *Review of Educational Research*[5]. The review investigated associations between TSRs and school-based measures of student engagement and students' subjective perceptions of their engagement. The role of teachers was chosen as the focus of this first study, due to the reported pre-eminence of teachers to student outcomes (Hattie, 2009). Moreover, the affective, relational aspect of teaching is thought to be central to adolescent development (Eccles et al., 1993; Roorda et al., 2011; Ryan & Deci, 2000). While the primary consideration was TSRs, where possible, other teaching and broader contextual influences, investigated by the studies reviewed would be noted and used to guide the subsequent two studies.

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[5] The Review of Educational Research is a journal published by the American Educational Research Association. It had a 5-year journal impact factor of 7.69. In 2015 it was ranked second out of 231 education and educational research journals (Thomson Reuters, 2016).

Abstract

This systematic review examined multiple indicators of adolescent students' engagement in school, and the indicators' associations with teacher–student relationships (TSRs). Seven psychology, education, and social sciences databases were systematically searched. From this search, 46 published studies (13 longitudinal) were included for detailed analysis. Cross-sectional studies showed better quality TSRs were associated with enhanced engagement in school. These associations with TSRs were demonstrated among multiple indicators of student engagement (i.e., psychological engagement, academic grades, school attendance, disruptive behaviours, suspension, and dropout). Similar associations were found in longitudinal studies. Longitudinal and cross-sectional associations remained when covariates from the individual, family, school, and teacher contexts known to influence student engagement were controlled for. TSRs were shown to have an important but not exclusive role in their association with a comprehensive range of indicators of student engagement.

Introduction

To date, the study of student engagement has tended to evolve along two parallel paths (M.-T. Wang & Degol, 2014). According to one path focused on *dis*engagement, student engagement is viewed as an intervention or "antidote" for students showing overt signs of low engagement, such as disruptive behaviours, reduced attendance, academic failure, and dropout (Finn, 1989; H. M. Marks, 2000; Rumberger & Rotermund, 2012). The second, more recent path focuses on both overt and psychological engagement. It encompasses as an overarching educational ethos that it is desirable for all students to be psychologically engaged, active participants in school, who also value and enjoy the experiences of learning at school (Eccles et al., 1993; Lawson & Lawson, 2013). Increasingly, it is acknowledged that students who are engaged at school are more likely to experience academic success and positive adolescent development outcomes (Chase et al., 2015; Jimerson et al., 2003).

A distinction can be made between students with low engagement who are disruptive, have low attendance, or fail to complete academic work and other students with less overt signs of diminished engagement. The latter, more typical, group of moderately engaged students have been described as behaving in class, generally attending school, and completing work but with "little indication of excitement, commitment, or pride" (Conner & Pope, 2013; Newmann et al., 1992, p. 2). However, the delineation between these levels of engagement is not obvious, and empirical literature suggests several typologies of engagement exist (Janosz, Archambault, Morizot, et al., 2008; M.-T. Wang & Peck, 2013). It has been argued that few students can be classified as completely engaged or disengaged in school (Reschly &

Christenson, 2012). Furthermore, there remains a need to address traditional school-based concerns, such as disruptive behaviours, low attendance, and dropout, while simultaneously improving students' less overt psychological engagement (M.-T. Wang & Degol, 2014).

The current review conceptualises disruptive behaviours, low attendance, dropping out, and academic grades as *indicators* and complementary to the more recent conceptualisations of engagement that recognise the importance of inconspicuous students' behaviours, emotions, and cognitions (Fredricks & McColskey, 2012). The current review sought to recognise the growing awareness of students' individual and internal indicators of engagement (OECD, 2013; Reschly & Christenson, 2012) as outcomes of the educational process, alongside traditional school-based measures of engagement (Henry et al., 2012).

School-Based Measures of Engagement

Disruptive behaviours, student absences, academic failure, and dropout have historically been viewed as a problem of student low engagement or alienation (Henry et al., 2012; Newmann, 1981). For over half a century, considerable efforts have been made to understand indicators of low engagement, such as disruptive student behaviours, noncompletion of prescribed class work, academic underachievement, and, in many instances, dropout or failure to complete school (Balfanz et al., 2007; Newmann, 1981; Rumberger & Rotermund, 2012). In traditional English-speaking countries, the prevalence and problems associated with low engagement are of concern. For example, in the United States, Australia, and England, the prevalence of literacy and numeracy failure or underachievement among 13 to 15 year olds ranges

from 5% to 24% (Australian Curriculum Assessment and Reporting Authority, 2013; Department for Education, 2013; National Center for Education Statistics, 2013). British high school students' self-report of "skipping school" or non-approved absences ranges from 1% to 10% (Attwood & Croll, 2006), and 11% of adolescents in the United States reported having skipped school in the past 30 days (Vaughn, Maynard, Salas-Wright, Perron, & Abdon, 2013). Rates of disruptive behaviours, defined as those that contribute to lost instruction time and teacher stress, range internationally from 15% to 20% (Beaman et al., 2007). A common disciplinary response to these disruptive behaviours is suspension or exclusion from school. Suspension rates reported among high school students have been reported as being 5% for females and 12% for males in Victoria, Australia, and 6% for girls and 16% for boys in Washington, D.C. (Hemphill, Plenty, et al., 2014). In England, 7% of state-funded high school students were suspended in 2012 to 2013 (Department for Education, 2015b). Finally, the rates for dropout or failure to complete school, which are typically viewed as the culmination of disengagement (Finn & Zimmer, 2012), are similar in the United States (23%), Australia (21%), and England (19%; Department for Education, 2015a; Heckman & Lafontaine, 2010; L. Robinson & Lamb, 2012). These rates are concerning in and of themselves, in addition to the far-reaching ramifications of low engagement.

There are both short- and long-term negative consequences of these overt indicators of diminished engagement. In the short term, diminished engagement can be seen to contribute to lost educational instruction time and learning opportunities. For example, lower secondary school teachers (Level 2, International Standard

Classification of Education; UNESCO Institute for Statistics, 2012) in 32 OECD countries reported that they spent, on average, 13% of their time managing student behaviour (OECD, 2014b), and it is common for teachers to report that between two and nine students in their class are troublesome (Beaman et al., 2007). Lifelong negative consequences such as diminished physical and mental health, reduced vocational opportunities, and increased mortality exist for those students who experience academic underachievement and dropout of school (Belfield & Levin, 2007; Woolf, Johnson, Phillips, & Philipsen, 2007). Furthermore, it is estimated that the US public benefit for each additional graduate is in excess of $200,000 as a result higher tax revenues and lower spending on health, crime, and welfare (Belfield & Levin, 2007; Henry et al., 2012).

Developments in the Understanding of Engagement

Several limitations exist when relying solely on traditional school-based measures of disruptive behaviours, attendance, academic failure, and dropout. These indicators of engagement are typically present or absent and are predominantly derived from teacher or school report. As a consequence, they fail to describe the full continuum of engagement and do not capture less overt, psychological aspects of engagement (Appleton et al., 2008; Fredricks & McColskey, 2012; Newmann et al., 1992). More recently, engagement is viewed as multidimensional, and students' emotions and cognitions are given commensurate consideration alongside students' observable and less overt behaviours (Appleton et al., 2008; Fredricks et al., 2016). Typically, conceptualisations of engagement are now more holistic and often include

behavioural, affective, or *emotional, cognitive*, and *academic* engagement (Fredricks et al., 2004; Jimerson et al., 2003; Reschly & Christenson, 2012).

Behavioural engagement refers to a student's participation in academic, social, and extracurricular pursuits (Finn, 1989; Fredricks et al., 2004). Measurement of behavioural engagement includes commonly collected school data describing patterns of attendance and reports of disruptive behaviours (Chase et al., 2014; Fredricks & McColskey, 2012). However, an undue focus on observable behaviours or students' time-on-task in the classroom is inadequate. As explained by Newmann (1981), "Increasing students involvement in school life, however, is not in itself a sufficient educational goal. Students may be energetically engaged in schoolwork, but their activities may have limited educational value" (p. 548). Consequently, students' reports of their goal-directed behaviours at school should be considered concurrently with students' perceptions of the value of the prescribed academic learning tasks (Fredricks & McColskey, 2012).

Affective or emotional engagement represents a student's feelings toward the complex interrelated components of the school as an institution and, more broadly, students' attitudes toward education (Fredricks et al., 2004). Cognitive engagement recognises that the foremost role of schools is to facilitate learning and that school success is influenced by a student's ability to utilise appropriate learning strategies (Fredricks et al., 2004). Concepts such as self-regulation, strategic thinking, and goal-directed learning are consistently included when measuring cognitive engagement (Appleton et al., 2006; Fredricks et al., 2004; M.-T. Wang & Fredricks, 2013). The term *academic engagement* is used less frequently and intersects with behavioural

engagement as it measures time spent completing academic tasks (Appleton et al., 2006). The current review conceptualises psychological engagement (Newmann et al., 1992) as multidimensional, encompassing overt and internal psychological processes across the continuum of high and low engagement (Fredricks et al., 2016; M.-T. Wang & Degol, 2014).

In recognition of the growing importance of students' psychological engagement, the OECD Programme for International Student Assessment (PISA) recently introduced a student-report measure of student engagement to complement traditional measures of school engagement (i.e., literacy, numeracy, and attendance; OECD, 2013). Studies that have assessed long-term adolescent outcomes via the construct of psychological engagement have demonstrated that psychological engagement is associated with reduced dropping out, disruptive behaviours, and substance use (Hirschfield & Gasper, 2011; Rumberger & Lim, 2008; M.-T. Wang & Fredricks, 2013). Furthermore, psychological engagement has been shown to be associated with improved academic outcomes (Finn & Rock, 1997), well-being (Li & Lerner, 2011), and long-term vocational opportunities (Abbott-Chapman et al., 2013). Such findings emphasise that the promotion of engagement should be a goal for all students, rather than waiting to intervene or respond to indicators of low engagement.

Antecedents of Engagement

Increasingly, it is recognised that student engagement is an important education outcome (Moore et al., 2015). In order to effectively promote student engagement, it is necessary to understand the precursors of engagement. A simplistic response to low student engagement could be to instruct students to be engaged at

school, with the unspoken recognition that the problem resides within the child.

However, "engagement is not an attribute of the student, but rather a state of being

that is highly influenced by contextual factors" (Sinclair et al., 2003, p. 31). These

contextual factors, or *facilitators*, are considered external to engagement and "are

hypothesized to influence engagement" (Skinner et al., 2008, p. 766). Empirical

studies have sought to test this pathway and reported that contextual factors, such as

teacher–student relationships (TSRs), had direct and indirect effects on a range of

student engagement indicators (Benner, Graham, & Mistry, 2008; Dotterer & Lowe,

2011; Fall & Roberts, 2012). However, it is also recognised that many adolescent

outcomes, such as engagement, academic grades, problem behaviours, and

perceptions of teachers, have bidirectional pathways (Chase et al., 2014; M.-T. Wang

& Fredricks, 2013).

There currently exists a need to elaborate on the precursors of engagement

beyond established individual and family factors (Finn & Zimmer, 2012). It is well

established that dropout and associated poor school outcomes are more common in

students from low socioeconomic families (Hemphill et al., 2010; Resnick et al.,

1997; Rumberger, 1987). A narrow focus on the family context ignores ecological

models, such as the social development model and associated evidentiary research,

which explain the role of school context (as well as families, peers, and communities)

in influencing adolescent development, including education outcomes (Battin-Pearson

et al., 2000; Catalano, Hagerty, et al., 2004; Masten & Cicchetti, 2010; Resnick et al.,

1997). For school and adolescent outcomes, such as engagement, the influence of the

school context is of increasing research interest (Thapa et al., 2013).

With the recognition that student engagement can be influenced by contextual factors comes the expectation that if specific characteristics of the school context can be identified and altered, then working toward the goal of student engagement should be possible (Fredricks et al., 2004). It is suggested that school factors hold the most promise for prevention and intervention efforts seeking to improve engagement, because unlike many family factors, school factors are viewed as malleable and open to modification by the school community (Fredricks et al., 2004; Hattie, 2009). Within the school context, the potential of high-quality TSRs is of increasing interest due to its demonstrated association with a range of school outcomes, including improved academic grades, classroom behaviour, participation in school activities, and reduced school avoidance (Cornelius-White, 2007; Roorda et al., 2011). In this regard, the importance of teachers to students' school-based outcomes is consistent with other influential adult relationships and adolescent physical and mental health outcomes (Sawyer et al., 2012).

The social development model and associated theoretical perspectives, such as self-determination theory and stage environment fit, emphasise the role of relatedness in adolescent development (Catalano, Berglund, et al., 2004; Eccles et al., 1993; Ryan & Deci, 2000). The applicability of these models to the school context lies in the understanding that "classrooms are complex social systems, and student-teacher relationships and interactions are also complex, multicomponent systems, [and] the nature and quality of relationship interactions between teachers and students are fundamental to understanding student engagement" (Pianta et al., 2012, p. 365). According to self-determination theory, relatedness is a basic psychological need

influencing intrinsic motivation, self-regulation, and well-being (Deci, 2009). Thus,

for adolescents who spend a large proportion of their waking hours at school, their

relationships with teachers are crucial for not only engagement in school but also

well-being outside of school (Eccles et al., 1993). An extension of attachment theory

suggests that as the interim adult caregiver, a teacher's relationship with his students

is one of providing a secure base for exploration of the school environment

(Ainsworth, Blehar, Waters, & Wall, 1979). In this way, a feeling of mutual affection

between teacher and student may buffer against negative emotions such as boredom,

frustration, and anxiety, and promote student engagement (Furrer & Skinner, 2003;

Wentzel, 1997). A recent theoretical review of relatedness and its function in TSRs

pointed to the role of "connective instruction" in influencing engagement (Martin &

Dowson, 2009, p. 344).

It may be that improved TSRs can improve students' engagement in school.

However, to understand this further, it is necessary to understand in what

circumstances better quality TSRs may be beneficial. Perspectives that examine

available supports from parents, peers, and teachers consider the impact of multiple

risks or deficits that can interact to influence adolescent outcomes (Masten &

Cicchetti, 2010). Some researchers suggest that a vulnerable child at risk of poor

academic outcomes due to family or individual factors may receive a greater benefit

from school contextual factors such as TSRs (Finn & Rock, 1997; Pianta & Hamre,

2009).

Findings from a recent meta-analysis, examining 99 studies of children from

preschool to high school, indicated that TSRs were associated with academic grades

and psychological engagement (Roorda et al., 2011). Although this review contained an inclusive definition of engagement (including terms such as attention, work habits, school avoidance, involvement, and school liking), common school-based measures of low engagement (such as disruptive behaviours, suspension, and dropout) were not considered. Similar results have been reported in a comparable review (Cornelius-White, 2007). However, student engagement as a multidimensional construct has not been specifically examined. A further limitation of both these reviews was the small number of longitudinal studies examined and minimal consideration of family and individual contexts. When seeking to understand predictive associations between TSRs and engagement, longitudinal studies can assist in addressing limitations of cross-sectional studies (Roorda et al., 2011). Furthermore, it is necessary to consider multiple contextual influences on engagement (Bronfenbrenner & Morris, 2006). The current review begins to address this research gap by prioritising longitudinal studies.

The Current Review

The structure of elementary or primary schools and secondary schools differ considerably. Most notably, elementary or primary school students develop a relationship with one core classroom teacher and secondary school students typically experience multiple teachers throughout the school day. The contextual factors and role of TSRs are likely to differ for primary and secondary school students. The present review will focus on secondary or middle and high school students and conceptualise TSRs as a plural.

To understand if TSRs can be used as an intervention target for improving student engagement, it is essential to understand how TSRs influence these outcomes.

To reach this understanding, the first aim of this review was to examine associations between TSRs and a comprehensive range of indicators of engagement. Second, this review aimed to elaborate on previously demonstrated cross-sectional associations between TSRs and engagement, by giving prominence to those studies that conducted longitudinal analyses. Due to the multiple influences of contextual factors on TSRs and levels of engagement, a supplementary aim of this review was the examination of contextual influences, where reviewed studies provided sufficient detail.

Method

Literature Search

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) procedures and guidelines were adhered to in conducting the current review (Moher et al., 2009). Seven education, psychology, criminology, and sociology electronic abstraction databases were systematically searched to retrieve abstracts of potentially relevant studies. These included PsycINFO, Educational Resources Information Center, Psychology and Behavioral Sciences Collection, Academic Search Complete, A+ Education, CINCH, and SocIndex. Given the previous separation of engagement and disengagement in education and psychology academic literature, and in order to retrieve published literature on these constructs across these disciplines, engagement and disengagement were treated as separate constructs within the search strategy.

Searches were conducted using the following terms, matched to the databases' subject headings, and as keywords in the title and abstract. The search terms addressed different conceptualisations of (a) TSRs, (b) engagement, and (c)

adolescents in secondary schools. The search terms for TSRs included "teacher student relationship," "teacher–student relationship," "TSR," "classroom communication," "classroom environment," "teacher–student interaction," "teacher attitudes," "teacher expectation of students." Search terms relevant to engagement included "student engagement," "learner engagement," "academic engagement," "school engagement," "disengagement," "expulsion," "suspension," "dropout," "attendance," "truancy," "academic failure," "underachievement," "low achievement," "retention," and "refusal." The search was limited to school-aged children and adolescents 10 to 19 years, enrolled in schools using the following terms: "secondary education," "secondary school," "high school," "middle school," "junior high school," "Grade 7," "Grade 8," "Grade 9," "Grade 10," "Grade 11," "Grade 12," "adolescent," "Year 7," "Year 8," "Year 9," "Year 10," "Year 11," and "Year 12." The terms utilised in the database searches were broad in order to encapsulate the various conceptualisations and database indexing of TSRs, engagement, and international definitions of adolescence (World Health Organization, 2015).

Inclusion and Exclusion Criteria

　　To ensure retrieved articles were relevant to the stated aims, inclusion and exclusion criteria were established prior to conducting the systematic search. Retrieved articles were restricted to studies that (a) reported on a sample of more than 55 school-aged youth (Grades 7–12), (b) were published between 1990 and 2014, (c) were published in the English language, (d) had an abstract available online, (e) presented quantitative analyses, (f) were peer-reviewed, and (g) tested one or more association between TSRs and engagement, where engagement was analysed as an

outcome of TSRs. A minimum sample size of 55 was specified to lower the likelihood of including studies with a Type II error (Field, 2013).

Retrieved articles were excluded when (a) the role of the TSRs was not differentiated from other predictors, (b) engagement was not differentiated from other outcome variables, (c) the measurement and conceptualisation of TSRs addressed issues related to teaching technique and related strategies rather than the affective relationship with students, (d) the participants were not enrolled in a mainstream school (i.e., a school which primarily serves students who do not have special needs), and (e) the participants were students with a physical or learning disability. The last two exclusion criteria limited the focus to TSRs and engagement in mainstream schools, although Sabol and Pianta (2012) have recommended that future research examine the role of TSRs among students with special needs (Sabol & Pianta, 2012).

To assess the suitability of retrieved articles against the stated inclusion and exclusion criteria, we examined the articles' abstracts. Where the abstract provided insufficient information to determine the inclusion or exclusion of the article, the article's full content was scanned. Particular consideration was given to the items used to measure TSRs and engagement. When necessary, individual items in a measure were assessed to ensure that the measured construct was consistent with the stated aims of this review. This additional step was necessary because of the lack of clarity regarding the measurement of engagement, as well as a desire to focus on the emotional connection between the student and teacher (Martin & Dowson, 2009). For example, excluded articles assessed solely time-on-task, perceptions of safety, motivation, curriculum effects, teacher gender, and number of students in a class

(Blatchford, Bassett, & Brown, 2011; Gansle, Noell, & Burns, 2012; Martin & Marsh, 2005). To ensure the analysed studies were accurately interpreted, two research associates cross-checked 15 (33%) of the retrieved articles.

Calculation of Effect Sizes and Treatment of Analyses

Where sufficient data were reported, effect sizes were calculated to determine the strength of the relationship between TSRs and engagement (Tabachnick & Fidell, 2013). When more than one TSRs–engagement relationship was reported, the effect size was calculated for each unique relationship (e.g., each of academic grades and attendance). For consistency and ease of reading, effect sizes were converted to either Cohen's d or f^2 (Tabachnick & Fidell, 2013). Cohen's d effect sizes between 0 and .30 were considered small, .31 and .49 medium, and greater than .50 large; Cohen's f^2 effect sizes between 0 and .15 were considered small, .16 and .34 medium, and greater than .35 large (Tabachnick & Fidell, 2013).

When studies reported an association between the same TSRs and engagement variables via bivariate correlations and multivariate analyses, both analyses were included in the current review. One study contained separate analyses for each grade and year of measurement, such that 20 individual associations were reported (McClure, Yonezawa, & Jones, 2010). For the current review, these associations were summarised rather than reported individually.
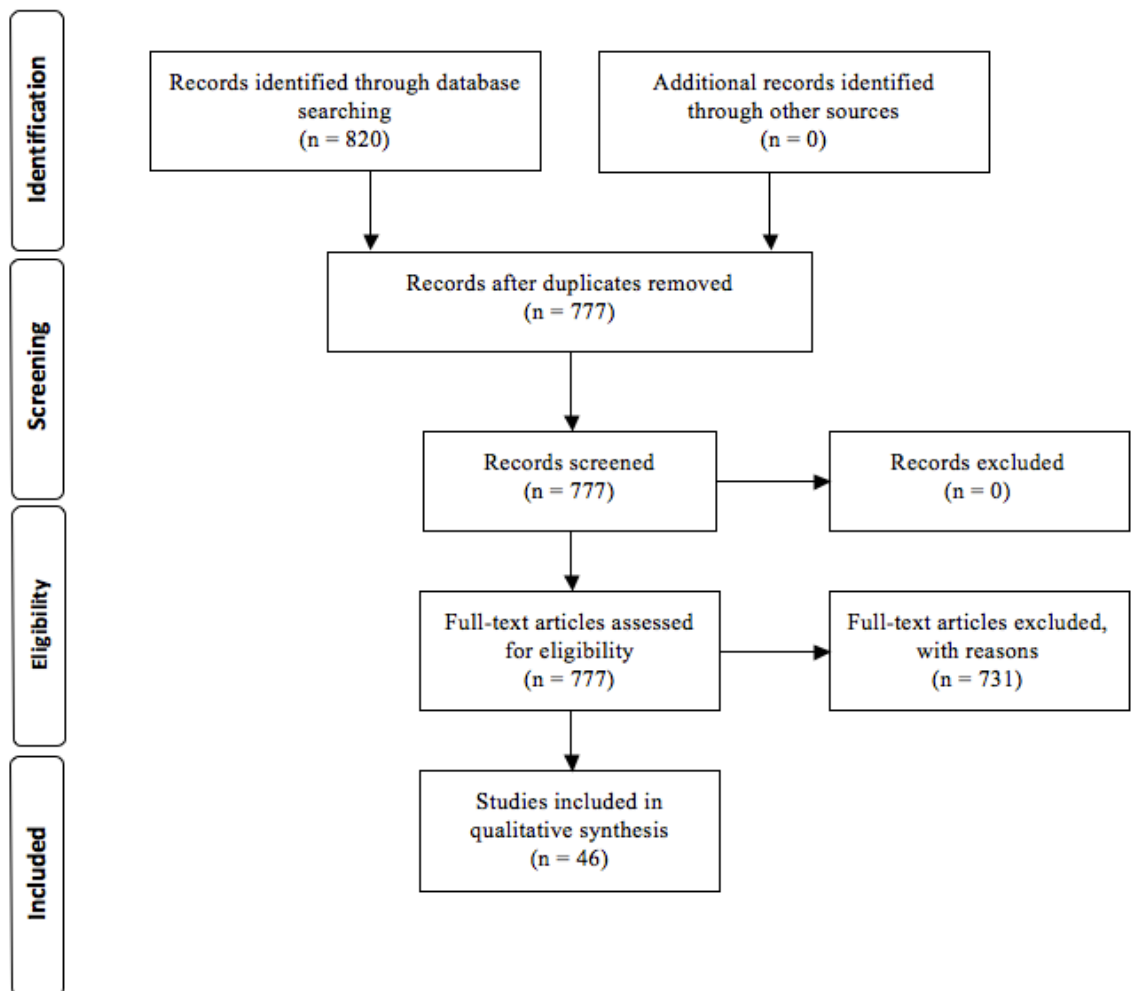
Figure 6. PRISMA diagram of published studies.

Results

Participants

Over 800 articles were identified from the initial systematic search (Figure 1). Of these, 46 articles met the inclusion criteria and were retained for detailed examination in this review. Of the studies included for detailed review, sample sizes ranged from 69 to 276,165, and the data collection sites included participants' homes, the community, and single and multiple schools. Two studies presented cross-national

comparisons across schools (Chiu, Pong, Mori, & Chow, 2012; Lam, Jimerson, et al., 2012). The majority of samples were from the United States, but samples from Australia, Canada, England, Finland, Italy, Norway, the Netherlands, Singapore, and Turkey were also included. Longitudinal analyses were presented in 13 studies. Reflecting the subjective nature of TSRs and most conceptualisations of engagement, student self-report data were the most frequently analysed. Both student self-report and school data were commonly used to measure academic grades and other school-based outcomes such as attendance and suspension (see Table 1).

Table 1

Characteristics of papers analysed

Authors	Country of origin	Study design (timeframe)	Site of sample	Data collection	Analytic sample size (Recruitment sample)	Age (*SD*) (years); Grade level
Attwood & Croll (2006)	Britain (Nationally representative)	CS; MM	Family homes	SR	343 (770) Gender NR	Grade 11
Barile et al. (2012)	United States (Nationally representative)	L (2 yr)	431 public high schools	SR, SC & TR	7,779 (16,000) 50% female	Grade 10 (T1), Grade 12 (T2)
Bear et al. (2011)	Delaware, United States	CS	17 middle & 10 high schools	SR & SC	3,891 50.1% female	Grade 6 – 10
Berti et al. (2010)	Southern Italy	CS	1 high school	SR & TR	400 47.5% female	*M* = 16, Range: 14 – 18
Brewster & Bowen (2004)	United States (10 states)	CS	53 middle & high schools	SR & TR	633 (699) 51% female (Latino, at risk of failure)	Grade 6 - 12
Cemalcilar & Goksen (2014)	Turkey (6 cities with high dropout rates)	CS	High schools, home, & community	SR & PR	415 DO & 349 students DO: 65% female; students: 50% female (low socioeconomic status)	DO*: M* = 15.1, Range: 7 – 18. Students*: M* = 10.4, Range: 7 – 15
Chiu et al. (2012)	International (41 countries[1])	CS	6,150 high schools	SR, SC & TR	276,165 50% female	15
Close & Solberg (2008)	Midwest, United States	CS	1 urban high school	SR & SC	427 54.8% female (ethnically diverse)	Grade 9 & 10

Conner & Pope (2013)	United States	CS	15 middle & high schools (All high performing; 11 private schools; 63% of sample public school students)	SR	6,294 54% female	*M* = 15.3 (1.56); Grade 9 - 12
Cooper (2014)	Texas, United States	CS; MM	1 high school	SR	1,111 (1,132) 53% female	Grade 9 - 12
Darwich et al. (2012)	Southern British Columbia, Canada	CS	18 urban high schools	SR	680 48.9% female	Grade 8 - 12
Davis & Lease (2007)	Southeastern, United States	CS	1 rural middle school	SR, PE, TR & SC	523 49.0% female (predominately white)	11 - 13
De Bruyn (2005)	Netherlands	CS	6 academic high schools	SR, TR & SC	749 51% female	*M* = 13.1 (.44)
De Wit et al. (2010)	Ontario, Canada	L (1 yr)	23 public and Catholic high schools	SR	2,616 (2,973) 54% female	13.77 (.54) (T1); Grade 9 (T1 & T2), Grade 10 (T3)
Dever & Karabenick (2011)	Southern California, United States	CS	4 public middle & 2 public high schools	SR & SC	3,602 49% female (Hispanic majority)	Grade 7 - 12
Green (1998)	Ohio, United States	CS	21 urban, rural & suburban schools	SR, TR and SC	NR Gender NR	NR
Haapasalo et al. (2010)	Finland (Nationally representative)	CS	190 schools	SR	3,405 (3,471) 52% female	*M* = 13.9, Grade 7; *M* = 15.8, Grade 9
Hafen et al. (2012)	Virginia, United States	L (10 mth)	4 high schools	SR & OB	578 44.1% female	Grade 9 - 12
Hardré & Hennessey (2010)	Indiana & Colorado, United States	CS	4 public rural high schools	SR	224 Indiana: 57.3% female Colorado: 57.0% female	*M* = 15, Range: 13 – 20
Jennings (2003)	Northern California, United States	CS	4 urban middle schools	SR & SC	229 Gender NR (ethnically diverse)	Grade 7
Kaplan et al.	Houston, Texas, United	L (3+ yr)	18 junior high schools &	SR	1,195 (2428)	Grade 7 (T1),

(1997)	States		home		Gender NR	Grade 8 (T2), Grade 9 (T3), Adult (T4)
Lam et al. (2012)	International (12 countries[2])	CS	48 urban secondary/high schools	SR & TR	3,391 (3,420) 50.9% female	$M = 13.82$ (1.15); Grade 7 – 9
Lan & Lanthier (2003)	United States (Nationally representative)	L (4 yr)	1,100 public & private schools	SR & SC	1,104 (1,327) National comparison sample: 25,000 46.5% female (only dropouts, between T2 and T3)	$M = 14.68$ (T1); Grade 8 (T1), Grade 10 (T2), Grade 12 (T3)
Langenkamp (2010)	United States (Nationally representative)	L (1 yr)	134 public, private & parochial schools	SR & SC	2,065 (3,171) 55% female	Group 1: Grade 8 (T1), Grade 9 (T2) Group 2: Grade 9 (T1), Grade 10 (T2)
Lee (2012)	United States (Nationally representative)	CS	147 schools	SR & SC	3,748 (3,846) 52.3% female	15; Grade 9 – 10,
Lee & Burkam (2003)	United States (Nationally representative)	L (2 yr)	190 urban high schools	SR & SC	3,840 47.4% female	Grade 10 (T1), Grade 12 (T2)
McClure et al. (2010)	California, United States	CS	14 small schools	SR & SC	531 – 1,358 50.6 – 50.8% female	Grade 9 - 12
Molinari et al. (2013)	Northern Italy	CS	2 urban schools (academic & vocational)	SR & SC	603 (614) 73.1% female	$M = 16.6$ (1.80)
Murdock (1999)	Mid-Atlantic, United States	CS	1 semi-urban middle school	SR & SC	405 (431) 49% female	Grade 7
Murray (2009)	Mid-west, United States	CS	1 urban middle school	SR, TR & SC	104 (129) 54% female (Latino, low socioeconomic status)	Adolescents
Needham et al. (2004)	United States (Nationally representative)	L (1 yr)	Homes & schools	SR & SC	10,873 (14,738) 53% female	Grade 7 - 12
Nie & Lau (2009)	Singapore	CS	39 high schools	SR & PE	3,196 51% female	$M = 15.5$; Grade 9

Perry et al. (2010)	Mid-west, United States	CS	2 urban high schools (1 public, 1 private)	SR	285 61.4% female	$M = 15.38$ (1.64); Grade 7 - 12
Sakiz et al. (2012)	Mid-west, United States	CS	6 urban & suburban public middle schools	SR	317 (328) 60% female	$M = 12.82$ (0.73); Grade 7 & 8
Sharkey et al. (2008)	California, United States	CS	Middle & high schools	SR	10,000 56% female	Grade 7, 9 & 11
Shen et al. (2010)	Mid-west, United States	CS	2 urban high schools (physical education classes)	SR & TR	566 47.0% female	$M = 15.01$ (1.32); Grade 9
Shen et al. (2009)	Mid-west, United States	L	3 urban middle schools (physical education classes)	SR & SC	253 (331) 47.8% female	$M = 12.9$, Range: 12 - 14
Shen et al. (2012)	Mid-west, United States	CS	3 urban public high schools (physical education classes)	SR & TR	184 100% female, African-American, low socioeconomic status)	$M = 15.1$, Range: 14 - 17
Shirley & Cornell (2012)	Virginia, United States	CS	1 urban public middle school	SR & SC	400 52% female	$M = 12.7$ (0.98); Grade 6 - 8
Studsrod & Bru (2012)	Western Norway	CS	1 upper high school	SR & SC	552 (564) 51.4% female	15 – 18
Tucker et al. (2002)	South-eastern United States	CS	4 afterschool programs	SR	67 (69) Gender NR for older sub-sample (African-American, low socioeconomic status)	$M = 14.52$; Grade 7 - 12
Veenstra et al. (2010)	Northern Netherlands	L (2.5 yr)	122 urban and rural schools	SR, PR & TR	1,675 (2,230) 50.8% female	$M = 13.56$ (.53) (T2)
Wang & Eccles (2012)	Washington DC, United States	L (4 yr)	23 middle schools, 1,472 families	SR, SC, TR, & PR	1,054 (1,479) 52% female	$M = 12.9$; Grade 7 (T1), $M = 14.3$; Grade 8 to 9 transition (T2), $M = 17.2$; Grade 11 (T3)
You et al. (2011)	United States (Nationally representative)	CS	1,052 schools	SR & SC	6,000 Gender NR	Range: 16 – 17; Grade 12
You & Sharkey	United States	L (4 yr)	934 high schools	SR & SC	13,825 (24,599)	Grade 8 (T1)

| (2009) | (Nationally representative) | | | | 52.1% female (Only school graduates analysed) | Grade 10 (T2) Grade 12 (T3) |
| Zimmer-Gembeck et al. (2009) | Queensland, Australia | CS | 2 high schools | SR | 314 (324) 52% female | $M = 15$ (.74); Grade 10 & 11 |

CS = Cross-sectional; MM = Mixed methods; L = Longitudinal. SR = student report; TR = teacher Report; SC = school data; PR = parent report; PE = peer report; OB = external observations. DO = Dropout. yr = year; mth = month. T = Measurement wave; SD = Standard Deviation; M = Mean. [1]Australia, Austria, Belgium, Brazil, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong-China, Hungary, Iceland, Indonesia, Ireland, Italy, Japan, Korea, Latvia, Liechtenstein, Luxembourg, Macao-China, Mexico, The Netherlands, New Zealand, Norway, Poland, Portugal, Russian Federation, Serbia and Montenegro, Slovak Republic, Spain, Sweden, Switzerland, Thailand, Tunisia, Turkey, United Kingdom, United States, and Uruguay. [2] Austria, Canada, China, Cyprus, Estonia, Greece, Malta, Portugal, Romania, South Korea, United Kingdom, and United States

Associations Between Teacher–Student Relationships and Engagement

Across the 46 articles reviewed, the majority of the associations identified were in the direction expected. That is, better quality TSRs were associated with higher levels of psychological engagement, academic grades, and attendance and lower levels of disruptive behaviours, suspension, and dropping out (see Tables 2 and 3). One third (30%) of the articles reviewed collected and analysed longitudinal data, enabling consideration of the long-term influence of TSRs on engagement outcomes (see Table 3). From these longitudinal analyses, better quality TSRs could be seen to precede improved student engagement.

Cohen's *d* effect sizes were calculated from the bivariate associations and they ranged from small to large. Among the multivariate analyses, the effect size for a unique association between TSRs and engagement was frequently unable to be calculated due to analyses that reported R^2 values for multiple covariates. For example, the percentage of variance explained, or R^2, was reported for a composite of teacher-related variables (Studsrød & Bru, 2012), school-level effects (Chiu et al., 2012), relatedness to peers and teachers (Tucker et al., 2002), or for the overall statistical model (J. C. Perry, Liu, & Pabian, 2010). Of the longitudinal multivariate analyses, two articles provided the effect size pertaining to the unique contribution of TSRs to the change in psychological engagement. TSRs exerted a small to medium effect (*d* = 0.06–0.58) on change in student compliance and psychological engagement (M.-T. Wang & Eccles, 2012) and a small effect on change in psychological engagement (*d* = 0.06; You & Sharkey, 2009). Effect sizes in the other longitudinal studies ranged from small to large (Table 3).

Cross-Sectional Associations Between Teacher–Student Relationships and Engagement

    Psychological engagement. Almost half (22) of the reviewed articles conducted analyses investigating cross-sectional associations between TSRs and higher levels of psychological student engagement. The majority of the effect sizes across these studies ranged from medium to large (see Table 2). The positive association between TSRs and psychological engagement could be observed among studies that controlled for a range of family and individual factors previously demonstrated to be associated with student engagement (Chiu et al., 2012; Conner & Pope, 2013; J.-S. Lee, 2012; Nie & Lau, 2009). Using a large sample of students from 41 countries, and after controlling for gender, prior grade retention, country, and family background variables, Chiu et al. (2012) found that TSRs and teacher support were statistically significantly associated with school belonging and attitude (Chiu et al., 2012). In the United States, after controlling for school type, gender, and academic grades, teacher support was associated with behavioural, cognitive, and emotional engagement (Conner & Pope, 2013). In this study, the effect size for teacher support ranged from small to medium. Two other US studies with ethnically diverse samples yielded positive associations between TSRs and psychological engagement after adjusting for academic grades (Cooper, 2014; Murray, 2009).

    Various conceptualisations of peer and parental support were included as covariates of TSRs across studies examining psychological engagement.

Table 2

Cross-sectional Associations between Teacher-Student Relationships and

Engagement

Authors	Statistical Analysis	Findings	Effect size
Psychological Engagement			
Berti et al. (2010)	Multiple regression	Greater distance in communication: - lower motivation (β = -.26***) - higher identification (β = .08 NS)	NA NA
Chiu et al. (2012)	Multilevel regression	Better teacher-student relationship: - improved attitude toward school (β = .34***) - higher sense of belonging (β = .18***) Higher teacher support: - improved attitude toward school (β = .07***) - higher sense of belonging (β = .04***)	NA NA NA NA
Conner & Pope (2013)	Hierarchical regression	Higher teacher support: - higher behavioural engagement (β = .30***) - higher cognitive engagement (β = .49***) - higher affective engagement (β = .44***)	f^2 = .07 f^2 = .25 f^2 = .22
Cooper (2014)	Multilevel regression Correlation	Higher connective instruction: - higher classroom engagement (β = .59*) - higher classroom engagement (r = .70*)	NA d = 1.96
de Bruyn (2005)	Path analysis Correlation	Poor teacher role strain: - lower academic engagement (β = -.16*) - lower academic engagement (r = -.23***)	NA d = .47
Hafen et al. (2012)	Correlation	Higher start of class teacher connection: - OB lower start of class engagement (r = -.05 NS) - SR higher start of class engagement (r = .54**) Higher end of class teacher connection: - OB higher end of class engagement (r = .28 NS) - SR higher end of class engagement (r = .14 NS)	d = .10 d = 1.28 d = .58 d = .28
Hardré & Hennessey (2010)	Multiple regression	Better teacher interpersonal style: - higher effort-engagement, Indiana (b = .90***) - higher effort-engagement, Colorado (b = .67***)	NA NA
Haapasalo et al. (2010)	Pearson's correlation	Better teacher student relations: - higher school engagement (r = .66**)	d = 1.76
Lam et al. (2012)	Hierarchical regression Correlation	Higher teacher support: - higher engagement (b = .14**) - higher engagement (r = .48**)	NA d = 1.09
Lee (2012)	Multilevel regression	Better teacher-student relationship: - higher behavioural engagement (β = .33***) - higher emotional engagement (β = .29***)	NA NA
Murdock (1999)	Multilevel regression Correlation	Worse teachers' disinterest-criticism: - higher engagement (β = .05 NS) - lower engagement (r = .16**) Higher teachers' encouragement: - higher engagement (r = .04 NS)	NA d = .32 d = .08
Murray (2009)	Hierarchical regression Zero-order correlation	Higher closeness-trust: - higher engagement (β = .49***) - higher engagement (r = .63***) Higher positive involvement:	NA d = 1.62

		- higher engagement (β = .06 NS)	
		- higher engagement (r = .44***)	NA
		Higher unclear expectations:	d = .98
		- lower engagement (β = -.05 NS)	
		- lower engagement (r = -.42***)	NA
			d = .93
Nie & Lau (2009)	Multilevel regression	Higher teacher care: - higher engagement (γ = .09*)	NA
Perry et al. (2010)	Structural equation modelling Correlation	Higher teacher support: - higher school engagement (β = .29**, direct effect) - higher school engagement (β = .24 NR, indirect effect) - higher identification with school (r = .52**) - higher behavioural school engagement (r = .28**)	NA d = 1.22 d = .58
Sakiz et al. (2012)	Structural equation modelling Latent factor correlation	Higher teacher affective support: - higher academic effort (β = .39***, total & indirect effect) - higher academic effort (r = .30*)	NA d = .63
Sharkey et al. (2008)	Structural equation modelling	Higher school assets: - higher engagement (β = .41***, direct effect)	NA
Shen et al. (2010)	Correlation	Higher relatedness support: - higher in-class effort (r = .21**)	d = .43
Shen et al. (2012)	Hierarchical regression Correlation	Higher relatedness to teacher: - SR higher behavioural engagement (β = .58**) - SR higher behavioural engagement (r = .45**) - SR higher emotional engagement (β = .46**) - SR higher emotional engagement (r = .48**) - TR higher behavioural engagement (β = .69**) - TR higher behavioural engagement (r = .36**) - TR higher emotional engagement (β = .37**) - TR higher emotional engagement (r = .43**)	NA d = 1.00 NA d = 1.09 NA d = .77 NA d = .95
Tucker et al. (2002)	Multilevel regression Pearson correlation	Higher teacher involvement: - higher engagement (β = .53**) - higher engagement (r = .63*)	NA d = 1.62
You & Sharkey (2009)	Multilevel latent growth curve model	Higher teacher support: - higher student engagement (β = .54***)	d = .36
You et al. (2011)	Correlation	Higher teacher support: - higher behavioural engagement (r = .47*)	d = 1.06
Zimmer-Gembeck et al. (2009)	Structural equation modelling Zero-order correlation	Better teacher-student relationships: - higher engagement (β = .56**, direct effect) - higher engagement (β = .13**, indirect effect) - higher engagement (r = .59**)	NA NA d = 1.46
Academic grades			
Bear et al. (2011)	Correlation	Better teacher-student relations: - higher English language achievement (r = .40*) - higher math achievement (r = .64**)	d = .87 d = 1.7
Close & Solberg (2008)	Correlation	Higher connection to teachers: - higher grade point average (r = .29 NR)	d = .61
Davis & Lease (2007)	MANOVA	Higher achievement in higher teacher-liking group (F = 6.27**, η² = .07)	NA

de Bruyn (2005)	Correlation	Worse teacher role strain: - lower achievement ($r = -.19$***)	$d = .39$
de Wit et al. (2010)	Correlation	Higher teacher support: - higher academic achievement ($r = .28$*)	$d = .58$
Green (1998)	Spearman Correlation	Positive relationship between teachers and students (SR): - higher proficiency scores ($r = .13$ NS) Positive relationship between teachers and students (TR): - higher proficiency scores ($r = .27$ NS)	$d = .26$ $d = .56$
Haapasalo et al. (2010)	Logistic regression	Good teacher student relations: - better perceived academic performance (OR = 1.86***)	$d = .34$
Jennings (2003)	Pearson's correlation	More caring adult relationships - higher grade point average ($r = .04$ NS)	$d = .08$
Lam et al. (2012)	Hierarchical regression Correlation	Higher teacher support: - higher academic performance ($b = .14$**) - higher academic performance ($r = .16$*, total effect)	NA $d = .32$
Lee (2012)	Multilevel regression	Better teacher-student relationship: - higher reading performance ($\beta = 10.96$***)	NA
McClure et al. (2010)	Hierarchical regression	Higher personalisation: - Higher grade point average ($b = .08$ NS to .23***) - Higher English language arts scores, ($b = 3.91$ NS to 8.62***) *(Four grade levels and three years of testing)*	NA NA
Molinari et al. (2013)	Structural equation modelling	Better proximity: - higher academic achievement, academic school ($\beta = .44$***, direct effect) - higher academic achievement, vocational school (NS, direct effect) - higher academic achievement, vocational school ($\beta = -.03$* & $\beta = .10$*, indirect effect pathways)	NA NA
Murray (2009)	Hierarchical regression Correlation	Higher closeness-trust: - higher language arts grades ($\beta = .12$ NS) - higher language arts grades ($r = .24$*) - higher mathematics grades ($\beta = .19$***) - higher mathematics grades ($r = .23$*) - lower basic reading skills ($\beta = -.10$ NS) - lower basic reading skills ($r = .11$ NS) - lower basic mathematics skills ($\beta = -.17$**) - lower basic mathematics skills ($r = .03$ NS) Higher positive involvement: - higher language arts grades ($\beta = .20$*) - higher language arts grades ($r = .24$*) - higher mathematics grades ($\beta = .06$ NS) - higher mathematics grades ($r = .14$ NS) - lower basic reading skills ($\beta = -.03$ NS) - lower basic reading skills ($r = .08$ NS) - lower basic mathematics skills ($\beta = -.06$ NS) - lower basic mathematics skills ($r = -.01$ NS) Higher unclear expectations: - higher language arts grades ($\beta = .02$ NS) - lower language arts grades ($r = -.21$*) - higher mathematics grades ($\beta = .07$ NS) - lower mathematics grades ($r = -.22$*) - lower basic reading skills ($\beta = -.18$**) - lower basic reading skills ($r = -.35$***) - higher basic mathematics skills ($\beta = -.10$) - lower basic mathematics skills ($r = -.22$*)	Language arts grades, $f^2 = .06$[1] Mathematics grades, $f^2 = .04$[1] Basic reading skills, $f^2 = .03$[1] Basic mathematics skills, $f^2 = .03$[1]
Perry et al.	Structural	Higher teacher support:	

(2010)	equation modelling Correlation	- higher grades (β = .20 NR, indirect effect) - higher grades (r = .17**)	NA d = .35
You et al. (2011)	Correlation	Higher teacher support: - higher academic achievement (r = .60*)	d = 1.50
Zimmer-Gembeck et al. (2009)	Structural equation modelling Zero-order correlation	Better teacher-student relationships: - higher achievement (β = .31**, indirect effect) - higher achievement (β = .16 NS, direct effect) - higher achievement (r = .35**)	NA NA d = .75
Attendance			
Attwood & Croll (2006)	Chi-square	Teachers getting at me: - higher truancy (OR 7.51**)	d 1.11
Close & Solberg (2008)	Correlation	Better connection to teachers: - higher attendance (r = .16 NR)	d = .32
Darwich, et al. (2012)	Multiple regression Zero-order correlation	Higher adults' support and recognition: - lower school avoidance amongst: lesbian/ gay students (β = -.42**) bisexual males (β = -.35**) bisexual females (β = -.25**) queer students (β = -.37**) straight students (β = -.19**) - lower school avoidance: lesbian/ gay students (r = -.42**) bisexual (r = -.28**) questioning (r = -.37**) straight (r = -.19**)	NA d = .93 d = .58 d = .80 d = .39
Davis & Lease (2007)	MANOVA	Lower absences in higher teacher-liking group (F = 19.63**, η^2 = .07)	NA
de Wit et al. (2010)	Latent growth curve model	Higher teacher support: - higher attendance (γ = .05 NS)	NA
Green (1998)	Spearman correlation	Positive relationship between teachers and students (SR): - higher attendance (r = .18 NS) Positive relationship between teachers and students (TR): - higher attendance (r = .25 NS)	d = .37 d = .52
Studsrod & Bru (2012)	General linear modelling Pearson product-moment correlation	Higher teachers' emotional support: - lower truancy (η^2 = -.08 NS) - lower truancy (r = -.22**) - lower class absence (η^2 = -.00 NS) - lower class absence (r = -.11**)	NA d = .45 NA d = .22
Disruptive behaviours & suspension			
Bear et al. (2011)	Correlation	Better teacher-student relations: - lower suspensions & expulsions (r = -.48*)	d = 1.1
Brewster & Bowen (2004)	Hierarchical regression Correlation	Higher teacher support: - lower problem behaviour (β = -.22*) - lower problem behaviour (r = -.26 NR)	f^2 = .04 d = .54
Green (1998)	Correlation	Positive relationship between teachers and students (SR): - lower suspension (r = -.40*) Positive relationship between teachers and students (TR): - lower suspension (r = -.18 NS)	d = .87 d = .37
de Wit et	Correlation	Higher teacher support:	

al. (2010)		- less disciplinary referrals ($r = .25*$)	$d = .52$
Murdock (1999)	Hierarchical regression Zero-order correlation	Worse teachers' disinterest-criticism: - higher discipline problems ($\beta = .21***$) - higher discipline problems ($r = .35***$) Higher encouragement: - lower discipline problems ($r = -.15**$)	NA $d = .75$ $d = .30$
Nie & Lau (2009)	Multilevel regression	Higher teacher care: - lower misbehaviour ($\gamma = -.04$ NS) Higher willingness to seek help: - lower discipline referrals ($\beta = -.11*$)	NA NA
Shirley & Cornell (2012)	Hierarchical regression Correlation	- lower discipline referrals, Caucasians ($r = -.18**$) - lower discipline referrals, African-Americans ($r = -.17$ NS) - lower suspension ($\beta = .05$ NS) - lower suspension, Caucasians ($r = -.07$ NS) - lower discipline referrals, African-Americans ($r = -.02$ NS)	$d = .37$ $d = .35$ NA $d = .14$ $d = .04$
Dropout			
Cemalcilar & Goksen (2014)	Hierarchical logistic regression ANOVA	Higher positive relations with teachers: - less likely to dropout ($\beta = -.62*$) Students reported more positive relations with teachers than dropouts ($F(1,762) = 36.09***$)	NA

$*p < .05, **p < .01, *** p < .001$, NS = Non-significant.
d = Cohen's d, r = correlation coefficient, f^2 = Cohen's f^2, OR = odds ratio, β = standardised beta coefficient, b = unstandardised beta coefficient, η^2 = partial eta, γ = gamma coefficient.
TR = Teacher report, SR = Student report, NA = insufficient data available for calculation of effect size, NR = Not reported.
[1]Effect size = combined effect of closeness-trust, positive involvement, and unclear expectations.

The relative influence from the teacher, family, and peer contexts was largely replicated among the studies which included parental or peer support as covariates of TSRs in the United States (Murdock, 1999; Murray, 2009; J. C. Perry et al., 2010; Shen et al., 2012), the Netherlands (De Bruyn, 2005), and a cross-national sample (Lam, Jimerson, et al., 2012). One Australian study modelled TSRs and peer relationships (Zimmer-Gembeck, Chipuer, Hanisch, Creed, & McGregor, 2006), finding that TSRs exerted both a direct and indirect positive effect on psychological engagement. Finally, one study conducted analyses that grouped students into low or high family support categories (Sharkey et al., 2008). Students who reported low family support were more likely to have lower levels of psychological engagement than their peers with high family support. Improved school assets protected against low psychological engagement, for students with lower levels of family support, and

promoted high psychological engagement, among students with higher levels of

family support.

Table 3

Longitudinal Associations between Teacher-Student Relationships and Engagement

Authors	Statistical analysis	Findings	Effect size
Psychological Engagement			
Hafen et al. (2012)	Cross lagged models	Start of class teacher connection: - OB change in engagement (β = .01 NS) - SR change in engagement (β = -.11 NS)	NA NA
Wang & Eccles (2012)	Multilevel growth model regression Correlation (across-time averages)	Higher teacher social support: - lower decline in school identification (β = .11***) - higher school identification (r = .25***) - lower decline in subjective valuing of learning (β = .28**) - higher subjective valuing of learning (r = .24***) - lower decline in participation in extracurricular activities (β = .04 NS) - higher participation in extracurricular activities (r = .01 NS)	d = .58 d = .52 d = .42 d = .49 NA d = .02
You & Sharkey (2009)	Multilevel latent growth curve model	Higher teacher support: - increase in student engagement (β = .09 NS)	d = .06
Academic grades			
Barile et al. (2012)	Structural equation modelling	Better teacher-student relationship climate: - higher math gain (β = .20 NS, direct effect)	NA
Dever & Karabenick (2011)	Multilevel regression	Higher teacher caring: - lower math achievement gain (γ = -10.81**)	NA
Langenkamp (2010)	Multilevel logistic regression	Higher teacher bonding: - lower course failure (β = -.09***)	NA
Needham et al. (2004)	Logistic regression	Higher teacher attachment: - lower course failure (OR = .76***)	d = .15
Shen et al. (2009)	Pearson product-moment correlation	Higher relatedness at time 1: - learning achievement (r = .00 NS) - cardiorespiratory fitness enhancement (r = .02 NS)	d = .00 d = .04
Attendance			
de Wit et al. (2010)	Latent growth curve model	Decline in teacher support: - decline attendance (γ = .49***) Higher initial teacher support: - decline attendance (γ = .05 NS)	NA NA
Veenstra et al. (2010)	Multinomial logistic regression t-test	Better attachment to teacher: - lower persistent truancy (b = -.35**) - amongst non-truants when compared to persistent truants t(1639) = -5.66**	NA d = .51
Disruptive behaviours & suspension			
Wang & Eccles (2012)	Multilevel growth model regression Correlation (across time average)	Higher teacher social support: - lower decline in compliance (β = .03*) - higher compliance (r = .09*)	d = .37 d = .18
Dropout			
Barile et al. (2012)	Structural equation modelling	Better teacher-student relationship climate: - less likely to dropout (β = -.47*)	NA

Kaplan et al. (1997)	Structural equation modelling (only indirect effect reported) Correlation	Grade 7 teacher rejection - dropout (β = .03 NS)	NA
		Grade 7 teacher rejection – dropout (r = .05 NR)	d = .05
		Grade 8 teacher rejection - dropout (β = .02 NS)	NA
		Grade 8 teacher rejection – dropout (r = .12 NR)	d = .24
		Grade 9 teacher rejection - dropout (β = .02 NS)	NA
		Grade 9 teacher rejection – dropout (r = .12 NR)	d = .24
Lan & Lanthier (2003)	ANOVA Descriptives	Relationships with teachers declined amongst dropout students (F = 5.78, η^2 = .08**)	NA
		Grade 8 teacher relationships not different between national average and dropout sample (NR)	NA
		Grade 10 teacher relationships worse amongst dropout sample than national average (NR*)	NA
		Grade 12 teacher relationships worse amongst dropout sample than national average (NR*)	NA
Lee & Burkam (2003)	Multilevel logistic regression	Better student-teacher relations: - lower dropout (OR = .14**)	d = 1.08

$*p < .05$, $**p < .01$, $*** p < .001$, NS = Non-significant, NR = Not reported.
d = Cohen's d, r = correlation coefficient, OR = odds ratio, β = standardised beta coefficient, η^2 = partial eta, γ = gamma coefficient.
SR = Student report, OB = Observation. NA = insufficient data available for calculation of effect size.

Several studies sought to elaborate on the relative contribution of different aspects of the teacher's role on psychological engagement. Teacher care and teacher control were associated with improved psychological engagement among a sample of students from Singapore (Nie & Lau, 2009). In a US sample, both TSRs and academic press (i.e., teachers' expectations) were positively associated with behavioural and emotional engagement (J.-S. Lee, 2012). Collectively connective instruction, academic rigour, and lively teaching explained a large portion of variance in psychological engagement among students from a socioeconomically diverse school in the United States (Cooper, 2014). Each aspect of teacher practices, including connective instruction, made statistically significant contributions to psychological engagement. Another study, after controlling for ethnicity and socioeconomic status, reported that only teachers' expectations—but neither teachers' disinterest criticism nor teachers' encouragement—explained the variance in psychological engagement (Murdock, 1999). In a small African American sample (n = 69), improved teacher involvement (i.e., caring, interest) exerted a direct, positive effect on psychological engagement, whereas when teachers were perceived to provide better classroom

structure and student choice, psychological engagement improved via an indirect effect pathway (Tucker et al., 2002). An Italian study considered students' perceptions of fairness, communication, and learning needs and reported that students who perceived inadequate teacher communication experienced lower psychological engagement (indicated by diminished motivation; Berti et al., 2010).

Academic grades. Sixteen of the reviewed studies presented cross-sectional analyses examining associations between TSRs and academic grades. Better TSRs were positively associated with student-reported and official school records of academic grades (see Table 2). Effect sizes were generally medium to large. Several studies presented analyses that covaried individual, family, peer, and school factors with TSRs, and the influence of these covariates varied.

For example, self-reported school performance was positively associated with TSRs, such that Finnish students who reported better quality TSRs were more likely to have a positive perception of their school performance (Haapasalo et al., 2010). Furthermore, male gender, higher socioeconomic status, increased educational aspiration, higher student engagement, and lower school strain were each associated with higher levels of school performance. Conversely, parental support, student autonomy, and peer relationships were not associated with school performance in this study (Haapasalo et al., 2010). In one study of Latino adolescents, Murray (2009) controlled for prior-year academic grades and parent–student relationships, seeking to ascertain the contribution of three overlapping TSRs variables (closeness–trust, positive involvement, and unclear expectations) on four academic grade–related outcome variables (teacher-report of language arts grades and mathematics grades and a standardised test of each of reading skills and mathematics skills). Of these 12 associations (see Table 2), four reached statistical significance and three showed that

better quality TSRs contributed to increased academic grades. The fourth showed an inverse association between higher levels of teacher–student closeness–trust and mathematics grades.

In three studies, psychological engagement was examined as a mediator of the association between TSRs and academic grades using structural equation modelling (Lam, Jimerson, et al., 2012; J. C. Perry et al., 2010; Zimmer-Gembeck et al., 2006). In each study, TSRs exerted a greater total effect on academic grades than either peer or parental support. In a study of Italian students, a similar mediation model showed that TSRs had a stronger association with academic grades for students in academically oriented schools than for their peers in vocational schools (Molinari et al., 2013). In a study of US students using data from the PISA data set, students who reported that they had a better relationship with their teachers had higher reading scores (J.-S. Lee, 2012). Furthermore, when academic press was covaried with TSRs, TSRs made a unique contribution to reading performance, but academic press did not. Davis and Lease (2007) analysed student, teacher, and peer report and school data from a rural school in the United States. Students who had higher teacher-liking rankings were more likely to have greater achievement in five academic subjects (i.e., English, math, social studies, science, and reading).

Elsewhere, Dutch adolescents in preuniversity schools who reported a poor teacher relationship were more likely to have a diminished grade point average (De Bruyn, 2005). A positive association between TSRs and academic grades was also apparent among Canadian students (De Wit et al., 2010) and US students (Bear et al., 2011; You, Hong, & Ho, 2011).

Attendance. Cross-sectional analyses examining associations between TSRs and attendance were presented in seven reviewed studies. Better quality TSRs were

positively associated with higher levels of attendance and lower levels of absence. The majority of effect sizes, calculated from the correlational analyses, were medium to large (see Table 2).

Much like academic grades, the association between TSRs and attendance was analysed as part of a larger mediation model (Darwich et al., 2012). In this study, sexual orientation victimisation was modelled as a mediator of TSRs and attendance. Findings from these analyses showed higher levels of adult (teacher) support was associated with lower school avoidance among students who experienced victimisation as a result of their sexual orientation. Norwegian researchers (Studsrød & Bru, 2012) reported that when gender, socioeconomic status, grade level, and course of study were controlled for, a combination of four teacher variables (academic, autonomy, monitoring, and emotional support) made a small contribution to school attendance variance, such that increases in school attendance were associated with improvement in the four teacher variables. Of these teacher variables, teacher academic support, but not teacher emotional support (TSRs), was a statistically significant contributor to the observed variance in attendance. A further study of Canadian students failed to detect an association between teacher support and student attendance, after controlling for a range of family and student variables such as gender, previous academic grades, family support, attitudes to school, and antisocial behaviour (De Wit et al., 2010). A study of British adolescents indicated that students who reported "teachers are always getting at me" were six times more likely than others to be highly truant (Attwood & Croll, 2006, p. 477). Elsewhere, students who had higher teacher-liking rankings were more likely to have higher attendance (Davis & Lease, 2007).

Disruptive behaviours and suspension. Cross-sectional analyses investigating associations between TSRs and disruptive behaviours and suspension were presented in seven reviewed studies. In general, better quality TSRs were associated with lower rates of these outcomes. The majority of effect sizes ranged from medium to large (see Table 2). Gender and various measures of socioeconomic status were commonly controlled for in analyses investigating the influence of TSRs on disruptive behaviour (Brewster & Bowen, 2004; Murdock, 1999; Nie & Lau, 2009). Only one reviewed study, examining a sample of students from Singapore, did not detect an association between TSRs and disruptive behaviours (Nie & Lau, 2009). The authors also reported that higher levels of teacher control diminished disruptive behaviours. In a Latino sample classified as being at risk of failure, students who reported higher levels of teacher support were less likely to report a range of problem behaviours in the previous 30 days (Brewster & Bowen, 2004). This association was present when parental support was included as a covariate, after controlling for gender, school, family structure, and socioeconomic status. In the full model, higher levels of teacher support, but not parent support, was a statistically significant predictor of diminished problem behaviours. Murdock's (1999) measure of TSRs considered teachers' disinterest-criticism. Higher levels of disinterest-criticism were associated with higher discipline problems. This association was statistically significant in both the model that controlled for socioeconomic status and the model that controlled for academic grades (Murdock, 1999). After controlling for ethnicity, aggressive attitudes, and school climate, students who were more willing to seek help from teachers were less likely to receive a discipline referral (Shirley & Cornell, 2012). Seeking help from teachers had no effect on student suspension in this study.

Dropout. Only one cross-sectional study examined student dropout. In this study of predominantly low socioeconomic status Turkish adolescents and their families, retrospective recall of TSRs was relied on. Findings showed that students who had dropped out of school were more likely to recall poor quality TSRs than their peers who remained in school, after controlling for a range of socioeconomic risk factors (Cemalcilar & Gökşen, 2014).

Longitudinal Associations

Thirteen reviewed studies presented longitudinal analyses investigating associations between TSRs and engagement. Overall, findings showed that TSRs were longitudinally associated with higher levels of psychological engagement, academic grades, and attendance, and reduced levels of disruptive behaviours, suspensions, and dropout (see Table 3).

Psychological engagement. Three studies analysed the influence of TSRs on psychological engagement, across two or more time points (Hafen et al., 2012; M.-T. Wang & Eccles, 2012; You & Sharkey, 2009). M.-T.Wang and Eccles (2012) surveyed students at three points in time (7th, 9th, and 11th grades) and reported a normative decline in psychological engagement (i.e., school participation, identification, and valuing of learning) over the 4 years. After controlling for gender, ethnicity, socioeconomic status, and academic grades, an increase in teacher social support (using teacher self-report data) diminished the normative decline in school identification and valuing of learning among students, but had no effect on student participation. These associations remained when peer and parent support were included as covariates with teacher social support (M.-T. Wang & Eccles, 2012).

In contrast, in a study that excluded all students who had dropped out of school, there was a normative increase in psychological engagement (8th, 10th, and

12th grades; You & Sharkey, 2009). After controlling for a comprehensive range of student characteristics (i.e., gender, ethnicity, prior achievement, education aspirations, and socioeconomic status), teacher support was not statistically associated with the observed change in psychological engagement among the students who completed school. In another study, Hafen et al. (2012) found no association between teacher connection (i.e., a positive and close relationship with their teachers) and psychological engagement (using either student report or external observer ratings of psychological engagement over a 1-year period).

Academic grades. Of the five longitudinal studies that examined the influence of TSRs on academic grades, two reported statistically significant associations between better quality TSRs and lower levels of academic failure over a 1-year period (Langenkamp, 2010; Needham, Crosnoe, & Muller, 2004). A third study reported an inverse association between teacher caring and math achievement (Dever & Karabenick, 2011). Findings from the remaining studies showed no association between TSRs and academic grades (Barile et al., 2012; Shen, McCaughtry, Martin, & Fahlman, 2009).

In a study of US students, Langenkamp (2010) reported that middle school students who described more positive perceptions of teacher bonding were less likely to report low engagement (indicated through having failed a subject in their first year of high school). In this study, male students and students with parents with lower levels of education were more likely to report academic failure. In another study examining course failure, lower levels of teacher attachment, student absenteeism, and trouble with homework displayed statistically significant effects, such that all three variables predicted course failure (Needham et al., 2004). Barile et al. (2012) modelled the influence of school and student covariates (i.e., ethnicity, socioeconomic

status, academic aspirations, school policies, Grade 10 math score) on Grade 12 math scores. After controlling for these variables, no statistically significant associations between TSRs and longitudinal gains in math were detected. In contrasting findings, Dever and Karabenick (2011) found increased teacher caring predicted diminished math achievement, among their sample (including a high proportion of Hispanic students). In the same study, higher levels of academic press (i.e., high academic expectations) predicted higher levels of math achievement.

Attendance. Of the longitudinal studies reviewed, two sought to assess the potential for TSRs to influence a change in attendance (De Wit et al., 2010; Veenstra, Lindenberg, Tinga, & Ormel, 2010). In a Canadian study, De Wit et al. (2010) used growth curve analysis to examine the influence of teacher support on attendance, finding that declining teacher support was associated with declining attendance over a 12-month period. Conversely, teacher support at the beginning of Grade 9 was not a statistically significant predictor of declining attendance, over the same period. This study included a comprehensive range of family, peer, and individual control variables (i.e., mother education, Grade 8 attendance, attitudes toward school, academic grades, and peer substance use) and peer support was covaried with teacher support. In the second study, Veenstra et al. (2010) used a combined teacher, parent, and student report measure of persistent truancy. Results showed the odds of persistent truancy increased where students reported lower attachment to each of teachers and parents. These associations were evident after controlling for individual and family variables including gender, socioeconomic status, family breakup, parental substance use, and parental antisocial behaviour.

Disruptive behaviours and suspension. In the one study examining the influence of TSRs on disruptive behaviours or suspensions, M.-T.Wang and Eccles

(2012) found increases in teacher social support protected against diminished school compliance. This medium effect ($d = 0.37$) was demonstrated after student gender and socioeconomic status were controlled for. Furthermore, increased teacher social support was a statistically significant predictor of school compliance trajectories in the model that included both peer and parent social support as covariates.

Dropout. Better quality TSRs were associated with lower rates of subsequent school dropout, across three of the four longitudinal studies examining this outcome (Barile et al., 2012; Lan & Lanthier, 2003; V. E. Lee & Burkam, 2003). V. E. Lee and Burkam (2003) reported better quality TSRs in Grade 10 predicted reduced rates of dropout in Grade 12, after adjusting for socioeconomic status, gender, prior academic grades, and ethnicity. Further analyses showed that the influence of TSRs differed in relation to the size and type (public, Catholic, and independent) of school. The authors reported that TSRs were not a significant predictor of dropout among larger schools (>1,500 students), due to other undefined organisational factors, theorised to undermine TSRs in large schools. They explained that the lack of an effect of TSRs on dropping out in independent schools was due to overall low dropout rates and predominantly good-quality TSRs in the independent schools (V. E. Lee & Burkam, 2003).

More recently, Barile et al. (2012) found students who reported poor quality TSRs in Grade 10 were more likely to have dropped out of school 2 years later, after controlling for a comprehensive range of covariates across individual, family, school, and peer contexts (i.e., prior mathematics grades, socioeconomic status, peer aspirations, school size, school location, teacher salary range). In another study, Lan and Lanthier (2003) reported that students who had dropped out of school relative to their graduating peers had poor quality TSRs in Grade 12, but not Grades 8 and 10.

Furthermore, TSRs were observed to decrease among the students who dropped out of school in the years leading up to dropout. Kaplan et al. (1997) reported that teacher rejection in each of Grades 7, 8, and 9 were not statistically significant predictors of dropout. However, teacher rejection exerted indirect effects on dropout, via low academic grades, peer rejection, and diminished academic aspirations.

Discussion

Overall, across the reviewed studies, better quality TSRs were associated with higher levels of psychological engagement, academic achievement, and school attendance and reduced levels of disruptive behaviours, suspension, and dropout. These associations were apparent among bivariate studies, and a range of multivariate studies that controlled or covaried for a range of individual, family, peer, school, and teacher contextual factors. Across the 13 longitudinal studies investigating the influence of TSRs on levels of engagement, when TSRs declined over 1 to 4 years, there was a commensurate decline in psychological engagement, attendance, and behavioural compliance (De Wit et al., 2010; M.-T. Wang & Eccles, 2012). Students who reported better quality TSRs were more likely to have higher academic grades and attendance rates subsequently and were less likely to report dropping out of school (Barile et al., 2012; Lan & Lanthier, 2003; Langenkamp, 2010; V. E. Lee & Burkam, 2003; Needham et al., 2004; Veenstra et al., 2010).

Taken as a collective, the studies provide evidence that better quality TSRs precede improved engagement. These findings were apparent among studies that controlled for a broad range of individual, family, school, and teacher variables. However, it should be acknowledged that only a small number of longitudinal studies investigated psychological engagement (3), academic grades (5), attendance (2), disruptive behaviours/suspension (1), and dropping out (4). Consequently, it is not

possible to conclude that better quality TSRs will improve each of these five indicators of students' engagement. Instead, the findings suggest that high-quality TSRs *contribute* to students' engagement within an ecological framework of adolescent development. For example, individual factors (Barile et al., 2012; Kaplan et al., 1997; You & Sharkey, 2009), family (You & Sharkey, 2009), peer (De Wit et al., 2010), school (You & Sharkey, 2009), and teacher variables other than TSRs (Barile et al., 2012; You & Sharkey, 2009) explained greater proportions of variance in student engagement than TSRs.

Teacher–Student Relationships and Associations With Multiple Indicators of Engagement

Findings of this review showed that better quality TSRs were positively associated with both traditional school-based indicators of engagement and the more recently conceptualised, less conspicuous, psychological measures of students' engagement. There is still some uncertainty regarding how psychological engagement should be conceptualised (Reschly & Christenson, 2012). This uncertainty was demonstrated in the multiple measures and conceptualisations of psychological engagement evident across the studies reviewed. It is perhaps this conceptual haziness that is hindering the field from concluding that high-quality TSRs can improve psychological engagement. For example, in the current review, two longitudinal studies reported that TSRs were not associated with observed changes in psychological engagement (Hafen et al., 2012; You & Sharkey, 2009). However, the measures of student engagement in those studies were limited in that they did not consider a multidimensional model of student engagement as has been recommended (Fredricks et al., 2004; Reschly & Christenson, 2012). Overt school-based constructs, such as academic grades, attendance, disruptive behaviours, suspension, and dropout,

are more established measures of student engagement (Henry et al., 2012). However, it was apparent from the reviewed studies that student, teacher, and school report of these outcomes vary. As long as inconsistent conceptualisations and measurement of psychological engagement persist, inconsistent associations, such as those currently reported, will also persist.

By concurrently reviewing studies including psychological and school-based measures of engagement and better established engagement constructs, the current study was able to present a more integrated perspective on TSRs and engagement. Several appraised studies simultaneously analysed psychological engagement and academic grades as student outcomes and each was positively associated with TSRs (J.-S. Lee, 2012; Murray, 2009; You et al., 2011; Zimmer-Gembeck et al., 2006). Tests of mediation models demonstrated support for the role of psychological engagement in contributing to the relationship between TSRs and academic grades (De Bruyn, 2005; Lam, Wong, Yang, & Liu, 2012; J. C. Perry et al., 2010; Zimmer-Gembeck et al., 2006). Of the studies that included a psychological measure of engagement and disruptive behaviour as outcomes, higher quality TSRs were associated with improved psychological engagement and reduced rates of disruptive behaviours (M.-T. Wang & Eccles, 2012). In contrast, higher quality TSRs were associated with increased psychological engagement but not improved disruptive behaviours (Nie & Lau, 2009). Conversely, Murdock (1999) reported that higher quality TSRs were associated with decreased disruptive behaviours but not improved psychological engagement. Collectively, these reviewed studies provide evidence for the complementary influence of TSRs across multiple important indicators of engagement.

One article that simultaneously considered academic grades and dropout suggested that higher quality TSRs may influence a student to remain at school, but higher quality TSRs may be insufficient to improve academic grades (Barile et al., 2012). In contrast to this perspective, the current review considered several studies that reported positive associations between better quality TSRs and academic grades (Lam, Jimerson, et al., 2012; J.-S. Lee, 2012) and reduced failure (Langenkamp, 2010; Needham et al., 2004). Studies such as these, that reported a significant association between TSRs and engagement, do not necessarily contradict statistically nonsignificant associations in other studies of comparable variables. Instead, this review further emphasises the need to consider the complexity of the multiple influences on students' engagement (Chase et al., 2015); in some instances, TSRs may not be as important as other individual, family, peer, and school factors.

However, across the 46 reviewed studies, better quality TSRs were positively associated with a comprehensive range of engagement outcomes. The current findings are consistent with prior reviews of TSRs that investigated a less exhaustive list of student outcomes (Cornelius-White, 2007; Roorda et al., 2011). The current review went beyond those prior reviews by examining long-term associations between TSRs and students' engagement.

Longitudinal Associations Between Teacher–Student Relationships and Engagement

The 13 longitudinal studies reviewed begin to address some of the limitations of the preexisting literature (Cornelius-White, 2007; Roorda et al., 2011). Nine of these studies presented longitudinal analyses, which indicated that higher quality TSRs either precede engagement or are associated with improved student engagement over time. Two of the most recent studies examined in the present review had large

samples, collected data at three time intervals, and used advanced statistical modelling techniques to investigate associations between TSRs and trajectories of engagement (De Wit et al., 2010; M.-T. Wang & Eccles, 2012). Higher quality TSRs were associated with improved psychological engagement, attendance, and behavioural compliance. High-quality middle school TSRs provided long-term protection against academic failure in high school (Langenkamp, 2010; Needham et al., 2004) and played an important role in preventing persistent truancy (Veenstra et al., 2010). Two studies suggested that TSRs did diminish over time prior to dropout (Kaplan et al., 1997; Lan & Lanthier, 2003). Similarly, lower quality TSRs predicted subsequent dropout (Barile et al., 2012; V. E. Lee & Burkam, 2003). Collectively, these findings provide empirical support for the proposed role of higher quality, affective TSRs in influencing engagement in the long term. These findings were apparent among studies utilising both overt and more inconspicuous indicators of students' engagement.

Most of the reviewed longitudinal studies collected data at 1- or 2-year intervals. To assist in disentangling potential bidirectional relationships and furthering an understanding of the development of multiple indicators of engagement, the current author supports recommendations to collect data a minimum of two times per school year (De Wit et al., 2010). Data collection at less frequent intervals is potentially problematic for two reasons. First, many high school students change teachers once or twice a year and presumably TSRs will also be altered. Second, over the course of a 1- or 2-year period, multiple influences external to school and teachers contribute to adolescent development (Catalano, Berglund, et al., 2004). These external influences may be transitory or, as is often the case with individual and family factors, more persistent, and several of the studies did attempt to control for these factors.

Although the studies implicate a role for TSRs in improving engagement, ecological models of adolescent development (Catalano & Hawkins, 1996; Eccles et al., 1993) recommend that TSRs should be considered within the context of the adolescent's individual, family, peer, and school contexts. When individual-level factors (e.g., prior academic grades, gender) were controlled for in the analyses across reviewed studies, the utility of TSRs for all students on a range of engagement outcomes was further demonstrated (Barile et al., 2012; Chiu et al., 2012; Murdock, 1999; M.-T. Wang & Eccles, 2012). Additionally, the finding that TSRs can assist in overcoming family educational disadvantage is a potentially powerful message (Brewster & Bowen, 2004; Cemalcilar & Gökşen, 2014; Murray, 2009; Tucker et al., 2002). Sharkey et al. (2008) sought to further clarify the relevance of better TSRs among students classified as either living in families with high or low risk, and reported that parental and teacher roles are "additive not compensatory" (p. 414).

In addition to individual and family considerations, the association between TSRs and engagement was demonstrated after controlling for school contextual effects such as teacher reward policy (Barile et al., 2012), country (Chiu et al., 2012), school type (private and public; Conner & Pope, 2013; Langenkamp, 2010; J.-S. Lee, 2012; V. E. Lee & Burkam, 2003), availability of school choice and urbanicity (Langenkamp, 2010), school socioeconomic status (J.-S. Lee, 2012), school size (V. E. Lee & Burkam, 2003; Needham et al., 2004), and availability of health services (Needham et al., 2004). Again, this diverse range of contextual variables emphasises the applicability of improved TSRs to a range of indicators of student engagement in a broad array of schools and school systems. Consideration of these school-based variables is crucial to allow generalisation of the applicability of TSRs, because as outlined, adolescent outcomes are influenced by a diverse range of contextual

considerations (Catalano & Hawkins, 1996; Eccles et al., 1993). In addition to adolescent outcomes, the relationship between the teacher and student is also influenced by the broader context of school (Crosnoe, Johnson, & Elder, 2004; V. E. Lee & Burkam, 2003), and self-determination theory asserts that high-quality, affective TSRs should be considered within the context of teacher instructional style (Ryan & Deci, 2000).

Several studies suggested that relationships between teachers and students were not as important as other aspects of teacher instructional style (Hafen et al., 2012; Shen et al., 2009; Studsrød & Bru, 2012). Furthermore, one study reported that higher quality TSRs were associated with lower academic grades, whereas better teacher instruction was associated with improved academic grades (Dever & Karabenick, 2011). Thus, it would appear that teachers need to strike a balance between the affective, relational aspects of teaching and high-quality instruction. This balance was encapsulated in two separate two-dimensional models in which both TSRs and teacher instructional style contributed to engagement (J.-S. Lee, 2012; Nie & Lau, 2009). The theory of stage environment fit emphasises teacher instructional qualities as key components of positive adolescent development (Eccles et al., 1993). From the current review, it appears that high-quality TSRs are associated with better student engagement in the long term. Additionally, multiple other factors (i.e., individual, family, peer, school, and teacher) are likely to concurrently influence the development of each of TSRs and students' engagement.

Recommendations for Future Research

Further longitudinal research investigating the influence of TSRs on growth trajectories for psychological engagement, academic grades, attendance, disruptive behaviours, suspension, and dropout is warranted. The applicability of engagement as

a target for intervention would benefit from empirical research that elaborates on its theorised multidimensionality (Conner & Pope, 2013; J.-S. Lee, 2012) and representation of the construct along a continuum (Nie & Lau, 2009; M.-T. Wang & Eccles, 2012). Additionally, the current review sought to understand engagement by simultaneously considering multiple indicators of student engagement. From a purely methodological viewpoint, integration of these measures should assist in overcoming concerns regarding reliability of student-report. More pertinently, further empirical evidence is required before a causal link can be drawn between TSRs and engagement.

Along with integrating engagement as a concept that spans a continuum, there is a need for longitudinal research that collects TSRs and engagement data at frequent (i.e., less than 6 months) time intervals to assist in untangling any temporal sequencing of these outcomes (De Wit et al., 2010). This is particularly important because the association between TSRs and engagement is likely to be bidirectional (M.-T. Wang & Degol, 2014). It is recommended that future research into antecedents of engagement consider not only individual, family, peer, and school factors but also teacher instructional factors beyond the emotional component of the relationships, as conceptualised in the current review.

Limitations of the Reviewed Studies

Several limitations of the studies reviewed in the present article are noted. First, a common limitation of research into education interventions or programs is the absence of well-designed experiments (Cook, 2007). Second, approximately two thirds of the reviewed studies utilised cross-sectional data. Each of these studies acknowledged that despite a strong theoretical basis for TSRs as antecedents in their association with engagement, the direction of associations between TSRs and

engagement cannot be assumed. At the very least, the association between TSRs and engagement is likely to be bidirectional.

Third, the conceptualisation and measurement of TSRs and student engagement differed among studies. With these differences come potential concerns associated with the reliability and validity of the methods employed. Only a small number of studies utilised teacher report or third-person observation of TSRs and student engagement. The failure to consider teachers' perspectives in the measurement of TSRs should be acknowledged. Fourth, the sampling methods employed within the reviewed studies at times inhibited an ability to generalise the findings. Low rates of consent and participation also give rise to concerns regarding sampling bias (Sakiz, Pape, & Hoy, 2012). It may be that active consent procedures, such as those employed in most of the reviewed studies, exclude educationally disadvantaged students and are therefore potentially biased (Shaw, Cross, Thomas, & Zubrick, 2014). Additionally, the importance of multilevel modelling is increasingly important (Sellström & Bremberg, 2006).

Finally, the reviewed studies incorporated and controlled for a disparate range of covariates. The preceding discussion has outlined the importance of context when considering student engagement. Relatively simple bivariate analyses (Green, 1998) should always be interpreted with caution. However, even more comprehensive multivariate models were unable to completely account for all of the variance in students' engagement (You & Sharkey, 2009).

Limitations of the Current Review

A number of limitations to the current review require acknowledgment. First, publication bias and the "file drawer problem" exist for any review of this nature. It is possible that studies that found no association between TSRs and engagement were

not published and could not be reviewed. Second, this review focused on peer-reviewed, quantitative studies and did not seek to include either non‑peer reviewed literature (gray literature) or qualitative studies. The reason for the exclusion of non-peer-reviewed studies was to only include high-quality studies that have undergone a rigorous scientific review. Qualitative studies were not included due to a desire to analyse studies that contained a sample size large enough to allow generalisations regarding TSRs to be made to mainstream high schools. Third, although the current review acknowledged some of the strengths and limitations of reviewed studies, it is not possible to adequately capture all of the details of the 46 studies. Despite the cross-checking performed by research associates, it should be acknowledged that in endeavoring to incorporate and summarise such a comprehensive body of work, some level of detail is lost.

Researchers also need to be cautious in generalising the findings of this review. Only studies of adolescents were included, and with a few notable exceptions, the samples were from English-speaking countries. The two cross-national studies reported that there was no national-level effect and consequently did not model this (Chiu et al., 2012; Lam, Jimerson, et al., 2012). Additionally, some samples had unique ethnic and socioeconomic status characteristics or were drawn from locations that limit generalisations to larger populations.

Conclusion

The current study elaborated on the potential of good-quality TSRs to improve a comprehensive range of indicators of student engagement. Based on theoretical models, it is tempting to conclude that better quality TSRs enhance all indicators of engagement but as yet insufficient evidence exists, at least in secondary schools, to prove or disprove causality. However, it is likely that improved TSRs will benefit

students displaying overt signs of low engagement and simultaneously facilitate students' psychological engagement.

Before concluding that teachers should seek to promote caring, responsive, and personal relationships with their students, caution should be heeded. A contextual model of adolescent development must be considered. Students do not learn and develop solely through their relationship with classroom teachers. Despite this caution, when individual, family, and to a lesser degree peer, school, and teacher factors were controlled for, TSRs could be observed to have an important, predictive association with multiple important indicators of student engagement. Future longitudinal research should consider multiple indicators of engagement that incorporate psychological measures of engagement and traditional, school-based measures of engagement.

Chapter 7: Teaching: More Than Positive Relationships

While the systematic review article provided a detailed integration and discussion of the 46 reviewed articles, several points pertinent to the current research program warrant further elaboration. The review simultaneously appraised school-based indicators of engagement and psychological engagement, as student outcomes. As predicted, better TSRs were positively associated with improved school and student-reported engagement. This integration of multiple indicators of engagement is novel (M.-T. Wang & Degol, 2014) and provides guidance for future research that wishes to consider both the student and school perspective. The implication of this, for the two subsequent studies was that traditional school-based measures of engagement and student-reported psychological engagement can be considered concurrently.

The review parameters did not allow a more thorough consideration of the association between teacher instructional style and engagement. However, a major recommendation from the systematic review was that "teacher instructional factors beyond the emotional component of the relationships" (Quin, 2017, p. 37) be considered. This is because several studies reported that teacher instructional characteristics had stronger associations with engagement than TSRs (Hafen et al., 2012; Studsrød & Bru, 2012). Consequently, when designing the two subsequent studies it was desirable to expand upon teaching beyond TSRs.

Further to a need to elaborate upon the role of teaching, the reviewed studies controlled for and covaried a disparate range of factors, theorised to influence student engagement. However, with few exceptions (M.-T. Wang & Eccles, 2012; You & Sharkey, 2009), the majority of the reviewed studies did not report upon comprehensive, multivariate, ecological models of student engagement. A strength of

the review, enabled by an integrated analysis of 46 studies of student engagement, was that it provided further empirical support for ecological models of adolescent development (Bronfenbrenner & Morris, 2006; Catalano & Hawkins, 1996). Specifically, the reviewed papers made it possible to ascertain that factors from the individual, family, peer, and school contexts do influence student engagement. As recommended, future investigations into student engagement should seek to capture this level of complexity.

An addition layer of complexity is that education can be described as a process (Reschly & Christenson, 2012). Therefore, it is recommended that "longitudinal tracking of changes in engagement as a result of attempts to alter the school context are also needed" (Fredricks et al., 2004, p. 74). The inclusion and exclusion criteria, established to conduct the systematic review, meant that less than one-third ($n = 13$) of the studies retained conducted longitudinal analyses. Of these, the majority ($n = 10$) were published in the final five years of the time-frame (1990 – 2014) for inclusion in the systematic review article. This is suggestive of a trend that is responsive to calls for longitudinal analyses of student outcomes. However, future investigations into the development of student engagement should include longitudinal study designs (Fredricks et al., 2016; Quin, 2017).

Finally, of the reviewed studies one (Zimmer-Gembeck et al., 2006) drew upon a sample of Queensland (Australia) students. Along with other notable exceptions (Bond et al., 2007; Martin, Anderson, Bobis, Way, & Vellar, 2012) empirical research, that reports upon Australian students' psychological engagement, has been infrequently published. From the review a study of international students included Australian participants and noted that between-country differences were not statistically significantly significant (Chiu et al., 2012). It is important, should

recommendations be made to the Victorian school system, that future research

includes Victorian students.

Chapter 8: Associations Between Teaching Quality and Secondary Students'

Engagement in School

The previous chapter established that teaching related factors (i.e., TSRs) have a positive association with a broad range of student engagement outcomes. The limitations of the extant literature are threefold: i) a need to consider teachers' instructional qualities; ii) insufficient multivariate studies that account for ecological models of adolescent development and; iii) a small number of longitudinal studies of students' engagement. This chapter, that describes a cross-sectional study, sought to elaborate upon the role of teaching in contributing to Victorian (Australia) students' engagement in secondary school.

The following article was submitted for publication to the peer reviewed journal *Social Psychology of Education*[6] in April 2016. It utilised self-determination theory (Ryan & Deci, 2000) to conceptualise the role of a classroom teacher. By using this theoretical framework, teaching characteristics, other than relationship qualities with students were measured. Associations with students' psychological engagement (i.e., behavioural, emotional, cognitive) and school-based engagement concerns (i.e., suspension, absences) were tested, after controlling for individual (i.e., academic grades, gender, mental health) and family support of education.

The following article did not report upon the suspension and absences analyses. These analyses were conducted and reported upon in an article originally

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[6] The Social Psychology of Education is an international research journal. It had a 5-year journal impact factor of 1.163. In 2015 it was in the fourth quartile of educational psychology journals (Thomson Reuters, 2016).
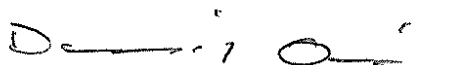
submitted, by invitation for a special edition, to *The Educational and Developmental Psychologist*[7]. The peer reviewers recommended that the statistically non-significant associations with suspension and truancy be removed from the results and discussion. The special edition journal was not published. However, the recommendations were adopted for a subsequent submission to the *Social Psychology of Education*.

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[7] The Educational and Developmental Psychologist is an Australian peer reviewed journal, published by the Australian Psychological Society.

Statement of Contribution

I acknowledge that my contribution to the paper is no less than 60 percent.

Name: Daniel Quin

Signature:

Date: 21st April 2017

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I acknowledge that my contribution to the paper is 15 percent.

Name: Dr Jess Heerde

Signature:

Date: 21st April 2017

Population Health Studies of Adolescents, Murdoch Childrens Research Institute

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Note: Professor Sheryl Hemphill has been and remains on extended leave. She was unavailable to nominate a percentage contribution and provide a signature.

Abstract

Students' perceptions of their social and instructional interactions with their teachers play a key role in students' engagement. Understanding how the quality of these interactions can influence students' engagement in school is paramount to improving students' engagement. Eighty-eight Year 7 students from three schools in the state of Victoria, Australia completed a self-report survey. Participants reported their perceptions of teaching quality, and their own behavioural, emotional, and cognitive engagement in school. After controlling for individual (i.e., gender, age, academic grades, mental health) and family variables (i.e., parent support of education) teaching quality was uniquely associated with behavioural and emotional engagement. The findings indicated that teaching quality has an important, but not exclusive role in influencing students' engagement in school.

Introduction

Adolescents with low levels of engagement in school (i.e., engage in disruptive behaviours, are frequently absent or suspended from school, fail subjects, or display apathy) are more likely to subsequently abuse substances, participate in antisocial behaviours, and have increased contact with the justice system (Hemphill et al., 2006; Henry et al., 2012). With a focus upon students at risk of disengaging from school, Finn (1989) identified a need to understand how improved student engagement in school can prevent disruptive behaviours, poor attendance, and academic failure at school. This need persists today amongst a broad range of schooling systems in developed countries (Beaman et al., 2007; OECD, 2014a).

In the last 20 years, the pursuit of improved student engagement in school has evolved as a response or 'antidote' to the problems associated with disruptive behaviours and absences (Finn, 1989; H. M. Marks, 2000). Students' with better engagement in school have been shown to have higher educational and vocational achievement in adulthood (Abbott-Chapman et al., 2013), diminished adolescent substance use and delinquency (Li & Lerner, 2011; M.-T. Wang & Fredricks, 2013), improved life satisfaction (A. D. Lewis et al., 2011), and diminished depression and higher academic grades (Li & Lerner, 2011). Consequently, there is an increasing research focus seeking to understand the contexts in which students' engagement in school can be promoted and simultaneously disruptive behaviours and absences diminished (Finn & Zimmer, 2012).

Students' Engagement in School

A holistic representation of student engagement views engagement as more than the absence of overt behaviours such as disruptive behaviours and regular school attendance. It is recognised that students may be in class, behaviourally compliant,

and achieving adequate academic grades without extending themselves to their full academic potential. Thus, Newmann (1992) described student engagement as a "student's psychological investment in an effort directed toward learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote" (p. 12). This psychological perspective views the pursuit of improved student engagement in school as relevant for all school students (Appleton et al., 2008; Deci, 2009; Noble & McGrath, 2008).

It is the less overt behavioural, emotional, and cognitive processes that have led to the development of multidimensional measures of student engagement that captures both traditional school-based measures of engagement and less readily observable psychological processes (Fredricks et al., 2004; Reschly & Christenson, 2012). Typically, conceptualisations of engagement now include the dimensions *behavioural*, *emotional*, and *cognitive* engagement in school (M.-T. Wang & Degol, 2014). *Behavioural engagement* incorporates historical school-based concerns such as disruptive behaviours and absences but goes further by referring to a student's participation in academic, social, and extracurricular pursuits (Finn, 1989; Fredricks et al., 2004). Students' reports of their goal directed behaviours at school, and observations of students' attention to their prescribed academic learning tasks are important behavioural engagement considerations (Fredricks & McColskey, 2012). *Emotional engagement* represents a student's feelings towards the complex interrelated components of the school as an institution (Fredricks et al., 2004). Measures of emotional engagement most commonly consider student's enjoyment and liking of, and interest in, school, classwork, teachers, and peers (Fredricks & McColskey, 2012). *Cognitive engagement* recognises that the foremost role of schools is providing a place of learning or academia and that school success is influenced by a

student's ability to utilise appropriate learning strategies (Fredricks et al., 2004). Concepts including self-regulation, strategic thinking, and goal directed learning are consistently included in definitions of, and when measuring, cognitive engagement (Appleton et al., 2006; Fredricks et al., 2004; M.-T. Wang & Fredricks, 2013).

Contextual studies that have longitudinally investigated students' engagement in school have demonstrated that individual characteristics (i.e., gender, academic grades, self-concept) and family background (i.e., socioeconomic status and parent support) uniquely predict psychological engagement in school (You & Sharkey, 2009), behavioural compliance and school participation, valuing, and identification (M.-T. Wang & Eccles, 2012), and attendance (De Wit et al., 2010; Veenstra et al., 2010). These studies of multiple adolescent contexts also reported a unique association between better quality teacher-student relationships and subsequent higher levels of student engagement (De Wit et al., 2010; Veenstra et al., 2010; M.-T. Wang & Eccles, 2012; You & Sharkey, 2009). These studies imply that even though many individual student and family characteristics are somewhat beyond the influence of the teacher, student engagement is malleable and responsive "to the school and classroom context" (Appleton et al., 2008; Finn & Zimmer, 2012, p. 105).

Increasingly within the school context mental health is being viewed as an important consideration for adolescent development (Bond et al., 2004; Gulliver, Griffiths, & Christensen, 2010; Weare & Nind, 2011). This is a result of concerns about the prevalence of mental health problems amongst adolescents in traditional English speaking countries (Kessler et al., 2012; King et al., 2008; Lawrence et al., 2015). A recent review of student mental health and academic outcomes reached the conclusion that student mental health, behavioural engagement, and academic

outcomes are complimentary (Suldo et al., 2014). These complimentary relationships have been explained as follows:

> Adolescents' decision to engage in learning or not in the classroom depend in some measure on whether they feel able to meet the challenges presented them, whether they see purpose and value in classroom activities, and whether they feel safe and cared for by others in the setting (Roeser et al., 2000, p. 454).

This quote touches upon a common thread to the development of students' engagement in school. That is, the importance of relationships with others and the teachers' role in fostering students' engagement in school.

To date much of the measurement of what teachers can seek to influence or 'value-add' has focused upon student academic grades (Fenstermacher & Richardson, 2005; Hattie, 2009; Isore, 2009). This presents a two-fold problem. First, as outlined, improved student engagement outcomes are complimentary to the development of academic grades and it is contended here that both should be goals of education. Second, this approach to measurement of teacher effectiveness is problematic because it is acknowledged that good teaching does not necessarily translate into improved student grades (Fenstermacher & Richardson, 2005). It is the belief of the authors of this paper that, when seeking to consider outcomes of school there is a need to understand how teachers can influence both academic grades and non-academic outcomes such as students' engagement in school. Amongst the existing empirical literature there is a need to elaborate upon how teachers can influence students' engagement within the parameters of their instructional role of teaching.

Teachers, Teaching, and Engagement

Comprehensive meta-analyses have sought to identify the key characteristics and behaviours that effective teachers display (Hattie, 2009; Kyriakides, Christoforou, & Charalambous, 2013). Teacher quality is traditionally measured via teacher qualifications, experience, adherence to professional standards, and public perceptions of status (Ingvarson & Rowe, 2008; Isore, 2009). It is argued that an undue emphasis upon teacher qualifications can contribute to inadvertently ignoring teacher instructional practices (Hiebert & Morris, 2012). Goe (2007) elaborated further on this point by distinguishing between *teaching* quality and *teacher* quality and suggested that "often, the two definitions are linked or even conflated so that there is an assumption that *teacher* quality ensures *teaching* quality" (p. 12). This perspective is important because students experience their teachers, classroom, and school via teaching. Or,

> Teaching is situated in instructional interaction, learning how to teach requires getting into relationships with learners to enable their study of content. It is here that one learns how to teach as students 'act back' and responses must be tailored to their actions (Lampert, 2005, p. 35).

Whilst the influence of teacher-student relationships on student engagement is of increasing research focus (Roorda et al., 2011) less frequently considered are other teacher and student interactions more specific to classroom management and academic instructional techniques (Allen et al., 2013; Lampert, 2005). To the best of the authors' knowledge there is an absence of literature that has sought to test the association between student-reported teaching quality and students' engagement in school. Further, to date students have not been regular participants in teaching evaluation (Isore, 2009) or research on teaching quality more generally (Polikoff,

2015). It is suggested that this is due to concerns that children and adolescents may not be able to distinguish between quality teaching and a popular teacher (De Jong & Westerhof, 2001). The lack of involvement from adolescents is somewhat surprising for several reasons. First, by the time students reach adolescence they have usually experienced numerous specialist and regular classroom teachers. It is contended here that through this process adolescents will have formed an ability to distinguish been good *teaching* and fun or friendly *teachers*, much like university students (Marsh, 2007). Second, there is a belief that giving adolescents, and more generally students, a 'voice' in their school can drive positive change (Mitra, 2004). Third, adolescent self-report is well established in the field of psychology and with appropriate cross-validation self-report is considered a valuable data source (Jolliffe et al., 2003; Ridge, Warren, Burlingame, Wells, & Tumblin, 2009). Finally, an ideological standpoint could assert that teachers should seek to teach from the perspective of the student (Ball & Forzani, 2009). This can only be achieved by knowing the student, including his or her academic ability and classroom needs (Subban, 2006; Vygotsky, 1980).

Of the existing literature that has sought to design and validate student report of teaching there is evidence to suggest that adolescents can distinguish between teaching and popularity (Belmont, Skinner, Wellborn, & Connell, 1992; Peterson, Wahlquist, & Bone, 2000; Polikoff, 2015). However, to date there has been a limited number of studies that have drawn on a strong theoretical perspective when defining teaching quality or interactions between students and teachers (Grossman & McDonald, 2008). For example, a large ($N = 276,165$) study of students, aged 15 years, from 41 countries considered the associations between student-reported teaching behaviours and student engagement (Chiu et al., 2012). Each of teacher-student relationships, teacher academic support, and teacher-maintained classroom

discipline climate were associated with students' emotional and cognitive engagement (Chiu et al., 2012). A study by Wang and Eccles (2012) reported that when teachers felt that they provided more support to their students, student engagement increased, after individual and family characteristics were controlled for in the analyses (M.-T. Wang & Eccles, 2012). This longitudinal study recruited a large sample ($N = 25,627$) from 23 schools. Student engagement was conceptualised as valuing of learning, school belonging, and behavioural compliance. Students were not requested to report their perceptions of the teaching by their teachers; instead the study relied upon teacher report. A limitation of studies such as these that considered important individual and family contextual covariates (Chiu et al., 2012; M.-T. Wang & Eccles, 2012; You & Sharkey, 2009) is that they did not draw on a strong theoretical explanation of *teaching* quality.

Self-determination theory and stage environment fit assert that the classroom teacher plays a central role in creating a good fit between the student and school (Eccles et al., 1993; Ryan & Deci, 2000). In a practical sense, this means that at school the teacher gives the student a sense of purpose and choice (autonomy), teaches at the student's academic level (competence), and is available and emotionally attuned to the needs of the student (relatedness) (Ryan & Deci, 2000). Through the creation of this good fit between student, teacher, and school the students' behaviours, emotions, and cognitions should be orientated towards successful engagement in school. Associated empirical evidence supports theoretical perspectives such as stage environment fit, self-determination theory, and the centrality of positive adult relationships in healthy youth development (Bond et al., 2007; Catalano, Hagerty, et al., 2004; McLaughlin & Clarke, 2010; Roorda et al., 2011).

Self-determination theory has been tested amongst samples from Norway (Studsrød & Bru, 2012), Australia (Zimmer-Gembeck et al., 2006), and the United States (Tucker et al., 2002). In these studies the teachers' ability to support the students' autonomy, competence, and relatedness was shown to influence both academic grades and engagement outcomes. Elsewhere, a two-factor model of teaching, which drew on self-determination theory, reported that teachers needed to achieve a complementary balance between classroom 'care' and 'control' when seeking to improve student behaviour and academic engagement (Nie & Lau, 2009).

The Current Study

The current study sought to conceptualise teaching as the interaction between students and teachers. Self-determination theory was drawn upon to define the teacher-student interaction as the students' perceptions of their teachers' support of autonomy, competence, and relatedness at school. Specifically, the aim of the current study was to determine the unique contribution of teaching quality to three dimensions of student engagement (behavioural, emotional and cognitive).

Two research hypotheses were made:

1) Teaching quality would make a unique contribution to each of student behavioural, emotional and cognitive engagement in school, after controlling for established individual and family factors.

2) An increase in each separate domain of students' perceptions of teaching quality (autonomy, competence, and relatedness) would uniquely and directly predict student behavioural, emotional, and cognitive engagement in school (after controlling for established individual and family factors).

Method

Ethics Approvals

Approval to conduct the research was provided by the Australian Catholic University Human Research Ethics Committee, and the Department of Education and Early Childhood for government schools. The parents provided consent for their child to participate in the study and on the day of the survey the participants provided assent to participate.

Permission to conduct this study in schools was sought from over 20 Victorian secondary school principals. The schools approached were all classified as below average on the Index of School Community Socio-educational Advantage (Australian Curriculum Assessment and Reporting Authority, 2010). Of the schools approached, three agreed to participate (two urban, one rural). The principals who declined to participate cited time constraints and potential interruptions to teaching for non-participation.

Participants

All Year 7 students ($N = 237$) from the two urban schools and all students from four Year 7 classes ($N = 85$) nominated by the assistant principal of the rural school were invited to participate in the study. Of the 322 students eligible to participate, 88 (27%) returned a completed parental consent form, were present on the day of survey administration, and provided assent to participate. The final sample consisted of 42 males and 46 females with a mean age of 12.8 years. The majority (62%) reported identifying as Australian. Identification with other ethnicities included Anglo Saxon (11%), Aboriginal or Torres Strait Islander (3%), and Asian (3%).

Survey Administration

The survey was administered in November and December 2014 at the students' schools during their regular timetabled classes. The participants were verbally informed of the procedures adopted to ensure the confidentiality of their responses. The survey was administered online using Qualtrics software (Qualtrics, 2009). Students completed the 20-minute survey on either their personal tablet device or a school computer. Participants completed an identical pen and paper survey when technical difficulties arose (four participants). The researcher was present at all times to assist with accessing the survey website and to clarify any questions relating to the survey.

Measures

A range of self-report measures, previously used with adolescents, were selected to measure individual and parent factors, three domains of teaching quality, and the three dimensions of students' engagement in school.

Individual factors.

Demographic information. Participants were required to indicate their gender by selecting male or female and their age by entering the number in years. Participants were also required to indicate their ethnicity by selecting from a list of six ethnic groups in response to the question: "What do you consider yourself to be?". A seventh option included "Other".

Academic grades. The items for academic grades were derived from the *Communities That Care* self-report survey that has been used extensively in Australia and the United States and has been shown to have acceptable psychometric properties (Arthur et al., 2002; Hemphill et al., 2011). Two items were used to assess academic grades: "Putting them all together, what were your grades/marks like last year?" and

"Are your school grades better than the grades/marks of most students in your class?"
The former had a 5-point response scale ranging from "*Very good*" to "*Very poor*" and
was rescaled so the scores ranged from 1 to 4. The latter item had a 4-point response
scale ranging from "Definitely yes (*YES!)*" = 1, to "Definitely no (*NO!)*" = 4. Student
self-report of academic grades, such as the measures described, have been shown to
correlate strongly with official school grades (Kuncel et al., 2005). The academic
grades measure had an internal consistency of .64 in the current study and elsewhere
has been reported to have an internal consistency of between .69 and .79 (Arthur et
al., 2002).

      ***Mental health*.** The *Strengths and Difficulties Questionnaire (SDQ)* (version
for 11 – 16 year olds) has been used in Australia and internationally in research and
clinical settings to screen for adolescent mental health problems (Goodman, 2011;
Maybery, Reupert, Goodyear, Ritchie, & Brann, 2009). The reliability and validity of
the SDQ has been adequately demonstrated, with internal consistency above .70
(Goodman, 2001; Mellor, 2005). The Cronbach's alpha in the present sample was .81.
The SDQ comprised 20 items used to generate a total difficulties score. Items were
scored on a 3-point scale ranging from: "*Not True*" = 0 to "*Certainly True*" = 2. "I
worry a lot" and "I have one good friend or more" are example items.

      Parent support of education. For the 7-item parent support of education
construct participants were asked: "How often have you discussed the following with
either or both of your parents?" For example, "school rules" and "Your grades/
marks". The 3-point scale ranged from *"Never"* = 1 to *"Often"* = 3. The current
construct was based on a previously used measure of parent support that was shown
to have an internal consistency above .80 (Fall & Roberts, 2012). The original
measure of parent support contained six items. From that original measure an item

that requested participants to rate how often they discussed current world events was excluded. It was decided that this item lacked face validity for the desired measure of parent support of education. The two additional items for the current study required participants to rate how often they discussed: "School rules" and "Teachers". The current, adapted measure had a Cronbach's alpha of .73.

Teaching quality factors. The three domains of teaching quality were examined using the short form of the *Teacher As Social Context Questionnaire* (TASC) (Belmont et al., 1992). The TASC questionnaire sought the participants' perceptions of their teachers' support of their autonomy (e.g., "My teachers give me a lot of choices about how I do my schoolwork"), competence (e.g., "My teachers make sure I understand before he/she goes on"), and relatedness (e.g., "My teachers really care about me"). Items were scored on a 4-point scale ranging from "Not at all true" = 0 to "Very true" = 4. Each domain contained eight items and internal consistency for each domain has been demonstrated to be above .75 (Belmont et al., 1992). The Cronbach's alpha in the current study was also above .75 for each of the three domains.

Outcomes. The *School Engagement Measure* was used to measure students' behavioural, emotional, and cognitive engagement in school (Fredricks, Blumenfeld, Friedel, & Paris, 2005). Behavioural engagement was measured using five items (e.g., "I pay attention in class"; "I get in trouble at school"). Emotional engagement was measured using six items (e.g., "I like being at school", "My classroom is a fun place to be"). Eight items measured cognitive engagement (e.g., "I check my schoolwork for mistakes", "If I don't understand what I read; I go back and read over it again"). The internal consistency of these three constructs has been shown to be above .70 amongst a sample of students in grades four and five (Fredricks et al., 2005) and

secondary school students (Dolzan, Sartori, Charkhabi, & De Paola, 2015). In the

current study the Cronbach's alpha values were above .80 for each of the three

dimensions of engagement. Participants answered each item on a 5-point scale

ranging from "*Never*" = 1 to "*All of the time*" = 5. Student-reported behavioural

engagement has been shown to have a moderate correlation with teacher reports of

behavioural engagement, while student-reported emotional engagement, was shown

to have a small correlation with teacher reports of emotional engagement (Fredricks et

al., 2005).

Analyses. The analyses were conducted using SPSS software, version 23

(IBM Corp, 2013). First, descriptive statistics were calculated on each of the outcome

variables. To test for gender differences between the outcome variables *t*-tests were

conducted. Next, correlations between all variables were examined for multi-

collinearity. In addition, multi-collinearity was assessed using the variance inflation

factor. Following this, three separate hierarchical regression analyses were conducted

to examine the associations between the variables. Step one of each of the regression

analyses included the individual (i.e., academic grades, age, gender, mental health)

and parent support of education variables. The second step was the addition of the

three teaching quality variables (i.e., autonomy, competence, relatedness). The three

outcome variables were behavioural, emotional, and cognitive engagement.

Results

Descriptive Statistics

Descriptive statistics for all analysed variables are presented in Table 4. An

independent samples *t*-test was conducted to compare males and females on each of

these variables. At the .05 level there were no significant gender differences. All

measures, with the exception of academic grades (α = .64) had Cronbach's alpha
values above .70.

Table 4

Means With Standard Deviations for Scores on the Individual, Family, Teaching
Quality, and Dimensions of Engagement

Variable	Male[a] M (SD)	Female[b] M (SD)	Total[c] M (SD)
Individual and family factors			
Academic grades	2.10 (.67)	1.99 (.66)	2.04 (.66)
Parent support	2.14 (.43)	2.15 (.45)	2.14 (.44)
Mental health	9.64 (4.33)	11.15 (6.73)	10.43 (5.73)
Teaching quality			
Autonomy support	2.98 (.61)	2.77 (.68)	2.87 (.65)
Competence support	2.96 (.69)	2.87 (.62)	2.91 (.65)
Relatedness support	2.96 (.60)	2.80 (.47)	2.87 (.54)
Engagement outcomes			
Behavioural engagement	3.75 (.76)	4.05 (.85)	3.91 (.82)
Emotional engagement	3.17 (.98)	3.08 (.88)	3.12 (.93)
Cognitive engagement	2.39 (.80)	2.55 (.82)	2.48 (.81)

[a]n = 42. [b]n = 46. [c]n = 88.

Note. *M* = mean; *SD* = standard deviation.

Correlations

Table 5 shows that most variables were moderately correlated. The large
correlations between the three teaching quality variables suggested some degree of
overlap amongst students' ratings of each domain of teaching quality. All variance
inflation values were below 10, indicating that multicollinearity was not a concern
(Tabachnick & Fidell, 2013). For both males and females, bivariate correlations
showed that parent support, teaching quality (autonomy, competence, and
relatedness), and student engagement (behavioural, emotional, and cognitive) were
positively correlated (Table 2). These same variables were negatively correlated with
low academic grades and poor mental health. For instance, low academic grades and

low mental health were positively correlated amongst males ($r = .24$) and females ($r = .64$).

Table 5

Pearson's Correlations for Scores on the Individual, Family, Teaching Quality and Dimensions of Engagement as a Function of Gender

	1	2	3	4	5	6	7	8	9
1. Academic grades	-	-.39**	.64**	-.39**	-.56**	-.46**	-.66**	-.57**	-.33*
2. Parent support	-.27	-	-.47**	.43**	.33*	.39**	.42**	.50**	.14
3. Mental health	.24	-.01	-	-.61**	-.65**	-.47**	-.64**	-.69**	-.27
4. Relatedness support	-.26	.38*	-.10	-	.61**	.62**	.54**	.62**	.32*
5. Competence support	-.24	.38*	-.16	.73**	-	.82**	.70**	.44**	.23
6. Autonomy support	-.37*	.45**	-.16	.78**	.83**	-	.66**	.43**	.24
7. Behavioural engagement	-.46**	.34*	-.42**	.28	.36*	.36*	-	.54**	.43**
8. Emotional engagement	-.53**	.47**	-.15	.55**	.61**	.68**	.47**	-	.40**
9. Cognitive engagement	-.24	.51**	.11	.41**	.45**	.50**	.44**	.65**	-

Note. Female is above the diagonal, male below. *$p < .05$. ** $p < .01$.

Hierarchical Regression Analyses

Behavioural engagement. The individual factors and parent support of education explained 47% of the variance in behavioural engagement (see Table 6). After entry of the three teaching quality variables, at step two, the total variance explained by the individual, family, and teaching variables was 53%, $F(8,79) = 11.11$, $p < .001$. Teaching quality explained an additional 6% of the variance in behavioural engagement, after controlling for individual and parent support of education variables, R squared change $= .06$, F change $(3, 79) = 3.17$, $p = .03$. In the final model, containing each of the eight individual, parent support of education, and teaching variables, only gender, academic grades, and poor mental health were each statistically significant correlates of behavioural engagement. Females and those students reporting higher academic grades, and/or good mental health were more likely to have higher levels of behavioural engagement.

Table 6

Summary of Hierarchical Regressions for Variables Predicting Emotional, Behavioural, and Cognitive Engagement in School

Predictor variables	Behavioural engagement				Emotional engagement				Cognitive Engagement			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Family and Individual		.47***				.45***				.15*		
Academic grades	-.35***		-.28**		-.35***		-.29**		-.23		-.18	
Gender	.20*		.23**		-.04		.01		.07		.11	
Parent support	.16		.09		.31***		.19*		.25*		.16	
Age	-.03		-.02		.14		.16*		.06		.07	
Mental health	-.34***		-.29**		-.18		-.07		.07		.15	
Teaching quality				.06*				.11**				.07
Autonomy support			.20				.03				.05	
Competence support			.14				.07				.11	
Relatedness support			-.07				.31**				.20	

Note. β = Standardized beta coefficient; ΔR^2 = R squared change.

*p < .05. ** p < .01. ***p < .001.

Emotional engagement. The individual factors and parent support of education explained 45% of the variance in emotional engagement (see Table 6). After entry of the three teaching quality variables, at step two, the total variance explained by the individual, family, and teaching variables was 56%, $F(8,79) = 12.54$, $p < .001$. Teaching quality explained an additional 11% of the variance in emotional engagement, after controlling for the individual and parent support of education variables, R squared change = .11, F change $(3, 79) = 6.47$, $p < .001$. In the final model, containing each of the eight individual, parent support of education, and teaching variables each of academic grades, parent support of education, age, and relatedness support were statistically significant correlates of emotional engagement. Older students and those students who reported higher academic grades, better parent support of education, and/or higher teacher relatedness support were more likely to have higher levels of emotional engagement.

Cognitive engagement. The individual and parent support of education variables explained 15% of the variance in cognitive engagement (see Table 6). After entry of the three teaching quality variables, at step two, the total variance explained by the individual, parent support of education, and teaching variables was 22%, $F(8,79) = 2.76$, $p = .01$. The teaching quality variables explained an additional 7% of the variance in cognitive engagement, after controlling for the individual and parent support of education variables, R squared change = .07, F change $(3, 79) = 2.39$, $p = .07$. In the final model, containing each of the eight individual, parent support of education, and teaching variables no single variable was a statistically significant predictor of cognitive engagement.

Discussion

This study aimed to assess the impact of teaching quality on a multidimensional measure of student engagement in school, among a sample of early adolescents. Teaching quality was conceptualised as the students' perceptions of the degree to which their teachers supported their autonomy, competence, and relatedness. In support of the first research hypothesis, after controlling for individual and family factors, teaching quality made a unique contribution to each of students' behavioural and emotional, but not cognitive engagement in school. The second research hypothesis was partially supported in that relatedness support was uniquely associated with emotional engagement but not either of behavioural or cognitive engagement. Neither competence support nor autonomy support was uniquely associated with any of behavioural, emotional, or cognitive engagement in school.

Teaching Quality and Separate Dimensions of Students' Engagement in School

Consistent with prior literature, the current study demonstrated that teaching related factors made a statistically significant contribution to adolescent education outcomes (Hattie, 2009; Kyriakides et al., 2013). Specifically, good quality teaching was positively associated with each of students' behavioural engagement and emotional engagement in school. After controlling for academic grades and parental support of education, the current findings were also congruent with contextual models of student outcomes that have reported the additive effect of teachers and teaching practices (M.-T. Wang & Eccles, 2012; You & Sharkey, 2009). The range of change in R^2 (.06 to .11) for each of the three dimensions of student's engagement equates to an effect size ranging from small to medium ($f^2 = .06$ to .12) (J. Cohen, 1998). It is argued that for education outcomes a low cost, relatively easy to implement intervention that has a medium effect size is a worthwhile intervention (Hattie, 2009).

It is not suggested here that improving teaching quality is easy, but for schools teaching is more malleable to change than individual or family-based factors.

The conceptualisation of teaching quality using self-determination theory elaborated upon prior research that has reported associations between teacher support and each of behavioural, emotional, and cognitive engagement (Conner & Pope, 2013; Lam, Wong, et al., 2012; M.-T. Wang & Eccles, 2013). Elsewhere, a large international, cross-sectional study reported that improved teacher academic support and better quality teacher-student relationships each contributed to better emotional and cognitive engagement (Chiu et al., 2012). That study utilised the Programme for International Student Assessment dataset and controlled for individual (i.e., academic grades) and family (i.e., socioeconomic status) variables. Consequently, studies such as the current one that indicate how better quality teaching is associated with better behavioural and emotional engagement, beyond parental support of education and academic grades, reinforce the importance of quality teaching above and beyond emotional (relatedness) support from their teachers.

The statistically non-significant association between teaching quality and cognitive engagement in school in the current study is in contrast to findings from a prior study from which the current engagement measure is drawn (Fredricks et al., 2005). In that study of grade five students in the United States, teacher support was uniquely associated with cognitive engagement. One possible explanation for the current substantial unexplained variance (87%) in cognitive engagement is that the cognitive engagement measure lacked sufficient validity with the current sample. Several of the eight cognitive engagement items used in the current study asked students to report the frequency with which they used study strategies relating to books and reading. All three of the schools in the current sample had online notebook

programs in their school. Thus, if a teacher supported a student by providing strategies to complement their learning via online databases and videos then an engagement measure reliant upon books would lack validity. Finn and Zimmer (2012) recently commented that "research on cognitive engagement is disjointed" (p. 124) and that perhaps cognitive engagement in school is subject or content specific. Thus, while the current study investigated each of students' behavioural, emotional, and cognitive engagement in *school*, it may be equally instructive to consider students' overall engagement in the curriculum, classroom, school, and prosocial institutions (Skinner & Pitzer, 2012).

Studies such as the current one theorise that each of the three dimensions of student engagement are crucial for positive education and adolescent development (Finn & Zimmer, 2012). However, it is important to acknowledge the still evolving conceptualisation and measurement of multi-faceted dimensions of student engagement (Reschly & Christenson, 2012). There currently exists a paucity of literature examining longitudinal outcomes relating to each of behavioural, emotional, and cognitive engagement (M.-T. Wang & Degol, 2014). One such study reported that increased behavioural and emotional engagement, but not cognitive engagement, predicted decreased substance use, problem behaviours, and dropout (M.-T. Wang & Fredricks, 2013).

Integrating Self-determination Theory and Multidimensional Student Engagement

Further to considerations of the separate dimensions of students' engagement in school, it was hypothesised that each separate domain of teaching quality (i.e. autonomy, competence, and relatedness support) would make a unique contribution to the dimensions of student engagement in school (i.e. behavioural, emotional, and

cognitive). Only relatedness made a unique contribution to emotional engagement. Thus, it would appear that prioritising one aspect of teaching quality over another might be counterproductive. Instead, it is contended here that the crucial aspect of teaching quality is the interaction and integrative relationship between the individual student and teacher.

It is suggested that there is a need to find commonalities amongst good quality teaching (Grossman & McDonald, 2008). Grossman and McDonald (2008) draw parallels with the psychology profession in which it is acknowledged that the common factors that improve client outcomes are relationship rapport and understanding the client (Prochaska & Norcross, 2014). The current application of self-determination theory to the teaching profession and students' engagement in school suggests that each of teacher support of student autonomy, competence, and relatedness are common factors to good quality teaching. An integrated theoretical model such as self-determination theory can also help to explain unexpected findings such as the one by Dever and Karabenick (2011) in which it was reported that: "higher teacher caring was inversely related to achievement gains for all students" (p. 140). The two-dimensional model of teacher caring versus academic press used by Dever and Karabenick (2011) overlaps with self-determination theory. The current findings and self-determination theory suggest that there is a need for teachers to balance positive relationship building with the support of students' academic goals and allowing for students' underlying cognitive abilities.

The role of relatedness (i.e., caring) warrants further investigation. That the current study found an association between relatedness support and emotional engagement is somewhat similar to a large study ($N = 3,196$) of Year 9 students in Singapore (Nie & Lau, 2009). In that study, teacher care and control were reported as

complementary to overall engagement and misbehaviour, while teacher care, but not control was associated with school satisfaction (Nie & Lau, 2009). In a study of United States high school students, it has been suggested that higher levels of teacher relatedness may be sufficient to improve a student's liking of school but not their academic grades (Barile et al., 2012). Elsewhere, it has been suggested that emotional engagement may be an antecedent to behavioural and cognitive engagement (Eccles & Wang, 2012). However, there currently exists limited empirical literature to confirm or disprove this notion. Despite these individual study differences, a comprehensive meta-analysis concluded that good quality teacher-student relationships have an important effect on students' engagement in school (Roorda et al., 2011). The current findings point to the potentially influential role of affective teacher-student relationships in students' liking of school.

Individual and Parent Factors

It was not a stated goal but this study reiterated the important relationship between individual and parent factors (i.e., parent support of education) and education outcomes such as students' engagement in school. Each of academic grades, gender, mental health and parent support of education made unique contributions to the measures of students' engagement in school. Further, these individual and family factors explained, in several instances, a more substantial proportion of the variance in student engagement than the measure of teaching quality. However, by drawing on self-determination theory and stage environment fit, the current study proposed that one of the inherent factors in good quality teaching is to acknowledge individual and family background factors (Deci, 2009; Eccles et al., 1993).

Self-determination theory specifically seeks to provide a framework for engagement through recognition of a student's pre-existing academic ability (Niemiec

& Ryan, 2009). It has been reported that higher levels of student engagement can improve academic grades in the long-term (M.-T. Wang & Holcombe, 2010). Equally, a process of gradual disengagement would assert that a history of low academic performance can contribute to reduced engagement (Roeser, Eccles, & Sameroff, 1998). The current associations between improved academic grades and higher levels of behavioural and emotional engagement suggest that good quality teaching should recognise that a history of low academic performance is likely to impact upon a student's ability to be engaged in school. It is possible that for adolescents an emotionally supportive teacher and a teacher who supports their learning and educational goals are one and the same.

For adolescents, school is a normative experience and if a student perceives that their academic abilities or needs do not match with the demands of their teacher then psychological distress is more likely to develop (Roeser et al., 1998; Suldo et al., 2014). The current positive associations between better mental health and higher behavioural engagement further emphasise the importance of teaching and a school environment that considers mental health and mental illness (Lawrence et al., 2015). Developmental cascades, a theory of adolescent development, acknowledges that positive adolescent behaviours are likely to provide an opportunity for subsequent positive behaviours and vice versa for negative behaviours (Masten & Cicchetti, 2010). Research based on developmental cascades acknowledges that poor mental health is likely to impact upon adaptive behaviours at school (Suldo et al., 2014). This is particularly the case when teachers' are uncertain how best to support students with a mental health problem (Trudgen & Lawn, 2011). The current association between poor mental health and low engagement in school are consistent with another study of 7th grade students (Quiroga, Janosz, Bisset, & Morin, 2013). That study proposed that

interventions that target students' mental health and perceptions of academic competence would be appropriate strategies to prevent low engagement and dropout (Quiroga et al., 2013).

Finally, positive associations between improved parent support of education and higher levels of emotional and cognitive engagement should be acknowledged. The current findings are consistent with Lamb's (2011) findings that family socioeconomic status is an important predictor of school completion. However, by considering parent support of education, rather than family socioeconomic status the study provided a more nuanced perspective. Specifically, it appears that family support of education plays an important role in student education and both parents and teachers have a role to play in overcoming education disadvantage.

Strengths and Limitations

The measurement and separate analyses of a multidimensional measure of students' engagement in school was a strength of the current study. For teachers (and others) who are concerned about academic grades and non-academic outcomes such as students' engagement in school (Sanderse et al., 2015), self-determination theory and stage environment fit can be used to explain how positive student academic and engagement outcomes can be achieved in parallel. By demonstrating that a teaching quality (i.e., autonomy, competence, and relatedness support), including classroom instruction and management techniques can influence students' engagement in school a teacher should not feel that they are forced to prioritise either academic or engagement outcomes.

A further strength of the current study was the successful administration of a student self-report measure of teaching quality to adolescents. Student-report of teaching quality is considered a valid and important component of university teaching

quality assessment (Marsh, 2007). The unique contribution of teaching quality to educational outcomes has been demonstrated using self-report measures with Grade 3 (8 - 9 year old) students (Fauth, Decristan, Rieser, Klieme, & Büttner, 2014). Research using the Teacher as a Social Context Questionnaire (Belmont et al., 1992) has been limited but the current study suggests that, when given the opportunity, adolescents have a role to play in assessing teaching quality. Advancement of the applicability of using self-determination theory to measure teaching quality could be performed by cross-validation with the teacher self-report measure (Belmont et al., 1992) and external observation.

A number of limitations to the conduct of this study should be considered. First, when considering contextual models of adolescent development it is important to recognise that the factors within and between contexts (individual, family, and school) cannot always be modelled adequately to capture the complex bi-directional interactions. The current study utilised cross-sectional data. In order to more adequately assess associations between teaching quality and students' engagement in school, as outlined, longitudinal data are required.

Second, sample bias may have arisen through the participant recruitment processes adopted. It is possible that differences existed between schools that gave permission to conduct research and those that did not. Low rates of parental consent are also acknowledged. The study sought to control for parent support of education but it is possible that consenting families represented a unique sample that are highly supportive of their child's education. Further to this point, parents were requested to report their education attainment. Students of the parents who declined to report their education (22% of parents), reported lower levels of parent support than students with parents that did report their education attainment. Future research in this area would

benefit from a state-representative sample from a larger number of participating schools, a higher participation rate within schools, and analyses conducted through multi-level modelling to account for between school differences.

Implications and Recommendations

Empirical research and ecological theories of development consistently conclude that teachers have an important role in influencing adolescents' short and long-term outcomes. By focusing upon teaching rather than teachers, the current study was able to report a unique positive association between good quality teaching and students' behavioural and emotional engagement in school. This suggests that within the confines of the school environment how teachers teach, and their students' perceptions of that teaching are important considerations when seeking to improve students' engagement in school.

The possible bi-directional relationship between each of academic grades and student mental health and students' perceptions of their teachers suggests that both teachers and students could benefit from support. Educational psychologists, trained in educational processes, cognitive abilities, and mental health could assist teachers with supporting their students' autonomy, competence, and relatedness. Similarly, students reporting low academic grades, poor mental health or engagement in school are likely to benefit from strategies that assist in maintaining positive perceptions of their teacher and the teacher's role in the classroom.

The conceptualisation and subsequent measurement of teaching quality, via self-determination theory and student self-report, suggests that it is possible to measure teaching quality relatively easily. The findings reported here provide guidance for further research in the area of teaching quality in preference to teacher quality. Elaborating upon what precisely teaching quality entails is important but even more

pertinent is understanding how teaching quality can influence students' engagement in school.

Conclusions

Students who perceived that their teachers provided good quality teaching were more likely to have higher levels of behavioural and emotional engagement in school. This association was apparent after controlling for important individual and parent factors known to influence students' engagement in school. Only one domain of teaching quality, support of relatedness, was uniquely associated with a dimension of engagement, emotional engagement. Future research should seek to elaborate upon how teaching quality is conceptualised and most importantly, how teaching quality influences crucial adolescent outcomes such as students' engagement in school.

Chapter 9: Relationships and Instruction: Do They Predict Student

Engagement?

Several contributions of the study, beyond those discussed within the preceding chapter relevant to the overall research program warrant further elaboration. Chapter 2 outlined the policy context in Australia, in which attitudes towards teachers and teaching have become somewhat reductionist or overly simplistic (Mockler, 2014). The systematic review (Chapter 6), that narrowly focussed upon TSRs, could be misconstrued as an exemplar of this reduction of teaching to the affective, emotional connection between teachers and students. However, it was reported that "teachers need to strike a balance between the affective, relational aspects of teaching and high-quality instruction" (Quin, 2017, p. 32). Others have commented that research on teaching should identify "common factors" to high quality teaching (Grossman & McDonald, 2008; McDonald et al., 2013). The second study (Chapter 8), that utilised self-determination theory to conceptualise teaching, supported the notion that teaching is a balancing act. Only relatedness was uniquely associated with any of the indicators of engagement.

As noted, there is an absence of published, empirical, research that has sought Victorian students' subjective views of their engagement. A previous study, of Australian secondary school students, also reported that teaching, as conceptualised via self-determination theory had positive associations with students' engagement (Zimmer-Gembeck et al., 2006). However, that study did not seek to test associations between separate dimensions of teaching and engagement. In conjunction the current study and the Zimmer-Gembeck et al. (2006) study suggest that self-determination theory can be used successfully to conceptualise teaching in Australian schools.

The lack of associations between teaching quality and the school-based outcomes of suspension and absences were in contrast to the findings reported in the systematic review. It is likely that the statistically insignificant results were due to a combination of the sample size ($n = 88$) and long-term trends that report that suspension and absences do not peak until Year 8 or Year 9 (Doyle, 2015).

Finally, both the systematic review and the current study of Victorian students recognised limitations associated with an overreliance on cross-sectional data. While scholars question whether engagement is a process or outcome (Reschly & Christenson, 2012) what is clear is that to understand the *development* of engagement, longitudinal data is needed.

Taken as a cohesive research program, the two studies presented to this point, confirm that both school-based and psychological engagement outcomes are associated with better quality teaching. Moreover, there is a need for conceptualisations of teaching to draw on theoretical perspectives such as self-determination theory. Both of the studies also emphasised the need for comprehensive ecological models of adolescent development that draws upon longitudinal data.

Chapter 10: Teacher Support Within an Ecological Model of Adolescent

Development: Predictors of School Engagement

This chapter presents the third and final study of the research program. The earlier narrative and systematic review (Chapters 2 - 4 and 6) presented theoretical and empirical literature that described teaching as a proximal factor in influencing student outcomes. However, the existing literature is somewhat limited by an insufficient examination of comprehensive ecological models of adolescent development. In the absence of empirical literature of this nature, policies and efforts that seek to improve student outcomes may be imprudent in focusing upon teachers and teaching. There exists a need to understand what contextual factors, including teaching, can influence multiple indicators of students' engagement. Consequently, the final study drew upon an existing dataset that enabled multivariate modelling of the multiple contexts that influence adolescents' development. Hierarchical modelling was applied to firstly, determine bivariate associations between teaching and engagement outcomes. In turn factors from the individual, family, peer, and community contexts were introduced to the statistical models. By doing this it was possible to elaborate upon which factors were particularly influential in determining students' engagement.

A commonality between ecological models of development is the importance of good quality relationships between adolescents and significant adults (Bronfenbrenner & Morris, 2006; Catalano & Hawkins, 1996). Evidence for the importance of positive TSRs in school-based outcomes was provided in Chapter 5. However, teachers as influential adults in schools have a role in addition to being a positive and emotionally supportive role model. Along with the second study of the current research program, several studies within the systematic review identified a

need to consider the instructional role of teachers. This is exemplified by a study that reported that autonomy supportive teachers are more likely to have students with higher engagement because "the classroom is best viewed in a broader perspective as both an academic and a social development context" (Hafen et al., 2012, p. 252). Thus, for the third study it was essential to broaden the conceptualisation and measurement of teaching beyond TSRs, as was the case in the systematic review.

Finally, two other principles were essential when designing the final study. First, it was necessary to utilise longitudinal data. By using longitudinal data it should be possible to make inferences based on predictive associations (L. Cohen et al., 2011). It is acknowledged that longitudinal data does not allow statements of causality to be made. However, conceptualisations of student engagement position it as an outcome of facilitators drawn from contexts that are external to and influence engagement (Bronfenbrenner & Morris, 2006; Skinner et al., 2008). The second principle was the need to build upon the underlying research theme, that of the concurrent consideration of school-based and students' perspectives of engagement.
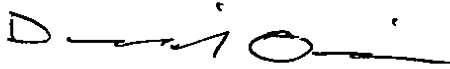
The following research paper was submitted to the *Journal of School Psychology*[8]. Peer reviewer feedback made recommendations for improvement to the manuscript. These recommendations were incorporated in a resubmission, made in October 2016. Subsequent peer reviewer feedback was received in January 2017. These recommendations were responded to in a resubmission made in March 2017.

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[8] The Journal of School Psychology is an international research journal. It is the journal of the Society for the Study of School Psychology, based in the US. It had a 5-year journal impact factor of 4.260. In 2015 it was ranked fourth of 57 educational psychology journals (Thomson Reuters, 2016).

Statement of Contribution

I acknowledge that my contribution to the paper is 80 percent.

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Abstract

There is a need to further understand the development of student engagement. Ecological models of adolescent development state that proximal factors, such as teacher support, should strongly influence student engagement. Theoretical models also explain concurrent influences from the individual, family, peer, and community contexts. The current, quantitative study, applied an ecological model to the development of five indicators of students' engagement in school. Seven hundred and nineteen adolescents, from Victoria, Australia, completed a *Communities That Care* survey in term 3 of Grade 10 and term 3 of Grade 11. Grade 10 risk and protective factors, from the school (e.g., teacher support), individual (e.g., academic grades, prior engagement), family (e.g., family management practices), peer (e.g., antisocial peer affiliation), and community contexts (e.g., community disorganisation), were modelled as predictors of five indicators of Grade 11 engagement (academic engagement, emotional engagement, school discipline, absences from school, and school dropout). Teacher support at Grade 10 had bivariate associations with Grade 11 academic engagement, emotional engagement, absences from school, and school discipline responses. In the full ecological models teacher support did not predict engagement. Prior engagement and academic grades explained the greatest proportion of variance in students' engagement. However, factors from the family, peer and community contexts made unique contributions to some indicators of engagement. The findings suggest that there is a need to consider student engagement as a long-term process. Implications for improving students' engagement are discussed within an individualised stage environment fit model of adolescent development.

Introduction

While conceptualisations of student engagement may have changed, a constant has been concerns with low engagement. For decades, teachers and members of school communities have sought to improve students' engagement in school. Traditionally student engagement has been inferred from school-based records of academic grades, suspension, attendance, and dropout (Henry et al., 2012). More recently self-report questionnaires have been developed to measure adolescent students' psychological engagement (Fredricks & McColskey, 2012). To date much of the research on student engagement has progressed along these two complimentary lines of inquiry with insufficient consideration of similarities and points of difference (M.-T. Wang & Degol, 2014).

Researchers have increasingly focused on student engagement "because there is evidence that it is malleable and responsive to changes in teachers' and schools' practices" (Appleton et al., 2008; Fredricks et al., 2016, p. 1). Detailed, systematic reviews of engagement have conceptualised disruptive behaviours, attendance, academic grades, dropout, and psychological engagement as outcomes of teachers' practices and the surrounding context (Quin, 2017; Roorda et al., 2011). Positive youth development research has long recognised that there exists a need to identify factors from the individual, school, family, peer group, and community contexts that can be modified to promote positive and prevent negative adolescent outcomes (Catalano, Berglund, et al., 2004; Lerner et al., 2005).

It is increasingly recognised that there exists a need to apply these same ecologically informed research principles to understandings of the development of student engagement, both school-based concerns and student-reported psychological engagement (Chase et al., 2015). This is because improving students' engagement has

been viewed as the 'antidote' to readily observable school-based concerns (Fredricks et al., 2004; H. M. Marks, 2000). Furthermore, educators, policy makers, families, and researchers are increasingly viewing improving students' psychological engagement in school as a desirable goal for *all* students, in order to improve students' experience of school (Yazzie-Mintz, 2007), long-term educational and vocational outcomes (Abbott-Chapman et al., 2013), life satisfaction (A. D. Lewis et al., 2011), and academic grades (Chase et al., 2014). Improved student engagement has been linked to reduced adolescent substance use, delinquency and depression (Li & Lerner, 2011).

The Problem of Low Engagement

Frequently, students who show signs of low engagement in school, are classified as disengaged students and at risk of school dropout (Henry et al., 2012; Newmann et al., 1992). Moreover, school-based indicators of low engagement, such as suspension, low attendance, and academic failure have been cited as correlates and predictors of subsequent problem behaviours and diminished health outcomes (e.g., substance abuse, poor mental health, and participation in antisocial behaviours) among adolescents (Hemphill et al., 2006; Kearney, 2008; Resnick et al., 1997). Further, suspension from school, diminished school attendance, and academic failure are also cited as increasing the likelihood of subsequent school dropout (Henry et al., 2012; Rumberger & Lim, 2008). These overt signs of low engagement are not just a problem for students. Teachers report that management of student disruptive behaviours is a significant cause of stress and interrupts student learning (Beaman et al., 2007; Crawshaw, 2015). Taken together, it is essential to understand how to improve student engagement and prevent disruptive behaviours, low attendance, and school dropout.

Further to the need to prevent overt symptoms of low engagement such as suspension, absences from school, and school dropout, there is a need to consider students' perceptions of school. A definition of students' engagement in school recognises that: "engaged students make a psychological investment in learning. They try hard to learn what school offers. They take pride not simply in earning the formal indicators of success (grades) but in understanding the material and incorporating or internalizing it in their lives" (Newmann et al., 1992, p. 3).

It is generally agreed that student-reported engagement is a broad construct, that contains two, three, or four interrelated dimensions that capture students' overt and less readily observable, behaviours, thoughts, and feelings in response to school (Fredricks et al., 2004; Fredricks et al., 2016). Historically, empirical research has tended to focus upon one dimension of engagement (e.g., Archambault, Janosz, & Chouinard, 2012; De Wit et al., 2010) or combine multiple dimensions of engagement in the one measure (e.g., Lam, Jimerson, et al., 2012; H. M. Marks, 2000). More recently several studies have simultaneously considered multiple dimensions and indicators of engagement (e.g., Chiu et al., 2012; Conner & Pope, 2013; A. D. Lewis et al., 2011; M.-T. Wang & Eccles, 2012; M.-T. Wang & Peck, 2013).

The benefit of these latter studies is that when different levels (i.e., minimal, moderate, and high), and unique dimensions (i.e., cognitive and emotional) of students' engagement have been identified, the outcomes were also unique. For example, students classified as "emotionally disengaged" were subsequently more likely to experience higher rates of depression. In contrast, the "cognitively disengaged" group of students were most at risk of academic failure, but not depression (M.-T. Wang & Peck, 2013).

In a large ($n = 81,499$) survey of high school students half of the students reported being bored every day at school (Yazzie-Mintz, 2007). Even adolescents attending high-achieving schools self-report that they lack engagement (Conner & Pope, 2013). The minority of students who reported being fully engaged were more likely to experience better mental and physical health and academic grades (Conner & Pope, 2013). Consequently it is understood that interventions that seek to improve students' engagement will support *all* students to adhere to school expectations, and attain better academic, physical, and emotional outcomes (Bond et al., 2007; Reschly & Christenson, 2012). However, interventions that seek to improve engagement should not assume that engagement is homogenous, both within students and between students (Betts, 2012; Hospel et al., 2016).

The current paper asserts that no one indicator of engagement can readily capture a student's experience of school. Instead multiple indicators of engagement should be used to capture both traditional school-based concerns (i.e., behaviours, absences, and dropout) and students' more subtle psychological engagement in school (Hospel et al., 2016). With the acknowledgement that students' engagement is multidimensional comes the recognition that the contexts for the development of students' engagement are also likely to be unique (M.-T. Wang & Eccles, 2013).

Context and the Development of Student Engagement

Within the school context, it is proposed that teachers, and the support that they provide to their students, are crucial to ensure a good fit between the student and school (Deci, 2009; Eccles et al., 1993). Indeed the importance of the teacher's instructional and emotional support in influencing student academic learning is well established (Hattie, 2009; Kyriakides et al., 2013; Slater et al., 2012). Further, teacher support in the form of good quality teacher-student relationships has been reported to

be associated with behavioural engagement indicators such as student participation and work habits, cognitive engagement indicators including commitment, and emotional engagement such as liking of school (Quin, 2017).

Theoretically, the primary focus on teachers' support of students is because teachers are considered to be a proximal and therefore crucial influence on engagement (Bronfenbrenner & Morris, 2006). However, an undue focus upon the preeminence of teachers and the support teachers can provide can lead to the false impression that teachers can overcome any individual, family, peer, or community barrier to student engagement. Ecological models of adolescent development explain concurrent interactions between the school, individual, family, peer, and community contexts (Bronfenbrenner & Morris, 2006; Eccles et al., 1993). Positive adolescent development programs that seek to improve a broad range of important adolescent outcomes, including school-based outcomes, consistently identify a need to intervene in multiple risk and protective factors across multiple contexts (Catalano, Berglund, et al., 2004; Chase et al., 2015).

Adolescence and the transition to secondary school are noteworthy due to the changing social and educational demands of this developmental period. Stage environment fit theory describes how adolescents seek increasing autonomy and independence from their family and concurrently the opportunity for high quality relationships with teachers decreases (Eccles et al., 1993). Despite this transition parenting practices and support persist as important influences on adolescent outcomes (Darling & Steinberg, 1993; M.-T. Wang & Eccles, 2012). Further, ecological theories, such as stage environment fit, assert that the normative influence of peers becomes more influential in adolescence (Catalano & Hawkins, 1996; Eccles et al., 1993). Empirically, the type of peer relationships (i.e., prosocial or antisocial)

formed, during adolescence have been reported to have differential effects on engagement (M.-T. Wang & Eccles, 2012).

Moreover, individual characteristics (i.e., gender, academic grades, self-concept) and family background (i.e., socioeconomic status, parent support) have been shown to uniquely predict behavioural engagement in school (You & Sharkey, 2009), behavioural compliance and school participation, valuing, and identification (M.-T. Wang & Eccles, 2012), and attendance (De Wit et al., 2010; Veenstra et al., 2010). Also reported were unique associations between better quality teacher-student relationships and subsequent levels of student engagement (De Wit et al., 2010; Veenstra et al., 2010; M.-T. Wang & Eccles, 2012; You & Sharkey, 2009). Thus, for schools seeking to improve students' engagement the preeminence of support from teachers should be considered within a comprehensive ecological framework that acknowledges risk and protective factors from the individual student, family, peer, and community contexts.

Current Study

With notable exceptions (M.-T. Wang & Eccles, 2012; You & Sharkey, 2009), to date the engagement literature has not substantially addressed the need for an ecological study of the development of engagement. Moreover, few studies have examined the effect of teacher support in late secondary school. The current study investigated associations between Grade 10 risk and protective factors, from the school, individual, family, peer, and community contexts, with five indicators of Grade 11 engagement. Five outcomes were operationalised as indicators of students' engagement in school: academic engagement, emotional engagement, school discipline (in response to breaches of school expectations), absences from school, and school dropout. These multiple indicators were employed in recognition of the

multidimensionality of student engagement (Fredricks et al., 2004; Hospel et al., 2016) and long-standing concerns with both overt indicators of low engagement and the more recently conceptualised psychological engagement (Newmann et al., 1992). The preeminence of teacher support as a predictor of students' engagement was initially modelled. Subsequently, using hierarchical models, established risk and protective factors, for positive adolescent development from each of the individual, family, peer, and community contexts were tested for their predictive associations with each of the five engagement outcomes.

It was hypothesised that (1) consistent with the notion of the preeminence of teacher support as a predictor of student engagement, Grade 10 teacher support will predict Grade 11 academic engagement, emotional engagement, school discipline responses, absences from school, and school dropout. Moreover, these associations will remain even after controlling for other risk and protective factors, known to predict student engagement; 2) the significance of the risk and protective factors from the school, individual, family, peer, and community contexts will differ with the indicator of engagement outcome. Specifically, it is hypothesised that factors from the individual context will predict subsequent engagement in the full ecological model.

Method

Participants

Data analysed in this study were drawn from the International Youth Development Study (Australia), a longitudinal study exploring the development of healthy and problematic behaviours. The participants were recruited via schools in 2002 (Arthur et al., 2002; Hemphill et al., 2007). A cluster sampling approach was utilised to ensure state-representative samples. At wave 1, within each school, a target classroom was randomly selected for participation. For subsequent waves,

participants were followed as they changed classes and schools. Further information, pertaining to the recruitment and attrition rates are described elsewhere (McMorris, Hemphill, Toumbourou, Catalano, & Patton, 2007).

Data for this paper are drawn from 927 adolescents originally recruited from Victoria, in Grade 5, in 2002. At the time of the Grade 10 (2007) survey 794 (85.6%) and Grade 11 follow-up (2008), 767 (82.7%) provided assent to and participated in the survey.

The current analyses were conducted on the 665 adolescents who reported being in full-time education in Grade 11 (2008). An additional ($n = 54$) adolescents who reported that they were no longer attending school in 2008 were included in the analyses that investigated school dropout as an outcome. The 48 adolescents who reported that they were in part-time education (in Grade 11) were excluded from the current analyses. Slightly more participants were females (56.2%) than males (43.8%). At the time of survey completion most participants were 16 or 17 years of age ($m = 16.96$).

Procedure

Ethics approval, for the Victorian participants, was obtained from The University of Melbourne Human Research Ethics Committee. Permission to conduct research in these schools was obtained from the Department of Education and Training for state (public) schools and from the Catholic Education Office for some independent schools. Individual permission for the participation of each school was attained from the school principal.

Parents provided written consent for their child's participation and students assented to complete the survey. The majority of the pen and paper surveys were administered, in the third term of Grade 10 and repeated one year later in term 3,

Grade 11 (July to September 2007 and July to September 2008). Over 90% of the

participants completed the surveys during a regular 45 – 60 minute class period under

the supervision of a trained research officer. The remaining participants, absent on the

day of survey administration, completed the survey, over the telephone, with a

research officer or self-administered the survey and then returned it to research staff

via pre-paid mail.

Measures

The risk and protective factors, from that survey, have been demonstrated to

have good reliability and validity with Victorian (Australia) samples (Bond et al.,

2000; Hemphill et al., 2011). The teacher support, academic engagement, and

emotional engagement measures were reorganised, from pre-existing measures,

within the *Communities That Care* survey (Table 7).

Table 7

Items Used to Measure Teacher Support and Academic and Emotional Engagement

Teacher support
My teachers are fair in dealing with students.
Most of my teachers really listen to what I have to say.
There's at least one teacher or other adult in this school I can talk to if I have a problem.
I feel I can go to my teacher with the things that are on my mind.
In this school, all students' idea are listened to and valued.
In this school, teachers and students really trust one another.
In this school, teachers treat students with respect.
This school really cares about students as individual.
Teachers notice when students are doing a good job and let them know about it.
In this school, teachers believe all students can learn.
Students have a say in decisions affecting them at this school.
There are lots of chances for students in my school to talk with a teacher one-on-one.
Academic engagement
How often do you feel that the schoolwork you are assigned is meaningful and important?
How interesting are most of your school subjects to you?
How important do you think the things you are learning in school are going to be for your later life?
How often did you try to do your best work in school?
I try hard in school.
Doing well in school is important to me.
Continuing or completing my education is important to me.
Emotional engagement
How often did you enjoy being in school?
How often did you hate being in school?
How many times have you looked forward to going to school?

Adolescent self-report of these factors was necessary because schools and education departments, within Australia, infrequently make school-based data, such as attendance and suspension available for research purposes (Youth Affairs Council of Victoria, 2016). Adolescent self-report of delinquent behaviours has been reported to be a valid technique (Jolliffe et al., 2003). Moreover, the included measures comprise previously validated items (Glaser et al., 2005) that have been reported to be risk and protective factors for suspension (Hemphill, Plenty, et al., 2014), academic grades (Feinberg, Jones, Greenberg, Osgood, & Bontempo, 2010), school dropout

(Kelly et al., 2015), and other related adolescent problems (e.g., bullying behaviour;

Hemphill, Kotevski, et al., 2012). With the exception of the absences from school

measure, the internal consistency of the measures used was acceptable (Table 2).

Grade 10 Predictors.

Teacher support. Students' perceptions of teacher support were measured

using 12 items (e.g., "Most of my teachers really listen to what I have to say", "My

teachers are fair in dealing with students", and "In this school, teachers treat students

with respect"). Responses were on a 4-point scale ranging from "*definitely no*" (1) to

"*definitely yes*" (4).

Gender. Students were asked to report their gender by nominating either

"*Male*" (0) or "*Female*" (1).

Academic grades. Students' rating of their academic grades was measured

using two items, rated on a 4-point scale ranging from "*definitely no*" (1) to

"*definitely yes*" (4; e.g., "Are your school grades better than the grades/ marks of most

students in your class?"). A third item was rated on a 5-point scale ranging from

"*Very poor*" to "*Very good*" (e.g., Putting them all together, what were your

grades/marks like last year?). Scores on the latter item were rescaled so the scores

ranged from 1 to 4 (e.g., 1 = 1, 2 = 1.75, 3 = 2.5, 4 = 3.25, 5 = 4).

Depressive symptoms. Participants were asked to respond on a 3-point scale

("*True*" [3], "*Sometimes True*", and "*Not True*" [1]) to 13 statements consistent with a

range of depressive symptoms (e.g., "I felt miserable or unhappy", "I cried a lot", and

"I was a bad person" Messer et al., 1995).

Poor family management. Nine items sought the participants' perceptions of

their parents' expectations regarding rules and general monitoring of behaviour (e.g.,

"My parents ask if I've gotten my homework done" and "The rules in my family are

clear"). Responses were on a 4-point scale ranging from "*definitely no*" (4) to "*definitely yes*" (1).

Family attachment. Participants were asked to rate the degree to which they feel close to their parents using four items (e.g., "Do you feel close to your mother?"). Responses were on a 4-point scale ranging from "*definitely no*" (1) to "*definitely yes*" (4).

Parental overcontrol. Participants completed two items to determine the degree to which they felt their parents controlled their life (e.g., "My parents try to control everything"). Responses were on a 4-point scale ranging from "*definitely no*" (1) to "*definitely yes*" (4).

Opportunities for prosocial involvement. Participants reported the degree to which their parents sought their opinion and involvement in the family via three items (e.g., "My parents give me lots of chances to do fun things with them"). Responses were on a 4-point scale ranging from "*definitely no*" (1) to "*definitely yes*" (4).

Recognition for prosocial involvement. Four items were completed by participants to determine if they enjoyed spending time with their parents and that their parents noticed when they have done something well (e.g., "My parents notice when I am doing a good job and let me know about it"). The items had a 4-point scale ranging from "*definitely no*" (1) to "*definitely yes*" (4) or "*Never or almost never*" (1) to "*All the time*" (4).

Interaction with prosocial peers. Two items required participants to report how many of their best friends had tried to do well in school or been involved in prosocial activities in the past 12 months (e.g., "Tried to do well in school?"). The 5-point scale ranged from "*None of my friends*" (0) to "*4 of my friends*" (4).

Interaction with antisocial peers. Nine items required participants to report how many of their best friends had participated in antisocial behaviours in the past 12 months (e.g., carried a weapon and dropped out of school). The 5-point scale ranged from "*None of my friends*" (0) to "*4 of my friends*" (4).

Low neighbourhood attachment. Participants completed three items, which sought to identify the degree to which they liked and felt attached to their neighbourhood (e.g., "I like my neighborhood"). The items had a 4-point scale ranging from "*definitely no*" (1) to "*definitely yes*" (4).

Community disorganisation. Three items required the participants to report if their neighbourhood felt safe or physically deteriorated (e.g., lots of empty or abandoned buildings). The items had a 4-point scale ranging from "*definitely no*" (1) to "*definitely yes*" (4).

Grade 10 and 11 indicators of engagement. Academic engagement, emotional engagement, school discipline, absences from school, and school dropout were each indicators of adolescents' engagement in school.

Academic engagement. Seven items were used to examine students' perspectives on how interesting and relevant they found schoolwork and how often they tried their best (e.g., "Doing well in school is important to me and I try hard in school"). Three items had a 4-point scale ranging from "*definitely no*" (1) to "*definitely yes*" (4). The other four items had a 5-point range from "*Never*" (0) to "*Almost always*" (4) were rescaled to have a range of four (e.g., 0 = 1, 1 = 1.75, 2 = 2.5, 3 = 3.25, 4 = 4).

Emotional engagement. Students' affective like or dislike of school in the prior 12 months (e.g., "How often did you enjoy being in school?") was examined using three items. Two of the items had a 5-point scale ranging from "*Never*" (1) to

"*Almost always*" (5) and were rescaled to have a range of four. The other item had an 8-point range from "*Never*" (1) to "40+ times" (8) and was also rescaled to have a range of four.

***School discipline response*.** Students were asked to rate how many times in the past 12 months they had received a school discipline response (e.g., internally suspended from school, been assisted to find another school to attend). The six items had an 8-point range from "*Never*" (1) to "40+ times" (8).

***Absences from school*.** Students were asked to nominate how many days of school they had been absent due to truancy, illness, or other reasons in the last four weeks (e.g., "How many whole days have you missed because of you skipped or "cut/wagged?"). The three items had a 7-point scale ranging from "*None*" (1) to "*11 or more*" (7) and were scaled to range from one to five.

School dropout. One item asked participants to nominate their school attendance status in each of 2007 and 2008 (e.g., "*In School Full Time*" [1], "*In School Part Time*" [2], "*Not in School*" [3]). Students who reported they were in full-time education in Grade 10 and were not attending school in Grade 11 were classified as having dropped out of school.

Analysis

Data analyses were conducted in SPSS software (IBM Corp, 2013). After visual inspection of the items within the pre-existing *Communities That Care,* school context measures, principal component analysis (varimax rotation; factor loading >.4) was necessary to determine the underlying factors, or variables consistent with recent multidimensional, student-report, conceptualisations of student engagement (Reschly & Christenson, 2012). This step was necessary because the original *Communities That Care* measures did not adequately distinguish between

school-based engagement and student-reported psychological engagement. Two factors, consistent with academic engagement and emotional engagement were derived (Finn & Zimmer, 2012; Reschly & Christenson, 2012). Factor analysis was also conducted to determine the teacher support and academic grades variables. It was necessary to determine if the data had a hierarchical structure. Intraclass correlations (ICC) for each of the five outcome variables were calculated to determine the proportion of variance explained by individual schools. Each of the ICCs were less than .05 (.01 - .05) and the number of students per school was small (719 / 209 = 3.44). This value was lower than might be expected because the students were recruited in Grade 5 and followed with each change of school. Consequently, the design effect estimates, a measure for assessing violations of the assumption of independence, were less than 2.0, lower than the recommended value for multilevel modelling (Peugh, 2010).

Pearson's correlations and variance inflation factors between analysed variables were checked to rule out potential problems with multicollinearity. All variance inflation values were below 10. Next, descriptives for each of the continuous variables (gender, school discipline response, and dropout excluded) were prepared. Frequencies for school discipline response and dropout were calculated.

Due to the inclusion criteria there were few cases with missing data (<5%). To address concerns with non-normally distributed data all regression analyses were conducted using 1,000 bootstrapped samples (Efron & Tibshirani, 1993). Further, the majority (79%) of students had not been a recipient of a school discipline response suggesting the underlying distribution of the school discipline variable was categorical (Iselin, Gallucci, & DeCoster, 2013). Consequently, the school discipline

response variable was dichotomised into presence or absence of a disciplinary response, in the past 12 months.

Next, three multiple hierarchical regression analyses were conducted to examine the associations between the Grade 10 predictors (i.e., school, individual, family, peer, and community) and the continuous Grade 11 engagement outcomes (i.e., academic engagement, emotional engagement, and absence). The Grade 10 school context predictor, teacher support, was entered at step one as a predictor of Grade 11 engagement. Due to the desire to test the theorised preeminence of teacher support on students' engagement, within an ecological model of adolescent development, the subsequent step saw the addition of the individual, family, peer, and community predictors (Bronfenbrenner & Morris, 2006; Eccles et al., 1993).The same hierarchical steps were modelled for the two categorical outcomes, school discipline response and school dropout, using logistic regression. Unstandardised beta values (*B*) and standard errors (*SE*) were determined for each predictor and effect sises (R^2) for the full ecological models. To assist interpretation the logistic regression unstandardised beta values were converted to odds ratios (*OR*; O'Connell & Amico, 2010). Effect sizes (R^2) and change in effect sizes (ΔR^2) were also reported.

Results

Descriptives

Continuous variables. Table 9 presents the bivariate associations between the continuous variables under consideration. Teacher support had a statistically significant association with each of the three Grade 11 indicators of engagement. The strength of the positive association between teacher support and each of academic and emotional engagement was medium (Hattie, 2009). Teacher support had a small, negative association with absences from school. With the exception of parental

overcontrol and interaction with prosocial peers, each of the Grade 10 predictors were associated with the Grade 11 outcomes ($p < .05$). The majority of these associations ranged from small to medium (Hattie, 2009)

Table 8

Summary of Pearson's Correlations, Means, and Standard Deviations for Scores on the Continuous School, Individual, Family, Peer, and

Community Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Teacher support	-																	
2. Academic engagement (10)	.53	-																
3. Emotional engagement (10)	.47	.54	-															
4. Absences (10)	-.18	-.26	-.21	-														
5. Academic grades	.36	.56	.47	-.26	-													
6. Depressive symptoms	-.26	-.22	-.38	.20	-.29	-												
7. Poor management	-.37	-.38	-.24	.22	-.21	.15	-											
8. Attachment	.31	.32	.28	-.08	.26	-.25	-.43	-										
9. Parent overcontrol	-.16	-.08^{NS}	-.17	.02^{NS}	-.07	.24	.00^{NS}	-.19	-									
10. Opportunities prosocial	.44	.40	.30	-.13	.31	-.30	-.57	.69	-.19	-								
11. Recognition prosocial	.35	.38	.31	-.11	.31	-.26	-.50	.76	-.22	.71	-							
12. Antisocial peers	-.28	-.29	-.22	.31	-.21	.18	.33	-.17	.18	-.26	-.25	-						
13. Prosocial peers	.33	.25	.38	-.10	.20	-.21	-.16	.16	-.08	.19	.22	-.18	-					
14. Low attachment	-.26	-.27	-.33	.10	-.23	.24	.25	-.30	.15	-.34	-.30	.14	-.22	-				
15. Disorganization	-.24	-.21	-.18	.18	-.21	.20	.26	-.24	.09	-.28	-.28	.24	-.15	.44	-			
16. Academic engagement (11)	.37	.62	.36	-.15	.41	-.15	-.34	.26	-.02^{NS}	.31	.34	-.14	.14	-.20	-.12	-		
17. Emotional engagement (11)	.35	.37	.64	-.15	.34	-.32	-.22	.24	-.15	.22	.28	-.11	.27	-.28	-.10	.54	-	
18. Absences (11)	-.14	-.15	-.15	.42	-.16	.17	.14	-.13	.08^{NS}	-.12	-.12	.23	-.03^{NS}	.09	.14	-.18	-.24	-
M	2.88	3.15	2.89	1.60	1.97	1.60	1.89	2.97	2.13	3.12	3.10	.38	3.10	1.90	1.49	3.15	2.87	1.58
SD	.47	.50	.68	.66	.60	.52	.53	.58	.82	.60	.65	.64	.97	.72	.53	.51	.64	.68
Cronbach's alpha *(α)*	.90	.85	.80	.52	.77	.93	.83	.79	.80	.75	.75	.89	.48	.80	.63	.86	.80	.45

Note. ^{NS} = not significant ($p > .05$). *M* = mean; *SD* = Standard deviation.

Categorical variables. One hundred and twenty-two (18.8%) Grade 11 students reported that they had been a recipient of a school discipline response in the past 12 months. Of the Grade 10 students, 141 (21.7%) had received a school discipline response in the past 12 months. The Cronbach's alpha coefficient for the Grade 10 and Grade 11 school discipline response variable was respectively, .90 and .94.

Of the 54 adolescents who were not attending school in Grade 11, 33 had reported being a full-time student in Grade 10. These 33 (4.9%) students were classified as having dropped out of school.

Grade 10 Predictors of Grade 11 Academic Engagement

Higher levels of teacher support did not predict academic engagement when factors from the individual, family, peer, and community contexts were modelled (Table 10). In combination the school and individual context factors explained 27% of the variance in academic engagement. Of the individual factors, each of higher levels of prior academic engagement, being female, and better academic grades at Grade 10 predicted higher levels of Grade 11 academic engagement, when all factors were considered at step five. Students who reported poor family management were more likely to have worse academic engagement in the full model. Affiliation with antisocial peers and community disorganisation predicted better academic engagement.

Table 9

Hierarchical Regression Analyses Predicting Grade 11 Engagement from Grade 10 School, Individual, Family, Peer, and Community Risk and

Protective Factors

	Academic engagement		Emotional engagement		Absences	
		Full model		Full model		Full model
Predictor	*B (SE)*	*B (SE)*	*B (SE)*	*B (SE)*	*B (SE)*	*B (SE)*
School						
Teacher support	.36 (.04)***	.05 (.05)	.46 (.05)***	.06 (.06)	-.16 (.06)**	-.03 (.06)
Individual						
Gender		.13 (.03)**		.08 (.04)*		.13 (.05)*
Engagement (10)†		.49 (.05)***		.53 (.05)***		.37 (.06)***
Academic grades		.09 (.03)**		.06 (.04)		-.03 (.04)
Depressive symptoms		-.05 (.04)		-.12 (.05)*		.07 (.06)
Family						
Poor management		-.10 (.04)**		-.12 (.05)*		.01 (.06)
Attachment		-.01 (.04)		.02 (.05)		-.07 (.07)
Parent overcontrol		.02 (.02)		-.03 (.03)		.03 (.03)
Opportunities prosocial		-.04 (.04)		-.13 (.06)*		.06 (.07)
Recognition prosocial		.10 (.05)*		.14 (.05)**		.03 (.08)
Peer						
Antisocial peers		.09 (.03)**		.12 (.05)**		.13 (.07)
Prosocial peers		-.01 (.02)		.01 (.03)		.04 (.03)
Community						
Low attachment		-.03 (.03)		-.09 (.04)*		.01 (.04)
Disorganisation		.07 (.03)*		.12 (.04)**		.01 (.06)
R^2	.12***	.41***	.11***	.43***	.01**	.19***

B = unstandardised beta coefficient, *SE* = Standard Error, R^2 = Adjusted *R* Square.

*p < 0.05, **p < 0.01, and ***p <.001.

† Predictor matched to outcome, e.g., Grade 10 academic engagement used to predict Grade 11 academic engagement.

Grade 10 Predictors of Grade 11 Emotional Engagement

Teacher support was not a statistically significant predictor of emotional engagement when other factors were added to the multivariate regression analyses (Table 10). In combination the school and individual context factors explained 30% of the variance in emotional engagement. Of the individual context variables female gender, lower levels of depressive symptoms, and higher emotional engagement at Grade 10 were associated with higher emotional engagement in Grade 11. Higher opportunities for prosocial involvement in the family and higher recognition for prosocial activities in the family at Grade 10 were also associated with higher emotional engagement in Grade 11. From the peer context, affiliation with antisocial peers predicted higher levels of emotional engagement, one year later. Students reporting better community attachment or higher levels of community disorganisation were more likely to subsequently have higher levels of emotional engagement.

Grade 10 Predictors of Grade 11 Absences from School

Teacher support did not predict absences from school when other factors were added to the multivariate regression analyses (Table 10). Of the individual context factors, being female and students who reported higher rates of absence in Grade 10 were more likely to be absent in Grade 11. No family, peer, or community factors had a multivariate association ($p > .05$) with absences from school.

Grade 10 Predictors of Grade 11 School Discipline

From the bivariate unadjusted associations all factors, with the exception of affiliation with prosocial peers, predicted school discipline responses (Table 11). When the same factors were included in the multivariate regression analysis, the individual factors uniquely predicted 21% of the variance in school discipline. Males, students with lower academic grades, and students who had previously been a

recipient of a school discipline response were more likely to subsequently experience school discipline. No factors from the peer or community contexts were associated (*p* > .05) with school discipline in the multivariate analysis.

Table 10

Unadjusted and Adjusted Multivariate Logistic Regression Analyses Predicting Grade 11 Discipline from Grade 10 School, Individual, Family,

Peer, and Community Risk and Protective Factors

Predictor	Unadjusted			Full model		
	B (SE)	*OR*	95% CI	*B (SE)*	*OR*	95% CI
School						
Teacher support	-.45 (.21)*	0.64	[.43, .98]	.40 (.33)	1.50	[0.85, 2.99]
Individual						
Gender	-.53 (.20)*	.59	[.39, .90]	-.48 (.28)*	.62	[.34, 1.09]
School discipline (10)	1.91 (.23)***	6.75	[4.32, 10.50]	1.50 (.28)***	4.50	[2.73, 8.06]
Academic grades	-.93 (.17)***	.39	[.28, .54]	-.63 (.24)**	.53	[.32, .80]
Depressive symptoms	.47 (.18)*	1.60	[1.09, 2.20]	.34 (.27)	1.40	[.84, 2.40]
Family						
Poor management	.90 (.20)***	2.45	[1.67, 3.66]	.42 (.31)	1.52	[.88, 2.89]
Attachment	-.39 (.15)*	.68	[.50, .92]	.11 (.30)	1.12	[.62, 2.17]
Parent overcontrol	.13 (.13)	1.14	[.88, 1.46]	-.03 (.16)	.97	[.70, 1.31]
Opportunities prosocial	-.54 (.15)**	-.59	[.43, .78]	.09 (.34)	2.56	[.58, 2.09]
Recognition prosocial	-.65 (.17)***	.52	[.38, .72]	-.29 (.35)	.75	[.35, 1.55]
Peer						
Antisocial peers	.79 (.17)***	2.20	[1.65, 3.16]	.33 (.22)	1.38	[.93, 2.12]
Prosocial peers	-.01 (.12)	.99	[.80, 1.26]	.10 (.16)	1.10	[.82, 1.58]
Community						
Low attachment	.27 (.14)*	1.32	[1.00, 1.75]	-.06 (.21)	.94	[.60. 1.45]
Disorganisation	.51 (.19)**	1.66	[1.12, 2.32]	.13 (.27)	1.14	[.67, 1.92]
R^2				.25***		

B = unstandardised beta coefficient, *SE* = Standard Error, *OR* = Odds Ratio, *CI* = Confidence Interval, R^2 = Nagelkerke *R* Square.

*$p < 0.05$, **$p < 0.01$, and ***$p < .001$.

Grade 10 Predictors of School Dropout

When dropout from Grade 10 to Grade 11 was analysed as an outcome Grade 10 teacher support was not a statistically significant predictor (Table 11). In both the unadjusted and adjusted multivariate logistic regression analyses, students with lower academic grades or higher rates of affiliation with antisocial peers were more likely to dropout of school. The family and community factors were not statistically significant ($p > .05$) predictors of dropout.

Table 11

Unadjusted and Adjusted Multivariate Logistic Regression Analyses Predicting Grade 11 Dropout from Grade 10 School, Individual, Family,

Peer, and Community Risk and Protective Factors

	Unadjusted			Full model		
Predictor	*B (SE)*	*OR*	95% CI	*B (SE)*	*OR*	95% CI
School						
Teacher support	-.28 (.36)	.75	[.39, 1.58]	.29 (.72)	1.33	[.29, 6.42]
Individual[†]						
Gender	-.08 (.39)	.93	[.45, 1.85]	.86 (.52)*	2.36	[1.03, 7.69]
Academic grades	-1.44 (.30)***	.24	[.13, .39]	-1.71 (.49)***	.18	[.06, .37]
Depressive symptoms	-.12 (.34)	.88	[.42, 1.58]	-.73 (.49)	.48	[.96, 7.00]
Family						
Poor management	.18 (.41)	1.19	[.50, 2.39]	-.00 (.57)	1.00	[.33, 2.84]
Attachment	.47 (.36)	1.61	[.85, 3.43]	.84 (.61)	2.31	[.78, 8.47]
Parent overcontrol	-.60 (.31)*	.55	[.28, .94]	-.49 (.43)	.61	[.24, 1.11]
Opportunities prosocial	.22 (.35)	1.25	[.66, 2.57]	.43 (.71)	1.54	[.39, 6.11]
Recognition prosocial	.02 (.36)	1.02	[.51, 2.18]	-.46 (.83)	.63	[.12, 3.13]
Peer						
Antisocial peers	.50 (.20)**	1.65	[1.07, 2.33]	.54 (.31)*	1.72	[.95, 3.13]
Prosocial peers	-.06 (.21)	.94	[.67, 1.44]	-.02 (.27)	.98	[.61, 1.73]
Community						
Low attachment	.16 (.30)	1.17	[.62, 2.02]	.24 (.49)	1.27	[.46, 3.09]
Disorganisation	.47 (.28)	1.60	[.86, 2.70]	.17 (.43)	1.18	[.48, 2.82]
R^2				.22***		

B = unstandardised beta coefficient, *SE* = Standard Error, *OR* = Odds Ratio, CI = Confidence Interval, R^2 = Nagelkerke *R* Square.

*p < 0.05, **p < 0.01, and ***p <.001.

[†]Dropout does not have a Grade 10 dropout predictor.

Discussion

The current study applied an ecological model to further an understanding of the development of multiple indicators of adolescents' engagement in school. The first hypothesis, that Grade 10 teacher support would predict multiple indicators of Grade 11 engagement was partially supported. At the bivariate level, consistent with prior research (Hattie, 2009; Quin, 2017), when students reported higher levels of Grade 10 teacher support they were more likely to have improved academic engagement and emotional engagement and diminished rates of absences and school discipline in Grade 11. Moreover, these associations aligned with a comprehensive research synthesis that concluded that, on average, teachers exert a small to medium effect (Hattie, 2009).

However, when risk and protective factors from the individual, family, peer, and community contexts were introduced the relative contribution of Grade 10 teacher support, to Grade 11 engagement diminished to statistically non-significant levels. This latter finding contrasts with other studies that reported that teacher support remained a significant predictor of students' engagement, in multivariate ecological analyses (M.-T. Wang & Eccles, 2012; You & Sharkey, 2009).

As predicted factors from the individual context explained the greatest proportion of variance in engagement. Findings of this nature support the viewpoint that engagement is heavily influenced by an accumulation of prior experiences (Finn, 1989; Rumberger & Rotermund, 2012). Additionally, in the full ecological models, factors from the family, peer, and community predicted academic and emotional engagement but not absences and school discipline. Grade 10 academic grades and affiliation with antisocial peers predicted subsequent dropout. These results are somewhat unique as prior research has tended to utilise

study designs that only model one or two contexts (e.g., Nie & Lau, 2009) or a limited conceptualisation of engagement (e.g., You & Sharkey, 2009).

Context and Predictors of Students' Engagement

The role of school context. The current bivariate associations reiterate that students' perceptions of their teachers' provision of support are an important factor in not only students' academic grades but also several important indicators of engagement (Conner & Pope, 2013; Quin, 2017; Slater et al., 2012; Veenstra et al., 2010; M.-T. Wang & Eccles, 2012). However, in the hierarchical regression analyses, the addition of prior academic grades and engagement overshadowed the significance of teacher support. Thus, the viewpoint that education, of which academic grades and engagement are fundamental, is a process (Reschly & Christenson, 2012) that warrants further consideration. It is possible that, by Grade 11, an engagement trajectory is somewhat fixed and that even a theorised proximal influence, such as Grade 10 teacher support, may not divert entrenched engagement behaviours and attitudes.

Rumberger (2012) has written that dropout is the final step in an accumulation of engagement experiences. The current lack of an association between Grade 10 teacher support and dropout within the ensuing year suggests that by the time an adolescent is close to dropping out of school, well established perceptions of prior, typically low, academic grades are more influential than teacher support. Elsewhere, teacher-student relationships, measured 2 years prior to determining dropout status, were predictive of dropout (Barile et al., 2012).

The use of an ecological model, in the current study, provided a nuanced perspective beyond an excessive focus on teachers and teaching (Thompson, 2013). Our findings showed

associations between teacher support and students' engagement diminished when factors from other contexts were introduced. A fatalistic interpretation of the role of teacher support would be that both school-based and the less overt indicators of engagement are not as readily malleable to teacher support as theorised (Appleton et al., 2008). Alternatively, the authors of the current study prefer to ultilise stage environment fit as an explanatory framework (Eccles et al., 1993). One of the skills of good quality teaching would appear to be the provision of instructional and emotional support to individual students. This should facilitate an understanding of each student and allow the teacher to support a student's individual engagement requirements (Eccles et al., 1993; Finn & Zimmer, 2012).

The role of individual context. A starting point for teachers seeking to create a good fit between student and school is prior school engagement. The finding that prior levels of engagement was the strongest predictor of Grade 11 engagement is consistent with the view that engagement is an accumulation of prior education experiences (Rumberger & Lim, 2008; Russell et al., 2005).

It is suggested that one of the reasons for a loss of engagement in adolescence is due to an increasing awareness of low academic grades or what Finn (1989) termed 'deficient practices'. The current associations between academic grades and engagement is consistent with the notion that academic achievement encourages longer-term participation, liking, and commitment to school, or engagement (Li & Lerner, 2011).

Along with academic grades and prior engagement, students' gender predicted several indicators of engagement. This is consistent with prior research on self-reported engagement (Lam, Jimerson, et al., 2012). Gender differences in patterns of absence are less clear (Kearney, 2008; Vaughn et al., 2013) and typically males are more likely to be suspended

(Hemphill, Plenty, et al., 2014). Regardless, for the school community seeking to improve students' engagement gender considerations are pertinent.

The role of family context. Beyond individual contextual factors the current multivariate results in which family contextual factors were not consistently strong predictors of engagement was somewhat unexpected. Elsewhere, ecological studies of engagement have reported that parent-child relationships predicted a range of indicators of students' engagement (M.-T. Wang & Eccles, 2012; You & Sharkey, 2009). It is recognised that adolescents entering into senior high school, as is the case with the current sample, are increasingly seeking independence and autonomy from their parents (M.-T. Wang, Dishion, Stormshak, & Willett, 2011). Consequently, there is reason to believe that family practices would exert a lesser influence on their child's engagement in Grade 11.

The role of peer context. The theorised diminishing influence of family and concurrent increase of peer influence in adolescence (Bronfenbrenner & Morris, 2006) is consistent with the present results. Elsewhere it has been reported that peer social support is more important than family and parent support for school engagement indicators (M.-T. Wang & Eccles, 2012). The predictive associations between affiliation with antisocial peers and subsequent engagement, after controlling for prior engagement, implicate a role for the normative influence of peer friendships on engagement.

The bivariate associations between Grade 10 affiliation with antisocial peers and subsequent engagement were consistent across the indicators of engagement. The absence of a statistically significant association between Grade 10 affiliation with antisocial peers and the negative outcomes of absences from school and school discipline, in the multivariate models is best explained by the large portions of variance explained by prior engagement. In

contrast, the multivariate dropout model that did not control for prior engagement showed a strong association between antisocial peer affiliation and subsequent dropout. Again, these results are suggestive of a long-term decline in engagement (Rumberger & Rotermund, 2012), that is not consistently influenced by the school, family, peer, and community contexts.

The role of community context. Further to the peer associations with several indicators of engagement, perceptions of community predicted both academic and emotional engagement. A lack of connection to teachers, peers, and the broader community is of concern due to the potential for long-term associations with substance use and mental health problems (Bond et al., 2007). To the best of the author's knowledge this is one of the first studies to report a predictive association between student perceptions of community and students' psychological engagement. Studies of adolescent development, not specific to school outcomes, highlight community factors as a consideration (Chase et al., 2015). It is argued that because adolescents are frequently unsupervised by adults at the end of the school day, in disadvantaged communities, students are more likely to associate with poor adult role models or other antisocial peers (Eccles & Roeser, 2011). In turn, these poor normative influences would be expected to diminish engagement in school (Catalano & Hawkins, 1996).

Multiple Indicators of Engagement

In addition to applying an ecological model to students' engagement the current study responded to a call to incorporate traditional school-based measures of engagement and more recent and less overt multidimensional conceptualisations of engagement (M.-T. Wang & Degol, 2014). A unique point of difference between the indicators of engagement was that

teacher support did not predict dropout, unlike the less enduring indicators of engagement. In this regard dropout is the accumulation of multiple school experiences, including prior engagement (Rumberger & Rotermund, 2012). This suggests that by the time a students' engagement has diminished to the point that school dropout is imminent, improved teacher support is unlikely to prevent school dropout. Instead, the current study implicates poor academic grades as a crucial risk factor for school dropout, one year later.

Empirical research has demonstrated that the relationship between multiple indicators of engagement, and in particular academic grades, is bidirectional (Chase et al., 2014; M.-T. Wang & Fredricks, 2013). In the current study poor academic grades predicted increased school discipline and dropout and diminished academic engagement. In contrast academic grades did not predict either emotional engagement or absences. Together these results suggest that a student can like and attend school without achieving good academic grades. However, to complete the classwork, avoid school discipline sanctions, and graduate, some degree of academic achievement is necessary (Barile et al., 2012). Future research should seek to elaborate upon the patterns and pathways between overt indicators of engagement and psychological engagement (Hospel et al., 2016).

Limitations and future research

The extant literature into antecedents of students' engagement is limited by an overreliance upon data collection at a solitary time point or short-term longitudinal associations (i.e., less than 3 years). This is true of the current study. The current predictive associations should not be interpreted as cause and effect relationships. Ecological models of adolescent development explicitly acknowledge the bidirectional and likely multiple interactions between contexts (Bronfenbrenner & Morris, 2006; Chase et al., 2014).

A strength of the current study was that it considered Grade 11 engagement, a period of school in which the focus is more typically limited to school dropout (Lamb & Markussen, 2011; Landis & Reschly, 2011). Future ecological research should seek to elaborate upon engagement across key developmental and educational transitions (Eccles & Roeser, 2011). Moreover, the co-consideration of overt, school-based indicators of engagement and psychological engagement is important when seeking to understand traditional school-based concerns and students' experiences of school (Hospel et al., 2016).

The consideration of multiple contexts, external to school, is a considerable strength of the current study (Chase et al., 2015). The current paper provides guidance for consideration of risk and protective factors in the individual, family, peer, and community contexts which should be concurrently considered. It should be acknowledged that the current study only considered one aspect of the school context, the students' perceptions of their teachers support. School climate research elaborates upon other ways that the school can influence students' engagement (Thapa et al., 2013).

Finally, the less overt aspects of students' engagement necessitates adolescent self-report (Fredricks & McColskey, 2012). Within Australia school data on the overt outcomes, school discipline and absences from school was not readily available and students' self-report was necessary. With regard to the predictor variables adolescents' perceptions of their self, family, peer, and community are just that, their perceptions and reflect their understanding of their life in context. Third-party validation of many of the risk and protective factors, particularly from the family context, would strengthen the current research.

Implications

The current results align with prior research that suggests that how teachers relate and provide support to their students is an important component of a student's engagement in school (Roorda et al., 2011). Consequently, teachers should continue to tailor their teaching so that they engender a student perception that they can and should seek instructional and emotional support from their teachers.

A long-term view of the development of students' engagement (Finn, 1989; Rumberger & Rotermund, 2012) suggests that when high school teachers seek to elicit students' engagement they should be aware of the individual student's academic history and prior engagement. A good fit between the student and school can only be facilitated when the teacher provides support at the level appropriate to the individual student (Eccles et al., 1993). Moreover, the current findings suggest that there is a need to intervene in students' engagement before attitudes and behaviours become entrenched.

When considering student outcomes it is tempting to focus upon the two key participants, students, and teachers. In contrast, modifications to family, peer, and community are often beyond the scope of schools. Despite this when seeking to facilitate students' engagement factors external to the teacher and student may be the best source of promotion, prevention, and intervention.

The current study has implications for school communities seeking to improve engagement. The predictors to the present five indicators of engagement were similar but not uniform. When seeking to improve engagement, clarity should be sought on precisely what indicator of engagement, because the predictive risk and protective factors associations differed. Any intervention that seeks to improve engagement should be tailored to the

student's unique engagement indicators. This is exemplified interventions such as the Check & Connect programme that successfully targeted areas of concern in the individual, school, family, peer, and community (Sinclair et al., 2003).

Conclusions

A comprehensive ecological model of adolescent development indicated that students' perceptions of their teachers' support made an important but not exclusive contribution to their levels of engagement. Grade 10 factors from the individual context, including gender, prior engagement, and academic grades made the strongest contribution to Grade 11 engagement.

The relative contribution of the risk and protective factors from the five contexts (i.e., school, individual, family, peer, and community) differed with the five indicators of engagement (i.e., academic engagement, emotional engagement, school discipline response, absences from school, and school dropout). These findings suggest that when seeking to improve a student's engagement in school one size does not fit all. The predictors of engagement and therefore intervention/s should differ with the indicators of engagement that a student is conveying.

Chapter 11: General Discussion

This final chapter provides an overview of the major findings of the research programme by summarising the findings of the three studies and integrating these findings with the existing educational psychology literature. Results showed that teaching related factors, including TSRs and instructional and classroom management, had bivariate associations with multiple indicators of student engagement. Subsequent multivariate results provided a more nuanced perspective. When factors from the individual (i.e., prior educational experiences), family, peer, and community contexts were incorporated in more a complete ecological model of engagement the associations between teaching and students' engagement diminished, in many instances to statistically non-significant levels. These results, including the limitations of teaching within a long-term education career are elaborated upon, including implications for theories of teaching practice, adolescent development, and student engagement. The final section of this chapter elaborates upon the strengths and limitations of the research programme. Further, recommendations for education practice and policy are made.

The prevailing view is that teachers are best placed to improve students' academic grades (Gillard, 2012; Hattie, 2009), but that a more comprehensive understanding of students' subjective experiences of school is needed to improve their experiences of school (Yazzie-Mintz, 2009) and post-school outcomes (Abbott-Chapman et al., 2013). Traditionally, student engagement has been inferred from school records of academic grades, attendance, suspension, and dropout. In this thesis, a more inclusive conceptualisation of engagement was adopted and included students' subjective experiences (i.e., psychological engagement). The broad aim of the research programme was to understand how teachers can

improve students' engagement. Moreover, it was recognised that adolescents' engagement does not develop solely from their school experiences. Multiple factors from the individual, family, peer, and community are likely to concurrently influence students' engagement (Chase et al., 2015). Based on existing research and ecological theory, the thesis addressed three hypotheses:

1) That better teaching would be positively and uniquely associated with school-based and student-reported outcomes. This hypothesis was based on current empirical, theoretical, and political perspectives that assert the teacher as the proximal factor in improving students' engagement (e.g., Gillard, 2012; Hattie, 2009; Pianta, Hamre, & Stuhlman, 2003). It was predicted that these associations, between teaching and multiple indicators of engagement, would remain statistically significant when modelled within an ecological model of adolescent development.

2) That non-teaching factors at the level of individual, family, peer, and community contexts would make unique contributions to different school-based and student-reported student indicators of engagement.

3) That separate dimensions of teaching (i.e., TSRs, instructional, and management) would be uniquely associated with school-based and student reported indicators of engagement.

Research results bearing on each hypothesis are discussed in turn.

Limits to Teaching and Facilitating Engagement

Consistent with previous research (Hattie, 2009; Slater et al., 2012), the three studies reported positive correlations between teaching and academic grades. This was the case when the conceptualisation of teaching was limited to the affective, relational qualities of teaching

(Study 1), or more comprehensive conceptualisations of teaching included instructional and management qualities of teaching (Studies 2 & 3).

Furthermore, relationships between teaching and each of suspension, attendance, and psychological engagement aligned with pre-existing literature (Hemphill, Plenty, et al., 2014; Quin & Hemphill, 2014; Salzer, Trautwein, Ludtke, & Stamm, 2012; M.-T. Wang & Eccles, 2012). The teaching-engagement correlations support the notion that teaching is a proximal factor for students' engagement (Pianta et al., 2003) and provide partial support for the first hypothesis. Across the three studies the contribution of teaching-related factors to key aspects of student engagement was not uniformly significant after inclusion of individual, family, peer, and community factors. This latter finding points to limitations to teaching modifications when seeking to improve students' engagement.

Results reported in this thesis are broadly consistent with other ecological studies that have reported positive associations between teaching and student engagement. This is evident in both international (Lam, Jimerson, et al., 2012) and Australian (Zimmer-Gembeck et al., 2006) studies. Lam and colleagues showed that both better quality teacher and parent support, but not peer support, were associated with better psychological engagement and academic grades (Lam, Jimerson, et al., 2012). While in the Australian study, teacher support and peer support were associated with psychological engagement and academic grades (Zimmer-Gembeck et al., 2006). The authors concluded that students' engagement developed from their relationships with teacher and peers and the ability of the school to support their psychological needs (Zimmer-Gembeck et al., 2006). In both of these studies, unlike study 2 and 3 reported here, prior academic achievement was modelled as an outcome.

Of the other studies that have examined the development of engagement, considerable diversity exists among the contexts controlled for or covaried with teaching factors. For example, as with the current findings, in a Canadian study better teacher support predicted attendance at the bivariate level. However, after controlling for a range of individual and family factors better peer support, but not teacher support, predicted improvements in attendance (De Wit et al., 2010). In a structural equation model each of poor academic grades and affiliation with antisocial peers, but not TSRs, predicted dropout (Kaplan et al., 1997). Similarly, Barile (2012) reported that TSRs did not predict gains in mathematics, after controlling for a range of individual, family, and peer factors (i.e., ethnicity, socioeconomic status, peer and parent academic aspirations).

Two recent studies have modelled the contribution of individual, family, and peer factors to academic grades, school behaviour, and psychological engagement much like study 2 and 3 (Chiu et al., 2012; M.-T. Wang & Eccles, 2012). The study of US middle and high school students, that relied upon adult-report measures of teacher support, concluded that better teacher support predicted better school behaviour and psychological engagement (M.-T. Wang & Eccles, 2012). Similarly, in a large ($N = 276,165$; 15 years old) cross-national study both better quality TSRs and teacher support were associated with improved psychological engagement (Chiu et al., 2012). This latter study conceptualised psychological engagement as students' emotional connection to school and peers and their cognitive valuing of school. TSRs was reported to have a stronger association with these engagement outcomes than the teachers' provision of academic support (Chiu et al., 2012). Not considered were other school-based measures of engagement. These studies that measured multiple indicators of engagement, in a similar approach to this thesis, conducted multiple

analyses on these engagement outcomes in recognition of the potential for different facilitators and post-school outcomes.

An emerging trend in these studies is that a student's prior educational experiences, family, peer, and community are collectively more influential in determining students' engagement than teaching-related factors. This is consistent with a report entitled *Teachers Matter* (OECD, 2005). The authors studied teacher policy across 25 countries and concluded teachers were the most important in-school influence on student learning. However, factors external to school and beyond the control of education policy makers influence student learning more than teachers and teaching related factors. The implications for teachers and school practitioners seeking to alter adolescents' engagement will be discussed in subsequent sections of this chapter. Furthermore, the need for engagement research and theory to elaborate upon the likely multiple influences, other than teaching, upon students' engagement over the duration of a school career will be considered.

Notwithstanding this limitation of teaching, it is apparent that when a student and teacher come together in a classroom, at a single point in time in a student's education, the most readily modifiable factor is the teacher and how he or she interacts with the student. School-level factors should be viewed within a broader systems perspective that acknowledges inequality, but also endeavours to address both school and structural effects on the educational experience of children (Teese & Polesel, 2003).

This section has discussed comparable extant literature reporting positive associations between teaching and both school-based indicators and students' subjective report of engagement. The current statistically non-significant multivariate associations between teaching and engagement (Study 2 and 3) can be interpreted as null findings. Whether other

null findings exist, but have remained unpublished is a possibility. This is referred to as the *file drawer problem* (Torgerson, 2006). The net effect is that the likelihood of null associations between teaching and engagement being published in peer-reviewed publications is diminished. Future research in this area should seek to build upon the discussed limitations of teaching with the recognition that so-called null findings, associated with teaching, have important implications when seeking to understand how best to improve students' education.

Summary of Non-Teaching Influences on Engagement

The current results are consistent with other Australian and international research that has documented multiple concurrent relationships between individual, family, peer, and community factors and a range of student engagement outcomes (Chiu et al., 2012; Hemphill, Plenty, et al., 2014; Lamb & Markussen, 2011; Lamb, Walstab, Teese, Vickers, & Rumberger, 2004; G. N. Marks, 2014; Vaughn et al., 2013). There exists however, considerable diversity in the relative contribution of the factors and contexts in which these factors are grouped, to students' engagement. For example, using measures similar to the current analyses, a study of US adolescents reported that improved teacher, parent, and peer support predicted improved classroom behaviour and psychological engagement (M.-T. Wang & Eccles, 2012). Unlike the current analyses other teacher instructional qualities was not investigated. In contrast a longitudinal Australian study that investigated predictors of Year 7 academic grades did not seek subjective perceptions of teacher, parent, or peer support (G. N. Marks, 2014). It was reported that prior academic grades reduced the effect of family and school socioeconomic factors.

The diversity of measures utilised and analyses conducted make direct comparisons between the present studies and the extant literature problematic. Instead this section of the

discussion will identify broad trends rather than seek to specify the dominance of one teaching, individual, family, peer, or community factor. Despite this constraint it is increasingly apparent that prior educational experiences are formative in shaping a momentary snapshot of engagement in high school.

Individual factors. Of the individual factors measured, prior academic grades were a correlate or predictor of all indicators of engagement. This is consistent with existing research that has reported prior academic grades had associations with academic grades (G. N. Marks, 2014), suspension (Hemphill, Plenty, et al., 2014), attendance (Studsrød & Bru, 2012), psychological engagement (Chase et al., 2014), and dropout (Lamb et al., 2004), in a range of multivariate analyses. Finn (1989) was one of the first scholars to present theoretical models that described the cyclical effects of academic failure upon psychological engagement and a range of school-based concerns. His influential participation models described how repeated academic failure is likely to lead to behavioural and emotional withdrawal from school and an increased likelihood of future academic failure. While this cyclical and dynamic influence of academic grades is increasingly supported by empirical studies (Chase et al., 2014; M.-T. Wang & Fredricks, 2013), less evident is the potential for other factors to also have complex dynamic relationships with other facilitators and student engagement outcomes.

Gender was also associated with some indicators of engagement, but not consistently so, unlike academic grades (Study 2 & 3), Like earlier Australian studies, male students were more likely to experience the negative outcomes of suspension or diminished psychological engagement (Hemphill et al., 2006; Lam, Jimerson, et al., 2012). In Australia, boys are also more likely to dropout of school (Lamb, 2011). However, the current dropout results align

with a comprehensive review of dropout that concluded that when other individual and family factors were controlled for, gender was not a significant factor in explaining the reasons for dropout (Rumberger & Lim, 2008). Similarly, gender was not an important consideration in explaining diminished attendance (Vaughn et al., 2013).

Whereas student mental health is an emerging area of interest (Lawrence et al., 2015), current results show that diminished mental health was a correlate of diminished behavioural engagement. Possibly because the measurement of student mental health relies on self-report, few studies have modelled mental health as a facilitator of student engagement. Other studies of adolescents have reported upon poor engagement as a predictor of diminished mental health (Bond et al., 2007; M.-T. Wang & Sheikh-Khalil, 2014). However, much like academic grades, the relationship between mental health and engagement is bidirectional (Suldo et al., 2014). The present results (Study 2) suggest that poor mental health is associated with diminished behavioural engagement at the bivariate level, for boys and girls. Girls reporting poor mental health were also more likely to have reduced emotional engagement. With the inclusion of other factors, poor mental health was associated with diminished behavioural engagement, in the analysis that included boys and girls. The reasons and implications for gender differences in mental health and engagement warrant further examination. It is proposed that males are more likely to be suspended because their overt behaviours are more likely to be interpreted as defiant or dangerous (Skiba et al., 2014). In this regard negative teacher preconceptions of a male student can contribute to diminished engagement and further implicate a role for better TSRs in improving male students' engagement (Roeser et al., 2000).

In summary, it is evident that school-based measures of engagement (including academic grades), and psychological engagement can be grouped as prior educational experiences, that in the long-term shape a students' engagement (Finn, 1989). A limitation to this conclusion is that there is an absence of empirical literature that has captured the accumulation of primary school experiences, including academic grades, suspension, attendance and psychological engagement and considered their impact upon secondary school engagement. This point is important when seeking to explain the development of adolescents' engagement, as in the case in the current research programme. Of the few studies that have sought to do this students with better behavioural engagement (i.e., classroom participation, disruptive behaviours, completion of prescribed work) and academic grades in Grade 4 were more likely to graduate (Finn & Zimmer, 2012). However, this study was limited by the sampling frequency and limited measures of student engagement. Despite this limitation the current influential role of prior educational experiences, at the individual level, strongly support Finn's models of engagement (1989). He described engagement as a developmental process that commences in the early years of schooling.

Family factors. The systematic review (Study 1) synthesised cross-sectional and longitudinal studies that controlled for, or covaried, a range of factors from the, family, peer and community contexts. It was concluded that future investigations into engagement should incorporate these factors. Furthermore, in some instances these factors may be more important than TSRs. Most studies relied upon socioeconomic status (i.e., parent income, occupation, education) as a measure of family context. Consistent with pre-existing literature (Barile et al., 2012; Hemphill et al., 2010; OECD, 2016) adolescents from lower

socioeconomic families were more likely to have diminished engagement, be they school-based measures of engagement or psychological engagement.

For families and students socioeconomic disadvantage is a structural factor that is difficult to overcome (te Riele, 2012). Therefore it is important to identify family practices that can assist to overcome socioeconomic factors associated with diminished student engagement. Study 2 and 3 and several papers from the systematic review sought to identify family practices (i.e., support of education, family management, and emotional support) that can influence students' engagement (i.e., Sharkey et al., 2008; M.-T. Wang & Eccles, 2012; You & Sharkey, 2009). Overall, at the bivariate level better quality parenting practices were associated with improved student engagement. Across the three studies these associations diminished however, when individual, peer and community factors were included in multivariate models For example, better parenting practices were associated with better emotional engagement (Study 2 and 3) and academic engagement (Study 3). In contrast better parenting practices were not associated with behavioural engagement (Study 2) and the school-based outcomes of suspensions, attendance, or dropout (Study 3).

Further, current results demonstrated a positive correlation between student-reported improved parenting and better teaching. This association has been reported to be bi-directional among a sample of US high school students (J. C. Perry et al., 2010). Cognate studies investigating the development of student engagement have proposed that parent and teacher support are complimentary or additive (Sharkey et al., 2008; M.-T. Wang & Eccles, 2012; Wentzel, 1998). These concurrent family and teaching influences are explained by the social development model (Catalano & Hawkins, 1996). The social development model asserts that significant adults in adolescents' lives establish norms and expectations for

behaviours. When these adults model positive expectations, relationships, and behaviours, adolescents are more likely to adopt these positive attributes.

Peer factors. In both the systematic review (Study 1) and Study 3, bivariate associations between peer factors and school-based and psychological indicators of engagement were evident (e.g., De Wit et al., 2010; M.-T. Wang & Eccles, 2012). However, these associations were not as consistent amongst multivariate analyses. For example, diminished attendance was predicted by reduced levels of classmate support (De Wit et al., 2010). Study 3 also reported analyses that found Grade 10 students who affiliated with antisocial peers were more likely to dropout and have diminished psychological engagement. In contrast, a study of Dutch adolescents reported positive bivariate correlations between peer support and each of academic grades and academic engagement. When parent and teacher support were covaried, peer support was no longer a correlate of academic grades or academic engagement (De Bruyn, 2005).

In support of the social development model (Catalano & Hawkins, 1996) the *type* of normative influence provided by peers is an important consideration. Results from Study 3 and elsewhere (Hemphill et al., 2006; M.-T. Wang & Eccles, 2012) indicate that affiliation *with* peers is not a protective factor against outcomes such as suspension, dropout, and reduced psychological engagement if the peers are a negative normative influence. It has been proposed that when a student experiences a negative school outcome, such as suspension, the circumstances for antisocial peer affiliation are increased (Costenbader & Markson, 1998; Quin & Hemphill, 2014). In turn important TSRs and engagement are likely to be diminished.

While not a primary aim of the current research programme, results suggest a positive influence of family and peer support on student engagement (Wentzel, 1998). The US study of 6th graders by Wentzel examined the influence of social support from parents, teachers, and peers on measures of school motivation (i.e., a correlate of engagement) and presented a model of *overall* social support. Overall, adolescents who experience positive role models, be they teachers, parents (or carers), or peers were more likely to be positively engaged at school.

Community factors. The need to distinguish between potential positive and negative normative influences was apparent in a study investigating the influence of community on students' behaviour (i.e., a composite of attendance, suspension, and disruptive behaviours) and academic grades (Hopson, Lee, & Tang, 2014). In this US study, the sample was biased towards students from low-income and African American backgrounds. Those with better community support reported worse behaviour. However community support was not associated with academic grades. In contrast better community *safety* was associated with improved behaviour and academic grades (Hopson et al., 2014). Similarly, exposure to community violence has been reported to predict diminished academic grades and psychological engagement (Borofsky, Kellerman, Baucom, Oliver, & Margolin, 2013). Consistent with these studies, Study 3 reported that at the bivariate level, diminished attachment to community and perceptions of community disorganisation predicted reduced psychological engagement and attendance and higher rates of suspension and dropout. Again, these predictive associations diminished, often to statistically non-significant levels, in the multivariate analyses.

It is thought that prosocial adults in the community can influence the development of positive school behaviours and attitudes (Catalano & Hawkins, 1996). Further work is required to understand the mechanisms underpinning the links between community violence and disorganisation and adverse school outcomes. One hypothesis is that students who are exposed to violence and threats to safety are at risk of developing psychological distress in the form of internalising and externalising disorders, which in turn impact upon school engagement (Borofsky et al., 2013; Janosz, Archambault, Pagani, et al., 2008).

Conclusions. From the preceding discussion it is evident that the non-teaching influences upon a students' engagement are multiple, complex, and interrelated. While it was not the intention of the current research programme to directly test an ecological model, the concurrent family, peer, and community associations with both school-based and psychological measures of engagement are consistent with ecological theories of adolescent development (Bronfenbrenner & Morris, 2006). The complexity of ecological models precludes a conclusion such as: "nothing matters more to the quality of a child's education than the quality of the teacher" (Gillard, 2012). Moreover, from the current research programme it cannot be concluded that individual, family, peer, or community factors are more or less important than teaching. Implications for practice and future research will be elaborated upon in more detail. However, it is recommended that efforts to improve students' engagement should recognise this complexity. A *developmental cascade* approach asserts that multiple permanent and transient factors from the individual, school, family, peer, and community will act to diminish or promote engagement. School communities should recognise that an adolescent' engagement, whether measured via school-based indicators or student-reported psychological engagement, is unlikely to be dramatically altered by a short-

term teaching intervention. Instead, to improve students' engagement it is necessary to intervene in factors from the individual, school, family, peer, and community throughout the duration of a student's academic career.

Summary of the Dimensions of Teaching and Indicators of Engagement

The third and final hypothesis addressed modifiable teaching factors that were thought to be associated with school-based and student-reported engagement. The systematic review (Study 1) extended prior research (Roorda et al., 2011) that showed positive associations between one aspect of teaching, TSRs, and a comprehensive range of school-based and psychological indicators of engagement. The importance of this relational aspect of teaching was also seen in Study 2 that showed that relatedness support had a unique, multivariate, association with emotional engagement. This suggests that a fundamental need for relatedness (Ryan & Deci, 2000) is important for students to like being at school. However, engagement is more than a liking of school. Participation in school and academic progress appears to need more than an emotional and caring relationship.

A study of Norwegian adolescents reported that teachers' academic support (i.e., lesson organisation, explanation of concepts) was more closely associated with different aspects of engagement (i.e., motivation, alienation, intention to dropout, attendance) than the teachers' provision of emotional support (Studsrød & Bru, 2012). From the perspective of self-determination theory, Studsrod and Bru concluded that teaching practices may not be as influential as prior educational experiences. However, teachers were more likely to provide academic or emotional support to at-risk students if they have a close relationship with the student.

The issue of finding a balance between TSRs and the teacher's provision of classroom autonomy has also been explored in view of the classroom being both an academic and social development context (Hafen et al., 2012). On the one hand, if a teacher becomes too caring, or sensitive to a students' social and emotional needs then academic grades may not improve (Dever & Karabenick, 2011). Conversely, too much teacher control of off-task classroom behaviours has been reported to be detrimental to students' engagement (Nie & Lau, 2009). Self-determination theory explains that this balance is important in lieu of the innate human needs about feeling competent, autonomous, and relatedness (Ryan & Deci, 2000). In order to satisfy a need for competence a student should feel that any classwork prescribed is challenging but not so difficult that they feel overwhelmed or threatened. While learning can and does occur with minimal threat, theories of learning such as the zone of proximal development, propose that optimal learning occurs when students are challenged but have expert support from their teacher (Vygotsky, 1980). Should a student be given too much autonomy he/she may miss the learning opportunity.

A recent study of secondary school students' psychological engagement used a mixed-methods approach to elaborate upon these teacher-student dynamics (Cooper, 2014). First, factor analysis was used to arrive at a three-dimensional model of teaching: connective instruction, academic rigour, and lively teaching. Students in the classroom with the highest levels of engagement reported learning "everything" (p. 385) but also described positive relational qualities that their teacher demonstrated. These included respect, humour, and care. Students in another class with moderate levels of engagement described similar positive teacher relational qualities but felt the academic content of their class was too easy (Cooper, 2014). From the qualitative analysis it was apparent that the students were of the view that

good quality teacher instruction is essential for academic learning. Moreover, students enjoyed being in a classroom with a caring and emotionally connected teacher. Thus, it might be expected that instructional dimensions of teaching would be more closely associated with academic grades. This is partially supported by the association between relatedness support and emotional engagement (Study 2). However, the pattern of results from Study 2 suggest that teachers need to strike a balance between emotional support and academic instruction.

For the secondary school teacher who seeks to improve a student's engagement there is further balance between short- and long-term engagement. For example, if a student is displaying disruptive behaviours the obvious requirement for optimal learning is for the behaviour to cease. Consequently, if only the present moment is considered the teaching response would be to instruct the student to stop disrupting the class. A teaching approach of this nature does not consider teacher-student relational qualities that take more time to develop (Pianta et al., 2003). Moreover, this narrow focus on the individual student's disruptive behaviour neglects potential broader influences on the students' engagement at that point in time. It is possible that prior academic grades, poor family practices, or long-established psychological engagement is contributing to the disruptive behaviour. This is because academic grades, psychological engagement, and other school-based concerns are complementary or bidirectional (Roeser et al., 2000). Finn's (1989) frustration-esteem model describes how a cycle of diminished engagement is exacerbated by "deficient school practices" (p. 122), which includes teaching. A disruptive behaviour, in a single class, is an accumulation of prior developmental experiences. The skill of the teacher is to adapt his or her teaching techniques to the present moment. This may mean prioritising the development

of a positive TSR or instruction of academic content before intervening to cease a disruptive behaviour.

The need to view education as a long-term process together with the importance of multiple complementary student outcomes, underscores concerns with high-stakes testing regimens, such as NAPLAN (Thompson, 2013). Multiple studies show that when a teacher utilises high quality instructional techniques (i.e., feedback, assessment, questioning, explanation, etc.) students' academic grades will be enhanced (Hattie, 2009). However, this thesis asserts that there is a need to consider a student's engagement over the full duration of their schooling. Reliance on intensive instructional techniques alone, to the detriment of a more affective, caring, relational teaching, may compromise the students' need for relatedness in the classroom (Ryan & Deci, 2000). Moreover, adolescents report that when their school responds to signs of diminished engagement with a controlling, rather than supportive response, then the likelihood of parent support is reduced (Quin & Hemphill, 2014). The net result for the adolescent, at-risk of further low engagement, is a loss of positive, emotionally supportive adult role models.

Taken together, firm conclusions about the impact of specific dimensions of teaching on engagement is not possible, my data do suggest that there is a need to balance the delivery of instructional regimes with students' need for positive relationships. No one dimension of teaching was correlated with all dimensions of engagement (Study 2). While the systematic review synthesised several studies that reported teaching instructional factors were more influential in predicting engagement than TSRs. This is consistent with self-determination theory that asserts engagement is enhanced when the fundamental psychological needs of competence, autonomy and relatedness are met (Ryan & Deci, 2000). Further, empirical

studies of what constitutes effective interactions between students and teachers (Hafen et al., 2015), systematic reviews that identify multiple teaching factors that contribute to improved student outcomes (Kyriakides et al., 2013; Study 1), and professional standards for teachers (Australian Institute for Teaching and School Leadership, 2011) all point to the complexity of teaching.

Implications for Theoretical Models of Student Engagement

Several important implications for theory emanate from the current programme of work. First, the current research identified multiple individual, school, family, peer, and community facilitators of student engagement. Consequently, developmental models of engagement should incorporate multiple factors within these contexts, over the duration of a student's academic career. Second, the contribution of facilitators to student engagement differed with the indicators of engagement outcome measured. This finding extends the notion that engagement is multi-dimensional (Fredricks et al., 2004) and points to a need to concurrently consider school-based engagement concerns and students' subjective perspectives. Third, better student engagement resulted when students' perceived that their teachers formed positive emotional relationships and were skilled at explaining academic content, within the classroom. Future models of "teaching" should seek to elaborate upon the apparent need to balance these teaching practices.

Developmental contexts. The current research programme relied upon theoretical perspectives that positioned individual, school, family, and peer contexts as facilitators of engagement (Skinner et al., 2008). Drawing on Bronfenbrenner's ecological models (2006), Eccles and Roeser (2011) described how context of school is influenced by broader contexts. They subsequently portrayed multiple instances of interactions between these contexts, both

in the short and long-term. While educational psychology research, such as the current research programme, increasingly recognises the multiple contextual influences on student outcomes, there is an absence of a satisfactory theoretical framework, specific to the development of student engagement. Future explanatory frameworks should elaborate upon the bi-directional pathways between factors and contexts.

Any theoretical model of student engagement should elaborate not only upon the development of engagement but interventions to improve engagement. Current results and theory position teaching as the proximal facilitator of engagement. However, the influence of factors beyond the influence of the teacher indicate that in-class teaching modifications may not necessarily translate into improved engagement. Consequently theoretical models of engagement should seek to explain the potential for short-term (i.e., single class or semester-long changes to teaching) and long-term (> 5 years) effects of teaching modifications.

Student and school perspectives. Improvements to improve student engagement will remain limited until engagement can be adequately defined. It is only by concurrently studying student and school perspectives, as this thesis did, can the more fundamental question of- What precisely is engagement?- be answered (Eccles, 2016). The contextual factors that were associated with school-based and student-reported psychological engagement outcomes displayed considerable, but not uniform, overlap. This suggests that engagement is a multi-dimensional construct and should be conceptualised as such. Engagement research will benefit when the scientific disciplines of education and psychology become more unified under a broad ecological framework (Eccles, 2016).

The current analyses positioned psychological engagement and school-based engagement measures as outcomes of external facilitators. Elsewhere it has been reported that

suspension can diminish TSRs and psychological engagement (Quin & Hemphill, 2014). The potential for school-based outcomes to influence psychological engagement and vice versa, needs to be integrated into a theory that encapsulates student engagement as a process (Rumberger & Rotermund, 2012).

Teaching. Each of the three studies conducted for this thesis reaffirmed that teaching is associated with student engagement. Study 2 in this thesis drew upon self-determination theory and reached the conclusion that students' engagement will be enhanced when teachers support students' need for autonomy, competence, and relatedness. Theory surrounding what constitutes good or effective teaching remains contested (Grossman & McDonald, 2008). There persists a need to clarify what "teaching" is and under what circumstances teaching can improve students' engagement. The need for a long-term, ecologically informed approach to the education of adolescents could be interpreted as an additional burden and skill set required for teachers. However, through the pursuit of positive TSRs, within existing classroom management and instructional techniques, a student's pre-existing skills, attitudes, dispositions or overall engagement should become progressively apparent. As a consequence future teacher-student interactions, that support a student's need for competence, autonomy, and relatedness, can be facilitated (Ryan & Deci, 2000).

Stage environment fit theory (Eccles et al., 1993) most closely aligns with these imperatives. The theory asserts that "teachers should provide the optimal level of structure for children's current levels of maturity while providing a sufficiently challenging environment to pull the children along a developmental path toward higher levels of cognitive and social maturity" (Eccles et al., 1993, p. 92). It is this junction between a

student's current abilities and teacher's ability to provide the optimal academic and emotional support that warrants further theoretical and empirical investigation.

Future Research

Future empirical research that seeks to elaborate upon this thesis should employ methods and analyses that encompass i) ecological models of adolescent development; ii) longitudinal (i.e., greater than 10 years); and iii) subjective student and school-based perspectives of engagement.

Ecological models. Future investigations into the development of engagement, particularly psychological engagement, can draw upon studies of adolescent delinquency that have better established protocols for the study of multiple contexts (Fine, Mahler, Steinberg, Frick, & Cauffman, 2016; Hawkins, Catalano, & Miller, 1992; Hemphill, Heerde, et al., 2014). Indeed, the third study of this thesis utilised data that originated from the *Communities That Care* youth survey that was originally designed to understand the development of adolescent antisocial outcomes (Arthur et al., 2002). Within Australia, the *Communities That Care* youth survey has been utilised to examine suspension (Hemphill, Plenty, et al., 2014), academic grades and dropout (Bond et al., 2007; Kelly et al., 2015) and now psychological engagement (Study 3).The study of developmental psychopathology has also incorporated ecological influences which can inform our interpretation (Masten et al., 2005). The commonality between these two fields of research is that these are concerned with negative outcomes. By seeking students' perspectives the current research programme invited the potential for positive outcomes rather than the absence of negative outcomes.

Developmental psychopathology also acknowledges "dual failure" such as poor parenting and child behaviour problems interacting to result in negative school outcomes

(Masten & Cicchetti, 2010). While the current results reported limitations to the influence of teaching, future research should seek to elaborate upon the potential for long-term teaching modifications to overcome disadvantages associated with dual failure. Research that seeks to examine the development of engagement, exclusively through the narrow lens of school context will fail to adequately explain how to improve engagement.

Moreover, it is the contention of this thesis that there exists a need for future empirical research to examine models of teaching within an ecological model. As reported there exists multiple contextual influences upon a student's engagement but equally, ecological models acknowledge the potential for these contexts to influence teaching.

Longitudinal research. Further to the need to integrate ecological theories of development with education outcomes there is a need to take a developmental perspective. As the systematic review (Study 1) uncovered there remains a preponderance of cross-sectional studies of engagement. While the third study was longitudinal it was increasingly apparent that longitudinal studies of engagement need to recognise that adolescents in high school have typically experienced more than six years of formal education. Longitudinal studies of engagement have identified distinct trajectories of engagement (Janosz, Archambault, Morizot, et al., 2008; Wylie & Hodgen, 2012). However, there exists a need to understand the influence of prior school, family, peer, and community experiences over time.

Moreover, future studies that track students for more than 10 years should seek to disentangle directional relationships between facilitators (i.e., individual, school, family, peer, community) and outcomes (i.e., engagement). As has been acknowledged bi-directional relationships are likely to exist (Chase et al., 2014). To more adequately understand these relationships more regular and long-term data collection is essential. Currently only

attendance and academic grades are recorded with any regularity, over time. The survey of students in Study 2 took less than 20 minutes. This suggests it should be possible to measure psychological engagement and students' perceptions of their important contexts frequently (i.e., every 3 – 6 months) with minimal interruption to other essential tasks in the classroom.

School and student perspectives. The present correlations between the multiple indicators of student engagement suggest that they share considerable overlap. Future research should seek to link the impact of school interventions, such as suspension or academic failure, upon students' psychological engagement. From a research perspective a school suspension or failure of a subject is an objective and discrete indicator of engagement at a point in time in a school career. These negative events, in addition to dropout, are typically after an accumulation of school experiences.

By tracking students' psychological perspectives, over time, it should be possible to detect more subtle changes in a student's engagement. Moreover, by concurrently studying school-based measures of engagement with psychological engagement, the impact of prior school-imposed sanctions (i.e., suspension) or academic grades upon psychological engagement can be disentangled. If, as is currently proposed, adolescent engagement is heavily influenced by the accumulation of prior school experiences then theories of engagement should seek to explain how these experiences interact, much like cascade theory (Masten & Cicchetti, 2010).

Practice and Policy Implications of the Research Programme

The preceding theoretical and research implications section identified a need for an ecological account of adolescents' engagement. By necessity an ecological approach is complex and precludes a rigid or simplified approach to improving students' engagement.

Unfortunately one of the reasons for the research to practice divide is that teachers have been reported to prefer research and theory to be more simple or straightforward (Gore & Gitlin, 2004). Despite the research to practice divide it is essential that educational psychology research, of this nature, has a practical application that informs teachers, education policy makers, and others working with adolescents. This is because the engagement outcomes of school have long-term implications in adulthood (Abbott-Chapman et al., 2013; Belfield & Levin, 2007).

Limits to teaching. When seeking to improve students' engagement it is necessary to acknowledge the limitations of teaching. Despite their best efforts, over the course of a semester or even a full school year, the classroom teacher may not be able to substantially alter the trajectory or type of a students' engagement. As will be further discussed, the implication is not that teachers don't matter and therefore shouldn't endeavour to alter students' engagement. Instead, it is posited that any discourse that frames teachers as supermen (or women) (Darling-Hammond, 2013) is a potential distraction from other more distal family, peer, and community factors that should be addressed (Mockler, 2014). For example, a recent Australian report that drew upon attendance, academic grades, dropout, and student-reported engagement data concluded that addressing inequity within schooling systems and the broader community would greatly enhance the engagement of disadvantaged students (Lamb, Jackson, Walstab, & Huo, 2015).

Moreover, research into teacher self-efficacy has reported that when teachers feel they are unable to engage students sufficiently they are more likely to be stressed and burnt out from teaching (H. Wang, Hall, & Rahimi, 2015). For teachers it may be more efficacious to focus upon improving classroom management practices and TSRs (Zee & Koomen, 2016).

The implication of this latter point is that efforts that seek to improve teaching should rely upon measures of teaching in preference to measures of student outcomes.

Students' perspectives. The current research measured teaching via student-report. The positive bivariate associations between student-reported teaching and student engagement indicate that improvements to teaching can contribute to better engagement. However, there exists a reluctance to rely upon students' perspective of teaching (Polikoff, 2015). While uncertainty exists around what constitutes good teaching (McDonald et al., 2013) there is potential for teachers to inform their teaching practice by seeking student feedback on their experience of their teachers. Teachers that have utilised feedback on their teaching, via standardised observation methods, have reported that the ability to self-regulate their teaching has improved their teaching (Pianta et al., 2012). This should in turn enhance students' engagement in the long-term.

For teachers this active seeking of students' perspectives or the interaction between student and teacher is central to the construction of a positive TSR (Sabol & Pianta, 2012). An ecological perspective of teaching acknowledges that within the classroom the relationship between student and teacher is proximal. *Connective instruction* describes how the teacher and his or her practice is essential in connecting the student to the classroom content and school (Martin & Dowson, 2009). Thus, while each student will have a diverse range of pre-existing risk and protective factors at the individual, school, family, peer, and community levels that will influence engagement, it is the teacher that is primarily responsible for integrating these factors and creating a good fit between the student and school (Eccles et al., 1993). The expectation is not that teachers and students will change all of these factors. Rather it is contended that there is a need for teachers to be aware of these

factors when seeking to improve engagement and that the foundation for this is a positive

relationship between the student and teacher.

Finally, teachers and students are also likely to benefit from psychologists and other

professional support (i.e., social workers, speech pathologists, occupational therapists) that

have expertise in assessment and intervention in areas such as mental illness, social and

emotional learning, learning disabilities, and peer, family, and community issues. School-

wide positive behaviour programmes recognise the need for a multi-layered approach to

education (T. J. Lewis, Jones, Horner, & Sugai, 2010). If, as is recommended, a more

comprehensive approach is taken to the education of adolescents, then teachers should be

given appropriate levels of support so that they can in turn support their students.

Strengths and Limitations

The overall research programme has several strengths and limitations, beyond those

discussed in the individual research papers. Foremost is the concurrent consideration of

traditional school-based measures of student engagement (i.e., academic grades, attendance,

suspension, and dropout) and students' subjective report of engagement. To date, much of the

literature on engagement has noted potential similarities and difference (Finn & Zimmer,

2012) without substantive empirical testing of these possibilities (M.-T. Wang & Degol,

2014). This approach has enabled a picture to emerge that the facilitators of these indicators

of engagement do share considerable overlap. For example, it was possible to conclude that

positive TSRs are associated with both school-based and students' psychological

engagement. The converse was also apparent. The facilitators of engagement were not

uniformly associated with the indicators of engagement measured. It is only by concurrently

measuring and analysing these facilitators and engagement outcomes can more nuanced and informed perspectives of student engagement be advanced.

Moreover, it was stated in the introduction that the consideration of psychological engagement, as reported by students, needs to be given greater priority than is currently the case. This thesis has demonstrated that it is not necessary to solely measure either students' perspectives or traditional school-based perspectives of engagement and thereby implicitly or explicitly provide greater precedence to one or the other. Perhaps more importantly, the increasingly acknowledged bidirectional and cyclical relationships between indicators of engagement suggest that there is a need to balance psychological engagement with academic grades, attendance, suspension, and dropout.

By necessity the measurement of psychological engagement relies upon self-report (Appleton et al., 2006). In this case adolescent self-report. Almost instinctively concerns with reliability and validity of adolescent self-report are viewed as a research limitation (Kuncel et al., 2005; Teye & Peaslee, 2015). These concerns should be noted as a limitation of the current research programme. The counter to this is that in a national (Australian Curriculum Assessment and Reporting Authority, 2015a), and to a lesser degree international (OECD, 2014a) assessment regimen that is largely silent on students' perspectives, it is a present strength that students' subjective psychological engagement were successfully integrated. Research of this nature can begin to redress the imbalance between students' perspectives of their education and the hierarchical system in which they 'receive' an education (Mockler & Groundwater-Smith, 2015). Despite this, it acknowledged that future investigations into school-based indicators of engagement should, when possible, seek to validate student-report with official school records.

Similar to concerns surrounding the validity and reliability of self-report of engagement, limitations surrounding adolescent report of school, family, peer, and community are acknowledged (Arthur et al., 2002). As consistently stated throughout this thesis there is a need for ecological theory informed studies of the development of engagement. Thus, the findings of associations between these ecological contexts and engagement are a strength and contribution to the engagement literature. Unfortunately it is difficult to compare and contrast these findings with pre-existing literature due to the lack of consistency in the conceptualisation, measurement, and subsequent statistical analysis of these facilitators of engagement. Until the study of engagement advances to the point that the outcome (i.e., academic grades, suspension, psychological engagement, etc.) is consistently conceptualised it will remain difficult to draw specific conclusions about the influence, or otherwise of contextual risk and protective factors.

Finally, the current findings apply to adolescents in mainstream secondary or high schools. It is not possible to make inferences about primary school-aged children. This is pertinent due to the developmental differences between children and adolescents. But also, differences between primary and secondary school curriculum and teaching structures exist. These child-adolescent developmental and primary-secondary school differences further underline the limitation of short-term longitudinal research. A major contribution of stage environment fit is that it seeks to explain the potential for a poor fit between school and adolescent when he or she transitions into secondary school (Eccles et al., 1993). Research of the current nature is unable to determine if the apparent engagement decline in adolescence (Janosz, Archambault, Morizot, et al., 2008) is due to changes in the individual student, school, family, peer, or community. The extension of this limitation is that it is not possible

to ascertain sequential ordering of facilitators or indicators of engagement. At present it is only possible to determine that prior engagement and in particular academic grades is a strong predictor of future engagement.

Conclusions

The broad aim of this thesis was to understand how teachers can improve students' engagement. The use of the word engagement was intentionally inclusive. It encompassed traditional school-based engagement indicators (i.e., academic grades, attendance, suspension, and dropout) and students' subjective psychological engagement.

Results showed that improvements to teaching were associated with improved adolescent students' engagement. However, by studying teaching within an ecological model of adolescent development it was evident that the influence of teaching related factors was less than is popularly advanced. Overall, a student's prior educational experiences, including academic grades, most strongly predicted an adolescents' engagement in school. Moreover, in some instances risk and protective factors from a students' family, peer, and community contexts were better predictors of engagement than teaching related factors.

The thesis discussed the need for teachers and people working with adolescents to take account of the duration of a student's education career. The reported short-term (i.e., less than 2 years) bivariate associations between teaching related factors and engagement were consistent with ecological theories that assert that teachers and teaching is proximal to adolescents' engagement. However, it was argued that it is unrealistic to expect that short-term modifications to teaching can overcome engagement patterns that have been established over more than seven years of formal education and in excess of 12 years of exposure to risk and protective factors from the family, peer, and community. The resultant implication was

not that secondary school teachers do not matter. Instead, it was recommended that via high quality TSRs, teachers should seek to understand existing and long-standing risk and protective factors for engagement. Via these short-term teacher-student interactions teachers can seek to adapt their instructional and management techniques, to the level of engagement of the individual student.

The need for a long-term and comprehensive ecological consideration of adolescents' engagement extends to future research investigations. Teachers, students, and broader society are likely to benefit from longitudinal research that reflects the diversity of experiences that children and adolescents accumulate over not only their education career, but also their development into early adulthood. This research should seek to understand how individual student, school, family, peer, and community factors interact and accumulate to facilitate the diversity of students' engagement experiences.

Finally, what constitutes better or good teaching is unclear. More certain was the recognition that adolescents are infrequently given the opportunity to have their teaching experiences heard. This thesis prioritised adolescent self-report and it was apparent that good TSRs and better student-reported and school-based engagement concerns are associated. Furthermore, students were more likely to be positively engaged when they felt that their teacher was not only interested and had time for them on a personal level, but also combined these factors with high quality instruction and management in the classroom.

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Appendix A: Proof of Publication or Submission to Journal

Study 1

Longitudinal and Contextual Associations Between Teacher–Student Relationships and Student Engagement: A Systematic Review

Daniel Quin
Australian Catholic University

This systematic review examined multiple indicators of adolescent students' engagement in school, and the indicators' associations with teacher–student relationships (TSRs). Seven psychology, education, and social sciences databases were systematically searched. From this search, 46 published studies (13 longitudinal) were included for detailed analysis. Cross-sectional studies showed better quality TSRs were associated with enhanced engagement in school. These associations with TSRs were demonstrated among multiple indicators of student engagement (i.e., psychological engagement, academic grades, school attendance, disruptive behaviors, suspension, and dropout). Similar associations were found in longitudinal studies. Longitudinal and cross-sectional associations remained when covariates from the individual, family, school, and teacher contexts known to influence student engagement were controlled for. TSRs were shown to have an important but not exclusive role in their association with a comprehensive range of indicators of student engagement.

KEYWORDS: student engagement, student disengagement, teacher–student relationships, systematic review, adolescents

To date, the study of student engagement has tended to evolve along two parallel paths (Wang & Degol, 2014). According to one path focused on *dis*engagement, student engagement is viewed as an intervention or "antidote" for students showing overt signs of low engagement, such as disruptive behaviors, reduced attendance, academic failure, and dropout (Finn, 1989; Marks, 2000; Rumberger & Rotermund, 2012). The second, more recent path focuses on both overt and psychological engagement. It encompasses as an overarching educational ethos that it is desirable for all students to be psychologically engaged, active participants in school, who also value and enjoy the experiences of learning at school (Eccles et al., 1993; Lawson & Lawson, 2013). Increasingly, it is acknowledged that students who are engaged at school are more likely to experience academic

Study 2

Lawrence Saha 📎   📁 Inbox - ACU   6 March 2017 at 2:53 pm   LS
RE: Manuscript SPOE-D-16-00062
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Dear Daniel,

Your manuscript is in the queue for processing, and you should be hearing from us shortly.

With best regards,

Larry Saha

Lawrence J. Saha
Editor, *Social Psychology of Education: An International Journal*
Professor, Research School of Social Sciences
College of Arts and Social Sciences
Australian National University
Canberra, ACT 0200, Australia
61-(02)-6125-2132
61-(02)-6125-2222

From: Daniel Quin [mailto:daniel.quin@myacu.edu.au]
Sent: Friday, 3 March 2017 2:30 PM
To: Lawrence Saha <lawrence.saha@anu.edu.au>
Subject: Manuscript SPOE-D-16-00062

Dear Professor Saha,

I am writing to you as editor-in-chief of Social Psychology of Education.

In April of last year I made a submission entitled: Associations between Teaching Quality and Secondary Students' Behavioral, Emotional, and Cognitive Engagement in School. I would be grateful if you could please update me on the progress of the review.

Regards,
Daniel

Study 3

Journal of School Psychology   📁 Research   2 March 2017 at 12:41 pm
Submission Confirmation for 16-CA081716-156R2
To: Daniel Quin,
Reply-To: Journal of School Psychology

Ms. Ref. No.: 16-CA081716-156R2
Title: Teacher Support Within an Ecological Model of Adolescent Development: Predictors of Engagement
Journal of School Psychology

Dear Mr. Daniel Quin,

Your revised manuscript was received for reconsideration for publication in Journal of School Psychology.

You may check the status of your manuscript by logging onto the Elsevier Editorial System as an Author at
https://ees.elsevier.com/jsp/.

Your username is: daniel.quin@myacu.edu.au
If you need to retrieve password details, please go to:
http://ees.elsevier.com/jsp/automail_query.asp

Kind regards,

Elsevier Editorial System
Journal of School Psychology

For further assistance, please visit our customer support site at http://help.elsevier.com/app/answers/list/p/7923. Here you can search for solutions on a range of topics, find answers to frequently asked questions and learn more about EES via interactive tutorials. You will also find our 24/7 support contact details should you need any further assistance from one of our customer support representatives.

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Appendix B: Human Research Ethics Committee Approval Form – Study 2

ACU
AUSTRALIAN CATHOLIC UNIVERSITY

Human Research Ethics Committee
Committee Approval Form

Principal Investigator/Supervisor: Professor Sheryl Hemphill

Co-Investigators: Dr Jess Heerde

Student Researcher: : Mr Daniel Quin

Ethics approval has been granted for the following project:
Adolescents' perceptions of school context and school disengagement: A longitudinal study of Australian students.

for the period: 01/02/2014 - 18/09/2015

Human Research Ethics Committee (HREC) Register Number: 2013 320V

Special Condition/s of Approval
Prior to commencement of your research, the following permissions are required to be submitted to the ACU HREC:
Department of Education and Early Childhood Development and Catholic Education Office Melbourne

The following standard conditions as stipulated in the *National Statement on Ethical Conduct in Research Involving Humans* (2007) apply:

(i)   that Principal Investigators / Supervisors provide, on the form supplied by the Human Research Ethics Committee, annual reports on matters such as:
 • security of records
 • compliance with approved consent procedures and documentation
 • compliance with special conditions, and

(ii)   that researchers report to the HREC immediately any matter that might affect the ethical acceptability of the protocol, such as:
 • proposed changes to the protocol
 • unforeseen circumstances or events
 • adverse effects on participants

The HREC will conduct an audit each year of all projects deemed to be of more than low risk. There will also be random audits of a sample of projects considered to be of negligible risk and low risk on all campuses each year.

Within one month of the conclusion of the project, researchers are required to complete a *Final Report Form* and submit it to the local Research Services Officer.

If the project continues for more than one year, researchers are required to complete an *Annual Progress Report Form* and submit it to the local Research Services Officer within one month of the anniversary date of the ethics approval.

Signed: ...... *K. Pashley.* ......   Date: .... 09/05/2014.....
(Research Services Officer, McAuley Campus)

Appendix C: Department of Education and Early Childhood Education Permission to

Conduct Research in Victorian Government Schools – Study 2

**Department of Education and
Early Childhood Development**

Strategy and Review Group

2 Treasury Place
East Melbourne, Victoria 3002
Telephone: +61 3 9637 2000
DX 210083
GPO Box 4367
Melbourne, Victoria 3001

2014_002281

Mr Daniel Quin
Faculty of Health Sciences
School of Psychology
Australian Catholic University
Locked Bag 4115
FITZROY MDC 3065

Dear Mr Quin

Thank you for your application of 11 February 2014 in which you request permission to conduct research in Victorian government schools and/or early childhood settings titled *Secondary school students' behaviours and experiences of school.*

I am pleased to advise that on the basis of the information you have provided your research proposal is approved in principle subject to the conditions detailed below.

1. The research is conducted in accordance with the final documentation you provided to the Department of Education and Early Childhood Development.

2. Separate approval for the research needs to be sought from school principals and/or centre directors. This is to be supported by the DEECD approved documentation and, if applicable, the letter of approval from a relevant and formally constituted Human Research Ethics Committee.

3. The project is commenced within 12 months of this approval letter and any extensions or variations to your study, including those requested by an ethics committee must be submitted to the Department of Education and Early Childhood Development for its consideration before you proceed.

4. As a matter of courtesy, you advise the relevant Regional Director of the schools or governing body of the early childhood settings that you intend to approach. An outline of your research and a copy of this letter should be provided to the Regional Director or governing body.

5. You acknowledge the support of the Department of Education and Early Childhood Development in any publications arising from the research.

6. The Research Agreement conditions, which include the reporting requirements at the conclusion of your study, are upheld. A reminder will be sent for reports not submitted by the study's indicative completion date.

Victoria
State Government

7.   If DEECD has commissioned you to undertake this research, the responsible Branch/Division will need to approve any material you provide for publication on the Department's Research Register.

I wish you well with your research study. Should you have further enquiries on this matter, please contact Youla Michaels, Project Support Officer, Research, Evaluation and Analytics Branch, by telephone on (03) 9637 2707 or by email at michaels.youla.y@edumail.vic.gov.au.

Yours sincerely

Joyce Cleary
Director
Research, Evaluation and Analytics Branch

22/04/2014

enc

Appendix D: Student and Parent Information Letters – Study 2

INFORMATION LETTER FOR STUDENTS

PROJECT TITLE: Secondary school students' behaviours and experiences of school
PRINCIPAL INVESTIGATOR: Professor Sheryl Hemphill
STUDENT RESEARCHER: Mr. Daniel Quin
STUDENT'S DEGREE: Master of Psychology (Ed. & Dev.) / PhD
CO-INVESTIGATOR: Dr. Jess Heerde

Dear Student,

You are invited to participate in the research project described below.

What is the project about?
The research project investigates students' behaviour and experiences of school.

Who is responsible for the project?
This project is being conducted by Daniel Quin and will be part of his psychology studies at Australian Catholic University. Professor Sheryl Hemphill and Dr. Jess Heerde supervise him.

Are there any risks associated with participating in this project?
All of your answers will remain confidential. The researchers will not be discussing your answers with your parents, family or people at school. It is not expected you will find the questions upsetting, however if you feel you need to talk to someone after completing the survey there are people available to assist you. These people are Dr. Katie Bunch at the Melbourne Psychology and Counselling Clinic, phone: 9953 3006 or Kids HelpLine, phone: 1800 55 1800.

What will you be asked to do?
You will be asked to complete a questionnaire of no more than 45 minutes in duration, in class. During this time you will complete a series of questions about your behaviours and attitudes towards school and your teachers. You will be asked to complete the same series of questions approximately 12 months later. Should you change schools before this second survey, your parents/guardians will be contacted to make arrangements for the completion of the questionnaire.
If your parent/guardian does not provide consent or you do not assent to participating you will complete regular school work or homework at the time other students are completing the questionnaire.

How long will the project take?
The questionnaire will take no more than 45 minutes. The questionnaire will be completed twice, 12 months apart.

What are the benefits of the research project?
There are no direct benefits from participating in the project. However, previous research indicates that students' appreciate the opportunity to provide their opinion of school. The general benefits are that changes may be made to improve school for future students.

Can I withdraw from the study?
Participation in this study is completely voluntary. You are not required to participate and can withdraw from the study at any time without needing to give a reason.

Will anyone else know the results of the project?
Your individual results will not be identified in any future presentation of the results; only group results will be presented in any reports or publications arising from this research. It is intended the group results from this study will be written in scientific journals and presented to schools and teachers. The responses you provide will be kept in a locked filing cabinet only accessible by the researchers listed at the start of this letter.

Will I be able to find out the results of the project?
A summary of the group results will be provided to your school to distribute. Additionally, the summary will available upon request from the researchers listed.

Who do I contact if I have questions about the project?

Mr. Daniel Quin	Prof Sheryl Hemphill
Phone: 03 9953 3123	Phone: 03 9953 3123
Email: ddquin002@myacu.edu.au	sheryl.hemphill@acu.edu.au

What if I have a complaint or any concerns?
The study has been reviewed by the Human Research Ethics Committee at Australian Catholic University (approval number 2013 320V). If you have any complaints or concerns about the conduct of the project, you may write to the Chair of the Human Research Ethics Committee care of the Office of the Deputy Vice Chancellor (Research).

Manager, Ethics
c/o Office of the Deputy Vice Chancellor (Research)
Australian Catholic University
North Sydney Campus
PO Box 968
NORTH SYDNEY, NSW 2059
Ph: 02 9739 2519; Fax: 02 9739 2870
Email: res.ethics@acu.edu.au

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

I want to participate! How do I say yes?
Please sign the assent form, place it in the envelope and return the envelope to the drop box at school.

Yours sincerely,

Mr. Daniel Quin	Professor Sheryl Hemphill	Dr. Jess Heerde
Student Researcher	Chief Investigator	Co-investigator

PARENT / GUARDIAN INFORMATION LETTER

TITLE OF PROJECT: Secondary school students' behaviours and experiences of school
PRINCIPAL INVESTIGATOR (or SUPERVISOR): Professor Sheryl Hemphill
STUDENT RESEARCHER: Mr. Daniel Quin
STUDENT'S DEGREE: Master of Psychology (Ed. & Dev.) / PhD
CO-INVESTIGATOR: Dr Jess Heerde

Dear Parent / Guardian,

You and your child are invited to participate in the research project described below.

What is the project about?
The research project investigates students' behaviour and experiences of school. By seeking students' views it is anticipated that a greater understanding of what contributes to students participating in and completing school will be achieved.

Who is undertaking the project?
This project is being conducted by Daniel Quin and will form the basis for the degree of a Master of Psychology (Educational and Developmental)/ Doctor of Philosophy at Australian Catholic University under the supervision of Professor Sheryl Hemphill and Dr. Jess Heerde.

Are there any risks associated with participating in this project?
There are no foreseeable risks associated with participating in this project. Individual responses to questions will remain confidential at all times and only the researcher will have access to this information. It is not expected your child will find the questions upsetting, however if he or she feels the need to talk to someone after completing the survey there are people available to assist. These people are Dr. Katie Bunch at the Melbourne Psychology and Counselling Clinic, phone: 9953 3006 or Kids HelpLine, phone: 1800 55 1800.

What will you and your child be asked to do?
Your child will be asked to complete a questionnaire of no more than 45 minutes in duration, in class, at a time agreed to by the school. During this time your child will complete a series of questions about themselves, their behaviours, and attitudes towards school and teachers.
Your child will be asked to complete the same series of questions approximately 12 months later. Should your child have changed schools before this second survey, you will be contacted to make arrangements for the completion of the questionnaire.
You will be asked to complete a single question regarding the parent's level of education. This question is on the enclosed consent form.
If you do not provide consent or your child does not assent to participating your child will complete regular school work or homework at the time other students are completing the questionnaire.

How much time will the project take?
The student questionnaire will take no more than 45 minutes. The questionnaire will be completed twice, 12 months apart.
The parent question will take approximately 1 – 2min and is completed only one time.

What are the benefits of the research project?
There are no direct benefits to students participating in the project. However, previous research indicates that students' appreciate the opportunity to provide their perspective of their school experiences. The general benefits

of participating in the project are a greater understanding of what contributes to students wanting to attend and complete school will be made. This may improve the school experiences of future students.

Can I withdraw from the study?
Participation in this study is completely voluntary. You and your child are not under any obligation to participate. If you agree, your child will be asked to provide the consent to participate in the study on the day of the survey. However, he/she can withdraw from the study at any time without needing to give a reason.

Will anyone else know the results of the project?
Individual participants or their results will not be identified in any future presentation of the results; only group results will be presented in any report. It is intended the results of the group data only will be published in scientific journals and presented to schools and teachers. The responses your child provides will be kept in a secure location for the research purposes described.

Will I be able to find out the results of the project?
A summary of the group results will be provided to the participating schools to distribute should you or your child wish to request the results. Additionally, the summary will available upon request from the researchers listed.

Who do I contact if I have questions about the project?
Mr. Daniel Quin   Prof Sheryl Hemphill
Phone: 03 9953 3123   Phone: 03 9953 3123
Email: ddquin002@myacu.edu.au   sheryl.hemphill@acu.edu.au

What if I have a complaint or any concerns?
The study has been reviewed by the Human Research Ethics Committee at Australian Catholic University (approval number 2013 320V). If you have any complaints or concerns about the conduct of the project, you may write to the Chair of the Human Research Ethics Committee care of the Office of the Deputy Vice Chancellor (Research).

Manager, Ethics
c/o Office of the Deputy Vice Chancellor (Research)
Australian Catholic University
North Sydney Campus
PO Box 968
NORTH SYDNEY, NSW 2059
Ph: 02 9739 2519
Fax: 02 9739 2870
Email: res.ethics@acu.edu.au

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

My child and I may participate! How do I say yes?
If you give permission please sign both copies of the consent form and ask your child to return the "researcher copy" to the school in the sealed envelope, along with the child consent form.

Yours sincerely,

Appendix E: Parent Consent Form, and Student Assent Form – Study 2

✚ACU
AUSTRALIAN CATHOLIC UNIVERSITY

PARENT/GUARDIAN CONSENT FORM

TITLE OF PROJECT: Secondary school students' behaviours and experiences of school
PRINCIPAL INVESTIGATOR (or SUPERVISOR): Professor Sheryl Hemphill
STUDENT RESEARCHER: Mr. Daniel Quin
CO-INVESTIGATOR: Dr Jess Heerde

I .... (*the parent/guardian*) have read (*or, where appropriate,* have had read to me) and understood the information provided in the Letter to the Participants. Any questions I have asked have been answered to my satisfaction. I agree that my child, nominated below, may participate in this activity, of up to 45 minutes duration involving the completion of a questionnaire about him/herself – his/her attitudes and behaviours toward school, on two separate occasions, once in 2014 and again in 2015. I realise that I can withdraw my consent at any time without adverse consequences and without needing to provide a reason. I agree that research data collected for the study may be published or may be provided to other researchers in a form that does not identify my child or myself in any way.

I **do / do not** (please circle) give permission for my child to participate in the study.

I **do / do not** (please circle) agree to participate in the study by completing the question below.

NAME OF PARENT/GUARDIAN: ....

SIGNATURE: ....DATE: ....

NAME OF CHILD:

SIGNATURE OF PRINCIPAL INVESTIGATOR: ....DATE: ....

SIGNATURE OF STUDENT RESEARCHER: ....DATE: ....

The research project requests your consent to survey your child twice, 12 months apart. Should your child change schools in that time, the researcher requests your permission to contact you directly so that arrangements can be made for your child to complete the questionnaire a second time. If you agree, please provide a contact email and/ or phone number for yourself and up to two other adults who know your child.

Email: _____ Phone: _____

Alternative contact 1 name: _____

Email: _____ Phone: _____

Alternative contact 2 name: _____

Email: _____ Phone: _____

As part of the demographic (age, gender, ethnicity) information collected from your child, his or her parent's highest level of education is requested. Please circle the highest education level either parent has achieved.

Completed year 10 or below	Completed year 11	Completed secondary school
TAFE, associate diploma or equivalent	Undergraduate qualification (eg. Bachelor degree)	Postgraduate qualification (eg. PG Diploma or Masters degree)

STUDENT ASSENT FORM

TITLE OF PROJECT: Secondary school students' behaviours and experiences of school
PRINCIPAL INVESTIGATOR (or SUPERVISOR): Professor Sheryl Hemphill
STUDENT RESEARCHER: Mr. Daniel Quin
CO-INVESTIGATOR: Dr Jess Heerde

I _____ (*the participant aged under 18 years*) understand what this research project is designed to explore. What I will be asked to do has been explained to me. I agree to take part in this activity this year and again next year. Each time it will take up to 45 minutes duration involving the completion of a confidential questionnaire about myself – my attitudes and behaviours toward school, realising that I can withdraw at any time without having to give a reason for my decision.

SIGNATURE .... DATE: ....

NAME OF STUDENT: ....

SIGNATURE OF PRINCIPAL INVESTIGATOR :...DATE: ....

SIGNATURE OF STUDENT RESEARCHER: ....DATE: ....

Please return both this form and the parent consent form to the research drop box at school in the sealed envelope. Thank you.

Appendix F: Memorandum of Understanding IYDS – Study 3

Memorandum of Understanding 16/04/2015

between

Daniel Quin (PhD candidate), Sheryl Hemphill (PhD Supervisor and lead CI on ARC Discovery Project), Jess Heerde (PhD co-supervisor), John Toumbourou (CI on ARC Discovery Project), Lyndal Bond (CI on ARC Discovery Project), and Rachel Smith (ARC DP Project Manager)

1. Preamble

The purpose of this document is to facilitate Mr Daniel Quin's PhD candidature (International Youth Development Study research undertaken in 2015). One paper of Mr Quin's thesis will analyse prospective data from the International Youth Development Study (IYDS). This document covers matters of project scope and authorship of publications.

2. Focus of the PhD research project

The paper (number 133) approved by the IYDS team will analyse IYDS data to investigate school versus student effects on student engagement and disengagement. Refinement of the paper will occur through PhD supervisors and IYDS collaborators.

3. Authorship and acknowledgements

Authorship will be guided by the IYDS policy on paper writing which is consistent with the accepted principles and good practice (e.g., Vancouver Protocol). It is expected that the student will be the first author on publication(s) that arise from work relating to his PhD thesis. It is expected that the student's supervisors and IYDS Chief Investigators will be invited to participate in paper preparation as co-authors on publication(s) resulting from the thesis. This will be balanced against the needs of the student who is completing a PhD by Publication and therefore needs to demonstrate substantial contributions to the writing of published papers.

4. Degree of interaction with the broader Project Work

The experience of doctoral candidature will be enriched through the development of collaborations and mentorships outside the direct scope of the project. Benefits evident for Mr Quin will be:
- Develop skills (beyond secondary data analysis) in project design, methodology and data collection
- Access to national and international collaborations, including high level statistical mentorship
- Enhanced research output through authorship on publications, in addition to his PhD work
- Enhancement of the ongoing longitudinal project.

Mr Quin will contribute no more than 90 days over the course of his candidature to the broader project. This will largely involve external work (based at ACU) and two, 2-day site visits to the Centre for Adolescent Health/Murdoch Childrens Research Institute. The visits will include staff and student

consultation, understanding of IYDS design and protocol, and data analysis support for IYDS papers led by Prof Sheryl Hemphill. The student will present results of data analyses during at least one IYDS analysis meeting. The level of the student's involvement will be negotiated with the student, ACU PhD supervisors and IYDS investigators. Consistent with authorship principles, the student will be provided with authorship for work conducted. When contributing to the broader activities of the project, the student will report to the IYDS Project Manager and Prof Hemphill (for data analyses). Students are required to keep an accurate diary listing contributions. Where analysis meetings do not clash with Mr Quin's class attendance, he will attend (in person or by phone) analysis meetings during the 90 day project contribution phase to provide an additional valuable opportunity for professional development during the analysis and write up phase of his thesis.

Signed _____ Dated _____

Daniel Quin (PhD Candidate)

Signed _____ Dated _____

Sheryl Hemphill (PhD Principal Supervisor & IYDS Investigator)

Signed _____ Dated _____

Jess Heerde (PhD Co-Supervisor)

Signed _____ Dated _____

John Toumbourou (IYDS Investigator)

Signed _____ Dated _____

Lyndal Bond (IYDS Investigator)

Signed _____ Dated _____

Rachel Smith (IYDS Project Manager