Socioeconomic status, academic self-concept and Indigenous status : Moderation effects on secondary school non-completion across policy contexts

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Socioeconomic Status, Academic Self-Concept and Indigenous Status

Moderation Effects on Secondary School Non-Completion across Policy Contexts

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Candidate's Certification

This thesis contains no material that has been extracted in whole or in part from a thesis that I have 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.

All research procedures reported in the thesis received the approval of the relevant Ethics/Safety Committees (where required).

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Abstract

Substantial inequities exist in the secondary school completion rates between Indigenous and non-Indigenous students internationally, and in Australia. This thesis aims to understand the interplay between key sociodemographic factors, including academic self-concept, socioeconomic status and Indigenous status, in predicting secondary school completion. While academic self-concept has been demonstrated to predict academic achievement, less evidence exists for academic self-concept in predicting school completion. Little research uses an intersectional approach to explore how sociodemographic contexts moderate this relation, particularly in Indigenous and low socioeconomic groups. This thesis addresses this lack of research using a systematic review (Study 1) and analyses of two large-scale representative and longitudinal datasets (Studies 2 & 3). Study 1 identified significant moderation effects between academic self-concept and a variety of educational outcomes. Moderation effects between academic self-concept, Indigenous status and socioeconomic status on school non-completion were pursued in Study 2, through multilinear regression analysis (n = 9378). Study 2 found the link between socioeconomic status and school non-completion to be significantly moderated by Indigenous status, controlling for academic achievement. Increased socioeconomic status for Indigenous students was not correlated with reduced school non-completion. Study 3 replicated the significant interaction effect of Indigenous status and socioeconomic status on school non-completion (n = 8759). Sampling occurred after increases to the compulsory school leaving age across Australia. Findings infer this policy reform improved school completion for Indigenous, low socioeconomic and low academic self-concept students. This thesis improves knowledge of educational inequity relating to school completion for Indigenous students and will assist in addressing that inequity.

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In a general sense, doing a PhD with young children is a ridiculous endeavour. Doing it in the midst of a global pandemic is even sillier. I am not sure what I was thinking, but it turns out that fortune does favour the bold. As they say, “what does not kill you makes you stronger”, which is encouraging as I am still alive. Thank you to the Newlands Primary School, which to be clear during the final year of this thesis was the factor determining completion against a farcical backdrop of adversity. I also thank Dr Janene Carey for her excellent editorial help, in formatting, copyediting and proofreading of this document, as outlined in Standards D and E of the *Australian Standards for Editing Practice*.

Dedication

To the spectacular Indigenous youth of Australia. May your future be bright.

Table of Contents

List of Figures

List of Tables

Chapter 1: Introduction

> "Life chances and opportunities remain circumscribed by gender, ethnicity, social origin, institutional structures, and the social and economic resources inherent in the connections young people have to their families and wider social context."
>
> (Schoon & Eccles, 2014, p. 6)

Study hard, believe in yourself, finish school, get a good job, and live a happy and prosperous life. Platitudes such as this reflect a deeply held belief that graduating from secondary school is en route to the so-called "good life" (Dietrich et al., 2012; Guenther, 2021; Lamb & Markussen, 2011; Piketty, 2014). In 1989, the United Nations' Convention on the Rights of the Child upheld the equal opportunity of all children to available and accessible secondary education, as a right to which all young people are entitled (United Nations, 1989). Our social pursuit of obtaining a secondary school qualification is understandable, given the benefits afforded to those who complete secondary school successfully. With a secondary qualification or equivalent, a young person in Western society is afforded many desirable opportunities, including social mobility, and financial and social attainment through enhanced workforce possibilities (Dietrich et al., 2012; Lamb & Markussen, 2011). However, obtaining a secondary qualification remains elusive for some.

Young people who leave school before successful completion frequently come from specific social and ethnic backgrounds (Jackson, 2013; Lamb & Markussen, 2011). Internationally school graduation rates for Indigenous adolescents are much lower than those of their non-Indigenous peers (Adelman et al., 2018). Indigenous adolescents are more likely than non-Indigenous adolescents to have a low

socioeconomic background, while adolescents from low socioeconomic backgrounds have lower school graduation rates than those from high socioeconomic backgrounds (Devenish et al., 2017). But perhaps, these educational gaps are not the failure of Indigenous young people to secure a secondary qualification, but rather a failure of education systems and their corresponding policy frameworks to make secondary qualifications available and equally accessible to the full diversity of young people.

Research over recent decades indicates that a young person's successful completion of secondary school depends on a complex interplay of factors (Archambault et al., 2017; Freeman & Simonsen, 2015; Lamb, 2011; Rumberger, 2012; Rumberger & Rotermund, 2012; Samuel & Burger, 2020; Zaff et al., 2017) including at the psychological, sociodemographic, and policy levels. School completion and dropout research has focused heavily on the role of malleable individual-level psychological factors on successful school completion, such as intrinsic motivation (Abar et al., 2012; Dæhlen, 2017; Tenenbaum et al., 2007), student engagement (Abbot-Chapman et al., 2014; Archambault et al, 2009; Fall & Roberts, 2012; Stearns et al., 2007; Wang & Eccles, 2012; Wang & Fredricks, 2014; Xing & Gordon, 2021), locus of control (Borman & Overman, 2004; Fall & Roberts, 2012) and youth expectations for academic attainment (Eccles & Wigfield, 2002; Marcenaro-Gutierrez & Lopez-Agudo, 2017; Ou & Reynolds, 2008; Schoon & Ng-Knight, 2017; Stein & Hussong, 2007).

Closely related to expectations for academic attainment, academic self-concept is broadly defined as a person's academic self-perceptions developed through their experience and understanding of their environment (Marsh & Craven, 2006). Academic self-concept has been identified as predicting a variety of educational outcomes (Marsh & O'Mara, 2008; Wu et al., 2021) and is a key variable in this thesis. In contrast to the emphasis placed on such individual-level factors in school completion and dropout research, the social and demographic contexts in which young people live and learn are often markedly less emphasised (Ciarrochi et al., 2016; Freeman & Simonsen, 2015; Rumberger & Rotermund, 2012). It is of value that the role of socioeconomic status on school completion has garnered some recognition, in terms of social justice and educational equity. However, as I will assert in this thesis, embracing a more encompassing approach toward successful school completion is

warranted, most notably for those young people of diverse backgrounds. Accordingly, using three interrelated studies, I will explore the interplay between academic self-concept, sociodemographic, and policy factors on secondary school completion rates. More specifically, I will articulate the role of sociodemographic factors (as moderators) on the impact of academic self-concept on successful school completion in current literature (Study 1). I will also explore – and demonstrate – how Indigenous status influences (or moderates) the relation between socioeconomic status and school completion (Study 2). At the policy level, I will explore – and demonstrate – the difference before and after of national policy changes on school completion rates for Indigenous young people, including policy alignment with Australian targets for 'closing the gap' between Indigenous and non-Indigenous secondary school completion rates (Study 3). The latter empirical analyses are based on data from the Longitudinal Survey of Australian Youth (LSAY). (See Chapter 3 for an overview of the three studies).

My approach is derived from social theories which maintain that stubborn gaps in educational outcomes between different groups of people are due to the replication of power imbalances across social classes by educational systems. An important theory considered in this thesis is the Sen-Bourdieu framework (Hart, 2013; Molla & Pham, 2019; Pham, 2019), a theory derived from Bourdieu´s theory of capital (Bourdieu, 2006) and Sen´s capability approach in regard to human development and social justice (Sen, 2000). This theory provides the theoretical underpinning to understand the factors contributing to gaps in educational outcomes for diverse populations and is discussed in more detail in Chapter 2.

The findings of this thesis will enhance our understanding of the complex interplay and influence of specific sociodemographic factors in a young person's successful school completion. A holistic understanding is vital to effectively address the current pervasive problem of secondary school non-completion and reduce the concentration of educational inequity for Indigenous and low socioeconomic background student populations. I analyse the impact of key psychological-, sociodemographic-, and policy-level influences on the relation between socioeconomic status and high school completion. More specifically, I test the interplay and influence of academic self-

concept (psychological-level), Indigenous status and socioeconomic status (sociodemographic-level), and increases in compulsory school leaving age (policy-level) on school completion.

This thesis has eight chapters and details of each chapter are outlined below.

Chapter 1 provides an introduction and overview of the thesis, indicating how the research is positioned regarding understandings of secondary school completion and educational inequity.

Chapter 2 synthesises the literature examining the links between predictors of successful school completion and dropout, focusing on academic self-concept and sociodemographic factors such as socioeconomic status and Indigenous status. In doing so, I demonstrate that research on the interactions between prominent variables in successful school completion is lacking in regard to the influence of sociodemographic variables. The basis for the present investigation and its role in extending recent advances in knowledge regarding school completion and educational equity is articulated.

Chapter 3 provides the overarching objective and research questions, guiding the three studies of this thesis. The specific aims of each study, their research questions, hypotheses and rationales, are highlighted.

Chapter 4 demonstrates the methodology employed across the three studies including the study design, measures used, and dataset details where relevant.

Chapter 5 outlines the results of Study 1, the systematic review. It identifies moderators and mediators of the relation between academic self-concept and successful school completion related variables. The results of Study 1 informed the direction of Studies 2 and 3.

Chapter 6 outlines the results of Studies 2 and 3. Study 2 is a quantitative analysis using a large and representative Australian dataset to test the interaction effects of socioeconomic status, Indigenous status, and academic self-concept on secondary school completion. Study 3 involves a similar analysis on a second large and representative Australian dataset collected after increases to the compulsory school

leaving age were implemented across Australia. By comparing the findings of the two analyses, the impact of the policy intervention on school completion rates and contribution to the Australian Government policy objective to 'close the gap' in school completion for Indigenous young people can be observed.

Chapter 7 provides a discussion of the findings from the three studies, including the implications of the findings, for further research and for policy makers, toward greater educational equity in high school completion for diverse groups of young people.

Chapter 8, the final chapter of the thesis, provides an overview of the research findings and highlights conclusions drawn from the three studies in regard to the research aims.

This thesis contributes valuable knowledge to the limited understanding of how certain contextual factors influence whether a young person completes secondary school, focusing on the interplay between the factors of Indigenous status, socioeconomic status, and academic self-concept. By examining policy level factors, the thesis also provides an assessment of the effectiveness of a large-scale policy implementation across Australia for diverse student groups. This knowledge is vital to upholding the right of all young people (particularly those in Australia) to available and accessible secondary education.

Chapter 2:
Literature Review

> "Quality education is a fundamental human right of every child and access should not depend on where you were born or the colour of your skin."
>
> —Senator Nova Peris (2021), Medal of the Order of Australia

Secondary school graduation is increasingly important in determining how wealth, health and happiness are distributed across society (Lamb & Markussen, 2011). Although secondary school graduation may provide pathways to employment and social mobility, not graduating from secondary school is associated with a wide array of negative consequences. The social patterns of school dropout across countries indicates that for many young people the benefits associated with successful school completion are not easy to access (Lamb & Markussen, 2011). Of particular concern are the large inequities that exist in school completion for Indigenous young people (Jackson, 2013; Lamb & Markussen, 2011). Indigenous adolescents have consistently poorer educational outcomes than non-Indigenous adolescents internationally (Adelman et al., 2018; Garrett et al., 2014; Johnston-Goodstar & VeLure Roholt, 2017; Lees, 2016; Manojan, 2018; Singar & Zainuddin, 2017; United Nations Department of Economic and Social Affairs (UNDESA), 2020) and experience significantly lower rates of school completion than their non-Indigenous peers (UNDESA, 2020). However, the mechanisms by wch these educational inequities occur are not well understood.

Given that academic self-concept has been shown to be an important predictor of both academic performance (Marsh & Craven, 2006; Marsh & O´Mara, 2008) and student engagement (Bakadorova & Raufelder, 2017; Raufelder et al., 2015), exploring this prominent psychological construct for Indigenous populations would seem like a good

place to start when seeking to address inequities. Little evidence exists, however, for academic self-concept as a predictor of school completion, particularly for diverse populations. Does positive academic self-concept predict school completion for Indigenous and non-Indigenous people alike? To answer this question satisfactorily requires looking beyond Indigenous status, as a failure to do so can result in a deficit discourse about Indigenous people (Fogarty et al., 2018; Walter & Anderson, 2016; Walter & Suina, 2019). Deficit discourse refers to narratives that represent people or groups in terms of a perceived deficiency and attribute the responsibility for problems with the affected individuals or communities while overlooking their larger socioeconomic contexts (Fogarty et al., 2018). Given that young Indigenous people are more often than not impacted by low socioeconomic status (Biddle, 2014b), it is important to explore what role this key variable may play in the relation between academic self-concept and ensuing educational outcomes. Central questions to emerge, therefore, are:

- 'Does positive academic self-concept predict school completion to the same extent for those from low as well as high socioeconomic backgrounds?' and
- 'What is the impact of socioeconomic status on Indigenous youth compared to non-Indigenous youth when it comes to finishing secondary school?'

With these questions in mind, this chapter explores the literature to examine links between predictors of successful school completion, focusing on academic self-concept and sociodemographic factors such as socioeconomic status and Indigenous status. This chapter contends that conceptualisations of secondary school completion and non-completion have been oriented around Western epistemologies based on individual characteristics (such as academic achievement, academic self-concept, student engagement) that downplay contextual factors. An overview of the theoretical basis upon which these contentions are made is also provided. Failure to identify the influence of key contextual variables results in an overemphasis on academic self-concept. An overemphasis on individual characteristics, such as academic self-concept, effectively blames young people for their poor educational outcomes with little consideration for how the broader educational system may have failed them.

This chapter reviews the current literature and establishes the basis for the present investigation. In the first section, the importance of successful school completion for young people is outlined. Indigenous education is then highlighted as an international concern, particularly in terms of low school completion rates. The next section highlights research on the enablers and barriers for school completion, focusing on academic self-concept, socioeconomic status and other sociodemographic predictors under the framework of Boudon´s (1974) Primary and Secondary Mechanism Distinction, and quantitative 'intersectionality' (Else-Quest & Hyde, 2016a; 2016b). The enablers and barriers section also addresses the concept of Indigenous 'disadvantage' and social theories explaining the mechanism underpinning differences in educational outcomes between Indigenous and non-Indigenous adolescents. Finally, policy-level influences are addressed; specifically, research findings pertaining to how increases to the compulsory school leaving age have impacted school completion. All of this points to a series of questions that remain unanswered within the current literature, which this research seeks to address (see Chapter 3 for more details).

2.1 School completion on the path to life accomplishments

An adolescent's successful completion of secondary school is a determinant of their subsequent life accomplishments (Dietrich et al., 2012). Secondary school graduation is commonly seen as the minimum level of education needed for young people to successfully participate in work and further study (Lamb & Markussen, 2011). While secondary school graduation is seen as opening pathways to employment, higher education and training, and social mobility, failure to complete can have grave consequences (Lamb & Huo, 2017; Lamb & Markussen, 2011). In this research, the focus is predominantly on non-completion of secondary school (i.e., when a young person does not finish final year of secondary school). Reference is also made to school dropout, which is slightly different but closely related. A dropout is a person who no longer attends school and does not go on to gain upper secondary school qualification (Lamb & Markussen, 2011).

Increasingly, young people are graduating from secondary school and staying in education longer to secure employment (Piketty, 2014). Although more young people

are graduating than ever before, those without a secondary education are being left further behind (Goldin & Katz, 2010). Across member countries of the Organization for Economic Cooperation and Development (OECD), secondary school graduation increased by six percentage points on average from 2005 to 2017. However, 15% of 25- to 35-year-olds did not successfully complete upper secondary education in 2018 (OECD, 2019). The negative consequences of dropping out are worsening as employers are demanding a more highly educated workforce (Lamb et al., 2015; Rumberger, 2011).

Not obtaining a secondary qualification is likely to negatively influence a young person´s future educational attainment and career prospects (Rumberger, 2011). Failure to complete secondary school, and increasingly failure to complete higher education, have disadvantages that have grown over time (Bowen et al., 2009). In comparison to secondary school graduates, early leavers have a higher rate of unemployment and reduced incomes (Rumberger, 2011). With greater social service dependency and lower tax contributions than their graduated peers (Lansford et al., 2016), the financial cost to society of those who drop out is enormous. For example, it's estimated that the almost 38,000 young Australians who dropped out in 2014 and will never finish secondary school will cost taxpayers over $315 million per year (Lamb & Huo, 2017). For Indigenous Australians specifically, the potential benefits from resolving access issues to employment and educational opportunities are substantial. The gains from addressing these issues will benefit government budgets through increased revenues and reduced expenditure (Deloitte Access Economics, 2014). As an example, if Indigenous Australian circumstances were to match that of the Australian average, then by 2031, Australian governments would receive a net gain of $11.9 billion due to increased revenues from a larger tax base and reduced expenditure from lower health and social security costs.

In addition, there is a strong association between dropout and negative health outcomes (Muennig, 2007), with early leavers exhibiting higher rates of depression (Rumberger, 2011), illicit substance use (Lansford et al., 2016) and ultimately earlier mortality (Molla et al., 2004) than their graduating peers. Early leavers also exhibit more criminal behaviour and spend more time incarcerated (Lansford et al., 2016; Rumberger, 2011).

Given these dire consequences of not completing secondary school, it is highly concerning that obtaining a secondary school qualification remains elusive for so many. Inequality of education is persistent across all nations (Lamb, 2011). In all countries, the social patterns of dropout suggest the advantages and opportunities associated with successful completion for 'non-traditional' users, such as Indigenous youth and youth from low socioeconomic background, are difficult to access (Lamb & Markussen, 2011). In comparing research from OECD countries, Lamb (2011) asserts that similarities exist in the profile characteristics of those who complete school and in those who do not. Features of family background (e.g., socioeconomic status), demographic factors (e.g., ethnicity) and individual attributes (e.g., self-concept) were identified as important factors. While greater numbers are graduating than ever before, it is of particular concern that substantial inequalities in educational attainment exist for Indigenous youth (Jackson, 2013), who are also commonly impacted by low socioeconomic backgrounds among other disadvantageous contextual factors.

2.2 Indigenous school non-completion is an international concern

Reducing educational inequity for Indigenous young people is increasingly an international issue. Substantial differences in the educational outcomes of Indigenous youth exist in comparison with their non-Indigenous peers (Calver, 2015; Chain et al., 2017). The world over, Indigenous adolescents experience vastly lower rates of school completion than their non-Indigenous peers (UNDESA, 2020) and have consistently poorer educational outcomes than non-Indigenous adolescents within their own country (Adelman et al., 2018; Garrett et al., 2014; Johnston-Goodstar & VeLure Roholt, 2017; Lees, 2016; Manojan, 2018; Singar & Zainuddin, 2017; UNDESA, 2020, United Nations, 2017). In the United States, the difference in academic achievement outcomes for Native American students compared with other American students has widened as academic achievement has increased in the general student population. Fischer and Stoddard (2013) report a gap in raw achievement (actual grades) of about 60 to 70% of a standard deviation in both math and reading for Native American students, and that the gap widens with age, based on an analysis of the National Assessment for Educational Progress, a large nationally representative math and reading example that

samples students in 4th, 8th and 12th grade across the United States. Statistics from Canada indicate a similar trend. For example, Calver (2015) reports gaps in raw achievement similar to that of the US, which are translated into gaps in secondary school completion. Canadian Indigenous secondary school completion rates are about 72% compared to 88% for non-Indigenous students. Calver asserted this gap translated into lower participation rates for Canadian Indigenous students at university. Researchers from Australia and New Zealand have reported similar results. Song et al. (2014), in investigating their own respective Indigenous student populations in their analysis of the PISA results from Australia and New Zealand, found significant achievement gaps also existed.

The UN Indigenous Peoples (UNDESA, 2020) have identified enduring educational gaps for Indigenous people as a major international concern. Indigenous groups share similar barriers to educational access with many ethnic minority groups, particularly in multi-nation states, across many countries of the world (Kymlicka, 2009). For this reason, research on inequity in educational outcomes for Indigenous young people is an international necessity. While this research is oriented toward Australia, it is likely to be of relevance to issues of Indigenous educational inequity, and in addition, ethnic minority inequity, internationally.

Disparities in high school completion and other educational outcomes are particularly prevalent for the Indigenous Australian population (Craven et al., 2016; Parker et al., 2015; Song et al., 2014). Historic trends in Year 12 completion for both Indigenous and non-Indigenous Australians demonstrate a long running upward trend in Year 12 retention from Year 10 to Year 12 according to the Australian Bureau of Statistics (2013). This upward trend has been more pronounced for Indigenous students (see Figure 2.1).

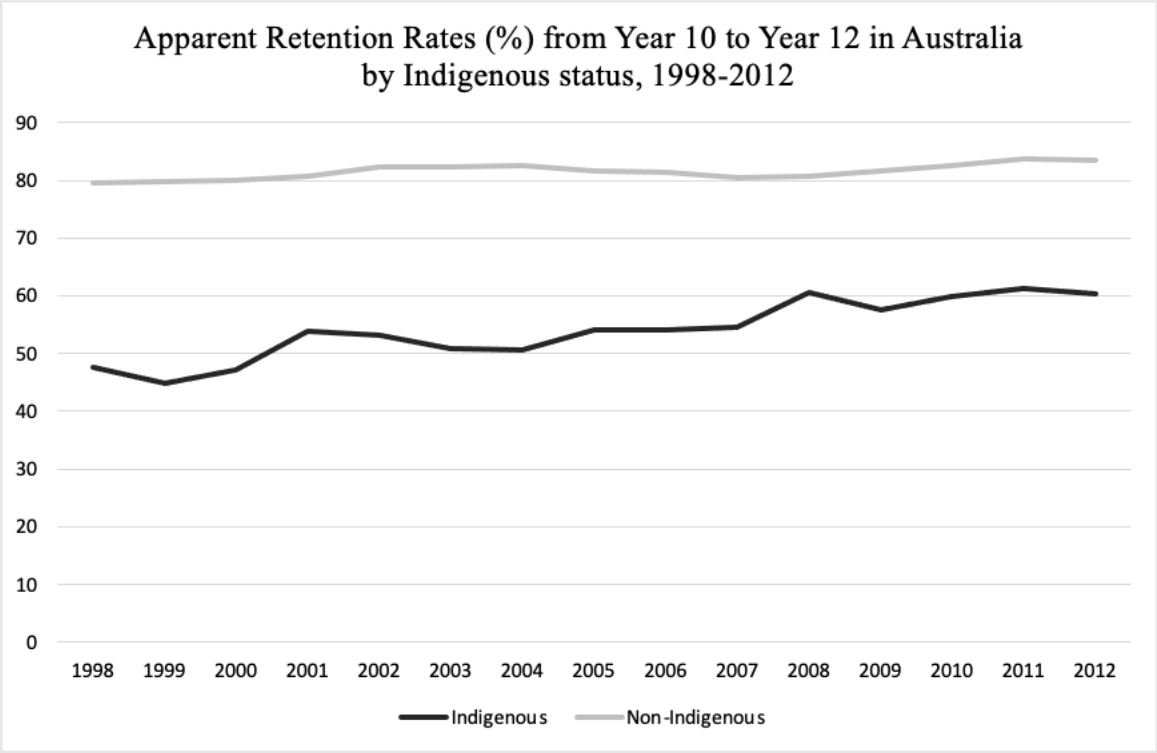


Figure 2.1: Apparent Retention Rates (%) from Year 10 to Year 12 in Australia by Indigenous status, 1998-2012 (Australian Bureau of Statistics, 2013 cat. 4221.0)

In Australia, the national bipartisan policy, 'Closing the Gap in Indigenous Disadvantage', developed in 2008, is the current policy approach for addressing inequalities in Indigenous education, health and wellbeing outcomes. Five of the eight policy targets focus on educational attendance, participation, achievement and attainment (Australian Government, 2020). A key target was to halve the gap for Indigenous Australians in Year 12 attainment or equivalent by 2020. Closing the secondary school completion gap is a goal of the Australian government due to the relation between school completion and access to full-time, secure and high-skilled occupations (Australian Government, 2020; Lamb, 2011). In 2008, only 45% of Indigenous youth graduated from secondary school compared to 85% of non-Indigenous students, indicating a 40 percentage-point gap. The latest 'Closing the Gap' report has shown an improvement in rates of secondary school completion for Indigenous students to 66% for 2018-2019, with the gap diminishing to 25 percentage-points (Australian Government, 2020). Notably, this statistic is based on lag indicators (that is, the proportion of 20- to 24-year-olds who have completed secondary school) not on lead indicators (benchmarks for completion) that could be better estimated via

longitudinal data which follows students through secondary school. Using longitudinal data would also allow research to examine mechanisms that may assist in explaining this gap.

While Australian Indigenous people have rich and enduring cultures and traditions, the strengths of Indigenous adolescents are evidently not being oriented toward school participation. In what manner has Australia´s education system not worked with Indigenous Australians to capitalise on their strengths and talents to promote better school engagement and completion? Internationally, Indigenous young people have higher rates of dropout than non-Indigenous adolescents (Adelman et al., 2018; Garrett et al., 2014; Johnston-Goodstar & VeLure Robolt, 2017; Lees, 2016; Manojan, 2018; Singar & Zainuddin, 2017; UNDESA, 2020). A "significant and sizeable Indigenous effect" in predicting the entry of young people to university has been demonstrated by Parker and colleagues (2021, p. 394), and it is attributed to non-academic achievement related mechanisms, such as Indigenous social capital (Walter, 2015), as outlined in more detail later in this chapter. In part, this 'Indigenous effect' is a result of family, school and community environments of Indigenous adolescents differing from that of the majority adolescent populations (Guenther & Osborne, 2018). Indigenous youth, particularly those from rural and remote locations, commonly have different worldviews to their non-Indigenous peers. Guenther and Osborne (2018, p. 58) assert that Indigenous "ways of being (ontologies), valuing (axiologies), believing (cosmologies) and knowing (epistemologies) are starkly different from the philosophical assumptions embedded in school systems". Walter and Suina (2019) articulate this differing world perspective as the 'Indigenous lifeworld', the dual intersubjectivities of first world dispossessed Indigenous peoples.

With respect to the research aims and informed by Boudon´s (1974) Primary and Secondary mechanism distinction (outlined in more detail later in this chapter), I consider the size of the school completion gaps for Indigenous students compared to their non-Indigenous peers with similar levels of academic ability. This thesis questions whether Indigenous young people are disadvantaged in terms of secondary school completion for equally achieving adolescents, and whether this varies with socioeconomic status. The role of academic self-concept is also explored. A

quantitative intersectional approach proposed by Else-Quest and Hyde (2016a, 2016b) is used, where the interaction between different forms of minority or marginalised status are considered. This approach also helps safeguard against deficit conclusions.

2.3 Enablers and barriers of school completion, but for whom?

Current research has indicated that a young person´s successful completion of secondary school depends on a complex interplay of factors which enable or hinder school completion (Archambault et al., 2017; Gubbels et al. 2019; Lamb, 2011; Rumberger, 2012; Rumberger & Rotermund, 2012; Samuel & Burger, 2020; Zaff et al., 2017). Individual-level factors such as student cognitive and behavioural factors, self-beliefs and expectations are embedded within the broader contexts of a young person´s home, schooling and community environments, which sit within the broader educational policy and institutional arrangements of the prevailing society in which young people live (Bronfenbrenner, 1979; Lamb, 2011).

Over the last decade, more than a thousand studies have investigated what precipitates adolescents to successfully complete high school or leave school early. Many research methods have been employed, including statistical modelling approaches applied to large datasets designed to identify the contribution of specific factors. Individual-level cognitive or achievement related factors have been the main focus of such research. Concern about inequalities in educational outcomes has focused on inequalities in academic performance in many countries (Jackson, 2013). More recently, individual-level non-cognitive or non-achievement related factors have gained increased interest. One such factor that has been demonstrated to be important in determining educational outcomes is academic self-concept.

2.3.1 Academic self-concept

Self-concept is about how a person assesses themself in terms of their behaviour, abilities and characteristics. Academic self-concept refers to how well an individual perceives they can learn, and includes their feelings of confidence, ability, and competence (Hau & Marsh, 2015; Van Zanden et al., 2015). A student´s academic self-concept can vary across academic disciplines (Marsh et al., 1988) and is influenced by

past academic performance (Marsh & Craven, 2006). Students with high academic self-concept are those who feel they can do well in their schoolwork.

Similar and overlapping constructs exist in relation to academic self-concept and are relevant to this research. For example, academic self-efficacy is a person´s beliefs about their ability to perform a behaviour successfully, within the context of academic learning (Bandura et al., 2001). Academic self-esteem is the sum of an individual´s thoughts and feelings about themselves academically (Fleming & Watts, 1980; Rentzsch et al., 2015). In addition, expectancy beliefs are how confident an individual is about succeeding at a task in the future (Wigfield, 1994) and are of interest as they relate to a young person´s expectations of graduating secondary school or leaving school early. A component of academic self-concept is social comparison (Parker et al., 2019b). Social comparison theory asserts that in making a subjective evaluation of their own capabilities, students compare themselves to others, and that this becomes the basis for their individual academic self-concept. As such, the abilities of surrounding students become a benchmark, or frame-of-reference, by which students form their academic self-concepts. As a result, it is possible that students with the same academic abilities could have different academic self-concepts depending on their frames-of-references (Möller & Marsh, 2013). The internal / external frame-of-reference model (Marsh, 1986) indicates that academic self-concept is shaped by internal comparisons; for example, where a student compares their performance in mathematics to their performance in English, or by external (or social) comparisons with others. The role of social comparisons or external standards and contingencies in shaping self-beliefs aligns with Deci and Ryan´s (1995) construct of contingent self-esteem.

An important aspect of positive academic self-concept is the impact of those beliefs on young people´s actions. A young person´s positive academic self-concept is a predictor of their academic performance (Davies & Brember, 1999; Hansford & Hattie, 1982; Marsh & Craven, 2006; Marsh & O´Mara, 2008; Marsh & Yeung, 1997) and has been shown to partially explain, or mediate, the relation between a student´s academic achievement and their educational outcomes (Marsh & Craven, 2006; Marsh & O'Mara, 2008; Seaton et al., 2014). Positive academic self-concept also predicts a student´s positive behavioural and emotional engagement at school (Bakadorova & Raufelder,

2017; Raufelder et al., 2015), a precursor to successful school completion (Fredricks et al., 2004), whereas a student´s disengagement may induce school dropout (Fall & Roberts, 2012; Finn, 1989; Henry et al., 2012). The relation between positive academic self-concept and the following educational outcomes have been demonstrated: coursework selection (Marsh & Craven, 2006; Marsh & Yeung, 1997), future academic choices (Marsh & Yeung, 1997), university entry (Parker et al., 2012), and educational attainment levels (Guay et al., 2004). Positive academic self-concept encourages students to have positive academic perspectives and behaviours, such as persistence at academic tasks, making positive academic choices, having educational aspirations and achieving academically (Craven & Marsh, 2008).

Given the role of academic self-concept in promoting positive educational outcomes, it seems feasible that students likely to drop out would benefit from targeted efforts to increase their academic self-concept, to improve their academic perspectives and behaviours and encourage successful school completion. But would increasing academic self-concept of Indigenous adolescents enhance their likelihood of school completion to the same extent as for non-Indigenous adolescents? While some have demonstrated that differences in academic self-concept between Australia´s Indigenous and non-Indigenous students have more similarities than differences (e.g., McInerney, 2003; McInerney & King, 2013), Yeung and colleagues (2013) indicated that non-Indigenous Australian students scored higher in a variety of domain-specific academic self-concept measures than Indigenous Australian students. Bodkin-Andrews, Denson and Bansel (2013) highlighted the tendency for academic self-concept related factors to have weaker associations with educational outcomes for Indigenous adolescents compared to their non-Indigenous peers. They assert that research up until that point had generally not been able to identify the cultural factors stemming from Indigenous epistemologies that may enhance the relations between academic self-concept and subsequent educational outcomes. Parker and colleagues (2021, p. 394) ameliorate this failure to some degree in identifying a “significant and sizable Indigenous effect” in predicting university entry in young people. This indicates academic self-concept may vary in its influence on school completion for Indigenous compared to non-Indigenous adolescents.

As highlighted previously, Indigenous adolescents are highly impacted by low socioeconomic status (Biddle, 2014b). Given the negative impact that low socioeconomic status has on many educational outcomes, we might also question whether the relation between academic self-concept and school completion applies to the same degree across young people from varying socioeconomic backgrounds. A number of studies indicate the potential of socioeconomic status as a moderator of the relation between academic self-concept and school completion related outcomes. Parker and colleagues (2018) demonstrated the instance of students from lower social class backgrounds with higher academic self-concept than their more advantaged and ability-tracked peers; however, despite this these students did not benefit from gains in educational attainment, potentially due to social contextual factors (Marsh et al., 2018; Parker et al., 2021).

The likelihood that socioeconomic status moderates the effect of positive academic self-concept on school completion is further reinforced by numerous other studies. Anders (2017) demonstrated that socioeconomic status is significantly associated with changes in student expectations (a self-concept related variable) of university attendance, a factor related to successful school completion. Other factors associated with dropping out of school, such as truancy, skipping school, student alcohol and drug use (Pham, 2019; Thomson et al., 2017; Willms, 2003), and student internalising and externalising behaviours (Hetlevik et al., 2018) have been shown to be influenced by self-concept and to be more prevalent in low, rather than high, socioeconomic environments (Esch et al., 2014; Melkevik et al., 2016; PISA, 2015; Thomson et al., 2017; Pham, 2019). As an example, self-concept has been shown to moderate the association between socioeconomic status and adolescent externalising behaviours (including antisocial behaviour and delinquency), such that at high levels of self-concept, socioeconomic status and externalising behaviours were no longer associated, but at low levels of self-concept, low socioeconomic status was associated with increased levels of externalising behaviours (Machell et al., 2016). In another example, Li and colleagues (2007) identified adolescent self-concept as a moderator for internalising behaviours (such as depression and anxiety) in African American youth, such that at high levels of self-concept, socioeconomic status and internalising behaviours were not

associated with each other, but at low levels of self-concept, low socioeconomic status related to increased internalising behaviours. Given self-concept influences the effect of adolescent internalising and externalising behaviours on school dropout, and that these behaviours are more prevalent in low rather than high socioeconomic contexts, it seems feasible that self-concept may also alter the impact of socioeconomic status on high school dropout.

While schools may respond to student diversity with varying degrees of success, it is not surprising that schools are not always adept at responding to the needs of minority groups. Is it possible that children from backgrounds not traditionally aligned with mainstream education systems are not only less likely to have positive academic self-concepts, but also less likely to complete secondary school even with positive academic self-concepts? Based on the studies cited above, the potential for positive academic self-concept to translate into socially desirable outcomes, such as school completion, seems likely to vary with the social and cultural contexts in which young people live and learn, and whether these contexts facilitate school completion. Young people have the potential to thrive given certain competencies, self-perceptions and social contexts (Ciarrochi et al., 2016; Kashdan & Ciarrochi, 2013). However, when sociodemographic contexts and educational outcomes are misaligned, the potential benefits of positive self-concept on educational outcomes may not be fully realised. To meet the challenge of encouraging more young people to stay at school until successful school completion, the needs of a diverse student population must be better addressed (Lamb & Markussen, 2011). To do this, an enhanced understanding of the interplay between important factors (including Indigenous status, academic self-concept and socioeconomic status) is necessary.

2.3.2 Western concepts of school completion and dropout

The social construction of the 'problem' of secondary school dropout only emerged when secondary education became a common expectation next to primary education within Western societies (Dorn, 1993). The economic opportunities for full-time work afforded to adolescents in industrialised economies declined substantially between the mid-nineteenth and mid-twentieth centuries. By the 1950s full-time employment of teenagers had become rare and secondary school graduation the norm. Backed by

alarm over juvenile delinquency, preventing dropout became a social imperative with racial minorities and poor youth commonly targeted. Secondary schools gradually broadened their clientele to become institutions for the masses rather than just for the elite. As secondary schools became increasingly comprehensive, the expectation of universal secondary education was born (Dorn, 1993) and with it, the inherent problem of dropping out. Under this expectation, early leavers and their characteristics (e.g., their cognitive abilities, academic achievement, academic self-concept, student engagement) have been seen as a problem. Young people, and by extension their families, were seen as deserving most of the blame for the systemic failures of schools and labour markets (Dorn, 1993).

With the dropout problem socially constructed within Western society, it is not surprising that school completion and dropout research to date has mainly centred epistemologically within Western frameworks (Finn, 1989; Tinto, 1987, 1994; Wehlage et al., 1989; Newmann, 1992; Vallerand et al., 1997). While leading theorists of school dropout acknowledge that early withdrawal from school is a complex occurrence resulting from a variety of factors, models of dropout have focused predominantly on the role of an individual's characteristics in precipitating their early departure from secondary school. Models tend to highlight the role of various individual-level factors, including cognitive factors (e.g., academic achievement and effort toward academic outcomes), non-cognitive factors (i.e., academic self-concept, student expectations of completion and identification with school) and behavioural factors (i.e., school attendance). Social factors are also highlighted, such as how well the individual engages with teachers and peers. In addition, models sometimes discuss some of the sociodemographic factors that could hasten school dropout. However, these circumstances are often mentioned peripherally, rather than as a central component of dropout models, and models vary in the importance placed on different factors in dropping out and in the process leading up to a student dropping out. The following sections briefly review five prominent theories of dropout, focusing on the role given to sociodemographic risks, beyond that of an individual's characteristics.

2.3.2.1 Finn's developmental theory of high school dropout

Finn´s (1989) "participation-identification" model is the seminal theory that conceptualises school completion as an ongoing process of student engagement or participation leading to school success and school completion. School dropout, conversely, is viewed as an ongoing process of student disengagement and non-participation at school, leading to poor school performance and then emotional withdrawal and subsequent dropout. A second proposed mechanism leading to school dropout under Finn´s theory is the 'frustration-self-esteem' model. Under this model early failure at school leads to development of a negative academic self-concept which propels student frustration and rebellion leading to a cycle of further failure and dropout or expulsion from school, and includes academic achievement, student behaviours and student self-perceptions. The models differ in the specific factors emphasised as important, but both focus on individual-level psychological or behavioural factors.

2.3.2.2 Tinto's sociological theory of college dropout

Tinto´s model (1987, 1994) of college dropout is widely cited in research relating to secondary school students. The model focuses on adolescent adjustment based on student cognitive abilities and factors such as student expectation of completion, but also includes family background and the school´s influence on how well a student integrates socially and academically into the school environment. The model also touches external events that can lead to school dropout, such as new occupational opportunities, work pressures or family problems. Tinto´s model indicates potential interactions between factors, with positive experiences considered able to mitigate the negative impact of experiences. For example, students with poor academic performance may not dropout as they are socially well integrated at school through involvement in extra-curricular programs. Critics, however, point to lack of emphasis on structural constraints extending beyond student influence such as insufficient financial resources or cultural capital, which may limit student academic and social integration, thus affecting their school completion (see Metz, 2004).

2.3.2.3 Wehlage's theory of high school dropout prevention via school-based reform

Wehlage and colleagues' (1989) model draws on Tinto's model and on findings from a mixed method study conducted in schools considered successful in preventing dropout. Wehlage's model explains a student's social bonding and educational engagement toward their continuance at school and impediments to these factors. It also focuses on the contribution of school-level factors associated with student retention, such as pedagogical approaches and school climate, over which policymakers have some control. Although the predominant focus of Wehlage's theory is the impact of school-level factors on decisions to drop out or complete school, the theory also raises student heterogeneity. For example, Wehlage describes cases that do not adhere to the dropout stereotype, taking into account factors such as student victimisation, social isolation associated with residential relocation, family difficulties such as parent separation, illness or death, physical or mental health problems or childbirth. To a degree, sociodemographic factors are encompassed within this model; however, Wehlage's discussion of these factors does not explicitly address ethnic and cultural factors. Wehlage's theory gives much less attention to the role of sociodemographic factors than the role of school-level dynamics in affecting dropout.

2.3.2.4 Motivation

Motivation in the context of dropout theory is seen as being related to but distinct from engagement (outlined below). Newmann (1992) asserts that academic motivation refers to a desire to succeed academically and emphasises that a student may be motivated to perform well generally without being specifically engaged in the school tasks. An additional motivational model is the application of self-determination theory to secondary school dropout by Vallerand and colleagues (1997). Under this model, low levels of autonomy-supportive behaviours from parents and teachers are considered to undermine students' perceptions of their own competence and autonomy. These low competence and autonomy self-beliefs reduce student autonomous motivation, which then leads to the intention to dropout, and is subsequently acted upon.

2.3.2.5 Student engagement

The role of student engagement has become more prominent in school dropout theories and research. Secondary school dropout is often defined as a process of

disengagement from school that culminates in the final act of departure from school (Finn, 1989; Rumberger, 2011). In an extensive literature review Fredricks, Blumenfeld, and Paris (2004) identified three dimensions of engagement: behavioural engagement (for example, doing homework and participating in extracurricular activities), emotional engagement (e.g., whether students are happy or bored), and cognitive engagement (e.g., expending effort on academic tasks). Social engagement, how well one interacts with teachers and peers, has more recently been considered a fundamental dimension of engagement (Finn & Zimmer, 2012). Recent consideration of the student disengagement process and early departure from school suggests the process begins early and involves a student's disengagement from school over a long period. This process has been described as requiring a life-course perspective by some (see Christenson & Thulow, 2004) moving the focus away from the decision to drop out. Instead, emphasis is placed on the gradual withdrawal from school that most early school leavers tend to exhibit long before they finally decide to drop out. A life-course perspective of school dropout with emphasis on the origins and development of disengagement from school aligns with the importance of sociodemographic factors as contended by this thesis. However, depicting school dropout as the logical end of a much longer process of academic failure and disengagement from school may unintentionally play down alternative routes to leaving school early and overlook identification of other important factors. The situation is complex as young people who leave secondary school early are part of a highly heterogeneous population that requires specific intervention approaches (Bloom, 2010). Evidence indicates that up to 40% of those that dropout do not demonstrate signs of disengagement from school, nor academic or behavioural difficulties in the years prior to their early departure from school (Bowers & Sprott, 2012; Janosz et al., 2000; Janosz et al., 2008). In a similar manner, others have observed that students from low socioeconomic backgrounds with strong academic profiles rapidly decline after the transition to secondary school and become high risk for dropping out (Roderick et al., 2014). Understanding the mechanisms underpinning the early departure of students who do not follow clearly identified pathways out of secondary school is essential to develop appropriate ways to address the issue (Feinstein & Peck, 2008).

2.3.2.6 Life-course theory approaches

Models of school dropout predominantly focus on early school leaving as a process influenced mainly by individual factors, including adolescent academic self-concept and attitudes relating to school, behaviours and academic achievement. The prominence and prevalence of these models, including the shift in research focus toward student engagement as a variable perceived as increasingly relevant to educational outcomes, highlight the research gap on the influence of contextual factors such as adolescents´ family, school and community settings, on all aspects of child and adolescent development, including social, physical, cognitive and psychological (Bronfenbrenner, 1979, Lerner & Galambos, 1998, Steinberg & Morris, 2001). The role context plays is increasingly recognised as fundamental to educational outcomes as models of school completion and dropout have evolved to incorporate a broader life-course theory approach (Dupéré et al., 2015; Dupéré et al. 2018, Lamb, 2011; Thouin et al., 2018). Life-course theories focus upon the interrelated effects of influence at various levels including the family, the school, the system and the broader political and economic settings. As an example, Lamb (2011) provides a model that summarises the factors examined in 13 large and representative studies across 13 OECD countries including Australia, Canada, the United States, and the United Kingdom (see Figure 2.2). The model reflects the substantive role contextual factors play in the conceptualisation of dropout and completion in research, including that of sociodemographic factors and the national contexts and policy frameworks, along with individual psychological factors such as academic self-concept. The results of the studies depict similar processes occurring within each of these countries. However, the studies suggest variation in the size of the influence exerted by the different factors.

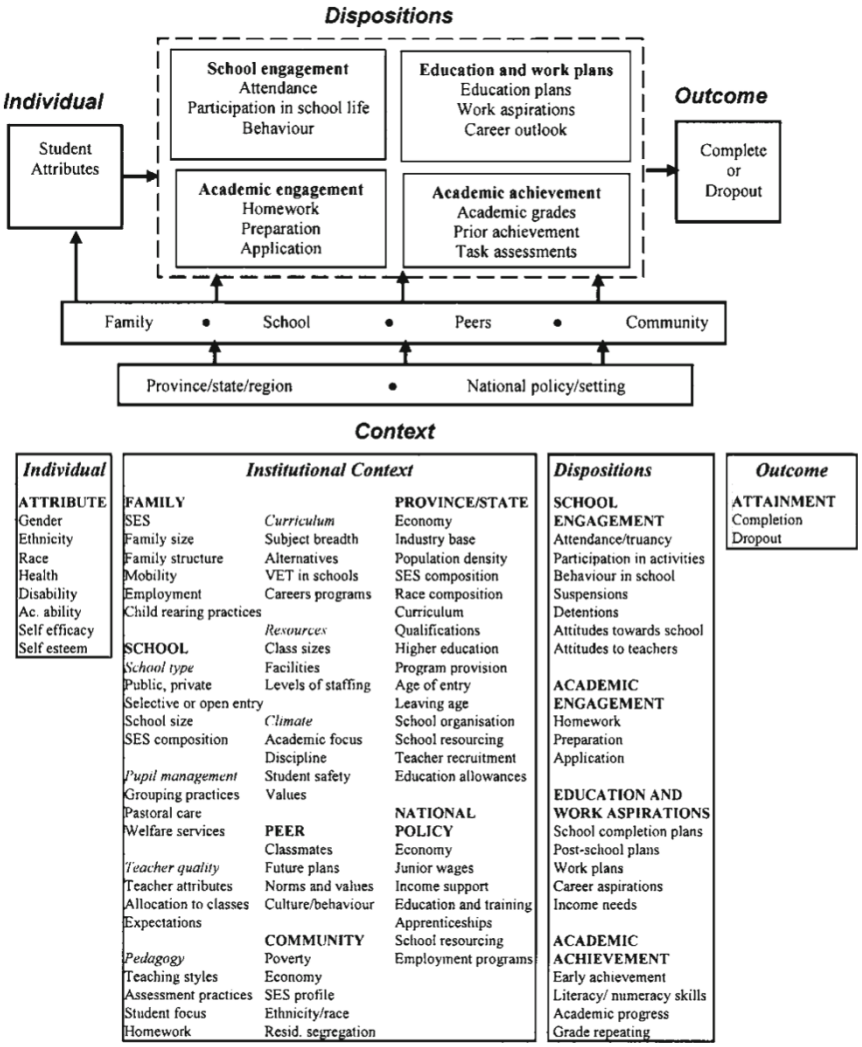


Figure 2.2: Factors influencing school completion across 13 OECD countries
(Lamb, 2011 p. 375)

Moves toward the inclusion of broader contextual variables in completion and dropout research is encouraging. It is important to note, however, that the lack of recognition of contextual factors in educational research has had the effect of marginalising and alienating diverse student cultures within schooling systems, particularly for Indigenous youth (Nakata, 2007; Smith, 2012). Accordingly, in many of the cross-cultural studies that identify barriers preventing Indigenous youth from reaching their full potential, a deficit lens has been applied (Fogarty et al., 2018). The unique world views of Indigenous youth (Walter & Suina, 2019), particularly those in geographically and culturally remote locations, are often described as gaps or deficits by non-Indigenous researchers and policymakers based in metropolitan areas (Guenther & Osborne, 2018). Viewing the education system from the perspective of these

Indigenous youth, that is from 'Red Dirt' as proposed by Guenther and Osborne (2018), the metropolitan is remote, and the disadvantage is that of teachers and policymakers who cannot see or understand the importance of contextual factors (e.g., culture, local language) in shaping school social and learning environments. In this respect, 'Red Dirt' is a metaphor that orients the remote context as different, rather than intrinsically disadvantaged or deficient (Osborne & Guenther, 2013).

2.3.3 Socioeconomic status and other sociodemographic predictors

While understanding the factors and pathways that lead to early school departure and school completion is of fundamental importance, researchers, educators and policymakers should also prioritise pathways that are reinforcing for those from diverse sociodemographic backgrounds.

The long-term negative impacts of dropping out of school are profound, and adolescents of minority or marginalised groups often have higher dropout rates than any other group. Educational inequalities for Indigenous youth have been outlined in a previous section. This section explores the sociodemographic contexts relevant to Indigenous youth. Where Western colonisation has occurred, Indigenous young people are more likely to be affected than not by low socioeconomic status (Biddle, 2014b), with significant populations living in remote and regional locations and many speaking an Indigenous language as their first language. These are all factors which have been associated with higher rates of withdrawing from school early. That such inequalities, or gaps, exist in school completion indicates the need for further investigation into the mechanisms underlying successful school completion. Understanding the interplay between key factors, from an intersectional perspective, will help identify heterogeneity within group categories (i.e., where categories are defined by Indigenous status, socioeconomic background, academic self-concept) and understand the mechanisms producing inequities in educational outcomes for those groups. Understanding the intersection between key factors is useful in enhancing access of Indigenous youth to a full and valued high school education and to the opportunities that this affords.

If the purpose of education is not to merely reproduce societal inequalities, then a clearer understanding of the role played by socioeconomic background is required. While much research has been undertaken over the last fifty years, and a degree of certainty exists that socioeconomic background does affect educational achievement, questions remain regarding the mechanisms underlying this effect. For example, does socioeconomic status impact Indigenous and non-Indigenous young people to the same extent when it comes to secondary school completion? Until there is a better understanding of these mechanisms, addressing issues of educational inequity remains difficult (Thomson, 2018). Internationally, there is ongoing concern for the educational outcomes of young people from low socioeconomic backgrounds (Earl et al., 2000; Perry & McConney, 2010; Zandvliet et al., 2014). Socioeconomic status is the most commonly used measure of a family´s resources. Socioeconomic status is an index based on measures of human and financial resources; such as, occupational status of both parents, years of education of both parents, and level of family income.

Substantial differences in the educational outcomes of youth from low socioeconomic backgrounds exist internationally in comparison with their peers from high socioeconomic backgrounds (Renzulli & Park, 2000; Ewijk & Sleegers, 2010; Lamb, 2011; Sirin, 2005). Students from high socioeconomic families, where the parents often have a university education, professional jobs and greater cultural resources at home, such as books and computers, are more likely to finish high school compared to those from low socioeconomic backgrounds, whose parents have fewer financial resources and less education. Strong evidence indicates that adolescents with lower socioeconomic status are more likely to leave school early than their more advantaged peers (Dalton et al., 2009; Devenish et al., 2017; Kim et al., 2019; Lamb, 2011; Lamb & Huo, 2017; Lamb & Markussen, 2011; McBride Murray et al., 2011; Polidano et al., 2013; Sznitman et al., 2017). Gaps in academic achievement outcomes in the United States for students from wealthy backgrounds compared to those from less socioeconomically advantaged backgrounds are remarkably large (Destin et al., 2019) and have widened in recent decades (Reardon, 2011, 2013). Dalton and colleagues (2009) report that students from the lowest quartile of socioeconomic status were five times more likely to leave school early than students from the highest quartile (12.4% compared with 1.8% respectively)

based on an analysis by the National Centre for Educational Statistics of a large nationally representative and longitudinal sample of 10th grade students across the United States. Statistics from Canada and Australia indicate a similar trend. For example, Perry and McConney (2010), in an analysis of PISA results from Canada and Australia, found significant raw achievement gaps exist between students with low and high socioeconomic status. For Canadian students, the achievement gap between low and high socioeconomic background is about 47.8 points (.59 SD). For Australian students, the achievement gap between low and high socioeconomic background is about 50.6 points (.60 SD). Statistics from New Zealand indicate that significant achievement gaps also exist. Broer and colleagues (2019) show that the achievement gap between students from low and high socioeconomic backgrounds increased by 26 points, from 70 points in 2003 to 96 points in 2015. Persistent educational gaps exist for young people with low socioeconomic status backgrounds universally (Lamb, 2011) and narrowing gaps in educational outcomes between students of low and high socioeconomic background is a common policy goal for many educational systems internationally (Broer et al., 2019).

In Australia, the role of low socioeconomic status on non-completion is reflected by the significant variation that exists in secondary school completion rates based on socioeconomic background (Lamb & Markussen, 2011). Recent figures indicate that approximately 40% of young people from the lowest of socioeconomic backgrounds do not complete secondary school or its equivalent by age 19, compared with the national dropout rate across Australia of 12% (Lamb & Huo, 2017). Other figures suggest that by age 24, about 64% of Australians from low socioeconomic status backgrounds have completed secondary school, while the rate for those from high socioeconomic backgrounds is 86% (Lamb, 2011). But perhaps, these gaps in school completion are not the failure of young people from low socioeconomic backgrounds nor from Indigenous backgrounds to secure a secondary qualification, but rather a failure of education systems and their corresponding policy frameworks, to make secondary qualifications available and equally accessible to the full diversity of young people, particularly those from marginalised groups.

2.3.4 Boudon primary and secondary mechanism distinction

Boudon (1974) highlighted the fundamental importance in educational inequality of delineating between primary (achievement related) and secondary (non-achievement related) mechanisms. Under this theory, primary mechanisms acknowledge the consistent finding that specific groups of young people have lower academic achievement levels than others. For example, Indigenous adolescents have had lower academic achievement at every PISA cycle (De Bortoli & Thomson, 2010; Song et al., 2014; Thomson et al., 2013). In addition, adolescents from low socioeconomic backgrounds have also had consistently had lower academic achievement across PISA cycles than their peers with high socioeconomic background (Aloisi & Tymms, 2017). Conversely, secondary mechanisms consider the gap in educational outcomes between peers with similar levels of academic achievement but from different sociodemographic groups. Parker et al. (2015) determined that around half of the Indigenous disadvantage in university entry was due to these secondary effects. Given that secondary effects featured so prominently for university entry, a similar situation may occur for secondary school completion. As secondary (non-achievement related) effects indicate the residual effect in educational outcomes, they capture a large range of non-achievement-based mechanisms of inequality. While noting that the relation between learning and earning fails to reflect differences in performance in today's globalised workforce (see Brown, 2010), it is highly concerning that differences remain in educational outcomes between different sociodemographic groups of young people after controlling for academic achievement. For this reason, emphasis has been placed on knowing whether gaps exist between Indigenous and non-Indigenous adolescents in secondary school completion when controlling for academic achievement; that is, comparison is made between equally achieving Indigenous and non-Indigenous youth. Although Boudon´s primary and secondary effects mechanism framework is useful, the theory is ultimately limited by the assumption of homogeneity within groups. The domination of the Indigenous research space by well-meaning researchers that treat Indigenous peoples as one homogenous group has potentially amplified inequalities and internal conflicts (Osborne et al., 2019). It must be noted that the label of Indigenous Australians used in this research does not recognise distinctions between

Aboriginal and Torres Strait Islander people, nor the enormous diversity of cultural values and language across Indigenous groups in Australia (Purdie et al., 2010).

2.3.5 Intersectionality

Investigating intersections between prominent predictors of school completion in this research uses a quantitative intersectional approach (Else-Quest & Hyde, 2016a, 2016b). In this respect, intersectionality is defined as "the various ways in which multiple social categorisations interact to shape the dimensions of the experiences of individuals" (Jang, 2018, p. 1269). In addition, Walter´s (2015) approach to intersectionality relating to Indigenous Australians informed this research. As Walter (2015) asserts, intersectional perspectives are vital in addressing Indigenous issues, particularly in relation to social class, gender and geography. Furthermore, Walter (2015) also asserts that Indigenous adolescents do not have the racial capital essential to educational success. Racial (or ethnic) capital is indicative of a person´s access to opportunities, resources and other forms of capital based on their race or ethnicity (Kim, 2019; Waring, 2017). Parker and colleagues (2021) assert that the ability of Indigenous young people to access and make use of other forms of capital is limited by their lack of racial capital, which limits their socioeconomic position. In line with this argument, they demonstrate that socioeconomic status has a weaker relation with university entry for Indigenous youth than for non-Indigenous youth. Correspondingly, Guenther (2019) also demonstrates that socioeconomic status has a weaker relation with school attendance for Indigenous youth than for non-Indigenous youth. The lack of association between socioeconomic status and the educational attainment of Indigenous youth is salient, given the strong relation observed in samples of the general population (Dalton et al., 2009; Devenish et al, 2017; Kim et al., 2019; Lamb & Huo, 2017; Polidano et al., 2013; Sznitman et al., 2017).

Indicating the importance of adopting an intersectional perspective, Sikora and Biddle (2015) found that the gender gap in educational and occupational expectations was generally larger (favouring females) in Indigenous youth compared with non-Indigenous youth. The influence of place has also been identified as an important factor. Place for Indigenous adolescents has been associated not only with physical distance between urban and rural locations, but also in terms of cultural distance, with

rural and remotely located Indigenous adolescents often possessing worldviews that differ to their urban Indigenous peers (Guenther & Osborne, 2018; Walter & Suina, 2019). This may influence the approach rural and remote Indigenous students have to education and how they value it, and may be a reason why educational attainment tends to be lower in rural and remote locations (Gray et al., 2000). Declining economic conditions in rural locations, and how various groups of people are affected, is a concern shared among Anglophone countries (Carr & Kefalas, 2010; Tieken, 2014), with the impact being greater for Indigenous people than their non-Indigenous counterparts (Gray et al., 2000).

2.3.6 Indigenous 'disadvantage' in education

The lack of access to quality education and to positive environments for learning at home and at school plays a significant role in a young person´s educational outcomes (Pham, 2019) and feeds social inequality (Dorling, 2015; Molla & Pham, 2019; Piketty, 2014). A common theme in the literature of Indigenous education is Indigenous 'disadvantage'. In Australia, this has been defined as "the difference (or gap) in outcomes for Indigenous Australians when compared to non-Indigenous Australians" (Steering Committee for the Review of Government Service Provision, 2012, p. xiv), and extends to 'closing the gap', the national policy framework to address Indigenous 'disadvantage' (Australian Government, 2020). Closing gap rhetoric occurs in many countries when referring to Indigenous and other minority groups (Guenther et al., 2016). While the data, and its practical consequences in influencing the lives of young people, cannot be denied, the pervasive use of 'disadvantaged' has been deemed problematic by many (e.g., Guenther et al., 2016; Rudolph, 2019). Such a rhetoric lends itself to consideration that Indigenous status is the disadvantage (Cowlishaw, 2012; Guenther et al., 2016), strengthening deficit discourse based on non-Indigenous understandings of 'advantage' and constructions of the 'Indigenous' problem (Gorringe, 2011; Guenther et al., 2016; Rudolph, 2019). Furthermore, this rhetoric may prioritise privileged interests, reinforce a hegemony that replicates existing societal power dynamics and result in 'self-fulfilling prophecies' for disadvantaged youth (Orlowski, 2011, p. 43).

Indigenous educational 'disadvantage' in Australia surfaced as a policy problem during the late 1960s, coinciding with a national referendum in 1967 that mandated the Commonwealth government to include Indigenous Australians in the national census. As a result, formal statistical comparisons between Indigenous and non-Indigenous people increased (Lingard et al., 2012) and deficits in educational outcomes were measured for Indigenous youth compared to their non-Indigenous counterparts. While education is often extolled as the solution to mitigating persistent forms of disadvantage and reducing social inequality, it is important to acknowledge the dual possibilities of education; that is, "the capacity to destroy and alienate, and the capacity to empower and liberate" (Rudolph, 2019, p. 2). Colonial education in Australia has contributed to present day disadvantage with the effect of marginalising Indigenous people and cultures (Rudolph, 2019). As Herbert (2012, p. 95) asserts, "the destruction of Indigenous cultures was not the result of any single incident or of a particular period of time, rather it was the cumulative effect of a systematic and concentrated attack in which education played a key role." While education may play an important role in improving inequities in society, numerous questions arise such as 'how may education contribute to maintaining inequities?', 'what assumptions are made about what constitutes a "better' life?" and 'who decides what a "better" life is?' Social theories based on power differentials between social groups offer useful frameworks for considering issues of educational inequity.

2.3.7 Theorising the gaps in educational outcomes

Some social theories suggest that the stubborn differences in educational outcomes between distinct groups rest in the role of education systems in upholding the power relationships between social classes, which in turn helps to reproduce how cultural capital is distributed among these classes (Bourdieu, 2006). This has been attributed to Indigenous social capital and lower racial capital, relative risk aversion, and structural barriers including Bourdieu's symbolic violence concept, and racism and prejudice (Bodkin-Andrews, Denison & Bansel, 2010; Parker et al., 2021; Sikora & Biddle, 2015; Walter, 2015). Building on ideas of social capital, the Sen-Bourdieu framework combines student capability and social capital (Hart, 2013; Molla & Pham, 2019; Pham, 2019) and provides an additional theoretical basis upon which to comprehend the

factors constructing inequities in educational outcomes, particularly as they relate to Indigenous youth.

2.3.7.1 Bourdieu's forms of capital

Bourdieu (2006) builds on the idea of capital in the economic sense to include social, cultural and symbolic capital. Social capital includes family, friends, affiliations, networks, religious and cultural heritage. Cultural capital encompasses knowledge, taste, language, aesthetic, knowing the right cultural codes, how to behave and what works in various contexts. Symbolic capital is transformed forms of other capital, such as expertise and knowledge, legitimacy of one's actions and inactions over others, financial resources, credentials and recognition. Economic capital is used by Bourdieu (2006) within a broader system of exchanges, where assets of various types are exchanged and transformed in complex networks in social fields (Moore, 2008). Capital of all forms has currency in terms of its economic value. An individual's stock of capital in a field either strengthens or weakens their ascribed legitimate position within a field. Individuals seek to gain advantage within social fields based on the capital they possess within those fields (Bourdieu, 2006; Pham, 2019). Bourdieu (2006) argues that a young person's stock of capital is dependent on their socioeconomic background and has a fundamental role in forming their educational experiences and opportunities. Schools are fields within which teachers and students occupy positions of power based on their possession of social capital, cultural capital and economic capital (Edgerton & Roberts, 2014). Students from different social origins are not positioned equally to benefit from equal access to education, due to their unequal scholastic attitudes and values, and differences in the way their cultural resources are valued within the schooling system (Bourdieu, 2006). Educational systems are considered to act as filters of social privilege and exclusion as they favour and socialise students based on their cultural and social resources, or capital (Bourdieu, 2006; Molla & Pham, 2019). It seems likely that aspects of a young person's stock of capital would enhance or negate the influence of positive self-concept on school success. Some studies have highlighted the potential of one's social capital to facilitate and constrain educational advancement in marginalised and minority populations (White et al., 2013; Portes, 1998).

The impact of forms of capital on education for Indigenous Australians is likely to be different to that of non-Indigenous people, due to unique social relationships within Indigenous groups and the race-related barriers to education attainment (Parker et al., 2021; Walter, 2015). Walter (2015) argues that patterns of Indigenous social capital encompass constraints that are not shared by non-Indigenous people and are absent from educational attainment approaches. The negative impact of racism and prejudice on achievement, engagement and aspirations of Indigenous students across nearly all levels of education is an example (Sikora & Biddle, 2015; Walter, 2015;). The different nature of social capital, and stock of capital more broadly, between Indigenous people and non-Indigenous people may suggest differences in their ability to mobilise economic resources to facilitate high school completion outcomes. It has also been suggested that forms of capital vary for people from high and low resource backgrounds (Bourdieu, 2006) with implications for how they perceive themselves academically and how they perceive the world (Kraus et al., 2012; Manstead, 2018). In support of this, Kraus et al. (2012) empirically demonstrated that the rich are different from the poor as they inhabit different social worlds with different resources available to them, including material resources and social rank. For individuals from the lower social classes, reduced resources and lower rank manifest contexts that limit social outcomes and enhance 'contextualist tendencies', that is, enhance a focus on uncontrollable, external social forces and other individuals who influence the outcomes of one's life. In contrast, higher class individuals have plentiful resources and an elevated rank creating contexts that enhance the personal liberty of upper-class individuals and precipitate 'solipsistic social cognitive tendencies'; that is, the individualistic focus on one's own goals and internal states. These factors underpinning differences in forms of capital between high and low socioeconomic groups may provide reasons why socioeconomic status may impact the relation between student academic self-concept and whether they complete high school.

2.3.7.2 Sen´s capability approach

Sen´s (2000) capability approach argues that an individual's capability to function is central to evaluating inequality and justice, and to the design of social policies and institutions. The capacity to function may relate to representational aspects, for

example having a voice in the school community; structural aspects, such as being able to enrol in the local school; elements of cultural recognition; for example, feeling respected within a school community; or material aspects, for example, having access to books and computers. Sen defines a person's capabilities as their real opportunities to function. The sum of a person's capabilities form a capability set, which represents their freedom to be and do the things they value (Robeyns, 2011). Great diversity exists in what individuals value and how they may convert their capital into functioning, which is dependent on the freedom and the power they have to convert resources into achievements (Molla & Pham, 2019). The basic capability of being educated is something to aspire to as it is significantly important in its own right, and assists in improving other capabilities and the enhancement of opportunity of one´s life (Sen, 2000; Molla & Pham, 2019). Sen´s capability approach acknowledges education does not occur within a vacuum. Rather, social structures such as school practices, school sectors, and patterns of economic, racial and gender inequality are factors that condition the participation of students and contribute to disparities in educational outcomes (Robeyns, 2008). Yet even adolescents with abundant educational resources experience various factors in their community and family life that may influence their educational prospects. In understanding how diverse students participate at school, it is important to acknowledge that differences exist in how students value education, what opportunities students see as available to them and how students respond to those contexts.

2.3.7.3 The Sen-Bourdieu framework of capability and capital

Bringing together Sen´s capability approach and Bourdieu´s forms of capital provide a framework that makes an intimate link between the stock of capital a young person possesses and their capabilities (Pham, 2019). The Sen-Bourdieu framework of capability and capital (Pham, 2019) asserts that the types of capital one possesses may enable the conversion of material resources into capabilities, where Bourdieu´s forms of capital are essentially convertible into economic capital, which may act as a vehicle to obtain educational outcomes such as completing secondary school successfully (Bourdieu, 2006). Bourdieu's forms of capital are useful in understanding the contexts in which an adolescent is able to discern their available opportunities and mobilise

resources to transform them into valued ways of being and doing (Sen, 2000). Drawing on this framework, one can consider how an adolescent´s family background, as a form of cultural capital, may be used within a schooling context to connect them with the expectations and cultural norms of the school. Or how parents' past education may act as symbolic capital that allows their voice to be heard on school policies. One might consider how a student's relationship with teachers might encourage a form of social capital that enables them to engage with each other to gain an advantage in the classroom. Or how socioeconomic background or economic capital might offer a student greater access to participate more fully within the learning environment (Pham, 2019).

2.3.8 System-level policy effects

Research suggests that system-level educational policies can increase school completion (Markussen & Sandberg, 2011). One such educational policy is increasing the compulsory school leaving age for students. Numerous Anglophone countries have implemented this policy, making it compulsory for students to remain at school for longer, under the belief it will increase the number of students gaining upper secondary qualifications (Markussen & Sandberg, 2011). Across Australia, the compulsory school leaving age was increased from 15 to 17 years from 2006 to 2010, by State Governments and Territories under the National Partnership Agreement on Youth Attainment and Transitions (Coalition of Australian Governments, 2011).

Australia has different approaches, qualifications and school completion requirements which vary across the different Australian states and territories. Secondary education is based on a model of general education through to the end of the compulsory phase, usually Year 10, followed by a two-year upper secondary schooling program with a senior school certificate awarded at successful completion. Most young people enter a certificate program at the end of compulsory education (Lamb, 2011).

The raising of the compulsory school leaving age across Australian states and territories occurred in response to perceived need for higher levels of education and skill in the globalised economy (Australian Curriculum, Assessment and Reporting Authority, 2011). The policy reform was intended to help increase school completion

rates nationally (Lamb, 2012). Raising the age at which students could leave compulsory schooling also reflected the policy intent of the Melbourne Declaration (2008) that maximising opportunities for healthy, productive and rewarding futures, required encouraging young people to not only complete secondary school, but also to move into additional training or education. This policy intent was formalised in 2009 through the National Partnership on Youth Attainment and Transitions. This agreement of the Council of Australian Governments (COAG) supported the implementation of the National Youth Participation Requirement commencing in 2010 which included a mandatory requirement for all young people to participate in schooling until they completed Year 10 and to participate in full-time training, education or employment, or a combination of these, until the age of 17.

Prior to 2009 across most jurisdictions in Australia the compulsory school leaving was 15 or 16 years. Once the new policy was implemented, young people were required to attend school (or an approved equivalent) until they had completed Year 10 (as previously) but then to participate in full-time study or employment, or a combination of these activities, until they turned 17. In Queensland, South Australia, Western Australia and Tasmania between 2006 and 2008 similar requirements had been introduced, and, in 2010 this requirement came into effect in New South Wales, Victoria, the Australian Capital Territory and the Northern Territory (Australian Curriculum Assessment and Reporting Authority, 2012).

For early school leavers, the main alternative pathway pursued is study or training for senior school certificate equivalent qualifications, usually through a TAFE college or private provider including apprenticeships and traineeships. Apprenticeships involve a contractual agreement with an employer where the young person undertakes formal training in a classroom usually provided through a TAFE college or private provider, along with on-the-job experience. Apprenticeships have traditionally been in trades, such as electrical, automotive, plumbing, and carpentry, for a four-year period. Traineeships in white collar occupations such as clerical work, last for usually 12 months. The policy reform included scope for young people to leave school to continue in full-time out-of-school training and/or employment pathways such as apprenticeships and traineeships. Out-of-school training and employment, such as

apprenticeships and traineeships, offer an alternative pathway to gaining a senior school certificate equivalent qualification (ACARA, 2012). In the 1995 LSAY cohort, almost 45% of early school leavers commenced an apprenticeship or traineeship within the period of seven years after leaving school. After seven post-school years, 23.9% of early school leavers had successfully completed an apprenticeship and 10.5% had completed a traineeship (Lamb, 2011). Snell and Hart (2008) highlight that low completion rates of such programs remains a major problem with national rates ranging between 24% and around 60% as cited by various researchers (see Ball & John, 2005; Bowman et al., 2005; John, 2003; NCVER; 2000; Victorian TAFE Association Inc, 2000). Given the low completion rates of apprenticeships and traineeships, investigation of alternative pathways will remain beyond the scope of this research. For simplicity, in this thesis, the policy reform will be referred to 'increasing the compulsory school leaving age from 15 to 17 years'. This description draws on the intention of the policy reform, and maintains consistency with references to this policy reform within the literature (Lamb, 2012, Parker et al., 2021; Schellekens et al., 2022).

The policy of increasing the compulsory school leaving age to 17 years was implemented on the basis that adolescents who stay in school longer are more likely to successfully complete. Lifting the age that a young person is able to leave compulsory schooling has been associated with increased school retention in the subsequent non-compulsory years, and also with reduced rates of dropout and increased secondary school graduation rates in various states of the United States (Rumberger & Lim, 2008). While studies have indicated that the policy of increasing the compulsory school leaving age across Australian lead to an increase in retention rates from secondary school (Year 10) to senior high school (Year 11 and 12) (Parker et al., 2021), questions remain regarding its impact on Indigenous students versus non-Indigenous students.

Reducing disparities in Year 12 completion rates between Indigenous and non-Indigenous young people has long been a priority of the Australian Government. It is therefore of great value to assess whether the policy of increasing compulsory school leaving age to increase school completion rates has helped the government achieve its 'Closing the Gap' policy obligations. As noted above, while numerous countries have

implemented policies to raise the compulsory leaving age, relatively little research exists that has looked at the success of these policies in terms of increased equity in school completion. Such policies may lift school completion rates across the board, with equal benefits for all students, without reducing the existing relative gaps in completion rates. As such, this research has important implications beyond Australia.

By taking advantage of two large representative and longitudinal datasets, this thesis explores whether secondary school completion gaps between Indigenous and non-Indigenous Australian youth varied before and after a change in government policy that lifted the compulsory school leaving age across Australia to 17 years of age. While other countries have employed this policy intervention that has been shown to positively influence high school completion (Markussen & Sandberg, 2011; Rumberger, 2011), this investigation will assess whether this policy helps close gaps in Indigenous educational inequity. It must be noted, as the nature of the analyses are correlational, no claims of causality can be made about the impact of implementation of such a policy on rates of secondary completion between the cohorts investigated, nor on closing the gap in school completion between Indigenous and non-Indigenous youth.

2.4 Thesis aims

In response to the negative consequences associated with failing to graduate from secondary school in Western society, schools implement interventions and governments pursue policies to reduce early school departure in an effort to keep young people on track to further education and employment, and a bright and prosperous future. Addressing school non-completion remains a major challenge for educational systems, as encouraging more young people to stay at school involves finding better ways to respond to student diversity (Lamb & Markussen, 2011). While research has focused on the role contextual factors play (e.g., psychosocial variables, sociodemographic variables and systems-level policy) in predicting, facilitating or acting as a barrier to school completion, the intersection between these factors is complex, and the mechanisms by which these relations occur is not well understood. As these variables are multifaceted, various relations of association and causality exist among them.

Therefore, in this research, I examine several relations among variables, where some variables take on more than one role (i.e., predictor, mediator, moderator, outcome variable). While many studies have investigated the relation between academic self-concept and achievement (Davies & Brember, 1999; Hansford & Hattie, 1982; Marsh & Craven, 2006; Marsh & O´Mara, 2008; Marsh & Yeung, 1997), to date few studies have investigated the intersection of academic self-concept and sociodemographic factors such as socioeconomic status on high school completion. Of particular interest is how these factors relate to Indigenous young people. As such, the overarching research objective of this thesis is to understand the interplay between key sociodemographic factors, including academic self-concept, socioeconomic status and Indigenous status, in predicting secondary school completion. Nationwide policy changes that increase the compulsory school leaving age were also investigated, in terms of their relation with school completion rates, and more specifically for Indigenous young people.

This literature review has identified that it would be useful to synthesise the existing evidence, to the extent that current results relating to the intersection of key variables can be determined. Accordingly, the following chapter presents a systematic review providing a more robust and reliable account of the correlation between academic self-concept and numerous educational outcome variables, as well as allowing an assessment of moderators and mediators of the links.

2.5 Chapter summary

The aim of this chapter was to review current literature and provide a theoretical account of current knowledge pertaining to the intersection of Indigenous status, socioeconomic status and academic self-concept on high school completion outcomes. This chapter has highlighted that school completion and dropout research has oriented around Western epistemologies mainly focusing on the role of the individual in their school success. However, research has lacked sufficient consideration of important influences at the individual, sociodemographic and policy levels. While evidence supports the role of academic self-concept and socioeconomic status in predicting school completion, numerous questions remain regarding for whom these pathways to school completion apply. This chapter contended that established

mechanisms underpinning secondary school completion inadequately encompass sociodemographic factors and as a result are not well applied to diverse groups of young people. An overview of the theoretical basis upon which these contentions were made was also provided, and a systematic review was proposed as the next step.

Chapter 3:
Research Aims, Hypotheses and Research Questions

The purpose of this research is to gain a deeper understanding of predictors of successful school completion. The research objective of this thesis is to understand the interplay between key sociodemographic factors including socioeconomic status and Indigenous status along with academic self-concept in predicting secondary school completion. As such, this thesis systematically reviews and comprehensively tests the interplay between prominent psychological/sociodemographic variables and educational outcomes, focusing on school completion in adolescents.

This chapter presents the research aims. A statement of specific research questions and hypotheses, and their rationale is posed against the backdrop of current research, theory and practice. Research questions have been numbered so that the aim it relates to in each study can be identified clearly. In a similar manner, the rationale is presented under each question, or set of questions, so that it also may be linked with ease to the corresponding aim and research question or hypothesis.

3.1 Research questions

In response to the three research questions of this thesis, three studies were developed. This chapter introduces the studies, their specific aims, and relevant hypotheses and research questions. Every study aim, hypothesis and research question is numbered for easy identification. The first digit represents the study number (e.g., 1, 2 or 3), the second digit refers to the aim of that study, and the third digit indicates the hypothesis/research question for the study-specific aim. For example, research

question 1.2.1 indicates research question 1 of the second aim of Study 1. After the aims and hypotheses/research questions are presented, rationales for these are provided.

To achieve the thesis research objective, the following research questions are posed:

1. Does academic self-concept facilitate secondary school completion to the same degree for everyone, including for students from diverse social and demographic backgrounds?

2. Does socioeconomic status facilitate secondary school completion to the same degree for everyone, including Indigenous and non-Indigenous students, and students with varying levels of academic self-concept?

3. Are national increases to compulsory school leaving age associated with secondary school completion to the same degree for everyone, including Indigenous and non-Indigenous students, and students with varying levels of academic self-concept?

3.2 Study 1 aims and research questions

Study 1 (*Does academic self-concept facilitate secondary school completion to the same degree for everyone?*) systematically synthesises research on the link between academic self-concept and secondary school educational outcomes relating to school completion (including school attendance and school engagement) in recent literature. Study 1 is based on the Cochrane systematic review methodology (Higgins & Green, 2011) and identifies the moderators and mediators of this link.

The research aims related to Study 1 are as follows:

Aim 1.1 Examine those factors identified in the literature that affect the relation between a young person′s academic self-concept and their educational outcomes,

Aim 1.2 Understand how sociodemographic factors identified in the literature affect the relation between a young person′s academic self-concept and their educational outcomes within current literature,

Aim 1.3 Understand specifically how a young person´s Indigenous background affects the relation between their academic self-concept and their educational outcomes within the literature, and

Aim 1.4 Understand specifically how a young person´s socioeconomic status affects the relation between their academic self-concept and their educational outcomes within the literature.

The corresponding research questions pertaining to Study 1 are:

Research Question 1.1.1 – What factors have been demonstrated to moderate the relation between a young person´s academic self-concept and their educational outcomes?

Research Question 1.1.2 – What factors have been demonstrated to mediate the relation between a young person´s academic self-concept and their educational outcomes?

Research Question 1.2.1 – Do sociodemographic factors moderate the relation between a young person´s academic self-concept and their educational outcomes?

Research Question 1.3.1 – Does a young person´s socioeconomic status affect the relation between their academic self-concept and their educational outcomes?

Research Question 1.4.1 – Does a young person´s Indigenous status affect the relation between their academic self-concept and their educational outcomes?

3.2.1 Rationale for RQ 1.1.1 and 1.1.2

RQ 1.1.1 What factors have been demonstrated to moderate the relation between a young person´s academic self-concept and their educational outcomes? and

RQ 1.1.2 What factors have been demonstrated to mediate the relation between a young person´s academic self-concept and their educational outcomes?

Concern about inequalities in secondary school completion rates is commonly focused on inequalities in academic performance (Jackson, 2013). Research and interventions have increasingly focused on adolescents' academic self-concept (Marsh and Craven, 2006; Marsh and O´Mara, 2008; Möller et al., 2009; Schwinger et al., 2014; Wu et al.,

2021). Studies by these researchers show that having a positive academic self-concept predicts one's academic performance. The underlying presumption is that reducing gaps in academic self-concept will reduce disparities in academic performance and importantly reduce disparities in other educational outcomes such as school completion. However, there is very little information about for whom, and under what conditions and settings, this relation between academic self-concept and school completion outcomes may vary. Enquiry into the contexts that strengthen or weaken the influence of an adolescent´s self-concept on these educational outcomes tells us for whom academic self-concept may be most beneficial, and for whom it may not, in improving outcomes such as school completion, school attendance and school engagement. In addition, it is also valuable to comprehend the extent to which factors may play a causal role (mediation) as a mechanism in the relation between academic self-concept and educational outcomes.

3.2.2 Rationale for RQ 1.2.1

RQ 1.2.1 Do sociodemographic factors moderate the relation between a young person´s academic self-concept and their educational outcomes?

Given the impact of school completion on later life attainment in Western culture, it is alarming that significant inequities exist in educational attainment across diverse groups, such as minority, Indigenous and low socioeconomic groups (Jackson, 2013). While the link between academic self-concept and numerous educational outcomes has been demonstrated (Bakadorova & Raufelder, 2017; Guay et al., 2004; Marsh & Craven, 2006; Marsh & Yeung, 1997; Parker et al., 2012; Raufelder et al., 2015), it remains unknown how this relation varies in different social and cultural contexts. Much of the research on academic self-concept in relation to subsequent educational outcomes, such as completion, attendance, and engagement, does not consider potential moderators or mediators. Very little research focuses on the moderators of this relation, particularly on the social and cultural contexts in which students live and learn, with factors such as socioeconomic status and ethnicity often only controlled for in studies (Freeman & Simonsen, 2015). Although sociodemographic factors are less malleable in terms of intervention, these factors must not be neglected if as a society we genuinely seek to make education systems equitable. We must investigate and

understand the impact of academic self-concept on educational outcomes for students from varying social and demographic contexts, such as low socioeconomic backgrounds, minority ethnic groups, diverse language backgrounds, Indigenous heritage and other minority and diverse groups. Does positive academic self-concept translate into similar educational outcomes across the contexts in which young people live and learn? Reviewing potential sociodemographic factors that moderate this relation will enhance understanding of the mechanisms underpinning the link between academic self-concept and school completion outcomes in different social and cultural settings.

3.2.3 Rationale for RQ 1.3.1

RQ 1.3.1 Does a young person´s socioeconomic status affect the relation between their academic self-concept and their educational outcomes?

Around the world, adolescents with an Indigenous background have higher dropout rates and poorer educational outcomes than non-Indigenous people within their own countries (United Nations, 2017). High academic self-concept has been shown to positively predict a variety of educational outcomes. However, how well this holds up for school completion in general, but more particularly for Indigenous youth, has been under-investigated. While McInerney (2003) has demonstrated that Australia´s Indigenous and non-Indigenous students have more similarities than differences between their respective academic self-concepts, the question remains why are their educational outcomes so different (McInerney, 2003)? Conversely, Yeung and colleagues (2013) indicated that non-Indigenous Australian students scored higher in a variety of domain-specific academic self-concept measures than Indigenous Australian students. Does academic self-concept facilitate school completion in Indigenous young people to the same extent as in non-Indigenous youth? Few studies have explored the strength of this relation for Indigenous adolescents compared with non-Indigenous adolescents for school completion. This is of great importance given the primary influence of family background in school dropout (Rumberger & Rotermund, 2012) and the implications for educational equity for minority group students. For this reason, Study 1 involved a thorough systematic review of the literature.

3.2.4 Rationale for RQ 1.4.1

RQ 1.4.1 Does a young person´s Indigenous status affect the relation between their academic self-concept and their educational outcomes?

Disparities in high school completion and associated educational outcomes, such as school attendance and school engagement, are particularly problematic for adolescents from low socioeconomic backgrounds. While high academic self-concept is beneficial in facilitating positive educational outcomes, its influence on secondary school completion for young people with low socioeconomic backgrounds is not well understood. Does academic self-concept facilitate school completion in young people with low socioeconomic backgrounds to the same extent as in young people with high socioeconomic backgrounds? While some studies have looked into relations between academic self-concept, country-level differences and gender, fewer studies have investigated the intersection of academic self-concept with socioeconomic status as they relate to educational outcomes. Sociodemographic contexts such as socioeconomic status and social class are impervious to change compared with individual factors more responsive to intervention. Given this, comparatively little research into these areas has occurred and their importance has been under-emphasised (Ciarrochi et al, 2016; Freeman & Simonsen, 2015) particularly given family background has been identified as the most influential factor in school dropout (Rumberger & Rotermund, 2012).

Study 1 aims to explore all possible moderators and mediators of the link between academic self-concept and educational outcome variables related to dropout and completion such as attendance and engagement, as identified in the literature. A focus of Study 1 is determining the effects of sociodemographic factors influencing these relations, to provide insight into the extent and variation to which academic self-concept has been demonstrated to benefit diverse student groups, such as Indigenous Australians and students from low socioeconomic backgrounds, in achieving positive educational outcomes. Study 1 highlights the importance of specific moderators and informs the direction of Study 2.

3.3 Study 2 aims, hypotheses and research questions

The second study of this thesis (*Does socioeconomic status facilitate secondary school completion to the same degree for everyone?*) substantiates and builds upon the findings of the first study. In Study 2, statistical regression structural equation modelling with a large and representative Australian dataset was used to build on current literature through analysis of differences in student socioeconomic status at the intersection of Indigenous status and academic self-concept. As the importance of socioeconomic status as a moderator of the academic self-concept-educational outcome relation was highlighted in Study 1, further investigation was conducted with socioeconomic status as the independent variable in Study 2 (as discussed further in Chapter 4). Study 2 has the following aims:

Aim 2.1 Determine whether a gap in secondary school completion exists between Indigenous and similar achieving non-Indigenous students,

Aim 2.2 Determine whether the influence of socioeconomic status on school completion varies for Indigenous and similar achieving non-Indigenous students,

Aim 2.3 Determine whether a gap in secondary school completion exists between students with high academic self-concept and similarly achieving students with low academic self-concept, and

Aim 2.4 Determine whether the influence of socioeconomic status on school completion varies for similar achieving students with varying levels of academic self-concept.

As such, the following hypotheses/research questions are investigated:

Hypothesis 2.1.1 – There is a gap in secondary school completion between Indigenous and similar achieving non-Indigenous students.

Hypothesis 2.2.1 – There is a gap in secondary school completion between similar achieving students with high and low academic self-concept.

Research Question 2.3.1 – Does socioeconomic status facilitate secondary school completion to the same degree for Indigenous and similar achieving non-Indigenous students?

Research Question 2.4.1 – Does socioeconomic status facilitate secondary school completion to the same degree for students with varying levels of academic self-concept?

Not obtaining a Year 12 qualification has negative consequences for individuals' health and wellbeing, for further education and employment opportunities and for later life attainment. There are also negative consequences for society through individuals' reduced participation in and contribution to society over a lifetime. Socioeconomic status has been demonstrated to predict completion, with adolescents from low socioeconomic background having far higher rates of dropout than their more advantaged peers (Dalton et al., 2009; Devenish et al., 2017; Kim et al., 2019; Lamb & Huo, 2017; Lamb & Markussen, 2011; McBride Murry, 2011; Polidano et al., 2013; Sznitman et al., 2017). However, is low socioeconomic status always disadvantageous when it comes to high school completion? Can sociodemographic factors overcome the negative effect of economic disadvantage on the likelihood of completion? In this study, I explore whether the benefit of high socioeconomic status in increasing successful school completion varies with adolescent Indigenous status, and with adolescent level of academic self-concept for similar achieving youth.

While considerable research has investigated the direct effects of socioeconomic status, academic self-concept and Indigenous status on school completion, it is not well understood whether low socioeconomic status always disadvantages school completion. This research seeks to answer whether Indigenous status, or academic self-concept, or the educational policy context of the day negate to some extent the disadvantage of low socioeconomic status for high school completion.

3.3.1 Rationale for H 2.1.1 and RQ 2.3.1

H 2.1.1 There is a gap in secondary school completion between Indigenous and similar achieving non-Indigenous students.

RQ 2.3.1 Does socioeconomic status facilitate secondary school completion to the same degree for Indigenous and similar achieving non-Indigenous students?

For individuals and for society, the rich enduring cultures and traditions of diverse groups of Australian Indigenous people are great strengths. Yet, how is Indigenous background disadvantageous when it comes to school completion? The family, school, and community environments of Indigenous young people vary in unique ways from that of the majority adolescent populations (Guenther & Osborne, 2018). A "significant and sizeable Indigenous effect" has been demonstrated by Parker and colleagues (2021) in predicting adolescent university entry, potentially due to "distinctive patterns of Indigenous social capital" (Walter, 2015, p. 69) which serve to enhance capacities other than those beneficial for school completion. It is hypothesised that high socioeconomic status benefits school completion, and is feasible that this may vary with adolescent Indigenous status. Indigenous young people possess different forms of capital (Walter, 2015) compared with non-Indigenous adolescents as they inhabit unique cultural and social contexts (Pham, 2019). The Sen-Bourdieu framework suggests that Indigenous adolescents from lower socioeconomic backgrounds may be disproportionally affected by their unique contexts and the associated forms of capital (social, cultural, economic and symbolic) they possess. Under the framework, the stock of capital of these students impacts upon their engagement, motivation and how they value school, along with their capability to learn and enjoy school success. As such, a student's Indigenous status is likely to moderate the effect of socioeconomic status on school dropout through the unique forms of capital they possess (Walter, 2015) which enhance or limit their capabilities to complete secondary school. It is possible that an interdependent relation between socioeconomic status and Indigenous status may exist, and that high socioeconomic status may be less protective for Indigenous adolescents in terms of dropout than non-Indigenous adolescents. For example, teachers may have lower expectations of Indigenous students than non-Indigenous students (Sarra et al., 2018), particularly where the curriculum is based on non-Indigenous norms and values (Lowe et al., 2021) and this is likely to occur irrespective of student socioeconomic status. In addition, schools that fail to acknowledge the cultural diversity of Indigenous students may ingrain curriculum and pedagogy into

school practices that position students from Indigenous backgrounds unequally in their educational experiences, compared to their peers (Bourdieu, 1977; Pham, 2019).

3.3.2 Rationale for H 2.2.1 and RQ 2.4.1

H 2.2.1 There is a gap in secondary school completion between similar achieving students with high and low academic self-concept.

RQ 2.4.1 Does socioeconomic status facilitate secondary school completion to the same degree for similar achieving students with varying levels of academic self-concept?

While positive academic self-concept is a well-recognised predictor of academic achievement, it has also been demonstrated to predict high school completion (Caprara et al. 2008; Mena, 2011; Peguero & Shaffer, 2015) and other educational outcomes (Parker et al., 2012; Guay et al., 2004; Marsh & O´Mara, 2008; Bakadorova & Raufelder, 2017, Raufelder et al., 2013). An individual's self-concept regarding his or her perceived likelihood of educational success is reflected in the patterns of choices that one makes to leave school or not, which are considered an important source of class differentials in educational attainment (Breen & Goldthorpe, 2009). In addition, expectancy value theory (EVT) highlights the importance of a young person´s self-concepts, along with their values, in directly influencing their decisions relating to achievement, performance, effort and persistence (Wigfield & Eccles, 2000). In EVT, two self-concept measures are used: a young person's expectancy beliefs and their ability beliefs (Eccles et al., 1983; Wigfield & Eccles, 2000) in interaction with how much they value school completion, which explains their choice to leave school or persist. Adolescents with low academic self-concept are more likely to drop out potentially due to the impact of their negative self-beliefs on their decision to persevere with school or not.

Research suggests a gap exists between students with high and low academic self-concept in secondary school completion rates, and that a relation may exist between academic self-concept and socioeconomic status in predicting completion. Peguero and Shaffer (2015) determined that gender, racial and ethnic disparities in dropout rates can be ameliorated by enhanced academic self-efficacy. In addition, reduced self-expectations of attending university over time has been shown to correlate with lower

socioeconomic status (Anders, 2017), which may also be relevant for high school completion. Numerous factors are associated with dropout, such as truancy, student alcohol and drug use (Pham, 2019; Organisation for Economic Co-operation and Development & Programme for International Student Assessment (OECD & PISA), 2017; Thomson et al., 2017), and student internalising and externalising behaviours (Hetlevik et al., 2018) have been shown to be influenced by self-concept and to be more prevalent in low socioeconomic environments (Esch et al., 2014; Melkevik et al., 2016; Pham, 2019; OECD & PISA, 2017; Thomson et al., 2017). For example, self-concept is demonstrated to moderate the association between socioeconomic status and adolescent externalising behaviours, including antisocial behaviour and delinquency, such that at high levels of self-concept, socioeconomic status and externalising were no longer associated, but at low levels of self-concept, low socioeconomic status was associated with increased levels of externalising behaviours (Machell et al., 2016). Li and colleagues (2007) identified adolescent self-concept as a moderator for internalising behaviours such as depression and anxiety in African American youth, such that at high levels of self-concept, socioeconomic status and internalising behaviours were not associated with each other, but at low levels of self-concept, low socioeconomic status related to increased internalising behaviours. Given this, it seems feasible that academic self-concept may have a mitigation effect on the negative impact of low socioeconomic status in increasing dropout.

3.4 Study 3 aims, hypotheses and research questions

The third study of this thesis (*Do national-level policy changes relating to school-leaving age appear to facilitate secondary school completion to the same degree for everyone?*) is intended to substantiate and build upon the findings of the second study. Study 3 investigates the relation between a specific policy change and school completion by analysing a second dataset and comparing findings with that of Study 2. The datasets are situated before and after implementation of a policy to increase the compulsory school leaving age across Australia. Study 3 determines who benefits after the policy change in terms of increased school completion and to what extent. Importantly, it also investigates whether the policy initiative works toward the Australian Government's policy of 'closing the gap' between Indigenous and non-

Indigenous school completion, by assessing whether the gap in school completion between Indigenous and non-Indigenous students narrowed after the policy change was implemented.

Using statistical regression structural equation modelling on a second large and representative Australian dataset, Study 3 has the following aim:

Aim 3.1 Determine if and to what degree does cohort year (that is, before and after increases in compulsory school leaving age) moderate the relation between socioeconomic status and high school completion.

As such, the following hypotheses/research questions are investigated:

Hypothesis 3.1.1 – Cohort year (before and after lifting the compulsory school leaving age) is associated with secondary school completion.

Research Question 3.1.2 – Is cohort year (before and after lifting the compulsory school leaving age) associated with secondary school completion to the same degree for Indigenous and non-Indigenous students?

Research Question 3.1.3 – Does the gap in Indigenous and non-Indigenous school completion change with cohort year (before and after lifting the compulsory school leaving age)?

Research Question 3.1.4 – Is cohort year (before and after lifting the compulsory school leaving age) associated with secondary school completion to the same degree for students with low academic self-concept compared to those with high academic self-concept?

3.4.1 Rationale for H 3.1.1 and RQ 3.1.2, 3.1.3 and 3.1.4

Increasing the compulsory school leaving age of secondary school students is a policy approach that aims to increase school completion (Markussen & Sandberg, 2011). Lifting the age that one is legally allowed to leave school has been associated with increased retention in subsequent non-compulsory years (Lamb & Markussen, 2011), and with lower dropout rates or higher graduation rates in various states of the United States (Rumberger & Lin, 2008). Whether this reduces dropout rates in Australia is not

currently well researched; however, we expect that increasing the compulsory school leaving age across Australia will be associated with lower dropout rates. As such, cohort year (that is, before and after lifting compulsory school leaving age) may be a moderator of the relation between socioeconomic status and school completion, reducing the influence of socioeconomic status on school dropout post-implementation of the policy, to level the playing field somewhat for students from low socioeconomic backgrounds. Were young people more likely to complete school after the school leaving age was increased? And which young people were more likely to complete school after the policy was implemented? Are Indigenous students advantaged to the same extent as non-Indigenous students? Does implementation of this policy work toward the national objective to 'close the gap' between Indigenous and non-Indigenous secondary school completion rates? How are the completion rates of students with low academic self-concept affected compared with those with high academic self-concept by this policy change? This research does not investigate whether the policy change caused improved school completion rates. Rather, this research indicates whether a difference exists between the school completion of two student cohorts, with the first cohort occurring before the policy was implemented, and the second cohort occurring after the compulsory school leaving age was increased to 17 years.

3.5 Chapter summary

This chapter provides the aims of this research and their rationale. The overarching thesis aim is to understand the interplay between socioeconomic status and Indigenous status, and academic self-concept, in predicting high school completion and related educational outcomes. More specifically, the thesis inquires whether academic self-concept, socioeconomic status and national level policy changes facilitate secondary school completion for everyone or just for some, with a particular interest in how Indigenous young people are affected compared to non-Indigenous youth in Australia. The specific aims, hypotheses/research questions and corresponding rationales for each of the three interrelated studies involved in this thesis were presented. Study 1 is a systematic review, while Studies 2 and 3 involve

statistical multi-linear regression modelling of two large representative and longitudinal Australian datasets.

Chapter 4: Methodology

> "Before we demand more of our data, we need to demand more of ourselves."
>
> (Silver, 2012, p. 14)

In this chapter, I outline the research methodology employed in this thesis. I commence with an overview of the theoretical foundations based on a postpositivist paradigm and within that, a conflict perspective. Next, the methods derived from the theoretical foundations are presented, including researcher position, and issues of Indigenous data sovereignty, use of secondary data, specific study designs, measures, datasets and analysis methods. Using three interrelated studies, this research explores the interplay between academic self-concept, sociodemographic and policy factors on secondary school completion rates. Study 1, a systematic review, investigates the role of sociodemographic factors (as moderators and mediators) on academic self-concept as a predictor of successful school completion and related educational outcomes in the current literature. Study 2, building on the findings of Study 1, uses a large longitudinal and representative dataset to comprehensively test the relation between socioeconomic status and school completion as it applies to Indigenous adolescents compared with their non-Indigenous peers. Study 2 also tests this relation for students with low academic self-concept compared to those with high academic self-concept. To do this, a multilinear regression modelling analysis was conducted. Study 3 investigates the potential moderation effect of cohort year to indicate the potential impact of national policy changes on socioeconomic status as a predictor of school completion for Indigenous and non-Indigenous adolescents. In this endeavour, I used a multilinear regression modelling analysis of an additional large longitudinal and

representative dataset to build on the findings of the previous two studies. Study 3 explores the impact of policy reform changing the age young people can leave compulsory schooling across Australia. Study 3 also validates the findings of Study 2 by replicating the analysis on a different dataset.

4.1 Research theoretical foundations

Research is a search for knowledge through systematic and 'objective' methods to find solutions to a problem (Kothari, 2004). However, research involving the study of social patterns, and the mechanisms that underlie what people do, is complicated. The notion of 'objective' cannot be so easily applied. As researchers, our social and cultural experiences and understanding of the world are important elements of the research process (Walter, 2019). That is, the axiological (belief and value systems), ontological (perceptions of the world), epistemological (how values are defined and knowledge prioritised), and sociocultural position (race, gender, age, cultural background) of the researcher and research institution form fundamental and intertwined elements of the methodology (Walter, 2019). The theoretical foundation of the research underpins what questions are deemed important to ask and for which to seek answers. The researcher´s theoretical foundations also inform the way answers are sought and interpreted, and which theoretical paradigms are useful in doing so (Kawulich, 2012; Walter, 2019).

4.1.1 Postpositivist and conflict paradigms

This research falls into a postpositivist research paradigm, which evolved as a reaction of educational researchers to the limitations of positivism (Panhwar et al., 2017). Like positivism, postpositivism is based on understanding human behaviour by discovering generalisable laws which, through scientific method, establish one objective reality knowable through probability. Both approaches are empirical and make claims about knowledge based directly on experience and emphasise facts and causes of behaviour (Bogdan & Biklen, 2003). However postpositivism rejects the central tenets of positivism; that is, that independence exists between the researcher and the researched. A postpositivist approach asserts that theories, hypotheses and

background knowledge and values of the researcher can influence what is observed (Robson, 2002). In addition, Crissey and Albee (1982) assert that:

> It is clear that there is a significant relationship between scientists' personal values and their acceptance of a particular explanation for human deviance … the closer we get to studying human beings and human deviance, the more the personality and values of the scientist appear to interact with the phenomena studied (p. 6).

Postpositivist research pursues objectivity while recognising that reality can only be known imperfectly and probabilistically (Robson, 2002) and in recognition of the influence of researcher bias. Adams (2015) argues that:

> Because research is a human endeavor, the beliefs, assumptions, and knowledge of the researcher influence the results. This influence permeates the research process, starting with which research questions are deemed worthy of exploration (and which are not), through the construction of research tools (e.g., interview questions, scale construction) and into specification of causative agents and appropriate interventions (p. 115).

As such, postpositivism is 'a certain pluralism' balancing both positivist and interpretivist approaches (Panhwar et al., 2017). However, unlike positivism, postpositivism upholds that the absolute truth is nowhere to be found (Phillips & Burbules, 2000). The current research focused on observational datasets and model experimentation. As school non-completion as a social phenomenon is objective in nature, and the research questions seek to discover relations between variables that are generalisable to broader populations, this research fits within a postpositivist research paradigm. In addition, postpositivism advocates for multimethod approaches; such as, in the case of this research, a systematic review followed by statistical modelling analyses, for achieving less bias and more objective results (Deluca et al., 2011).

Within a postpositivism research paradigm, a conflict perspective was drawn upon. A conflict perspective is based on the idea that society is inherently unequal and ongoing conflict exists around the competing interests of different social groups. The conflict between different groups and the associated distribution of power determine the social arrangements of society. Research framed by a conflict paradigm examines social phenomena with a focus on who benefits and who is disadvantaged by specific social arrangement and social changes. In addition, research using a conflict paradigm

framing is often associated with large-scale, quantitative research methods such as survey use (Walter, 2019). The conflict aspect provides a macro perspective of society and is based on Marxist theory of economic oppression (Marx et al., 1992) extending to include social conflict involving class and ethnic divisions or conflicts of interest between different social groups (Babbie, 2002). Like Marx, Bourdieu´s work embraces key aspects of conflict theory. Bourdieu theorises that social struggle occurs within fields where hierarchies exist based on economic conflict between social classes. The conflicts present in each social field have characteristics specific to those fields and involve additional social relationships that also stem from non-economic forms of capital (Bourdieu, 1977).

4.1.2 Researcher position

Given the important but largely invisible influence of the researcher perspective on the research process, it is essential to consider my responsibility as a non-Indigenous researcher (Craven et al., 2016) working within what has been termed 'the third space' (Bhabha, 1990, 1994). Working within 'the third space' is working within the cross-cultural location between Indigenous and non-Indigenous worldviews, and acknowledging, akin to Bourdieu´s (1987) understanding of symbolic power, that knowledge construction and use are power-laden tools that may be used in the reproduction of social hierarchies. This is particularly relevant in postcolonial contexts, where Bhabha (1994) attributes a naturalising and legitimising role to knowledge that maintains patterns of dominance. Orienting myself within 'the third space' allows some consideration of how researcher bias informs this research, and the way in which the research itself may reflect or perpetuate power disparities between Indigenous and non-Indigenous groups. Zechmeister et al. (1997) suggest that although researcher bias can never be eliminated, it can be minimised through researcher awareness of its existence.

In addition to researcher bias, recognition is required of the broader systemic bias associated with the way quantitative data is conceived, collected, analysed, and interpreted within first-world colonised countries, such as Australia, New Zealand, the United States and Canada. As an example, Walter and Carrol (2021) assert that the slice of Indigenous social and cultural realities represented in data collected about

Indigenous people is limited to the elements of interest to the dominant society, which contributes to the statistical objectification of Indigenous people (Walter & Andersen, 2016). As Māori researcher Tahu Kukutai (2011, p. 47) asserts, Indigenous populations are, from a data perspective, "statistical creations based on aggregated individual-level data, rather than 'real world' concrete groups", and this shapes how they are perceived by others and themselves (for example, see Andersen, 2008). As a non-Indigenous researcher, I was aware of the systemic bias in how Indigenous data is often used in ways not constructive to Indigenous people, and this knowledge informed my understanding of the research findings.

While Indigenous people have been the subject of much research, they have rarely dictated the research questions to be pursued, the type of data to be collected, nor controlled the narrative around research findings and the creation of knowledge. Western Eurocentric worldviews in research (particularly positivist paradigms) have been deemed problematic as they are poorly aligned with Indigenous worldviews (Walter & Anderson, 2016). Such research has frequently located Indigenous people in a deficit discourse under a pretence of 'objectivity' (Walter & Suina, 2019). Consequently, the findings of researchers about their study subjects are often not perceived as relevant or meaningful to the very people that researchers seek to understand and assist. Despite Indigenous Australians being the most researched people on Earth, not all research has benefitted Indigenous people and their communities (see Bainbridge et al., 2015; Walter & Andersen, 2016). Research based on Eurocentric worldviews, and involving research questions conceived by non-Indigenous people, often constructs knowledge which informs policies and deficit-based social narratives that are not helpful and are in many instances detrimental (Walter & Anderson, 2016). However, by the same token, "researchers have substantial power in their ability to represent and validate what is believed to be true about Indigenous peoples" (Guenther et al., 2016, p. 46).

To further minimise the risk of misrepresentation in this respect, in this investigation I consulted closely with my three Indigenous supervisors on matters of data interpretation and knowledge construction, particularly in terms of framing the investigation. I also drew upon the core values of ethical conduct in research with

Aboriginal and Torres Strait Islander Peoples and communities (National Health and Medical Research Council, 2018) which were applied to the individual studies as outlined later in the study specific sections of this chapter. In this thesis, I have given due consideration to the strengths-based approach proposed by Craven et al. (2016) which was applied as well as possible within the study constraints (e.g., university processes, dataset specifications and time).

4.2 Indigenous data sovereignty

Related to issues of non-Indigenous researcher biased representations of Indigenous people is the theme of Indigenous data sovereignty. Indigenous data sovereignty asserts that Indigenous people have the right to govern the collection, the ownership and the application of their data, and sees data as a cultural and economic asset (Walter et al., 2021). Indigenous data sovereignty focuses on the collective rights of Indigenous people to data about themselves, their lands and their natural resources. Indigenous data sovereignty is underpinned by the inherent right of Indigenous people to self-determination and governance over their people, land and resources as outlined in the United National Declaration on the Rights of Indigenous Peoples (UNDRIP) (Taylor & Kukutai, 2016).

Data sovereignty is considered fundamental to self-governance and Indigenous sovereignty more generally (Taylor & Kukutai, 2016). Currently there is discussion regarding Indigenous data sovereignty for the Indigenous people of New Zealand, Australia, Canada and the United States (Rainie et al., 2017). Broad agreement exists on the requirement for data that meet Indigenous data needs and aspirations, including data that 'disrupt deficit narratives', is disaggregated, reflects the social, political, cultural and historical lived experiences of Indigenous peoples´ lives and addresses Indigenous nation-building agendas (Rainie et al., 2017; Walter, 2018). More specifically, Walter et al. (2021) outline the key requirements of Indigenous data as follows. Comprehensive and nuanced data are needed to inform narratives of culture, community, resilience and successes of Indigenous people (lifeworld data), rather than an almost exclusive focus on Indigenous/non-Indigenous contrasts that pits the problematic Indigenous person against the normed Australian. Indigenous data also

need to include data that recognise cultural and geographic diversity to assist community-level planning and service delivery (disaggregated data), rather than data aggregated at the national or state level implying homogeneity. Data inclusive of the wider social structural contexts and complexities that influence Indigenous outcomes (contextualised data) are needed rather than simplistic decontextualised data focusing on individuals and families outside their specific contexts. In addition, data addressing Indigenous priorities and agendas (Indigenous priority data) are important, rather than 5D data that focus on disadvantage, disparity, dysfunction, difference and deficit, which solely reflect government priorities (Walter & Suina, 2019).

There is also a need for data that are accessible for Indigenous use, rather than being exclusively available to the official agencies and institutions that hold the data. The issues associated with unmet Indigenous data needs are exacerbated by advances in big data and open data technologies (Walter et al., 2021). Providing Indigenous people governance over their own data would allow them to better reflect their interests, values and priorities in research. The work of the Albuquerque Area Southwest Tribal Epidemiology Centre is an example of the adoption of an Indigenous-centred approach to tribal health data. The approach includes use of Indigenous quantitative methodologies and demonstrates the successful application of Indigenous data sovereignty (Suina & Chosa, 2021; Walter & Suina, 2019).

It must be acknowledged that Australia´s empirical data pertaining to its Indigenous populations are 'second-to-none internationally' particularly in terms of its Indigenous-specific nationally representative longitudinal surveys (Biddle, 2014b, p. 26). The Longitudinal Surveys of Australian Youth (LSAY), the datasets involved in Studies 2 and 3 of this thesis, contain large Indigenous samples and are representative. However, there is much work to be done if future LSAY surveys are to meet Indigenous data needs. For example, the LSAY datasets have evidently not been designed to allow for data collection that meaningfully reflects the cultural and geographic diversity of Indigenous Australian groups. The imposed category of 'Indigenous status' within the LSAY is problematic, as it ignores the diversity of contexts, histories, values and languages of the more than 500 Indigenous cultural and language groups that exist across Australia (Parker et al., 2021). While the LSAY datasets are used by academics

and other researchers to understand and explain phenomena relating to Indigenous Australians, they are not used by Indigenous communities for their own purposes of reflection and advocacy (Biddle, 2014b). In addition, the lack of Indigenous involvement in LSAY survey design, and subsequent analyses of data, can result in the prioritisation of outcomes of minimal relevance to Indigenous people, while outcomes of greater importance are marginalised (Walter & Suina, 2019).

4.3 Individual study designs

After determining the research paradigm, study design options were considered to identify the most effective approach for answering the research questions. Johnson and Christensen (2012) identified qualitative, quantitative and mixed methods as the three major approaches in educational research. Quantitative research quantifies variables, solves problems through numeric analysis, and involves hypothesis testing to find the cause-and-effect relation between variables. As quantitative research is underpinned by positivist and postpositivist approaches, a quantitative design was a natural fit for this research. A solely qualitative approach, characterised by constructivism/interpretivism, was deemed misaligned with the research questions. The option of employing mixed-methods research, that is, combining a quantitative approach with a qualitative approach, was considered in terms of the advantages and disadvantages of a qualitative research component. Qualitative research allows human behaviours to be studied holistically through in-depth examination (Eysis, 2016) of people and their contexts (De Vaus, 2014), factual and descriptive information (Johnson & Christensen, 2012), and non-predetermined emergent theory (Maxwell, 2013). However, due to the non-generalisability of qualitative findings being limited to a particular group (De Vaus, 2014), and difficulties with replicability of potentially inconsistent and unreliable data (Atkins & Wallac, 2012), a quantitative approach was deemed most appropriate to answer the overarching research questions. Moreover, this research thesis emphasises generalisability and applicability of findings, with a strong interest in efficacy and sampling efficiency.

This research extends the use of intersectional approaches (as discussed in more detail in Chapter 2), once exclusively the domain of qualitative research, into quantitative

research. While quantitative research methods have been under-utilised for this purpose, they offer valuable contributions to intersectionality research, through moderation analyses, moderated mediation analyses, and mixed-method research, particularly on the topic of social equity (Else-Quest, 2016a; Else-Quest, 2016b). Recent intersectional research focusing on race (ethnicity) and gender differences in education (Harris & Leonardo, 2018) has acknowledged the multiplicative rather than additive effects of intersecting variables on vulnerable communities (Harris & Leonardo, 2018; Nadal et al., 2015). This finding reinforces that a quantitative approach is appropriate to address the research questions and hypotheses of this research. Moreover, Walter (2015) notes, intersectional perspectives for Indigenous issues are critical. For these reasons, an intersectional quantitative approach was adopted in this research.

4.3.1 Use of secondary data

Aligned with the quantitative research approach selected, secondary data analysis was chosen as the main methodological approach. Secondary data analysis involves re-analysis or reinterpretation of existing data to bring about new perspectives which may adopt novel research questions and may be conducted by those other than the original researchers (Smith & Smith, 2008). Numerous methods of secondary analysis exist, including the exploration of aggregate data such as systematic reviews of previously published studies and manipulation of large-scale complex datasets.

Using secondary data has limitations, including issues of incomplete data, inherent bias and non-specificity to researchers' needs. Some of these limitations can be addressed through research design. Use of secondary data in Studies 2 and 3 through use of the Longitudinal Surveys of Australian Youth (LSAY) has the additional disadvantage of the lack of diversity of data pertaining to Indigenous people within the datasets and a lack of Indigenous-specific measures. Additionally, as secondary data was used, there was arguably a lack of ability to adhere to the principles for ethical conduct in research with Indigenous people (National Health and Medical Research Council, 2018) as they relate to the data collection process. However, I believe this has been offset by the benefits gleaned by extending the use of existing data and not subjecting Indigenous communities to yet more research. I am mindful of the

pervasive construction of deficit narratives around research involving Indigenous people. As such, I have adopted an intersectional approach to inform understanding of the mechanisms that contribute to Indigenous secondary school non-completion and combat the surrounding deficit narratives. Moreover, this thesis directly responds to calls for greater recognition of social and cultural influences on secondary school completion in educational research, intervention and policy (Freeman & Simonsen, 2015; Rumberger, 2012).

Despite the disadvantages, the advantages gained through use of secondary data were enormous, particularly with large and representative datasets that provide findings which are relevant at the population level. The decision to use secondary data also recognises the lack of large-scale quantitative research in Indigenous Australian research (Craven et al., 2016). The advantages in time and cost efficiencies allowed access to data on a scale that would have been impossible to replicate through first-hand data collection. Furthermore, use of secondary data (i.e., through use of the LSAY datasets) reduces the burden of participation on Indigenous people and maximises the use of previous surveys involving Indigenous data. As a result, secondary data as an approach allows researchers to stand on the shoulders of giants (Gorard & Taylor, 2004; Smith & Smith, 2008). Access to data on a grand scale and minimising the survey respondent burden on Indigenous people through use of secondary data is the primary rationale for selection of secondary data design in this research. This approach provides a perspective that would be difficult, if not impossible, to achieve through other methods. Despite the aforementioned limitations and given the nature of the research questions, use of secondary data was deemed appropriate for exploring social issues such as high school completion and educational inequity, where special groups, such as Indigenous people, are of particular interest.

4.3.2 Integration of Study 1, Study 2 and 3

A systematic review (Study 1) looks at "existing research using explicit, accountable rigorous research methods" (Gough et al. 2017, p. 4) and is compelling as it investigates the full body of evidence rather than trying to understand studies in isolation to answer a research question (Borenstein et al., 2009). The generation of knowledge to answer questions with systematic, accountable and rigorous methods allows for what

is known and unknown to be determined, and also identifies what new research needs to be undertaken to address currently unanswered questions (Newman & Gough, 2020). The prevalence of systematic reviews is on the rise due to increased awareness of the limitations of single studies, the desire for overarching perspectives of the research landscape, and the increased demand for empirical evidence to guide educational policy and decision-making (Nelson and Campbell, 2017).

One limitation of conducting a systematic review is that the original data of studies is generally not accessible. Therefore, conclusions which may be drawn are limited to the reported variables in published articles (Marsh et al., 2009). Meta-analyses are increasingly being used in the social sciences to statistically synthesise data to understand a study's results in the context of all the other comparable studies. However, as an approach for Study 1, a meta-analysis was not deemed appropriate due to the incompatibility of effect sizes from multiple outcome variables, small study numbers for each outcome, and in some instances, incomplete data. Fortunately, there are alternatives to the meta-analysis. Alternative approaches vary in the amount of data they require and the conclusions and hypotheses that can be drawn from their findings. While alternative approaches provide limited findings compared with a meta-analysis, they are superior to a narrative description where some findings are given more prominence than others without adequate justification (McKenzie & Brennan, 2019). In Study 1, a systematic review drawing on the approach of summarising effect estimates, as outlined in the *Cochrane Handbook* (McKenzie & Brennan, 2019) was utilised instead of a meta-analysis.

To complement the systematic review (Study 1), primary studies involving large quantitative databases, amenable to testing moderation effects and conducting more precise investigations beyond describing effect sizes, are useful for interpreting Study 1 results and developing new areas of inquiry (Marsh et al., 2009). As such, the large-scale quantitative data analyses of Studies 2 and 3 offered potential to substantiate, address the limitations, and build upon the findings of Study 1, particularly as Study 1 was a systematic review in the absence of a meta-analysis. An early finding of Study 1 was that the focus on student academic self-concept appeared unduly emphasised, in line with the scepticism of Parker et al. (2021) regarding enhancing academic self-

concept to assist closing the gap in educational attainment for Indigenous youth, based on the current state of evidence. Instead, further investigation of the link between socioeconomic status and secondary school completion was considered warranted, based on the frequency with which low socioeconomic status impacts Indigenous young people, and the lack of studies investigating the intersectionality of socioeconomic status, academic self-concept and Indigenous status on school completion. Studies 2 and 3, as primary studies, provided the opportunity to undertake this investigation.

A variety of approaches are available to explore how various predictors jointly contribute to the process of school dropout. Examples include development of risk indexes involving composites of predictors (e.g., Ferrara, 2015; Jovanović et al., 2017) and the creation of profiles or taxonomies to identify types of dropout (e.g., McDermott et al., 2018). However, testing statistical models that link factors together through multilinear regression modelling was the approach selected based on the advantages of this approach over others. The main advantage of multilinear regression modelling is that it is a statistical modelling method that specifically allows the combining of predictor variables for the exploration of intersectionality. Multilinear regression also allows the strength of the interaction relations among predictor variables to be quantified to estimate how well the resulting model 'fits' the data (Kline, 2010). Furthermore, use of multilinear regression modelling allows the weight of specific variables to be determined and a prediction of the probability of school non-completion to be made based on a combination of factors specific to an individual.

4.4 Study 1 Methods: Systematic review

The main aim of Study 1 was to address how sociodemographic contexts affect the impact of academic self-concept on adolescent educational outcomes, as outlined in Chapter 3. To achieve this, a systematic review of the literature was conducted to summarise the magnitude of effects estimates of academic self-concept across numerous studies and a diverse participant range. As discussed in the literature review (Chapter 2), much of the research on academic self-concept in relation to educational outcomes does not specifically consider the moderation effects on academic self-

concept of varying sociodemographic factors. While some studies have begun investigating the relations between self-concept and ethnicity, country level differences, and gender (e.g., Parker et al., 2019c), little work has investigated the intersection of Indigenous status and self-concept with socioeconomic status. As outlined previously, a vast amount of educational research targets the role of cognitive and psychological factors, particularly student academic achievement, and to a lesser degree academic self-concept. However, many researchers have highlighted that the social and cultural context in which students live and learn (Freeman & Simonsen, 2015) are often not adequately addressed in psychological and educational research. Study 1 responds to the research gap identified.

As a systematic review, Study 1 followed the methods outlined by the Cochrane approach for systematic reviews (Higgins et al., 2019). Consistent with the approach, the protocol of the review was registered on Prospero, an international register of prospective systematic reviews (registration number: CRD42019128170). The eligibility criteria for study inclusion in the review are outlined below, along with an overview of how searches for potentially eligible studies were conducted and how title and abstract screening of studies has been conducted.

4.4.1 Eligibility criteria

For inclusion in this review, studies needed to demonstrate a quantitative relation between an academic-self competency variable (e.g., academic self-concept or expectancy for academic success) and one measure of educational outcome (e.g., high school completion or student engagement). Studies also needed to have full-text available in English to ensure extracted data was accurate. Studies derived from meta-analyses and other study reviews were not included. Participants needed to be school-aged, that is approximately between the ages of 4 and 18, or school attendance needed to be demonstrated. Student populations with special needs, such as mental or physical disabilities were excluded, unless they were present as part of a broader sample not separated from the mainstream class environment. No restrictions were applied to publication date or type to enhance the breadth of the review. Studies completed at any time before the date of the search were included irrespective of

whether they were published or not, in an effort to reduce publication bias. (Appendix A provides the full eligibility criteria for Study 1).

4.4.2 Searches

A number of electronic databases were used to conduct searches: PyschINFO, Web of Science, Education Resources Information Centre (ERIC), and ProQuest Sociology. Search terms included terms that identified competency-based self-concepts; that is, variations of the term 'academic self-concept' such as 'competency belief', 'perceived competence', 'self-efficacy', 'self-esteem', 'self-belief' and 'expectancies'. Variations of the term 'educational outcome' were searched; such as, 'school completion', 'dropout', 'school attendance', and 'student engagement' (see Appendix B for search terms and strategy).

Initially, I selected the keywords from the study research questions and searched for them in Google Scholar to retrieve related papers. Reference lists of the papers were also searched for target papers. Having identified several target papers, I extracted the potential search terms that were used to guide the database searches. Search terms were identified in titles, abstracts and keywords. References from studies included in the review were also explored to identify other potentially relevant studies not previously identified through the database search process. Figure 4.1 shows the study inclusion process.

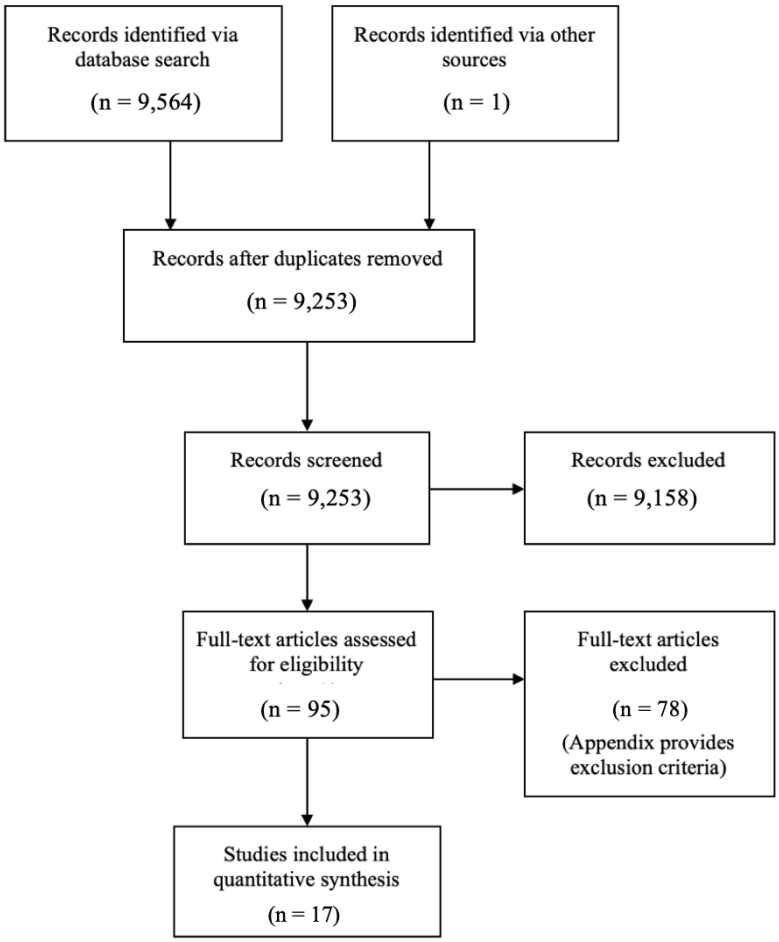


Figure 4.1: Flow diagram of the study selection process

4.4.3 Selection of studies

Reference list and database searches yielded potentially eligible papers of studies for review inclusion. The papers were exported into EndNote and duplicate papers removed. Three researchers independently screened titles and abstracts. Studies were not included where there was researcher agreement that title and abstract information did not meet eligibility criteria. After duplicates were removed, 9253 were screened by three researchers at the title and abstract level. In total, 95 full-text papers were reviewed. For all remaining studies, full-text versions were acquired and then assessed against the eligibility criteria. Disagreement between researchers regarding inclusion was resolved through discussion. There were 17 papers meeting the criteria for inclusion in the review. The inter-rater reliability of full text screening was high *(k* = .89).

4.4.4 Data collection process

After determining which studies would be included in the review, three researchers extracted summary data from each study. The data extracted from each study included the following: 1) study descriptive information (i.e., study title, authors, year of publication, study source (e.g., peer reviewed journal, book chapter), country of study, study type (cohort, cross-sectional)); 2) study participants (i.e., socioeconomic status grouping (%)), ethnicity group (%), Indigenous comparison (Y or N), gender (%), sample size, females in the sample (%), school grade, age range, age (mean, standard deviation), type of school (public, private, religious, metropolitan, regional); 3) study detail (i.e., study research question relating to moderation/mediation analysis, sampling procedure, number of measurement timepoints); 4) independent variable (including independent variable measure (including items), independent variable measure reliability (Cronbach′s α); 5) outcome variable (including outcome variable measure (including items) and outcome measure reliability (Cronbach′s α); 6) moderator/mediator variable (including moderator/mediator measure (including items), moderator/mediator measure reliability (Cronbach′s α), type of moderation/mediation analysis, control variables, moderation/mediation measurement units); 7) results (including the statistical result examining the effect of a moderator/mediator on the relation between an academic self-concept variable and educational outcome variable, other emergent study results). Data extracted from the studies were based on recommendations made by the Cochrane approach for systematic reviews (Higgins et al., 2019).

4.4.5 Risk of bias

A variety of tools assess the risk of reporting bias. However, different tools have different limitations in terms of scope, how risk of bias judgements are made and measuring risk of bias (Page et al., 2021). As this study investigated both longitudinal and cross-sectional studies, peer-reviewed quality assessment tools appropriate to both study types were used. A risk of bias assessment checklist was made using a set of 10 questions derived from two separate instruments for the purpose of ease of use and comprehensiveness. The first instrument was the critical appraisal tool, AXIS, developed by Downes et al. (2016) to assess the quality of cross-sectional studies.

Farrah et al. (2019) identified this tool as commonly used in non-randomised studies. The second tool was the Critical Appraisal Skills Program (CASP) tool for longitudinal studies (CASP, 2018), which is one of the most accepted tools for cross-sectional studies (Sanderson et al., 2007). The systematic review of risk of bias tools by Farrah et al. (2019) demonstrates both tools to be commonly used for non-randomised studies. Of the set of 10 questions selected, nine questions were directly relevant to both types of study and one question was specific to cohort design studies only. The full criteria used in the assessment of risk of bias are included in Appendix C. Two reviewers assessed the risk of bias of included studies independently. Discrepancies relating to risk of bias between reviewers were resolved through discussion.

4.4.6 Summary measures

Summary measures that were used within the included studies were standardised regression analysis coefficient (β), correlation coefficient (*r*), chi-square statistic (with 1 degree of freedom) (χ^2) and eta-squared statistic (η^2). Firstly, all of the results were transformed into a correlation effect size (*r*). Peterson and Brown´s (2005) formula was used to convert β to *r*. Rosenberg´s (1994, 2010) formula was used to convert χ^2 to *r* and the transformation from η^2 to *r* was also conducted based on Lenhard and Lenhard's (2016) recommendations. While combining beta coefficients with varying metrics (e.g., correlations) may be a limitation (given the number of covariates considered in multivariate analysis differs across studies in general), a beta coefficient may be converted to *r* if it is within the range of -.50 to .50 (Bowman, 2012; Peterson & Brown, 2005). None of the beta coefficients were outside this range. Effect sizes were then corrected for attenuation (Charles, 2005) with the reported measure internal consistency (i.e., Cronbach´s alpha). Where this was not reported, .70 was used to estimate reliability of the measure based on the method used by Vasconcellos and colleagues (2020). The effect sizes were then transformed to Fisher´s z, to account for the strong dependence of variance on the correlation (Borenstein, 2009) for analysis, and reversed back to r to present findings (adjusted effect sizes). Calculations were preformed and then cross-checked by a second researcher. Effect sizes were defined as greater than 0.1 is weak, greater than 0.3 is moderate, and greater than 0.5 is strong based on Cohen (1988).

4.4.7 Publication bias

Studies reporting high effect sizes have a greater likelihood of being published than studies that report lower effect sizes (Ellis, 2010). As studies that are published are more likely to end up in a systematic review than unpublished studies, the systematic review is likely to reflect the bias in the literature. This publication bias can mean that effect sizes are inflated in systematic reviews. Publication bias is best determined using a funnel plot (Sterne, 2008) which generally requires more studies than were included for each of the outcomes in the review. As a result, publication bias was not calculated.

4.4.8 Synthesis of results

This systematic review allowed the effects of academic self-concept on a variety of educational outcomes to be synthesised, across many studies and diverse participant populations. Researchers in school completion and dropout often neglect to provide sufficient information regarding the ethnic minority status or socioeconomic status of study participants (Freeman & Simonsen, 2015). In addition, researchers often do not indicate differences in self-concept for the different demographic categories within a sample, but instead provide average self-concept differences across the whole sample (Marsh et al., 2009). The poor comparability of study findings due to inadequate reporting of participant demographic and other details, along with varying outcome variables and the omission of diverse participant samples, produced inadequate statistical power to perform a meta-analysis for moderation effects (Borenstein et al., 2009). As the number of studies using similar comparison groups or outcome measures was small, a quantitative synthesis of findings through meta-analysis was deemed inappropriate in terms of producing meaningful results. Instead, as recommended in the *Cochran Handbook* (Higgins et al., 2019), summary tables were created for moderators and mediators. Based on the GRADE approach for grading certainty of evidence (Atkins et. al., 2004; Guyatt et. al., 2008; Guyatt et. al. 2011; Schünemann et al., 2003; Schünemann et. al., 2006), the studies were classified as low or medium certainty of evidence due to potential bias associated with their observational nature (lack of randomisation, i.e., confounding and selection bias; Schünemann et. al., 2021). Certainty of evidence was informed by the presence and absence of the specific design and implementation features of the studies, derived from AXIS (Downes et al., 2016)

and CASP (CASP, 2018) tools. This approach allowed reviewers to rate the evidence in terms of certainty of evidence. Results of the review were reported (see Chapter 5) in line with the PRISMA (Preferred Reporting Items for Systematic Review and Meta-analyses) guidelines (Moher et al., 2015).

4.4.9 Summary

The methodology of Study 1 followed the Cochrane approach for systematic reviews (Higgins et al., 2019) and involved reviewing current literature and summarising the magnitude of effects estimates of academic self-concept across numerous studies and a diverse range of participants on various educational outcomes. A protocol for the review was developed including the search process and inclusion criteria. Database searches (PyschINFO, Education Resources Information Centre (ERIC), ProQuest Sociology and Web of Science) were conducted and 9,564 records identified. Title and abstract screening by three researchers produced 95 studies eligible for full-text screening. After full-text screening, a further 78 studies were excluded, resulting in 17 studies included in the quantitative synthesis yielding 20 effect sizes. Risk of study bias was conducted based on a set of questions derived from the Downs and colleagues (2016) AXIS tool for longitudinal studies, and from the CASP tool (CASP, 2018). The GRADE approach was then used for grading certainty of evidence (Atkins et. al., 2004; Guyatt et. al., 2008; Guyatt et. al. 2011) and results reported in line with the PRISMA guidelines (Moher et al, 2015).

4.5 Study 2 Methods: Statistical modelling

Study 2 builds on the findings of Study 1 and aimed to comprehensively test whether the relation between socioeconomic status and secondary school completion varies for different student groups, as described in Chapter 3. This study addresses the overarching research question: Does high socioeconomic status facilitate secondary school completion to the same degree for everyone, including Indigenous and non-Indigenous students, and students with varying levels of academic self-concept? To answer this, I conducted a multilinear regression modelling analysis of a large and representative longitudinal sample to quantify the strength of the interaction effects among specific predictors. As highlighted in Chapter 2, research on school completion

(Freeman & Simonsen, 2015; Rumberger & Rotermund, 2012) and academic self-concept often does not fully take into account the sociodemographic settings of young people. While some studies have investigated relations between academic self-concept and ethnicity (e.g., Bodkin-Andrews, Denson & Bansel, 2013), and country level differences (e.g., Marsh et al., 2018), and gender (e.g., Parker et al., 2019c), little research has investigated the intersection of Indigenous status and socioeconomic status, and of academic self-concept and socioeconomic status in relation to school completion. Given the nature of the research question, multilinear regression modelling analysis is particularly appropriate as generalised conclusions can be obtained more easily than with other methods. Study 2 followed Lumley's (2011) methodology for analysis of complex surveys using R, a statistical programming language (R Core Team, 2020). This section provides an overview of the study participants, the dataset and sampling process used in the study. Measures included in the analyses are described. Finally, the data analysis methodology is outlined, including data preparation with weights, addressing missing data, model selection and validity testing.

4.5.1 Participants

This study used a nationally representative and large-scale longitudinal Australian database, the Longitudinal Survey of Australian Youth (LSAY), an extension of the Programme for International Student Assessment (PISA), to explore the data and test for moderation effects. LSAY follows cohorts of young people from the age of 15, contacting them once a year for 10 years until age 25. LSAY is Australian government funded and has been running since the mid-1970s, collecting data on the education, training, employment and social development of young people as they transition from adolescence to adulthood. The sample used in this study came from the LSAY 2003 cohort (N =10,370; 50.82% male). In the 2003 cohort (weighted), 87.2% of participants were Australian born and 2.1% of those identified as Indigenous Australians. Most participants (72.1%) lived in metropolitan areas.

The sample had the following characteristics relating to participant secondary school completion. The sample (N = 9378) had 7662 participants who completed Year 12 and 1716 participants who left school without completing Year 12. While 124 of the 191

Indigenous Australian students in the sample completed Year 12, 67 left school without completing Year 12. The 2003 cohort was selected as it contained the variables needed to explore the research questions. Data for achievement, academic self-concept and socioeconomic status was derived from the first wave of the data collection, while the Year 12 non-completion variable was based on participants' reports of whether they left school without completing Year 12, measured at each subsequent wave while participants were at secondary school.

4.5.2 Sampling

The first wave of the 2003 cohort participated in the PISA sampling, conducted by the OECD. PISA sampling used a complex two-stage clustered sampling design. In the first stage, the sampling approach involved selection of schools based on a probability proportional to school size, where larger schools were more likely to be chosen. The sample comprised 355 schools from all Australian states and territories. The sample was designed to be representative of students across Australia in terms of state/territory, school sector, and metropolitan/regional. The second stage of sampling resulted in the random selection of a set number (50) of non-Indigenous students from all possible 15-year-old adolescents at each sampled school. At schools with fewer than the set number of students, all 15-year-olds were selected. In addition, at each selected school all of the Indigenous 15-year-old students were sampled. Indigenous students were oversampled, along with students from areas with fewer participants, to allow representative results to be produced for Indigenous status and state (NCVER, 2010, 2017; Rutkowski & Rutkowski., 2013). Every selected student was then given a demographics questionnaire along with a subset of cognitive items. Follow-up telephone interviews of the LSAY questionnaire were conducted with subsets of the original PISA respondents annually (NCVER, 2010, 2018).

4.5.3 Measurements

The predictor variables included in the analysis are outlined below.

Academic self-concept. In this study, the academic self-concept item included was drawn from the second wave of the LSAY data. The second wave included the general academic self-concept item "compared with most of the students in your year level at

school, how well are you doing in your school subjects overall?" Question responses were measured on a 5-point Likert scale - *very well* (1), *better than average*, *about average*, *not very well*, and *very poorly* (5). This item draws on social comparison, one of the three components of self-concept (Parker et al., 2019b), in which individuals compare their performance against others (Van Zanden et al., 2015). The social comparison component of self-concept has been demonstrated to be stronger than temporal and dimensional components of self-concept (Muller-Kalthoff et al., 2017).

Socioeconomic status. Socioeconomic status was measured using participant responses to a series of questions relating to the socioeconomic status of their parents. More specifically, it was measured using the PISA Economic, Social and Cultural Status (ESCS) scale, a composite score based on three sets of indicators from PISA 2003 (wave 1 of the LSAY 2003 dataset). These sets of indicators were highest parental education (highest number of years of parental education according to the International Standard Classification of Education), highest status of parental occupation and a measure of household possessions. The household possessions index comprised three sub-indices: family wealth possessions, cultural possessions and home education resources, including a measure of the number of books at home (OECD, 2005, 2012; Rutkowski & Rutkowski., 2013).

Measures of socioeconomic status are generally based on income, education and occupational status. However, the presence of specific household items in the ESCS scale are used as a proxy for family wealth as no direct income measure is available (OECD, 2017; Rutkowski & Rutkowski., 2013). Students are considered socioeconomically advantaged if they are among those with high values on the ESCS index, while socioeconomically disadvantaged students are those with low values. High socioeconomic status was defined as the mean ESCS value plus one standard deviation, and low socioeconomic status was defined as the mean ESCS value minus one standard deviation from the 2003 dataset. ESCS index values have been standardised such that the mean is zero and the standard deviation is 1. Although generally accepted as having sufficient validity, available evidence indicates that the ESCS measure has error associated with the lack of concordance between student and parent responses on the same items concerning parents' occupation and parents' education level in some

countries (Adams & Wu, 2002; Rutkowski & Rutkowski, 2010; Rutkowski & Rutkowski., 2013; Schulz, 2006). In addition, Lim and Gemici (2011) highlight that the need for multi-country adjustment of the ESCS variable for PISA makes the variable less reliable when it is considered exclusively in the Australian context.

Academic achievement. Student academic achievement was measured by the PISA achievement tests in mathematics, reading, and science (see OECD, 2004 for additional information). These assessments involved open, closed, and multiple-choice questions to measure some realms in each academic domain. The test of science ability measured student ability to describe, explain, predict and interpret scientific evidence, and understand scientific investigation. The mathematics achievement test measured academic competency in the following mathematic realms: quantity, change in relationships, uncertainty, space and shape. The reading achievement test assessed the ability to retrieve, explain and reflect on information. Matrix sampling and item response theory was used in the academic ability assessment to create five plausible values for each student´s achievement in each domain. These plausible values were used to generate a measure of prior academic achievement by summing the five plausible values multiplied by the student weight, then calculating the average of the partial results of each value, as outlined in Laukaityte and Wiberg (2017).

Indigenous status. Student Indigenous status was measured by how they responded to the question: "Are you of Aboriginal or Torres Strait Islander origin?" In this instance, students identifying as being of Indigenous Australian or Torres Strait Islander heritage responded with 1. Students not identifying as being of Indigenous Australian or Torres Strait Islander heritage responded with 0.

Gender. In determining gender, responses were 1 for male and 2 for female.

The outcome variable included in the analysis is outlined below.

School non-completion. The measure of secondary school non-completion in this study is a derived variable based on adolescent reports of whether they left secondary school before completing Year 12. Reports of not leaving school prior to completing Year 12 mean the adolescent continued at school until the end of the Year 12 school

year. Participants may have reported that they completed Year 12 without having successfully gained a Year 12 certificate. If it were indicated that the young person had left school before completing Year 12, they scored a one on the "left school before completing Year 12" non-completion measure, in contrast to Year 12 completers (scored zero). This variable is aligned with the frequently referenced Year 12 'retention rate', a measure of school participation at the time of the annual census conducted mid-year, instead of a measure of school completion to the standard needed to achieve the Year 12 certificate (Homel et al., 2012).

4.5.4 Data analysis

The analysis involved multilinear regression modelling to investigate possible moderation effects of a third variable (that is, academic self-concept and Indigenous status) on the relation between a predictor variable (socioeconomic status) and an outcome variable (school non-completion). The method to determine moderation in this study follows the original approach outlined by Judd and Kenny (1981) and Baron and Kenny (1986) that was subsequently advanced by Muller and colleagues (2005) and Edwards and Lambert (2007). The model shown in Figure 4.2 below has three causal paths to the outcome variable (school non-completion). These paths are the impact of the independent variable as a predictor (path a), the impact of the moderator (path b), and the interaction (or the product) of both path a and path b (path c). The hypothesis of moderation is supported if the interaction (indicated as path c) is shown to be significant.

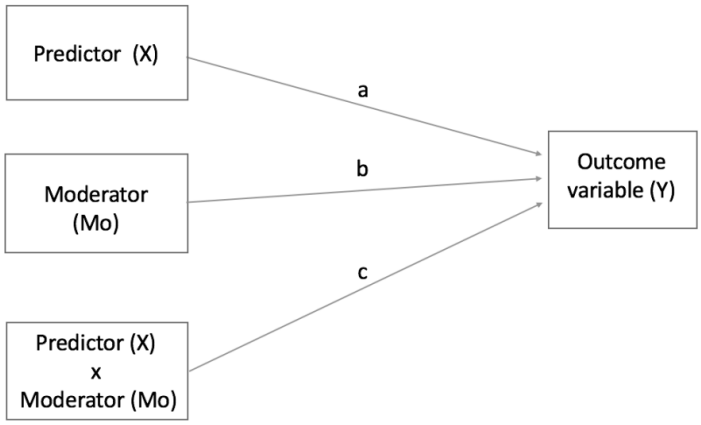


Figure 4.2: Moderation model

Weights. LSAY used complex sampling procedures in its data collection that involved oversampling of Indigenous groups and students from areas with fewer participants to ensure data that was representative of the Australian population. To address the associated issues, a number of weighting procedures were used. Sample weights addressed sampling bias by reflecting the original sample design and ensuring the sample had the same distribution as the population from which it was drawn. Student attrition from samples was a problem, so attrition weights were used to address item non-responses by matching sample and sample population distributions (NCVER, 2010, 2018). In addition, schools were the primary unit of measurement in the dataset. To address the challenges this presented, replicate weights were used to ensure the accuracy of the standard errors. Replicate weights were provided by the survey organisers. For a full explanation on LSAY survey weights, see Lim (2011).

Data manipulations were conducted using R (as outlined in Lumley, 2011). The R function "svyglm" allowed for the fit of a generalised linear model to the LSAY dataset involving complex weighted survey data. Svyglm uses inverse-probability weighting and design-based standard errors (Lumley & Scott, 2017) to achieve this. All variables in the model were scaled based on given weights in the survey.

Generalised linear modelling. As the model is designed to predict only two categorical outcomes in the dependent variable (0 = school completion, 1 = school non-completion) the analysis involved binary logistic regression. With only two categorical outcomes, the dependent variable does not have a normally distributed error. As a result, binomial generalised linear model (GLM) with logit (logistic regression) link was selected to predict the probability of dropout (binary logistic regression GLM with logit link). The quasi-binomial was selected over the binomial GLM in R, as it had an extra parameter that accounted for the additional variance resulting from use of weights in the survey.

Initially, the 2003 dataset was filtered to eliminate missing and invalid data. The initial sample was reduced to account for attrition from the first LSAY wave to the second wave, after which there was minimal missing data. A focus was placed on school

continuation and completion rates from LSAY wave 2. This focus was due to the steep attrition in the following LSAY waves and the relatively modest number of Indigenous students in the initial sample, and avoided underpowered tests of the study hypotheses. The vast majority of participants were in Grade 10 during the first wave, with school continuance from Grade 10 to 11 being particularly crucial (see Ciarrochi et al., 2017). As a result, the analytical focus on waves 1 to 2 was a pragmatic way of addressing the data. Acknowledging students may stay at school in wave 2 but drop out in the subsequent waves, information on school continuance and completion in the waves 3 to 5 of the LSAY sample were utilised to update the primary outcome variable (last observation carried backward) to maintain definitional integrity. Due to attrition, much of the sample in the later waves was missing. To account for this, we include a missing by attrition flag (1 for missing at wave 5, 0 otherwise) to the models.

Selected variables identified as potential moderators were extracted from the dataset, along with socioeconomic status as the independent variable and school non-completion as the outcome variable. Analysis was conducted to determine relations between the variables while controlling for prior academic achievement.

4.5.5 Summary

Multilinear regression modelling was used in Study 2 drawing on the methods outlined by Lumley for complex surveys in R (Higgins et al., 2019). The sample was drawn from the LSAY 2003 cohort (N =10,370; 50.82% male). The first wave of data collection involved PISA sampling, conducted by the OECD, using a complex two-stage clustered sampling design. A multilinear regression modelling analysis was conducted using a binomial generalised linear model with logit link. Variable measures used in the analysis were academic self-concept, socioeconomic status, academic achievement, Indigenous status, gender and school non-completion. A number of survey weights were applied including sample weights, attrition weights and replicate weights based on Lim (2011) to address issues associated with the complex sampling procedure.

4.6 Study 3 Methods: Statistical modelling

Study 3 supports and extends the findings of Study 2 and aimed to test the moderation effect of a significant national-level policy change on secondary school completion as

outlined in more detail in Chapter 3. Study 3 responds to the question: Do national-level policy changes relating to school-leaving age facilitate secondary school completion to the same degree for everyone, including Indigenous and non-Indigenous students, and students with varying levels of academic self-concept? The policy changes involved an increase in age at which young people are legally able to leave compulsory secondary schooling from 15 to 17 years across Australian states and territories. The focus of Study 3 was investigating the role of the policy change on school completion rates of Indigenous young people compared with non-Indigenous youth and also on students with high and low academic self-concept, and the implications of the policy intervention on the Australian government´s policy objective of 'closing the gap' in school completion between Indigenous and non-Indigenous youth. Study 3 also tested the generalisability of potential findings of Study 2.

4.6.1 Participants

The sample used in Study 3 came from the LSAY 2009 cohort (N = 14251; 48.90% male). In the 2009 cohort (weighted), 87.3% of participants were Australian born and 3.2% of those identified as Indigenous Australians. Most of the sample (74.8%) lived in metropolitan areas. The 2009 cohort used in this study (N = 8759) had the following characteristics relating to participant secondary school completion: 8181 participants completed Year 12 and 519 left school without completing Year 12. The sample had 492 Indigenous Australian students. While 433 of the Indigenous students completed Year 12, 59 left school without completing Year 12. The LSAY 2009 cohort was selected for this study as it contained the appropriate variables to explore the study research questions and allowed for analysis of the effect of the major policy change implemented between the 2003 and 2009 cohort samples. In addition, use of this sample allowed for the replicability of Study 1 effects to be tested given the consistency in measures. Data for achievement, academic self-concept, and socioeconomic status was derived from Wave 1 of data collection, while the Year 12 non-completion variable was based on participants' reports of whether they left school without completing Year 12, measured at each subsequent wave while participants were at secondary school.

4.6.2 Sampling

The same sampling procedures were used in the 2009 cohort in this study, as in the 2003 cohort. The first wave of the 2009 cohort participated in PISA sampling, using a complex two-stage clustered sampling design. The first sampling stage involved selection of schools based on a probability proportional to school size, where larger schools are chosen with higher likelihood. The 2009 sample comprised 353 schools from all states and territories and was designed to be representative of Australian students in terms of distribution across state/territory, school sector and metropolitan/regional. The second sampling stage involved random selection of a set number of non-Indigenous students (48) from all possible 15-year-old adolescents at each school sampled. Like the 2003 sample, all Indigenous 15-year-old students were sampled at each school, and at schools with fewer than the set number of students, all 15-year-olds were selected. Again, Indigenous students and students from areas with fewer participants were oversampled, to allow representative results (OECD, 2005, 2012; Rutkowski & Rutkowski., 2013; NCVER, 2010, 2018). All selected students were given a demographics questionnaire with a component of cognitive items. Follow-up telephone interviews of the LSAY questionnaire were conducted with subsets of the original PISA respondents annually (NCVER, 2010, 2018).

4.6.3 Measurements

The same variables were derived from the LSAY 2009 sample as were derived from the LSAY 2003 sample in Study 2. The predictor variables were academic self-concept, socioeconomic status, academic achievement, Indigenous status and gender. The academic self-concept item was "compared with most of the student in your year level at school, how well are you doing in your school subjects overall?" The item was drawn from the second wave of the data. Responses to the question were measured on a 5-point Likert scale - *very well* (1), *better than average, about average, not very well, and very poorly* (5). Socioeconomic status was measured using the PISA Economic, Social and Cultural Status (ESCS) scale, a composite score based on three sets of indicators from PISA 2009; that is, highest parental education (highest number of years of parental education according to the International Standard Classification of Education), highest status of parental occupation and a measure of household

possessions. High socioeconomic status was defined as the mean ESCS value plus one standard deviation, and low socioeconomic status was defined as the mean ESCS value minus one standard deviation from the 2003 dataset. Student academic achievement was measured by the PISA achievement tests in mathematics, reading, and science (see OECD, 2004 for additional information). As in Study 2 student Indigenous status was determined by the response to the question: "Are you of Aboriginal or Torres Strait Islander origin?" Gender was also measured in the same way as in Study 2. The outcome variable was school non-completion and was a derived variable based on whether participants report that they left school before completing Year 12. This is presumed to mean they remained at school until the end of the school year, and participants may have reported that they completed Year 12 without having gained a Year 12 certificate. For more details about the specific measures used in the Study 3 statistical data analysis, please refer to the 'Measurements' section 4.5.3 under Study 2 Methods – Statistical modelling.

4.6.4 Data analysis

The analysis involved multilinear regression modelling to investigate possible moderation effects of a third variable on the relation between a predictor variable (socioeconomic status) and an outcome variable (school non-completion) in a very similar process as used in Study 2. For more detail on the data analysis process for Study 3, including selection of the binomial generalised linear model (GLM) with logit (logistic regression) link, missing data and use of sample, attrition and replicate weights to maintain the representativeness of the sample, please refer to the previously outlined 'Data analysis' section 4.5.4 under 'Study 2 Methods – Statistical modelling'.

4.6.5 Summary

Multilinear regression modelling was used in Study 3 drawing on the methods outlined by Lumley for complex surveys in R (Higgins et al., 2019), as in Study 2. The sample was drawn from the LSAY 2009 cohort (N = 14251; 48.90% male). The first wave of data collection involved PISA sampling conducted by the OECD, using a complex two-stage clustered sampling design. A multilinear regression modelling analysis was conducted using a binomial generalised linear model with logit link. Variable measures used in

the analysis were academic self-concept, socioeconomic status, academic achievement, Indigenous status, gender and school non-completion. A number of survey weights were applied including sample weights, attrition weights and replicate weights based on Lim (2011), to address issues associated with the complex sampling procedure. The findings of Study 3 were compared with those of Study 2, to determine the impact (moderation effect) on school completion of implementing a policy to increase the compulsory school leaving age to 17 years (from 15 years). Study 3 findings were also compared to those of Study 2 to replicate and generalise findings.

4.7 Chapter summary

The research methodology was informed by a postpositivist worldview which rejects the basic premise of positivism, that of independence existing between the researcher and the researched. Rather postpositivism acknowledges that the values of the researcher influence what is observed. Within this paradigm, a conflict perspective was adopted. A conflict perspective is based on the idea that society is unequal due to the conflict between different groups and the associated distribution of power. In this thesis, my sociocultural position as a non-Indigenous researcher has been made explicit to help minimise the associated bias all too common to research conducted by non-Indigenous researchers and involving Indigenous participants. Indigenous data needs and the importance of Indigenous data sovereignty were discussed along with associated limitations of the LSAY datasets used in Studies 2 and 3. The pros and cons of using secondary data sources in the research were discussed.

Next the method, including detail of the specific study designs, measures used and dataset details were presented. Study 1 involved a systematic review to synthesise the effects of potential moderators and mediators of the relation between academic self-concept and a variety of school completion related educational outcomes across the literature. Study 2 involved a multilinear regression modelling analysis of a large longitudinal and representative dataset, to test the relation between socioeconomic status and school completion as it applies to Indigenous adolescents compared to their similarly achieving non-Indigenous peers, and for students with low compared to those with high academic self-concept while controlling for prior academic achievement.

Study 3 also involved a multilinear regression modelling analysis of a second large longitudinal and representative dataset to validate and build on the findings of the previous two studies. Study 3 explored the impact of policy changes on school completion rates of Indigenous adolescents, including whether the policy contributes to 'closing the gap' between Indigenous and non-Indigenous school completion rates.

Chapter 5:
Results of Study 1

Does academic self-concept facilitate secondary school completion to the same degree for everyone, including for students from diverse social and demographic backgrounds?

5.1 Introduction

This chapter presents the results from Study 1, which investigated academic self-concept as a predictor of educational outcomes related to school non-completion, with a focus on the influence of social and cultural factors. Study 1 answers the questions: "what factors have been demonstrated to moderate the relation between a young person´s academic self-concept and their educational outcomes?" and "what factors have been demonstrated to mediate the relation between a young person´s academic self-concept and their educational outcomes?" This study also explored "do sociodemographic factors moderate the relation between a young person´s academic self-concept and their educational outcomes?" In addition, this study investigated whether socioeconomic status and/or Indigenous status contribute significantly to the role of positive academic self-concept in assisting young people to successfully complete high school. This chapter presents the answers to Study 1´s research questions (outlined in Chapter 3).

First, the characteristics of the studies included in this review are provided, followed by details of an assessment of the strength of evidence for included studies. The demonstrated interaction effects and indirect effects, indicating moderation and

mediation respectively, are then presented. To answer the research questions of this study, findings are presented in a series of tables, and further elaborated in the discussion (Chapter 7).

5.2 Characteristics of studies

Seventeen studies met the inclusion criteria (see Chapter 4) and included 48,597 young people from Year 3 to beyond Year 12. One study involved primary school student participants (Yeung et al., 2013) while all others involved secondary school students. Of the eight studies reporting whether participants' schools were rural or urban, four studies drew participants from exclusively urban schools, two utilised exclusively rural schools, and the remaining two studies included a mix of both. The majority of studies sampled across two year-levels of schooling. Questionnaires were generally administrated by school staff or researchers, and data were drawn from school records as required. Most of the studies were undertaken in the United States. However, studies conducted in Australia, Germany, Canada, Singapore and Portugal were also included. All studies were published over the last 20 years, from 2003 to 2018, with more than half published since 2015. Due to the nature of the research questions, all included studies were observational by nature and included surveys. Of these, three were longitudinal cohort studies while 14 had a cross-sectional design. Studies were categorised by the presence of moderation or mediation effects, and the results of the studies. The characteristics of the studies included in this review are provided in Table 5.1.

Table 5.1: Characteristics of included studies

Citation	Participant description								Independent variables/Outcome variables
	n	% Female	School stage	Country	Urban/ rural	SES	% Ethnic minority	% Indigenous	
Cohort									
Peguero & Shaffer (2015)	11820	50.6	Year 10 onwards	United States	–	–	46.7	0	Academic self-efficacy / Secondary school dropout
Phan et al. (2016)	284	43.0	Year 11 (*Mage*=16.5 years)	Australia	–	–	50.0	0	Academic self-efficacy (Pintrich et al., 1991, 1993)/Academic engagement (adapted from Fredrick et al., 2005; Suárez-Orozco et al., 2009)
Taboada Barber et al. (2017)	123	51.0	Grade 6 and 7	United States	Urban	Low	63	0	Student self-perceptions/Behavioural engagement (Skinner et al., 2008), behavioural disaffection (Skinner et al., 2008), emotional engagement (Skinner et al., 2008), emotional disaffection (Skinner et al., 2008)
Wang & Eccles (2013)	1157	52.0	Year 7 and 8	United States	–	Normal distribution	68	0	Academic self-concept (adapted from the expectancy and value scales developed by Eccles et al., 1993)/School engagement (behavioural) based on Finn and Voelkl, (1993), Pintrich (2000), Skinner and Wellborn (1994)
Cross-sectional									
Bergeron et al. (2011)	2360	51.8	12 to 15 years (*Mage*=13.8 years)	Canada	–	High and low	–	–	Competence beliefs in math (derived from Janosz and Bouthillier (2004), Ntamakiliro et al. (2000), competence beliefs in English arts/Dropout intention
Bodkin-Andrews, O'Rourke & Craven (2010)	1369	49.8	Year 7 to 12 (*Mage*=13.8 years)	Australia	Rural	–	–	14.4	Mathematics self-concept (Marsh et al. 2005), verbal self-concept (Marsh et al. 2005)/Absenteeism, aspirations to complete Year 12 (Craven et al. 2005)
Chong et al. (2018)	3776	51.6	Grade 7 and 8 (*Mage*=13.6 years)	Singapore	–	–	37	0	Academic self-efficacy (Bandura, 2006; Midgley et al., 2000)/Behavioural engagement (Glanville & Wildhagen, 2007)
Fan & Wolters (2014)	16194	48.0	Year 10 and 12 (approx. age 16 to 18 years)	United States	–	–	56	–	Math academic ability belief, English academic ability belief/School dropout

Citation	Participant description								Independent variables/Outcome variables
	n	% Female	School stage	Country	Urban/ rural	SES	% Ethnic minority	% Indigenous	
Fredricks et al. (2018)	3833	52.1	Year 6 to Year 12	United States	–	Low (35.2%)	33.9	–	Expectancy beliefs of success in math and science/Behavioural engagement, cognitive engagement, emotional engagement, social engagement
Guo et al. (2016)	1868	53.1	Year 9, mean age 14.6 years	Germany	–	–	–	–	Math self-concept/Teacher-rated behavioural engagement in math, student self-reported effort in math
Hardré et al. (2009)	414	62.0	Year 9 to Year 12, 14 to 19 years	United States	Rural	–	31	9	Perceived competence (derived from Tschannen-Moran et al. (1998) and Greene & Miller (1996)/Engagement and effort (Hardré et al., 2007), Intention to persist at school (Hardré & Reeve, 2003), adapted from Vallerand et al. (1997)
McInerney (2003)	1103	49.1	Year 7, 8 and 9, mean 13 years	Australia	Rural/ urban	–	75.5	24.5	Negative self-esteem, positive self-esteem, general academic self-concept, English self-concept, math self-concept/School attendance
Pan et al. (2017)	938	52.3	Mean age = 16.5 years	United States	Urban	Low (33%)	81.1	5.1	Student academic self-efficacy (Schaufeli & Leiter, 1996)/Academic engagement (emotional) (Li & Lerner, 2013), Academic engagement (cognitive) (Li & Lerner, 2013)
Raufelder et al. (2015)	1088	53.9	Year 7 and 8, 12 to 15 years	Germany	–	–	–	–	Individual school self-concept (Schöne et al., 2002)/School belonging (OECD, 2003), Emotional school engagement (Skinner et al., 2008), Behavioural school engagement (Skinner et al., 2008)
Saunders (2004)	243	56.0	Year 10, 15 to 18 years	United States	Urban	Low (52%)	100	0	Academic self-efficacy (Bachman, 1970)/Intention to complete school (Ajzen, 1991)
Veiga et al. (2015)	685	56.8	Year 6 to 10, 11 to 17 years	Portugal	Urban	–	–	–	Self-concept (intellectual and school status) (Piers & Herzberg, 2002)/Student engagement at school (cognitive; affective; behavioural; and personal agency) (Veiga, 2013)
Yeung et al. (2013)	1342	54.9	Year 3 to Year 6, 10 to 13 years	Australia	Urban/rural	–	18	18	School self-concept, reading self-concept, math self-concept (all from Marsh, 1990a, 1990b)/Participation (Leithwood et al., 1999)

Notes. *n=sample size, % female=percentage of females in sample, Country=country in which study undertaken, SES=socioeconomic status, % ethnic minority =percentage of societal ethnic minority group in sample, % Indigenous=percentage of Indigenous students in sample, M=mean, Independent variables=independent variables in each study, Outcome variables=outcome variables in each study, – =information was not provided or insufficient information was provided.*

The socioeconomic, ethnic and Indigenous status of participants varied across studies, although some studies did not provide this information. Participant socioeconomic status was reported in just under half of the studies (41%). Where reported, the percentage of participants from low socioeconomic backgrounds varied from 33% to 71% across samples. Of the studies reporting socioeconomic status, four studies indicated they controlled for socioeconomic status, and only Bergeron and colleagues (2011) tested socioeconomic status as a moderator variable. While most studies reported some measure of student ethnicity, three studies (18%) did not (Bergeron et al., 2011; Guo et al., 2016: Raufelder et al., 2015). Almost half of the studies (47%) involved samples with at least three different ethnic groups.

Five studies made an ethnic group comparison (including an Indigenous comparison) and four studies controlled for ethnicity (Chong et al., 2018; Fredricks et al., 2018; Pan et al., 2017; Wang et al., 2013). Approximately a third of all studies (five), collected data relating to student Indigenous status. While Fan and Wolters (2014) included Indigenous students in the category of other minority ethnic groups, Indigenous students were specifically excluded from Peguero and Shaffers' (2015) study. Three studies conducted an Indigenous versus non-Indigenous comparison (Bodkin-Andrews, O'Rourke & Craven., 2010; McInerney et al., 2003; Yeung et al., 2013).

The measures of effect varied across studies, as did measures of key variables. The majority of studies demonstrated effect sizes with standardised regression analysis coefficients (β), while some studies used chi-square statistics (with 1 degree of freedom) (χ^2), correlation coefficients (r), and eta-squared statistics (η^2). One study reported correlation coefficients and confidence intervals, seven studies reported correlation coefficients and standard errors, while 13 studies reported on p-values. All studies involved different measures of academic self-concept in terms of academic competency beliefs or expectancy. While general academic competency was the most common measure used across studies, five measures targeted perceived ability or expectancies in mathematics (Bergeron et al, 2011; Bodkin-Andrews, O'Rourke & Craven, 2010; Fan &

Wolters, 2014; Fredricks et al., 2018; Guo et al., 2016; McInerney, 2003; Yeung et al., 2013) and four measures targeted perceived ability in literacy/language (Bergeron et al., 2011; Bodkin-Andrews, O'Rourke & Craven, 2010; Fan & Wolters, 2014; McInerney, 2003; Yeung et al., 2013). The outcome variables of studies included school dropout, attendance or absenteeism, effort and various types of engagement. Additional emergent outcome variables were student intention to dropout, and student intention to complete secondary school. Engagement was the most common outcome variable investigated with variations of behavioural, cognitive, emotional, social, and personal agency engagement measured over 11 studies. While four studies involved intention or aspiration to complete Year 12 as an outcome measure, only two studies measured secondary school dropout or non-completion.

Of the 17 studies, 12 tested the moderation (interaction) effects and five tested mediation (indirect) effects. Of the studies involving moderation effects, four studies used a measure of general academic self-concept as the independent variable, three used a measure of general academic self-efficacy, and six used subject-based self-competence measures (mathematics predominantly, along with language and social studies). The most commonly measured outcome variable in seven of the 12 studies testing moderation, was student engagement, which involved various measures of engagement, including the Behavioural and Emotional Engagement and Disaffection Scale (Skinner et al., 2008), the Math and Science Engagement Scales (Wang et al., 2016), student self-reported effort in math (from OECD, 2003), the Academic Engagement Scale (Li & Lerner, 2013), and Student´s Engagement in School (Veiga et al., 2013). Other outcome variables measured were student dropout (Peguero & Shaffer, 2015), intention to dropout or complete (Bergeron et al., 2011; Bodkin-Andrews, O'Rourke & Craven, 2010; Saunders et al., 2004) and student attendance/absence (Bodkin-Andrews, O'Rourke & Craven, 2010; McInerney, 2003).

Of the 17 studies, five tested mediation (indirect) effects. Of these, two studies used a general measure of academic self-efficacy (Chong et al., 2018; Phan et al., 2016) as the

independent variable while the others used general or specific subject-based competency measures (i.e., mathematics or English). The most common outcome variables in studies testing mediation were measures of engagement, and included behavioural engagement (Glanville & Wildhagen, 2007), the School Engagement and Effort Scale (Hardré et al., 2007), academic engagement in mathematics (adapted from multiple measures), emotional and behavioural engagement (based on Skinner et al., 2008), and school belonging (from OECD, 2005).

As previously mentioned in Chapter 4, the studies did not demonstrate sufficient homogeneity to conduct a meaningful meta-analysis due to effect sizes from multiple outcome variables, small study numbers for each outcome, and in some instances, incomplete data. Studies could not be aggregated meaningfully as the outcome variables differed across the small number of studies. In place of a meta-analysis, a systematic review summarising effect estimates, as outlined in the *Cochrane Handbook* (McKenzie & Brennan, 2019) was conducted.

5.3 Risk of bias within studies

The 17 studies used in this review were observational studies; that is, either cross-sectional or cohort studies. Based on the GRADE approach for grading certainty of evidence (Atkins et. al., 2004; Guyatt et. al., 2008; Guyatt et. al. 2011; Schünemann et al., 2003; Schünemann et. al., 2006), these studies were classified as having either 'low' or 'moderate' certainty of evidence due to potential bias associated with their observational nature (lack of randomisation, i.e., confounding and selection bias; Schünemann et. al., 2021). In addition, the certainty of evidence ratings were influenced by the presence or absence of specific study design and implementation factors, derived from the AXIS (Downes et al., 2016) and the Critical Appraisal Skills Programme (CASP, 2018) quality assessment process. More specifically, these factors are as follows: presence of a focused research question; clearly stated study design; external validity such as appropriate sampling procedure; clearly defined and measured predictor variable; internal validity including identification and treatment of confounding variables; clearly defined and

measured outcome variable; clearly demonstrated methods to determine statistical significance and precision estimates; and identification and appropriate management of missing data. The presence of these factors in each study is outlined in Table 5.2.

All 17 studies had a clearly focused research question in terms of the population studied, and predictors and outcomes addressed. However, for a number of studies, the relevant findings were secondary study findings, i.e., the research questions of the study did not target moderation or mediation effects between the key variables.

While all studies demonstrated a clearly articulated study design, two included studies had a less than ideal design for determining the specific information relevant to this review (Phan et al., 2016; Raufelder et al., 2015).

The appropriateness of sampling also varied across studies with over half (62%) indicating selection bias compromised the generalisability of findings and limited external viability; for example, through non-representative sampling. Non-reporting of the ethnic or socioeconomic diversity of the sample was evident in 65% of studies. Approximately one quarter of studies did not record the ethnicity of the sample and just under half did not record participant socioeconomic background. A particularly relevant and universal source of bias within all studies limiting the certainty of evidence was the omission of fully disengaged and non-school-attending young people from all study samples. An additional bias in study design was the predominance of secondary school samples in contrast to younger samples. Only one of the 17 studies included a primary school-aged sample, while most focused on mid to late secondary school (Years 9, 10, 11 and 12). As a result, effects across all young people may be underestimated, which is pertinent given recent research suggesting the role of early childhood education in increasing secondary school graduation rates (McCoy et al. 2017). The sizes of study samples varied considerably, ranging between 123 and 16,194 participants. Over half of the studies (11) had sample sizes greater than 1000.

Table 5.2: Consensus risk of bias for studies with effects

Citation	Overall Risk of Bias (ROB)	Focused question	Clear study design	External validity	Predictor variable	Internal validity	Outcome variable	Statistical significance	Missing data
Cohort									
Wang & Eccles (2013)	+	Y	Y	Y	Y	Y	Y	Y	Y
Peguero & Shaffer (2015)	+	Y	Y	Y	Y	Y	Y	N	Y
Phan et al. (2016)	–	Y	N	N	Y	?	Y	Y	Y
Cross-sectional									
Fredricks et al. (2018)	+	Y	Y	?	Y	Y	Y	Y	Y
Guo et al. (2016)	+	Y	Y	Y	Y	Y	N	Y	Y
Fan & Wolters (2014)	+	Y	Y	N	Y	Y	Y	Y	Y
Chong et al. (2018)	+	Y	Y	N	Y	?	Y	Y	Y
Bodkin-Andrews, O'Rourke & Craven, 2010)	+	Y	Y	Y	Y	Y	Y	Y	N
Raufelder et al. (2015)	–	Y	N	Y	Y	N	Y	Y	Y
Bergeron et al. (2011)	–	Y	Y	N	Y	Y	Y	Y	?
Veiga et al. (2015)	–	Y	Y	N	Y	N	Y	Y	Y
Hardre et al. (2009)	–	Y	Y	N	Y	N	Y	Y	Y
McInerney (2003)	–	Y	Y	N	Y	Y	Y	N	N

Notes. + = *moderate ROB / medium quality of evidence (<50%), – = high ROB / low quality of evidence (>50%, ?=Information not provided*

In all studies, the definition and measurement of the predictor variable was provided and appropriate to measure bias to some degree. Most predictor variables were derived at least in part from existing questionnaires and involved between three and 10 items. Numerous studies, however, didn´t provide sufficient detail regarding how the predictor variable was measured. For seven of the 25 predictor measures used across all studies, the source of the measure was not identified. Almost all study measures included measures of internal consistency (Cronbach's alpha) of between .85 and .95, commonly described as "high" or "good" (Taber, 2018). However, it must be noted that Cronbach´s alpha is not a measure of questionnaire reliability, despite being commonly used for this purpose (Taber, 2018; Webb et al., 2006).

In 12 of the 17 studies, confounding variables were identified and accounted for in the analyses. Studies most commonly controlled for socioeconomic status and gender. However, in five studies confounding variables were not identified nor addressed, reducing the quality of evidence of these studies.

In all studies the definition and measurement of outcome variables were provided and varied in terms of associated risk of bias. The outcome variables of some studies were student self-report measures, such as emotional engagement (e.g., Pan et al., 2017; Taboada Barber et al., 2017), engagement and effort (Hardré et al., 2009), completion aspirations (e.g., Bodkin-Andrews, O'Rourke & Craven, 2010), and dropout intention (e.g., Bergeron et al., 2011; Hardré et al., 2009; Saunders et al., 2004). However, other outcome variables were more objective, such as teacher-rated behavioural engagement in mathematics (Guo et al., 2016), school attendance rates (McInerney, 2003), and school completion rates as determined by high school enrolment status (e.g., Fan & Wolters, 2014; Peguero & Shaffer, 2015). Objectively measurable outcomes carry more weight than subjective self-report measures in demonstrating quality of evidence (Rosen et al., 2017). Of the subjectively measured outcomes, the majority involved or were derived from one or more existing scales and involved four or more items. The validation status of the measures, or of the tools from which the measures were derived from, was not indicated

in any of the studies. In six studies, items used to measure outcome were not derived from existing scales, and four studies provided insufficient information in this regard. Where relevant, all studies demonstrated relatively high Cronbach´s alpha measurements of internal consistency for outcome variable measures used (Taber, 2018).

Methods to determine precision estimates and statistical significance were clearly demonstrated in all studies. However, in a number of studies findings were not articulated clearly, compromising the integrity of evidence. Most studies used beta correlation coefficients as measures of effect. All studies included p-values and outlined the method of statistical analysis. Findings were inconclusive in numerous studies where findings were the secondary rather than the primary study focus. In such instances, although the analysis was conducted, effect sizes were not determined. According to Cohen (1988, 1992), the effect size is low if the value r varies around .1, medium if it varies around .3 and large if it varies around .5. Based on this, one study had a large effect size (Chong et al., 2018), and three studies demonstrated medium effect sizes (Fan & Wolters, 2014; Raufelder et al., 2015; Phan et al., 2016). The effect size in the paper by Chong et al. (2018) was sufficiently large (d = .58) that, based on the GRADE approach (Schünemann et. al., 2021), its risk of bias assessment was reduced.

Over half of the studies (10) indicated that missing data had been identified and clearly outlined how it was addressed in the analysis; for example, through use of imputation. Studies that did not highlight treatment of missing data, particularly with larger sample sizes, indicated increased risk of bias.

Overall, the quality of evidence was considered low for just over half (53%) of the studies with clearly demonstrated effects based on risk of bias assessment and indicative of their observational nature. The remaining studies were assessed as having moderate quality of evidence due to extenuating factors such as mitigating risk through study design and implementation elements (Bodkin-Andrews, O'Rourke & Craven, 2010; Fan & Wolters, 2014; Fredricks et al., 2018; Guo et al., 2016; Wang & Eccles, 2013) and high effect size (Chong et al., 2018). Many studies indicated a moderate risk of bias due to issues

associated with internal validity (such as not addressing confounding variables appropriately) and external validity (such as limited sampling and limited applicability to broader populations). A degree of bias is embedded in the concentration of cross-sectional studies. In the three cohort studies (Peguero & Shaffer, 2015; Phan et al., 2016; Taboada Barber et al., 2017) the time intervals between data collections were insufficient or not indicated. In addition, many studies did not clearly make an assessment of their overall risk of bias, with unclear descriptions of bias indicators and inadequately detailed reporting of measures and methods.

5.4 Quality of evidence for moderators

The moderation effect of a third variable on the impact of academic self-concept on a young person´s educational outcomes was explored in 12 studies in this review (see Table 5.3). Moderation (or interaction) effects were explored for the impact of a variety of independent variables (mathematics self-concept, math competence beliefs, mathematics expectancy beliefs, academic self-concept, and intellectual and school status self-concept) on numerous outcome variables (student engagement [emotional, behavioural, cognitive, personal agency], student effort in mathematics, and dropout intention). Six of these studies clearly reported eight moderation effects sizes (Bergeron et al., 2011; Bodkin-Andrews, O'Rourke & Craven, 2010; Fredricks et al., 2018; Guo et al., 2016; Veiga et al., 2015; Wang & Eccles., 2013), all of which were low, according to Cohen's effect size criteria (1988, 1992). Two studies claiming moderation effects presented the results with insufficient clarity (McInerney, 2003; Peguero & Shaffer, 2015). The sample sizes of studies with moderation effects were generally high (n_{mean} = 3,024, range = 685 – 11,820). All of these studies were considered to have either a moderate or high risk of bias, indicative of a low or moderate quality of evidence. As a result, there was some ambiguity in the patterns that emerged regarding the impact of moderators on how a young person´s academic self-concept impacts specific educational outcomes, as outlined in the subsequent sections where answers are provided to the Study 1 research questions.

Table 5.3: Moderators of academic self-concept - educational outcome relation

Citation	Risk of bias	n	Independent variable	Moderator	Outcome variable	Moderation effect size
Guo et al. (2016)	+	1868	Math self-concept	Value (intrinsic, attainment, utility value and cost)	Student self-reported effort in math	.17
Guo et al. (2016)	+	1868	Math self-concept	Value (intrinsic, attainment, utility value and cost)	Teacher-rated student behavioural engagement in mathematics	.15
Fredricks et al. (2018)	+	3833	Math expectancy beliefs	Gender	Emotional engagement	.13
Wang & Eccles (2013)	+	1157	Academic self-concept	Prior academic achievement	School engagement (behavioural)	.09
Bergeron et al. (2011)	-	2360	Competence belief in mathematics	Socioeconomic status	Dropout intention	-.12
Veiga et al. (2015)	-	685	Self-concept (intellectual and school status)	Adolescent stage	Student engagement at school (cognitive)	.12
Veiga et al. (2015)	-	685	Self-concept (intellectual and school status)	Adolescent stage	Student engagement at school (personal agency)	.12
Bodkin-Andrews, O'Rourke & Craven, 2010)	-	1369	Mathematics self-concept	Indigenous status	Aspiration to complete Year 12	.09
Peguero & Shaffer (2015)	-	11820	Academic self-efficacy (independent variable) moderated by ethnicity	Gender	High school dropout	Unclear
Peguero & Shaffer (2015)	-	11820	Academic self-efficacy (when moderated by gender)	Ethnicity	High school dropout	Unclear
McInerney (2003)	-	1103	General academic self-concept	Indigenous status	School attendance	Unclear

Studies with no effect are not included. - = high ROB, + = moderate ROB, Unclear=an effect was provided however due to ROB was unclear.

5.5 Quality of evidence for mediators

The mediation effect of a third variable on the impact of a young person's academic self-concept on specific educational outcomes was explored in five studies, all of which found mediation effects (see Table 5.4). Across these five studies there were 15 effect sizes. Of these, 12 demonstrated statistical significance, while three did not. In this study, results for statistically non-significant findings were not reported. Sample sizes of all studies were generally large (n_{mean} = 4,271, range = 284 – 16,194). Of the significant findings, effect sizes were medium (on average), however they ranged from low (in the study by Raufelder et al., 2015) to high (in the study by Chong et al., 2018). Raufelder and colleagues (2015) was the only study to report confidence intervals (95% CI [.12, .22], 95% CI [.09, .19], 95% CI [.01, .09]) as recommended by the Cochran approach (Schünemann et al., 2021). Of studies with significant mediation effects, one study was longitudinal (Phan et al., 2016) and all the others were cross-sectional. All studies were judged to have either a moderate or high risk of bias. Overall, a pattern regarding the factors that mediate how a young person's academic self-concept impacts their educational outcomes emerged, as outlined in the subsequent sections of this chapter.

Table 5.4: Mediators of academic self-concept - educational outcome relation

Citation	Risk of bias	n	Independent variable	Mediator	Outcome variable	Adjusted effect size
Chong et al. (2018)	+	3376	Academic self-efficacy	Cognitive engagement	Behavioural engagement	.58
Hardré et al. (2009)	-	414	Academic perceived competence	School achievement	Intention to drop out	-.38
Fan and Wolters (2014)	+	16194	English self-efficacy (year 10)	Educational expectations	High school dropout	-.29
Fan and Wolters (2014)	+	16194	English self-efficacy (year 10)	Educational expectations (with value beliefs included in the model)	High school dropout	-.29
Raufelder et al. (2015)	-	1088	Academic self-concept (individual school self-concept)	Teacher student relationship	Emotional school engagement	.28
Phan et al. (2016)	-	284	Academic self-efficacy	Wellbeing at school	Academic engagement	.27
Hardré et al. (2009)	-	414	Academic perceived competence	Interest in class	School engagement and effort	.27
Phan et al. (2016)	-	284	Academic self-efficacy	Wellbeing at school moderated by social self-efficacy (with academic self-efficacy)	Academic engagement	.24
Fan and Wolters (2014)	+	16194	Math self-efficacy (year 10)	Educational expectations	High school dropout	-.24
Raufelder et al. (2015)	-	1088	Academic self-concept (Individual school self-concept)	Teacher student relationship	Behavioural school engagement	.23
Fan and Wolters (2014)	+	16194	Math self-efficacy (year 10)	Educational expectations (with value beliefs included in the model)	High school dropout	-.19
Raufelder et al. (2015)	-	1088	Individual school self-concept	Teacher student relationship	School belonging	.12

+ = moderate ROB / medium quality of evidence (<50%), - = high ROB / low quality of evidence (>50%)

RQ 1.1.1 What factors have been demonstrated to moderate the relation between a young person´s academic self-concept and their educational outcomes?

A variety of moderators were identified that influence the relation between a young person´s academic self-concept and the educational outcomes investigated, as demonstrated in Table 5.3. These moderators are prior student academic achievement (Wang & Eccles, 2013), student adolescent stage (Veiga et al., 2015), gender (Fredricks et al., 2018), general student value beliefs of achievement (i.e., the common variation shared by all value measure items including intrinsic, attainment, utility and cost value; Guo et al., 2016), socioeconomic status (Bergeron et al., 2011) and Indigenous status (Bodkin-Andrews, O'Rourke & Craven, 2010).

Some variables acting as moderators of the link between academic self-concept and an educational outcome variable were social and cultural factors, and they are further addressed in response to subsequent research questions. Other moderators identified could not be classified as social and cultural factors, including prior academic achievement (Wang & Eccles, 2013) and adolescent stage (Veiga et al., 2015). Wang and Eccles (2013) demonstrated that prior academic ability moderated the strength of associations between academic self-concept and school engagement where academic self-concept was demonstrated to be the full mediator of the relation between provision of choice at school and behavioural engagement. This study had a moderate risk of bias and medium quality of evidence, diminished somewhat by the indirect nature of the analysis in determining the moderation effect via a full mediation model. In addition, Veiga and colleagues (2015) indicate that the link between student self-concept and cognitive engagement is moderated by adolescent stage, such that at early adolescence high academic self-concept in students was a greater predictor of their cognitive engagement than at middle adolescence. During middle adolescence, student self-concept has much less influence over cognitive engagement (Veiga et al., 2015). Veiga et al. also indicate that student self-concept and agency engagement link is moderated by adolescent stage, such that at early adolescence, self-concept is a much stronger predictor of agency engagement than during middle adolescence. By middle adolescence, for students with high self-concept (intellectual and school status),

agency engagement at school decreases, while for low self-concept (intellectual and school status) students it increases slightly (Veiga et al., 2015). In this study, for other outcomes (i.e., behavioural engagement and affective engagement), no significant moderation effects were ascertained. While not social or cultural factors per se, prior academic achievement and adolescent stage both were highlighted as moderators of the relation between an academic self-concept variable and forms of student engagement at school.

In an effort to minimise publication bias it is important to note that numerous studies also did not demonstrate significant effects for the following moderators: student language status (Taboada Barber et al., 2017), adverse childhood experiences (Pan et al., 2017), numerous value belief of achievement (intrinsic, attainment, utility, cost value; Guo et al., 2016), prior academic achievement (Wang & Eccles, 2013), adolescent stage (Veiga et al., 2015), and gender (Bergeron et al., 2011; Saunders et al., 2004; Wang & Eccles, 2013).

RQ 1.1.2 What factors have been demonstrated to mediate the relation between a young person´s academic self-concept and their educational outcomes?

In this review, the following six mediators of the link between academic self-concept and an educational outcome variable were determined: cognitive engagement (Chong et al., 2018), interest in class (Hardré et al., 2009), school achievement (Fan and Wolters, 2014), educational expectations (Fan and Wolters, 2014), teacher student relationship (Raufelder et al., 2015) and wellbeing at school (Phan et al., 2016). The effect of these mediators was explored for the impact of a variety of independent variables; that is, academic self-efficacy (Chong et al., 2018; Phan et al., 2016), English self-efficacy at Year 10 (Fan & Wolters., 2014), mathematics self-efficacy at Year 10 (Fan & Wolters, 2014), individual school self-concept (Raufelder et al., 2015), and academic perceived confidence (Hardré et al., 2009), on numerous outcome variables. Student engagement featured prominently in a number of forms; that is, behavioural engagement (Chong et al, 2018; Raufelder et al., 2014), emotional school engagement (Raufelder et al, 2015), school engagement and effort (Hardré et al., 2009), academic engagement (Phan et al., 2016), along with the related variable of school belonging

(Raufelder et al., 2015). Intention to drop out (Hardré et al., 2009) and high school dropout by Year 12 (Fan & Wolters, 2014) also featured as outcome variables.

The following three variables – educational expectations, student interest in class and teacher-student relationships – were identified as mediators of the relation, and may be influenced directly by the social and cultural contexts of a student´s family and community, particularly where these contexts vary to that of the school environment.

Fan and Wolters. (2014) indicate that a young person´s educational expectations mediate the relation between their English self-efficacy at Year 10 and mathematics self-efficacy at Year 10, as predictors of whether the young person drops out of secondary school in Year 12. This effect was evident with and without the presence of value beliefs included in the model. The findings demonstrate that the relation between a young person´s ability beliefs in mathematics and English, and whether they leave school before graduation, were fully mediated by the level of education the young person expected to achieve (Fan & Wolters., 2014). The size of the effect was medium (d = .24) and risk of bias was moderate based on a non-representative sample, appropriate management of missing data and controlling of confounding variables, (i.e., gender, socioeconomic status and ethnicity). According to these findings, it seems that students with low expectations to achieve higher levels of education may be less likely have high beliefs in their academic abilities in mathematics and English.

Hardré and colleagues (2009) indicate that a young person´s interest in class mediates the relation between their academic perceived confidence as a predictor of the level of their school engagement and effort. It appears that students with low interest in class may be less likely to have high academic self-concept. The size of this effect was medium (d = .27) with a high risk of bias due to the indirect nature of the mediation exploration, a non-representative sample, and a lack of certainty regarding the identification and control of confounding variables.

Raufelder and colleagues (2015) indicate that the teacher-student relationship mediates the relation between the student's academic self-concept and the student's emotional engagement at school, and also between student academic self-concept and student behavioural engagement at school. It appears that students with poor relations with

their teachers may be less likely to have high academic self-concept. The effect sizes for both emotional engagement and behavioural engagement at school were small (*d* = .28 and *d* =.23 respectively), with a high risk of bias due to an unclear study design and insufficient information regarding how confounding variables were addressed. For each of these studies, results must be considered in light of the quality of evidence of findings.

RQ 1.2.1 Do sociodemographic factors moderate the relation between a young person's academic self-concept and their educational outcomes?

Half of the studies with moderation effect sizes (four studies) indicate the influence of sociodemographic moderators on the relation of academic self-concept and an educational outcome. One study (Bergeron et al., 2011) found socioeconomic status to moderate the relation between academic self-concept and dropout intention. While two studies explored Indigenous status as a moderator of the relation between academic self-concept and an educational outcome (Bodkin-Andrews, O'Rourke & Craven, 2010; McInerney; 2003), only Bodkin-Andrews, O'Rourke and Craven (2010) provided sufficient clarity of findings. In the studies indicating that socioeconomic and Indigenous status interactions effects were significant, student engagement was the most common outcome variable. Student engagement as an outcome measure occurred in a variety of forms across different studies, (i.e., student effort in mathematics, and teacher-rated student behavioural engagement in mathematics (Guo et al., 2016), student engagement at school (cognitive, and person agency; Veiga et al., 2015) and school behavioural engagement (Wang & Eccles, 2013). Conversely, high school dropout was inadequately investigated as an outcome measure with a lack of clarity around findings demonstrated (Peguero & Shaffer, 2015). Ethnicity was tested as a moderator (Peguero & Shaffer, 2015); however, findings were inconclusive due to a lack of clarity demonstrating findings.

General value beliefs of achievement (intrinsic, attainment, utility, cost values) were an additional sociocultural moderator identified by Guo et al. (2016) under an Expectancy Value Theory framework. In their study, Guo and colleagues (2016) demonstrate that value beliefs of achievement influence the strength of mathematics self-concept as a

predictor of student self-reported effort in mathematics (effect size = .17). They also demonstrate that value beliefs of achievement influence the strength of mathematics self-concept as a predictor of teacher-rated student behavioural engagement in mathematics (effect size = .15). General value beliefs yielded the greatest effect sizes compared with moderators identified in other studies. Guo and colleagues' study was assessed as having a medium risk of bias and corresponding moderate quality of evidence. As such, there is some evidence that social and cultural factors moderate the relation between a young person´s academic self-concept and their educational outcomes (including school completion, attendance and engagement).

RQ 1.3.1 Does a young person´s socioeconomic status affect the relation between their academic self-concept and their educational outcomes?

Socioeconomic status was investigated as a moderator in one-third of all the studies testing moderation effects (four studies) on the relation between an academic self-concept variable and an educational outcome variable. In one of these studies, socioeconomic status was demonstrated as a moderator (Bergeron et al., 2011). In that study, socioeconomic status was shown to moderate the extent to which a young person´s competence belief in mathematics predicted their intention to drop out of secondary school. For students from high socioeconomic backgrounds, their intention to drop out is reduced when they have high competence beliefs in mathematics. However, for students from low socioeconomic backgrounds, their level of competence beliefs in mathematics does not predict their intention to dropout (Bergeron et al., 2011). It is worth noting that this study also indicates that socioeconomic status does not moderate the relation between competence beliefs in language arts and intention to drop out (Bergeron et al., 2011). Interestingly, the effect only seems to hold for self-beliefs in mathematics competence but not for self-beliefs in language arts competence. The study was assessed as having a high risk of bias and low quality of evidence. While it had a large sample size and confounding variables were identified and controlled for, the sample was not representative and little information was reported regarding extent and management of missing data.

There is some evidence that a young person´s socioeconomic status does affect the relation between their academic self-concept and their educational outcomes, with socioeconomic status demonstrated to moderate the relation between competence belief in mathematics and intention to drop out of high school.

RQ 1.4.1 Does a young person´s Indigenous status affect the relation between their academic self-concept and their educational outcomes?

A young person´s ethnicity was investigated as moderator in six studies (Bodkin-Andrews, O'Rourke & Craven, 2010; McInerney, 2003; Peguero & Shaffer., 2015; Wang & Eccles, 2013; Yeung et al., 2013), and Indigenous status was investigated as a moderator in two studies (Bodkin-Andrews, O'Rourke & Craven, 2010; McInerney, 2003). However, in only one study (Bodkin-Andrews, O'Rourke & Craven, 2010) was Indigenous status demonstrated to be a moderator of the relation between an academic self-concept variable and an educational outcome variable. Bodkin-Andrews, O'Rourke and Craven (2010) demonstrated that for Indigenous youth, mathematics self-concept was a weaker predictor of aspirations to complete Year 12 compared with non-Indigenous youth. The study was assessed as having a medium risk of bias and moderate quality of evidence. While it had a large sample size and confounding variables were identified and controlled, the sample was not representative and little information was reported regarding extent and management of missing data. It must be noted, however, that Wang and Eccles (2013) demonstrated that ethnicity did not moderate the relation between academic self-concept and a young person´s behavioural, emotional or cognitive engagement at school. Furthermore, Indigenous status did not moderate the link between school self-concept and student participation (Yeung et al., 2013), nor the link between reading and mathematics self-concepts and student participation (Yeung et al., 2013). Indigenous status also did not moderate the link between mathematics or verbal self-concept and absenteeism, nor the link between verbal self-concept and a young person´s aspirations to complete Year 12 (Bodkin-Andrews, O'Rourke & Craven, 2010).

However, there is some evidence a young person´s Indigenous status does affect the relation between their mathematics self-concept and aspiration to complete Year 12,

such that, for Indigenous youth, mathematics self-concept is a weaker predictor of aspiration to complete Year 12 than for non-Indigenous youth.

5.6 Conclusion

Based on the 17 articles reviewed in this study, there is some evidence that various factors play a role in how a young person´s academic self-concept influences their educational outcomes relating to school completion, including engagement, attendance and intention to drop out. Some evidence exists suggesting that sociodemographic factors play a prominent role. More specifically, some evidence indicates that socioeconomic status and Indigenous status may indeed change the way a young person´s academic self-concept is associated with intention to drop out and expectancy to complete Year 12. Socioeconomic status moderates the association between a young person´s academic self-concept and their intention to drop out, resulting in reduced dropout intention for high socioeconomic students with high mathematics competence beliefs, but no change for their low socioeconomic peers with equally high mathematics competence beliefs (Bergeron et al., 2011). The association between a young person´s academic self-concept and their expectancy to complete Year 12 varies for Indigenous and non-Indigenous students. As a result, for non-Indigenous youth, mathematics self-concept is a stronger predictor of aspiration to complete Year 12 than it is for Indigenous youth. For Indigenous youth, their level of mathematics self-concept is less likely to predict their aspiration to complete Year 12. The interaction effect of academic self-concept and socioeconomic status on dropout intention (Bergeron et al., 2011), and the interaction effect of academic self-concept and Indigenous status on aspiration to complete secondary school (Bodkin-Andrews, O'Rourke & Craven, 2010) both signal the potential importance of these factors, along with academic self-concept, on high school dropout. Socioeconomic status is demonstrated to moderate the relation between academic self-concept and intention to drop out. However, no evidence has yet been identified to indicate that this same moderation effect holds between academic self-concept and student dropout or school completion behaviour. In the same vein, Indigenous status is demonstrated as influencing the relation between academic self-concept and aspiration to complete school. However, no evidence has yet been identified to indicate the same influence of

Indigenous status on relation between academic self-concept and student dropout or school completion behaviour. There is currently no evidence indicating whether these interaction effects between academic self-concept and socioeconomic status, and between academic self-concept and Indigenous status, are maintained when a young person´s school dropout status is used as the outcome variable in place of their intention to drop out. The high prevalence of studies in this review with student engagement as an outcome variable, along with the well-recognised relation between low student engagement and high likelihood of school dropout, suggests such interaction effects may be likely.

The balance of best available evidence suggests other factors; that is, prior student academic achievement, cognitive engagement, student interest in class, student educational expectations, teacher-student relationship and student wellbeing at school, may play a role in the relation between academic self-concept and dropout-related outcome variables. Conversely, current evidence does not suggest that student language status, adverse childhood experiences and prior academic achievement play a role in the relation between variables. For the following factors, the results were inconclusive due to conflicting findings: value beliefs, prior academic achievement, adolescent stage, gender.

Given the low number of studies with significant effects, these findings should be taken lightly due to the lack of study homogeneity due to incomparability of independent variables, incomparability of outcome variables, varying study design, issues of low or uncertain external and internal study, lack of high-quality evidence and other risk of bias factors, exacerbated by an absence of large scale longitudinal and representative samples. As a result, further investigation into socioeconomic status is likely to be important for the confidence held in moderation effects, and in determining the importance of specific moderators where confusion over results exists, particularly as applied to the educational outcomes of Indigenous young people, compared with their non-Indigenous peers.

Chapter 6:
Results of Studies 2 and 3

This chapter presents the findings of Studies 2 and 3, two inter-related multilinear regression analyses involving two large longitudinal and representative datasets. Studies 2 and 3 provide insight into the effect of socioeconomic status on secondary school completion against a varying policy context, for Indigenous and non-Indigenous young people, and for students with varying levels of academic self-concept.

The Study 2 analysis was conducted on the 2003 cohort of the LSAY sample. Data for this sample was collected when the compulsory school leaving age for young people was 15 years across Australian states and territories. Hence at that time, attending school was compulsory for all young people up until the age of 15. Study 2 results include descriptive statistics of the key variables within the sample. Direct effects and interaction effects are presented. The direct effect results are organised around responses to the research Hypotheses 2.1.1, and 2.3.1. The interaction effect results are organised around responses to Research Questions 2.2.1 and 2.4.1. Overall, Study 2 demonstrates the effect of socioeconomic status on school non-completion for Indigenous students and similar achieving non-Indigenous students. The results indicate that socioeconomic status has a minimal effect on the secondary school completion of Indigenous students compared to the effect of socioeconomic status on the school completion of similar achieving non-Indigenous students. While socioeconomic status predicts school completion, for Indigenous students the association between socioeconomic status and school completion is much weaker than for non-Indigenous students.

The results of Study 3 are then presented. Study 3 supported and extended the findings of Study 2. The Study 3 analysis was conducted on the 2009 cohort of the LSAY sample. Data for this sample was collected after the National Youth Participation Requirement, took effect nationally in 2010, which required that young people complete at least Year 10 and then remain in full-time study or work, or a combination of these, until age 17. Study 3 results include descriptive statistics of the key variables within the sample. The direct and interaction effects of Study 3 (2009 cohort) are compared with those of Study 2 (2003 cohort).

Study 3 also makes an important contribution by determining the association between cohort year, before and after increases to the compulsory school leaving age from 15 to 17 years across Australia from 2006 to 2010, and high school completion. The interaction effects of cohort year are presented to demonstrate the effect of the policy change on school completion in response to Hypothesis 3.1.1 and Research Questions 3.1.2, 3.1.3 and 3.1.4. Study 3 indicated that after the lifting of the compulsory school leaving age from 15 to 17 years across Australia between 2008 and 2010, secondary school completion was more likely for most student groups. Furthermore, Study 3 showed that the gap in Indigenous and non-Indigenous school completion narrowed after increases in compulsory school leaving age, in alignment with the Australian government policy objective to 'close the gap' in Year 12 attainment between Indigenous and non-Indigenous adolescents. Study 3 also demonstrated that after the policy change students with low academic self-concept were more positively impacted than students with high academic self-concept.

6.1 Study 2 Results

Study 2 determined the effect of a young person´s socioeconomic status on their secondary school non-completion for Indigenous youth compared to non-Indigenous youth, and for adolescents with varying levels of academic self-concept while controlling for prior academic achievement. More specifically, this study tested whether low socioeconomic status predicts reduced rates of school completion, and if so, whether Indigenous status, or academic self-concept, overcomes the disadvantage of low socioeconomic status for secondary school completion. For more details on the specific goals of Study 1, see Chapter 3.

6.1.1 Descriptive statistics of key variables

Descriptive statistics of the data set used in this analysis are presented in Table 6.1 and Table 6.2. The 2003 sample had a rate of secondary school completion of 81.7%. Important findings are summarised in the table below. Secondary school completion was linked to higher academic self-concept, higher socioeconomic status and gender with females more likely to complete than males. In terms of sociodemographic differences, Indigenous adolescents were less likely to complete secondary school compared to non-Indigenous adolescents in the 2003 sample.

Table 6.1: Descriptive statistics of key variables (2003)

Key Variable	**Non-Completion**	**Completed Secondary School**	**Observed**
All students	18.3%	81.7%	9378
Male	21.4%	78.6%	4769
Female	15.1%	84.9%	4609
Indigenous	35.3%	64.7%	191
Non-Indigenous	17.9%	82.1%	9187
Academic Self-Concept (Mean, se)	2.67 (0.01)	2.25 (0.01)	2.64 (0.01)
Socioeconomic Status (Mean, se)	-0.13 (0.01)	0.32 (0.01)	0.23 (0.01)

Note. Academic self-concept is negatively scored: 1 = compare very well to others, 5 = compare very poorly to others). Socioeconomic status is positively scored: -2 = low, 3 = high.

Table 6.2: Descriptive statistics Indigenous vs non-Indigenous 2003

Key Variable	Non-Indigenous	Indigenous
Academic Self-Concept (Mean, se)	2.32 (.01)	2.57 (.02)
Socioeconomic Status (Mean, se)	0.24 (.01)	-0.24 (.02)
Achievement Science		
Achievement Maths		
Achievement English		

Note. Academic self-concept is negatively scored: 1 = compare very well to others, 5 = compare very poorly to others). Socioeconomic status is positively scored: -2 = low, 3 = high.

6.1.2 2003 cohort direct effects

In the 2003 cohort (N = 9378), adolescent socioeconomic background was a significant predictor of secondary school non-completion (see Table 6.3). Specifically, socioeconomic background had a direct negative effect on secondary school non-completion (β = -0.31, p < .001). This result reproduced findings of previous research showing socioeconomic disparities in secondary school non-completion (e.g., Kim et al., 2019; Lamb & Huo, 2017; Lamb & Markussen, 2011; Sznitman et al., 2017). An additional finding was the impact of gender on secondary school non-completion with boys reporting significantly higher rates of school non-completion than girls (β = 0.38, p < .001) in the 2003 dataset. The direct effects of Indigenous status and of academic self-concept on secondary school non-completion are outlined below. The full regression results for all variables included in the model for the 2003 dataset is provided in Appendix D. The measure of goodness of fit for this model was a log-likelihood value of 4219.8 (p=<2.2e^{-16}) indicating a good model fit with high log-likelihood value and p-value less than 0.05 (Qian & Wu, 2006).

Table 6.3: Direct and interaction effects (2003)

Pathway of Influence	**2003 Cohort** (N = 9378)	
Direct Effects	Coef.	(S.E.)
Socioeconomic status → Secondary school non-completion	-0.31**	(0.02)
Indigenous status → Secondary school non-completion	0.45**	(0.07)
Academic Self-concept → Secondary school non-completion	0.44**	(0.02)
Gender (boys) → Secondary school non-completion	0.38**	(0.05)
Interaction Effects		
Socioeconomic status × Indigenous status → Secondary school non-completion	0.36**	(0.06)
Socioeconomic status × Academic self-concept → Secondary school non-completion	0.04	(0.02)

Note: Academic self-concept is negatively scored, $^{**}p < 0.001$.

H 2.1.1 There is a gap in secondary school completion between Indigenous students and similar-achieving non-Indigenous students.

As demonstrated in Table 6.3, Indigenous status had a significant direct positive effect on secondary school non-completion ($\beta = 0.45$, $p < .001$) in the 2003 sample. As such, it can be said that there is a difference, or gap, in the secondary school completion of Indigenous adolescents compared with similar-achieving non-Indigenous students in the 2003 dataset having controlled for prior academic achievement. This result reproduced findings of previous research that adolescent Indigenous status has a direct positive effect on secondary school non-completion (e.g., Lamb et al., 2015).

H 2.2.1 There is a gap in secondary school completion between similar-achieving students with high and low academic self-concept

As demonstrated in Table 6.3, academic self-concept (which is negatively scored) had a significant direct positive effect on secondary school non-completion ($\beta = 0.44$, $p < .001$). This finding shows that there is a difference, or gap, in the secondary school completion of students with high academic self-concept compared with similar achieving students with low academic self-concept in the 2003 dataset having controlled for prior academic achievement. This result reproduced findings of previous

research that show that adolescent positive academic self-concept has a direct negative effect on secondary school non-completion (e.g., Peguero & Shaffer, 2015). In other words, adolescent positive academic self-concept has a direct positive effect on secondary school completion.

6.1.3 2003 cohort interaction effects

RQ 2.3.1 Does high socioeconomic status facilitate secondary school completion to the same degree for Indigenous and non-Indigenous students?

In this study, the effect of student socioeconomic status on secondary school non-completion is shown to vary according to Indigenous status while controlling for prior academic achievement. As shown in Table 6.3, for the 2003 cohort, adolescent Indigenous status had a significant interaction effect with adolescent socioeconomic background on secondary school non-completion ($\beta = 0.36$, $p < .001$). The interaction effects of adolescent Indigenous status with socioeconomic background on school non-completion for the 2003 sample is further represented in Table 6.4 and in Figure 6.1. Table 6.4 shows how the probability of secondary school non-completion at high, average and low socioeconomic status varies with Indigenous status. Figure 6.1 demonstrates the predicted probabilities of secondary school non-completion by socioeconomic background and Indigenous status in the 2003 cohort. This study advances previous research by demonstrating that the link between socioeconomic status and secondary school non-completion varies by Indigenous status.

The finding of a significant interaction effect suggests that high socioeconomic status may not insulate Indigenous students from school non-completion as it does for non-Indigenous students. In this study, for non-Indigenous young people, increases in socioeconomic status are associated with a reduced probability of school non-completion; however, for Indigenous young people, this is not the case. For Indigenous young people, increases in socioeconomic status are not correlated with reduced likelihood of school non-completion. From these findings, it appears that having Indigenous status mitigates the disadvantage of low socioeconomic status on school completion; however, Indigenous adolescents also did not benefit from higher socioeconomic status in terms of reduced school non-completion.

Table 6.4: Socioeconomic status and Indigenous status interactions

Cohort	SES	Probability of School Non-Completion	
		Indigenous	Non-Indigenous
2003	High (1.09)	.193	.093
	Mean (0.28)	.187	.117
	Low (-0.54)	.181	.146

Note. Predicted probabilities estimated at the average academic self-concept for 2003 cohort and for the most populous state (NSW). SES=socioeconomic status.

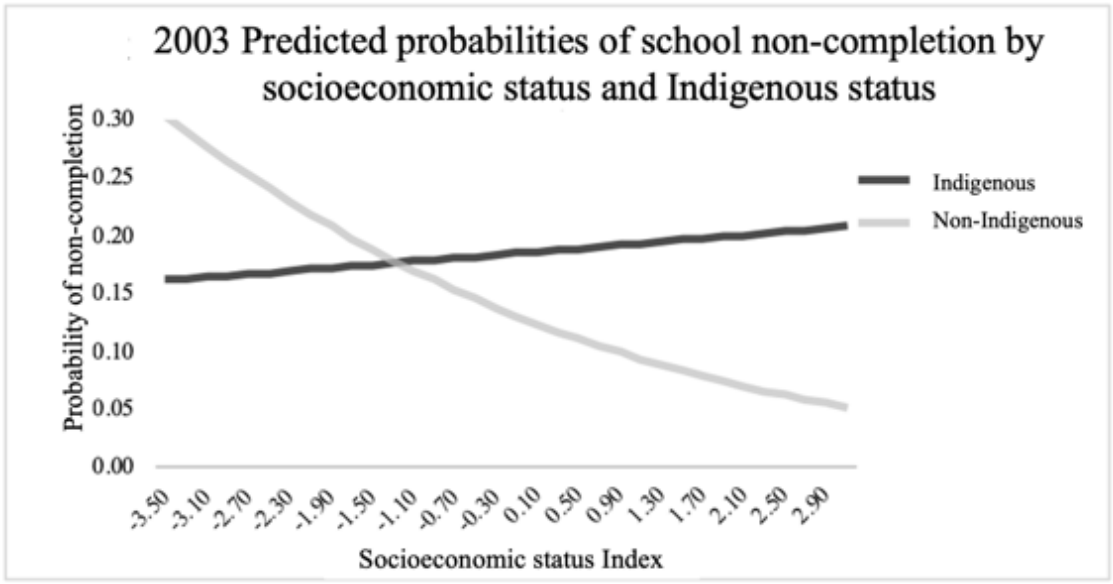


Figure 6.1: Probabilities of school non-completion by socioeconomic status and Indigenous status (2003)

RQ 2.4.1 Does socioeconomic status facilitate secondary school completion to the same degree for students with varying levels of academic self-concept?

In the 2003 cohort, academic self-concept did not have a significant interaction effect with socioeconomic background on secondary school non-completion (see Table 6.3). The effect of academic self-concept with socioeconomic background on secondary school non-completion is represented in Table 6.5 and Figure 6.2. Table 6.5 indicates how academic self-concept influences the probability of school dropout at high, average and low socioeconomic status levels. Figure 6.2 demonstrates the predicted probabilities of secondary school completion by socioeconomic background and academic self-concept in the 2003 cohort. The results indicate that high socioeconomic status does not protect adolescents with low academic self-concept from secondary

school non-completion any more than it protects similarly achieving students with high academic self-concept from secondary school non-completion.

Table 6.5: Socioeconomic status and academic self-concept interactions

Cohort	SES	Probability of School Non-Completion	
		High Self-Concept	Low Self-Concept
2003	High (1.09)	.06	.14
	Mean (0.28)	.08	.17
	Low (-0.54)	.10	.21

Note. Predicted probabilities estimated for non-Indigenous status and for the most populous state (NSW). SES = socioeconomic status.

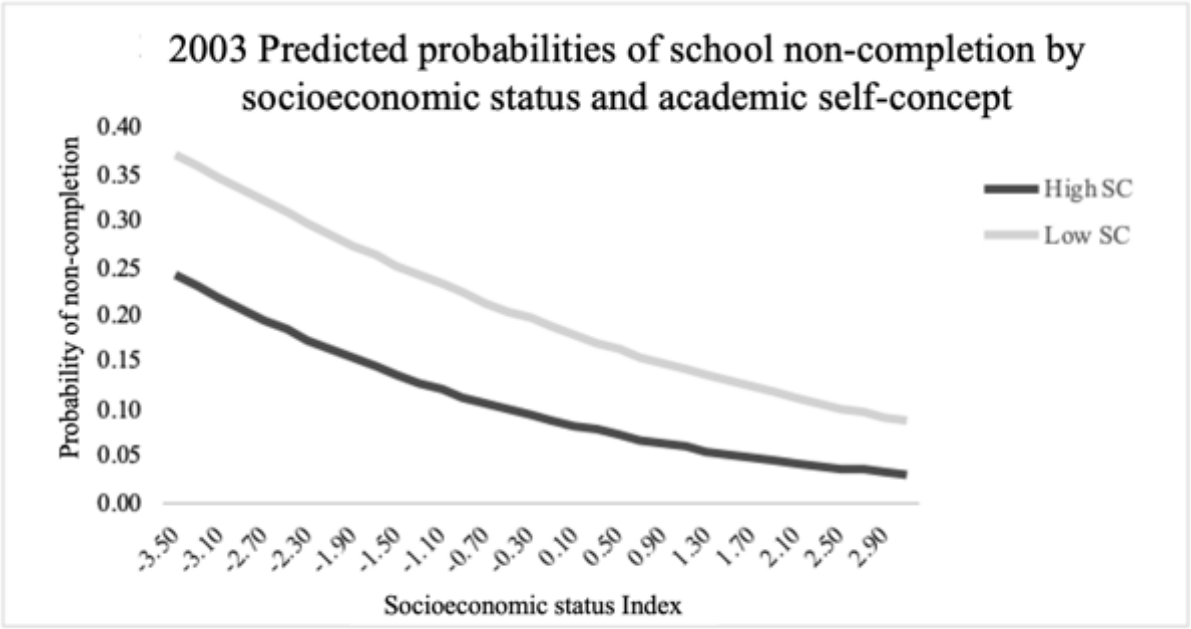


Figure 6.2: Probabilities of school non-completion by socioeconomic status and academic self-concept (2003)
Note. High SC = High academic self-concept, Low SC = Low academic self-concept.

6.2 Study 3 Results

Study 3 replicates and builds on the findings of Study 2. Analysis of the 2009 cohort allows demonstration of the difference in school non-completion between the 2009 cohort and 2003 cohort (presented in the previous section). The difference in school non-completion between the 2009 and 2003 cohorts is likely related to the implementation of a national policy change increasing minimum school leaving age. The policy change increased the compulsory school leaving age of students from 15

years to 17 years and was implemented across Australian states and territories between 2006 and 2010. The 2003 dataset (investigated in Study 2) was collected before the policy was implemented across all Australian states and territories, while the relevant data of the 2009 dataset was collected after policy implementation. Study 3 indicated cohort year (2003 cohort versus 2009 cohort samples) moderated the relation between socioeconomic status and school completion while controlling for prior academic achievement. Such a moderation effect would be indicative of the influence of increases to the age at which young people are legally able to leave compulsory schooling on their subsequent secondary school completion. For more details on the specific aims of Study 3 see Chapter 3.

In this section, the findings of Study 3 are presented indicating a general alignment with the key findings of Study 2. Then findings of Study 3's research questions (outlined in Chapter 3) are presented. First, the descriptive statistics of the LSAY cohorts 2003 and 2009 are presented as an overview of the differences in the datasets. Then the direct effects of socioeconomic status, Indigenous status, academic self-concept and gender on secondary school non-completion for both cohorts are provided. The interaction effects are presented for the 2009 cohort and 2003 cohorts. The first interaction effect is the moderation of Indigenous status on the relation between socioeconomic status and secondary school non-completion. The second is the moderation effect of academic self-concept on the relation between socioeconomic status and secondary school non-completion. Finally, the interaction effects relating to cohort year (i.e., pre- and post-policy implementation) as a moderator of the relation between socioeconomic status and secondary school non-completion are presented. To resolve the research questions and hypothesis of this study, various statistical data are presented in tables and graphs, particularly the results associated with the interaction effects. For a more in-depth discussion of the research findings in the context of the broader literature, see Chapter 7.

6.2.1 Descriptive statistics of key variables

Descriptive statistics of both data sets used in this study (2003 and 2009) are presented in Table 6.6 and Table 6.7. While data for the 2003 cohort has already been shown in Table 6.1 and Table 6.2 it is presented here for comparative purposes and convenience.

The 2003 sample had a lower rate of high school completion than the 2009 sample (81.7% and 86.2% respectively). In both cohorts, females were more likely to complete school than males. In addition, across both cohorts, secondary school completion was linked to higher academic self-concept and higher socioeconomic status. In terms of sociodemographic differences, Indigenous adolescents were less likely to complete school compared to non-Indigenous adolescents in both cohorts.

Table 6.6: Descriptive statistics 2003 and 2009

	2003 Cohort		
Key Variable	**Non-completion**	**Completed School**	**Observed**
All students	18.3%	81.7%	9378
Male	21.4%	78.6%	4769
Female	15.1%	84.9%	4609
Indigenous	35.3%	64.7%	191
Non-Indigenous	17.9%	82.1%	9187
Academic Self-Concept (Mean, SE)	2.67 (0.01)	2.25 (0.01)	2.64 (0.01)
Socioeconomic Status (Mean, SE)	-0.13 (0.01)	0.32 (0.01)	0.23 (0.01)
	2009 Cohort		
Key Variable	**Non-completion**	**Completed School**	**Observed**
All students	13.83%	86.2%	8759
Male	17.2%	82.8%	4270
Female	10.6%	89.4%	4490
Indigenous	22.0%	78.0%	270
Non-Indigenous	13.6%	86.4%	8489
Academic Self-Concept (Mean, SE)	2.78 (0.01)	2.31 (0.01)	2.33 (0.01)
Socioeconomic Status (Mean, SE)	0.04 (0.01)	0.42 (0.01)	0.36 (0.01)

Note. Academic self-concept is negatively scored: 1 = compare very well to others, 5 = compare very poorly to others. Socioeconomic status is positively scored: -2 = low, 3 = high.

Table 6.7: Descriptive statistics Indigenous vs non-Indigenous (2003 & 2009)

	2003 Cohort	
Key Variable	**Non-Indigenous**	**Indigenous**
Academic Self-Concept (Mean, se)	2.32 (.01)	2.57 (.02)
Socioeconomic Status (Mean, se)	0.24 (.01)	-0.24 (.02)
Achievement Index (Mean, se)	-0.08 (.01)	-0.98 (.03)
	2009 Cohort	
Key Variable	**Non-Indigenous**	**Indigenous**
Academic Self-Concept (Mean, se)	2.36 (.01)	2.68 (.03)
Socioeconomic Status (Mean, se)	0.38 (.01)	-0.09 (.02)
Achievement Index (Mean, se)	-0.11 (.01)	-0.85 (.03)

Note. Academic self-concept is negatively scored: 1 = compare very well to others, 5 = compare very poorly to others). Socioeconomic status is positively scored: -2 = low, 3 = high.

6.2.2 2009 cohort direct effects

The following details relate to the replication of Study 2 findings in Study 3. The direct effects in Study 3 (2009 cohort) are compared with those of Study 2 (2003 cohort). In the 2009 cohort sample (N = 8759), after implementation of the school leaving age policy reform, some variation in direct effect patterns were observed. In concordance to the 2003 cohort, adolescent socioeconomic background was a significant predictor of secondary school non-completion, with a similar direct negative effect (β = -0.28, p < .001) in the 2009 cohort, as presented in Table 6.8. Also similar to Study 2, academic self-concept (which was negatively scored) had a significant direct positive effect on secondary school non-completion (β = 0.34, p < .001). Also similar to Study 2, in the 2009 cohort boys reported significantly higher rates of secondary school non-completion than girls (β = 0.47, p < .001). However, in contrast to the 2003 cohort, adolescent Indigenous status had a non-significant direct effect on secondary school non-completion. Prior academic achievement was controlled for in the analysis. While data for the 2003 cohort has already been presented in Table 6.3, it is shown here again for convenience. The full regression results for all variables included in the model for the 2009 dataset is provided in Appendix D. The measure of goodness of fit for this model was a log-likelihood value of 4439.9 (p=<$2.2e^{-16}$) indicating a good model fit with high log-likelihood value and p-value less than 0.05 (Qian & Wu, 2006).

Table 6.8: Direct and interaction effects (2003 & 2009)

Pathways of Influence	**2003 Cohort**	**2009 Cohort**
	(N = 9378)	(N = 8759)
Direct Effects	Coef. (S.E.)	Coef. (S.E.)
Socioeconomic status → Secondary school non-completion	-0.31** (0.02)	-0.28** (0.03)
Indigenous status → Secondary school non-completion	0.45** (0.07)	-0.13 (0.11)
Academic Self-concept → Secondary school non-completion	0.44** (0.02)	0.34** (0.02)
Gender (boys) → Secondary school non-completion	0.38** (0.05)	0.47** (0.07)
Interaction Effects		
Socioeconomic status × Indigenous status → Secondary school non-completion	0.36** (0.06)	0.31** (0.09)
Socioeconomic status × Academic self-concept → Secondary school non-completion	0.04 (0.02)	0.06* (0.02)

Note. Academic self-concept is negatively scored. *$p < .05$. **$p < .001$.

6.2.3 2009 cohort interaction effects

Does socioeconomic status facilitate secondary school completion to the same degree for Indigenous and non-Indigenous students?

In Study 3, the effect of socioeconomic status on secondary school non-completion is shown to vary according to Indigenous status. In the 2009 cohort, adolescent Indigenous status had a significant interaction effect with socioeconomic status on secondary school non-completion ($\beta = 0.31$, $p < .001$). The 2009 cohort interaction effect findings from the 2009 cohort were highly consistent with the interaction effect findings from the 2003 cohort as described in Study 2, demonstrating robust findings. For the 2003 cohort, adolescent Indigenous status had a significant interaction effect with adolescent socioeconomic background on secondary school non-completion ($\beta = 0.36$, $p < .001$). The interaction effects of student Indigenous status and socioeconomic status on secondary school non-completion across the 2009 and 2003 cohorts is represented in Table 6.8 and Table 6.9. While data for the 2003 cohort has already been presented in Table 6.3, it is shown in Table 6.8 for comparison and convenience. Table 6.9 shows how the probability of secondary school non-completion at high, average, and low socioeconomic status, varies with Indigenous status. Table 6.9

demonstrates the predicted probabilities of secondary school non-completion by socioeconomic status and Indigenous status in the 2003 cohort and 2009 cohorts.

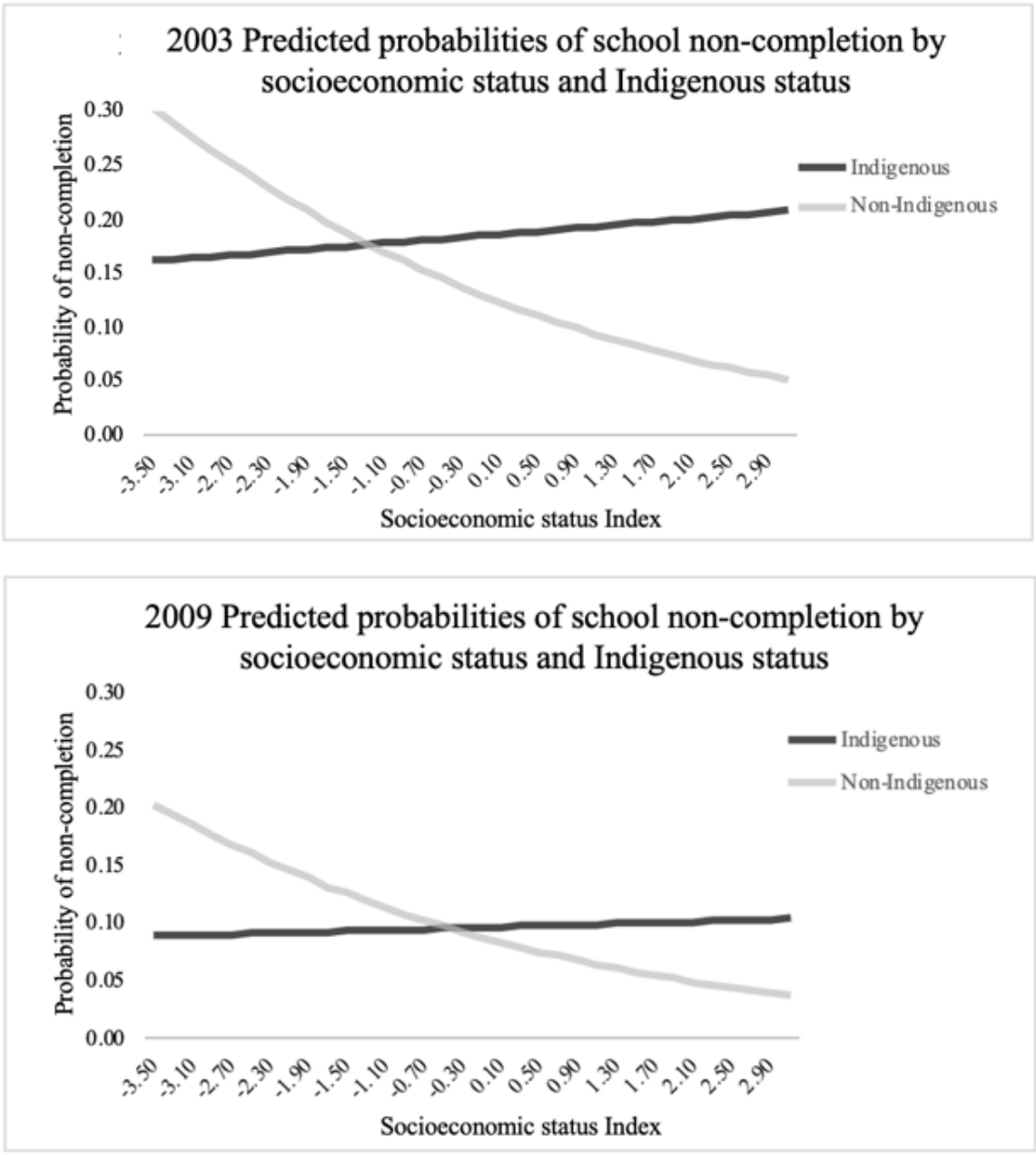


Figure 6.3: Probabilities of school non-completion by socioeconomic status and Indigenous status (2003 and 2009)

Table 6.9: Socioeconomic status - Indigenous status interactions (2003 & 2009)

Cohort	SES	Probability of School Non-Completion	
		Indigenous	Non-Indigenous
2003	High (1.09)	.193	.093
	Mean (0.28)	.187	.117
	Low (-0.54)	.181	.146
2009	High (1.14)	.099	.063
	Mean (0.40)	.097	.077
	Low (-0.33)	.096	.093

Note. Predicted probabilities estimated at the average academic self-concept for each cohort and for the most populous state (NSW). SES = Socioeconomic status.

Does high socioeconomic status facilitate secondary school completion to the same degree for students with varying levels of academic self-concept?

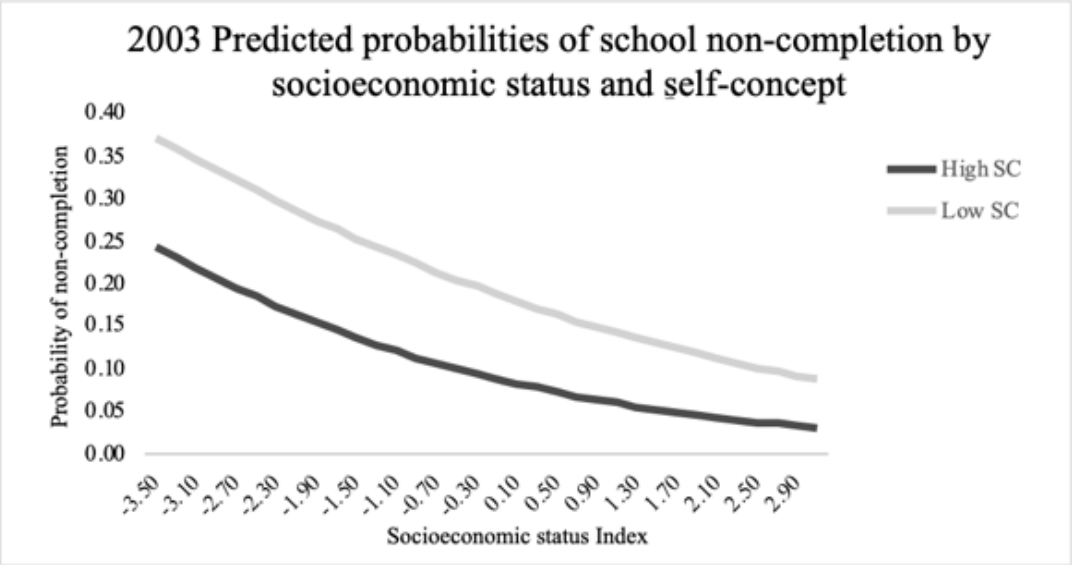
In the Study 3 analysis, the effect of socioeconomic status on school non-completion is shown to vary with a student´s academic self-concept while controlling for prior academic achievement. This effect did not occur in Study 2 (2003 cohort). In Study 3 (2009 cohort) adolescent academic self-concept controlling for prior academic achievement had a significant interaction effect with socioeconomic status on secondary school non-completion ($\beta = 0.06$, $p < 0.05$). However, in Study 2 (2003 cohort), academic self-concept did not have a significant interaction effect with socioeconomic status on secondary school non-completion.

Table 6.10: Socioeconomic status - academic self-concept interactions (2003 & 2009)

Cohort	SES	Probability of School Non-Completion	
		High Self-Concept	Low Self-Concept
2003	High (1.09)	.06	.14
	Mean (0.28)	.08	.17
	Low (-0.54)	.10	.21
2009	High (1.09)	.05	.10
	Mean (0.28)	.06	.12
	Low (-0.54)	.08	.14

Note. Predicted probabilities estimated for non-Indigenous status and for the most populous state (NSW). SES = socioeconomic status.

The interaction effect of student academic self-concept with socioeconomic status on school non-completion for the 2009 cohort in comparison with the 2003 cohort is represented in Table 6.10. The Study 2 findings for the 2003 cohort are presented earlier in Table 6.4 but have been included in Table 6.10 for ease of comparison. Data contained in Table 6.10 (also see Figure 6.4) show how the probability of secondary school non-completion varies with level of academic self-concept and level of socioeconomic status for both the 2003 and 2009 cohorts. This finding indicates that the link between socioeconomic status and secondary school non-completion is weakly moderated by academic self-concept, as the link was found to be statistically significant in Study 3 (2009 cohort) but not in Study 2 (2003 cohort), as presented in Table 6.8. The finding of academic self-concept as a weak moderator of the relation between socioeconomic status and secondary school completion is an advancement on previous research. These results indicate that increased socioeconomic status is likely to benefit students with low academic self-concept more than it benefits equally achieving students with high academic self-concept in completing secondary school, at least after the policy implementation (2009 cohort).



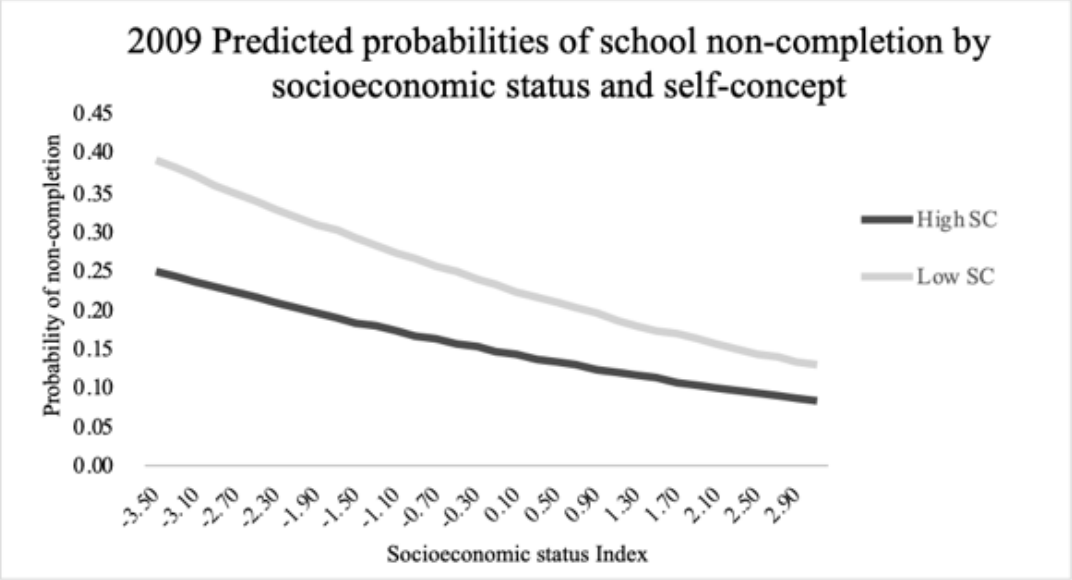


Figure 6.4: Probabilities of school non-completion by socioeconomic status and academic self-concept (2003 and 2009)

6.2.4 Compulsory school leaving age (cohort year) interaction effect

Study 3 investigated the potential impact of an increase to the compulsory school leaving age by investigating cohort year (pre- and post-policy implementation) on the relation between socioeconomic status and secondary school non-completion. The findings as they relate to each of the study research questions are outlined below.

H 3.1.1 Cohort year (before and after lifting the compulsory school leaving age) influences secondary school completion.

This study indicates that students in the 2009 cohort (after the compulsory school leaving age was increased to 17 years) were more likely to go on to complete secondary school than their peers in the 2003 cohort, who were able to leave school at age 15 (See Table 6.6). However, increased likelihood of school completion was not enhanced for all students. Figure 6.5 (below) demonstrates the impact of cohort year on school non-completion for Indigenous students and non-Indigenous students. Specifically, Indigenous adolescents were more likely to complete secondary school following the policy change, as the probability of non-completion reduced between the 2003 and 2009 samples irrespective of student socioeconomic status (Figure 6.5 top). For non-Indigenous students, the probability of school non-completion varied with socioeconomic status. Specifically, for low socioeconomic students, the probability of non-completion reduced between the 2003 and 2009 cohorts, while very little change occurred for high socioeconomic non-Indigenous students (Figure 6.5 bottom).

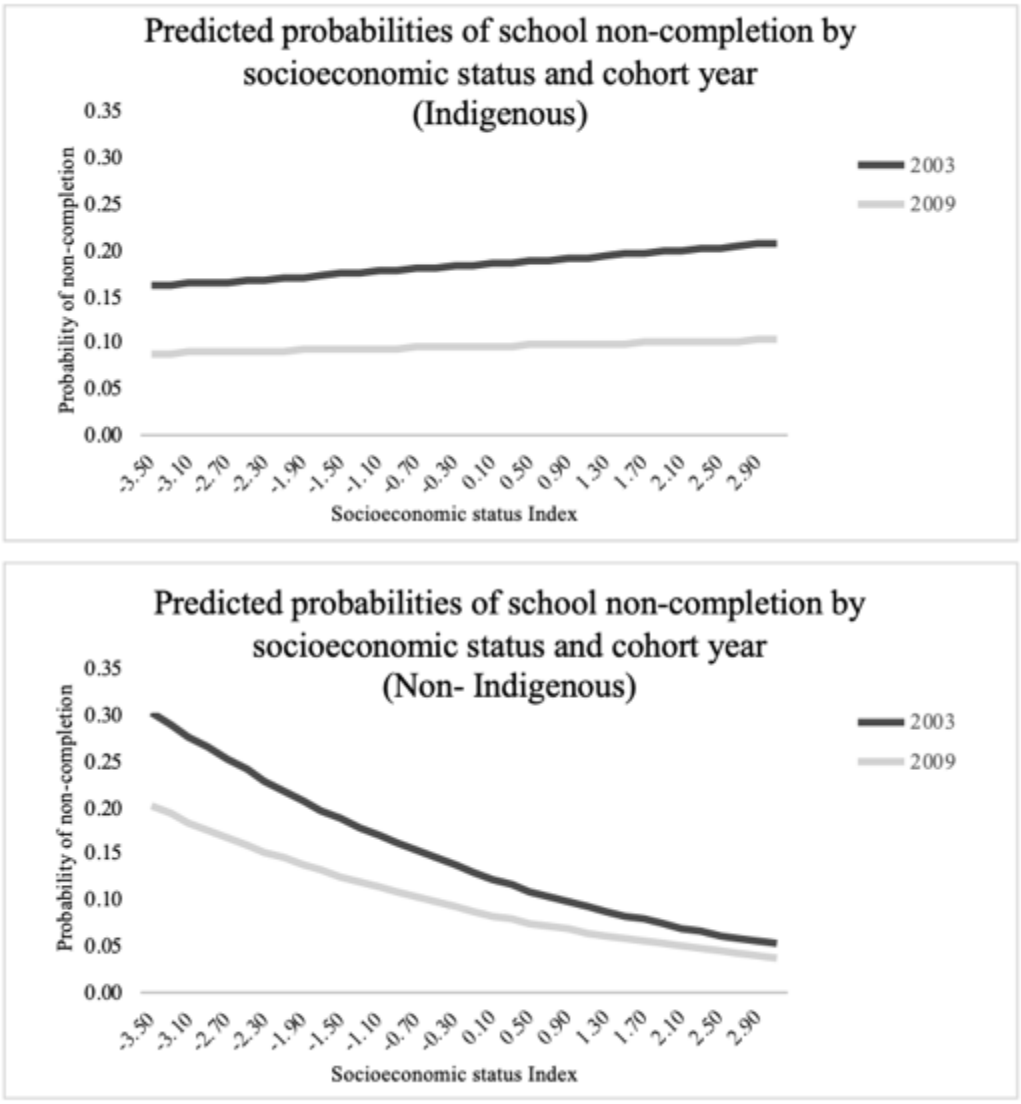


Figure 6.5: Probabilities of school non-completion by socioeconomic status and cohort year for Indigenous and non-Indigenous adolescents

For students with low academic self-concept, a considerable reduction in the likelihood of school non-completion occurred for those from low socioeconomic backgrounds, while only a slight reduction occurred for students from high socioeconomic backgrounds (Figure 6.6 top). The only student group that did not benefit between the 2003 and 2009 cohorts was students with high academic self-concept. Students with high academic self-concept from low socioeconomic backgrounds were not less likely to leave school early in the 2009 cohort (after the policy change) compared to those in the 2003 cohort (before the policy change) as it appears the cohort year made no difference to the school completion of this group (see Figure 6.6 bottom). For students with high academic self-concept from high socioeconomic backgrounds, the policy implementation appears to have had the opposite effect. Students with high academic self-concept and high socioeconomic status in the 2009 cohort had a greater likelihood of leaving school before completing Year 12 than their high academic self-concept, high socioeconomic status peers in the 2003 cohort (see Figure 6.6 bottom).

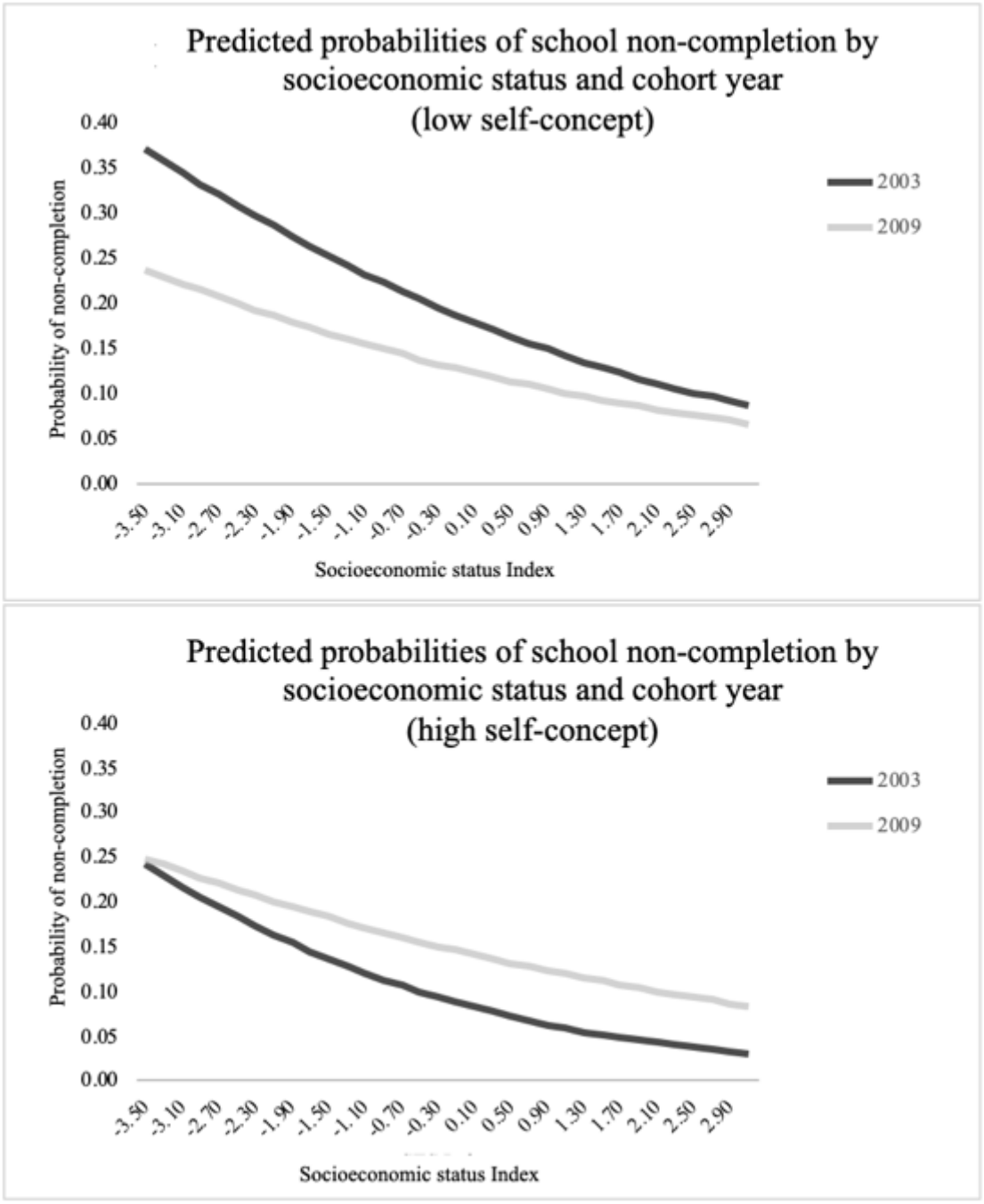


Figure 6.6: Probabilities of non-completion by socioeconomic status and cohort year for low academic self-concept and high academic self-concept

RQ 3.1.2 Does cohort year (before and after lifting the compulsory school leaving age) influence secondary school completion to the same degree for Indigenous and non-Indigenous students?

In this study, the effect of socioeconomic status on secondary school non-completion was shown to vary with cohort year, with implications regarding increases to

compulsory school leaving age, for Indigenous and non-Indigenous students controlling for prior academic achievement. The moderation effect of cohort year (indicative of compulsory school leaving age) is demonstrated in Table 6.11 which shows probability of school non-completion for high, average and low socioeconomic status for Indigenous and non-Indigenous students. To determine the moderation effect, the test of parallelism of two slopes (Field et al., 2012) was used as indicated in Figure 6.5, with non-parallel slopes demonstrated in each graph indicating the presence of an interaction between variables. However, the manner in which cohort year (and potentially) compulsory school leaving age influenced the impact of socioeconomic status on secondary school non-completion varied for Indigenous and non-Indigenous adolescents. Figure 6.5 (top) demonstrates that for Indigenous adolescents there is a slightly negative impact of high socioeconomic status on likelihood of school non-completion and that this is reduced in the 2009 cohort compared with the 2003 cohort. While for non-Indigenous adolescents, shown in Figure 6.5 (bottom), the 2009 cohort shows a reduced negative impact of low socioeconomic status on probability of dropout, compared with the 2003 cohort year, making a more equal playing field particularly for those from low socioeconomic backgrounds. This effect is not observed for Indigenous adolescents. These results suggest that the nationwide implementation of raising the compulsory school leaving age may have been beneficial in increasing high school completion rates, particularly for low socioeconomic background non-Indigenous youth.

Table 6.11: Socioeconomic status - cohort year interactions (Indigenous vs non-Indigenous)

Status	**SES**	**Probability of School Non-Completion**	
		2003 Cohort	2009 Cohort
Indigenous	High (1.09)	.193	.099
	Mean (0.28)	.187	.097
	Low (-0.54)	.181	.095
Non-Indigenous	High (1.09)	.093	.064
	Mean (0.28)	.117	.080
	Low (-0.54)	.146	.098

Note. Predicted probabilities estimated at average academic self-concept for each cohort and for the most populous state (NSW). SES = socioeconomic status. High, mean and low SES was derived from mean and standard deviation socioeconomic status from the 2003 cohort.

RQ 3.1.3 Does the gap in Indigenous and non-Indigenous school completion change with cohort year (before and after an increase in compulsory school leaving age)?

Study 3 demonstrates that the difference in likelihood of school completion of Indigenous students compared with non-Indigenous students (the gap in school completion between Indigenous and non-Indigenous students) narrows from the 2003 cohort analysed in Study 2 to the 2009 cohort in this study. As the main difference between the two cohorts was the significant policy change implementing an increase in compulsory school leaving age across Australia from 15 to 17 years between data collection of each cohort, a moderating effect of the policy change on school completion outcomes may be inferred. The narrowing of the gap is demonstrated in Table 6.8. Table 6.8 shows the direct effects of Indigenous status on secondary school completion across both cohorts. For the 2003 cohort, prior to policy implementation, the direct effect of Indigenous status on secondary school completion is significant ($\beta = 0.45$, $p < 0.001$), as demonstrated in Study 1. However, for the 2009 cohort, after policy implementation, the direct effect of Indigenous status on secondary school completion is non-significant. This finding indicates that a student´s Indigenous status is not predictive of their secondary school completion for the 2009 cohort, but it is predictive of school completion for the 2003 cohort, prior to policy implementation. The

narrowing of the gap between Indigenous and non-Indigenous school completion is also demonstrated in **Error! Reference source not found.**. The difference between the slopes of the line for Indigenous students and the line for non-Indigenous students is less in the 2009 cohort than in the 2003 cohort, indicating a reduced range of probabilities of school non-completion shared between Indigenous and non-Indigenous students in the 2009 cohort compared to the 2003 cohort.

RQ 3.1.4 Does cohort year (before and after lifting the compulsory school leaving age) influence secondary school completion to the same degree for students with low academic self-concept compared to those with high academic self-concept?

The findings of this study suggest that cohort year influences secondary school completion to varying degrees for students with low academic self-concept compared with similar achieving students with high academic self-concept. In other words, the effect of socioeconomic status on secondary school non-completion was shown to vary, between the 2003 and 2009 cohorts, for students with high academic self-concept and those with low academic self-concept. Table 6.12 demonstrates the moderation effect of cohort year by presenting the probability of school non-completion for adolescents with low academic self-concept and then for adolescents with high academic self-concept across high, average and low socioeconomic status. High socioeconomic status was the mean value on the Economic Social and Cultural Status (ESCS) index, plus one standard deviation, while low socioeconomic status was the mean value of the ESCS index minus one standard deviation. All three values were determined from their relevant cohort datasets.

Table 6.12: Socioeconomic status - cohort year interactions (low and high academic self-concept)

Academic Self-Concept	**SES**	**Probability of School Non-Completion**	
		2003 Cohort	2009 Cohort
Low	High (1.09)	.14	.10
	Mean (0.28)	.17	.12
	Low (-0.54)	.21	.14
High	High (1.09)	.06	.05
	Mean (0.28)	.08	.06
	Low (-0.54)	.10	.08

Note. Predicted probabilities estimated at average academic self-concept for each cohort and for the most populous state (NSW). SES = socioeconomic status. High, mean and low SES was derived from mean and standard deviation socioeconomic status from the 2003 cohort.

The moderation effect of cohort year was determined using the observational test of parallelism of two slopes (Field et al., 2012). Figure 6.6 suggests significant moderation effects of cohort year on the relation between socioeconomic status and secondary school non-completion for adolescents with both low and high academic self-concept. Figure 6.6 (top) shows the moderation effect of cohort year on the relation between socioeconomic status and likelihood of school non-completion for adolescents with low academic self-concept. Specifically, students with low academic self-concept were more likely to not complete Year 12 in the 2003 cohort compared to in the 2009 cohort. However, this effect was most pronounced for students with low academic self-concept and low socioeconomic status who benefitted most across cohort years, and the inferred role of the change in policy context, in terms of reduced likelihood of school non-completion. Figure 6.6 (bottom) shows the moderation effect for adolescents with high academic self-concept.

In Figure 6b it can be observed that increasing compulsory-school leaving age actually had a negative influence on high-academic self-concept adolescents from high socioeconomic backgrounds. Figure 6b indicates that compulsory-school leaving age (via cohort year) made a bigger (negative) impact on the school completion rates of high academic self-concept students with high socioeconomic background than for high academic self-concept students from low socioeconomic backgrounds. For those

students with high academic self-concept from the lowest socioeconomic background, increasing compulsory-school leaving age (via cohort year) appears to have made very little difference in terms of the likelihood of school non-completion.

As the predominant policy change between data collection for the 2003 and 2009 cohorts was the nationwide implementation of raising the compulsory school-leaving age, these results appear to suggest that the change in compulsory school leaving age may have played out differently for young people with varying academic self-concept from different socioeconomic status backgrounds. Those with low academic self-concept from the lowest socioeconomic background appeared to benefit most, along with those with high academic self-concept from the moderate to high socioeconomic background.

6.3 Summary

Studies 2 and 3 used data generated from multilinear regression analyses of two large longitudinal and representative datasets. These studies determined that the effect of socioeconomic status on secondary school non-completion varies according to Indigenous status and according to the educational policy context. This chapter presented the findings of Study 2 as they relate to the Study 2 hypotheses and research questions. As expected, Study 2 demonstrated that the likelihood of an Indigenous student completing secondary school was lower than that of a similar achieving non-Indigenous student. Similarly, Study 2 demonstrated that the likelihood of a student with high academic self-concept completing secondary school was higher than that of a similar achieving student with low academic self-concept. In addition, and unique to this research, Study 2 demonstrated that high socioeconomic status does not facilitate secondary school completion to the same degree for Indigenous students and for similar achieving non-Indigenous students. Non-Indigenous students gained more from having high socioeconomic status in terms of school completion, whereas higher socioeconomic status made little difference to the school completion of Indigenous students. In other words, socioeconomic status has a minimal effect on secondary school completion for Indigenous students compared to the effect it has on the school completion of similar achieving non-Indigenous students. Study 2 also showed that

high socioeconomic status facilitates secondary school completion to the same degree for students with high academic self-concept and for similar achieving students with low academic self-concept. Overall, Study 2 demonstrates that while socioeconomic status predicts rates of school completion, this does not appear to apply to Indigenous students.

This chapter also presented the findings of Study 3, in terms of how they provided support for Study 2 findings, and in relation to the Study 3 hypothesis and research questions. The findings of Study 2 relating to the impact of socioeconomic status on the school completion of Indigenous students compared to non-Indigenous students was consistent across both datasets (2003 and 2009), demonstrating robust findings. In addition, Study 3 suggests that lifting the compulsory school leaving age may facilitate secondary school completion, as cohort year (before and after increases to the compulsory school leaving age) is associated with secondary school completion for most students. Cohort year is associated with increased school completion rates for Indigenous students, students from low socioeconomic backgrounds, and students with low academic self-concept. In addition, the gap in Indigenous and non-Indigenous school completion narrows between the two cohorts, with increases to the compulsory school leaving age. The study also demonstrates that cohort year made more of a difference to the likelihood of school completion for students with low academic self-concept than it did for students with high academic self-concept. In Chapter 7, these findings will be discussed in detail.

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Chapter 7:
Discussion of Research Findings

> "Some of us have stood at the crossroads where it is possible to choose a path to the good life or the path to continuing poverty and marginalisation."
>
> Marcia Langton (2013, p. 11)

7.1 Introduction

In this chapter, I explain and elaborate on the findings reported in this thesis. This is achieved by discussing trends emerging from the findings that require additional investigation, drawing links from the three studies and positioning the findings within the broader field of literature. Particularly, while the data show some general trends, I suggest that the road to successful school completion is nuanced, particularly for minority and historically marginalised groups of young people. For example, based on the data used in this research, young Indigenous Australians appear to be relatively impervious to the influence of socioeconomic status on secondary school completion, as I will detail below. However, increases to the compulsory school leaving age across Australia appear to have increased the likelihood of school completion for Indigenous students. In this respect, this thesis suggests that implementation of this policy reform, under the National Partnership Agreement on Youth Attainment and Transitions (Coalition of Australian Governments, 2009), may have contributed to leveling the playing field in terms of Year 12 attainment levels, in line with the Australian Government´s 'Closing the Gap' policy directive. Building on the results of Study 1 (presented in Chapter 5) and Studies 2 and 3 (presented in Chapter 6), I further argue that the Sen-Bourdieu framework of capability and capital (Hart, 2013; Molla & Pham, 2019; Pham, 2019) is a mechanism that helps to explain why Indigenous students

appear resistant to socioeconomic status when it comes to school completion. In recognition of the heavy focus on Indigenous people as research participants where they often gain little, if anything (Bainbridge et al., 2015), this research has spared them from being further interviewed and subjected to interventions.

The primary aim of this thesis was to gain a deeper understanding of the interplay between key sociodemographic factors, including academic self-concept, socioeconomic status and Indigenous status, in predicting secondary school completion. A deeper understanding of this interplay was reached based on responses to the following overarching research questions which guided each of the three studies:

- Does positive academic self-concept facilitate secondary school completion for students across diverse social and demographic backgrounds? (Study 1)
- Does socioeconomic status facilitate secondary school completion across Indigenous and non-Indigenous students to the same degree, and across students with varying levels of academic self-concept to the same degree? (Study 2)
- Does cohort year (before and after a national initiative that increases compulsory school leaving age) influence secondary school completion to the same degree for everyone, including Indigenous and non-Indigenous students, and students with varying levels of academic self-concept? (Study 3).

This research provides strong evidence for some of the mechanisms believed to underpin inequalities in educational outcomes for young Indigenous Australians and points to potential drivers of inequity. As such, the research provides useful ideas for educational policy and intervention rather than just highlighting gaps in educational outcomes, which typically contribute to a deficit view of Indigenous Australians (Fogarty et al., 2017). Furthermore, the applications of these findings in policy, practice or research in Australia need to recognise the immense diversity of people of Aboriginal and Torres Strait Islander descent in terms of language groups and cultural values (Purdie et al., 2010). Finally, the similar histories of dispossession, colonisation,

marginalisation, and minority-status of Indigenous people internationally, particularly for those within Anglo-colonised countries, make these findings relevant to a broader international audience.

This chapter commences with a summary of key findings for the three studies. This is followed by a study-based discussion comprising two parts: the first discusses Study 1 findings and the second discusses Study 2 and Study 3 findings, elaborating on the relevance and importance of key findings. In addition, strengths, limitations and future directions are included. The chapter concludes with a general discussion and implications for policy and practice section. In this section I discuss overarching themes related to the findings of the three studies and current literature, which have implications for research, policy and practice.

7.2 Summary of key findings

7.2.1 The relation between academic self-concept and educational outcomes

Does positive academic self-concept facilitate secondary school completion for students across diverse socioeconomic backgrounds? Study 1 sought to answer this overarching question via a systematic review of 9,564 records investigating the nature of the link between academic self-concept and various educational outcomes such as school completion, engagement and attendance. From these initial records, 17 studies were assessed in terms of the moderation or mediation effect of a third variable on the relation between academic self-concept and the educational outcome variable. The findings of Study 1 as they relate to the Study 1 hypotheses and research questions are outlined below.

Research Question 1.1.1 examined what factors have been demonstrated to moderate the relation between a young person´s academic self-concept and their educational outcomes. There were six moderators of the link between academic self-concept and an educational outcome (e.g., student attendance, student engagement, school dropout) identified in the literature review. These moderators were prior academic achievement, student stage of adolescence, gender, socioeconomic status, Indigenous status and student value beliefs relating to academic achievement. Conversely, the following variables were tested and demonstrated to not moderate the relation

between academic self-concept and an educational outcome: student language status, adverse childhood experiences, specific value beliefs relating to academic achievement (i.e., intrinsic value, utility value, cost value), and gender.

Research Question 1.1.2 examined what factors have been demonstrated to mediate the relation between a young person´s academic self-concept and their educational outcomes. There were six mediators identified: cognitive engagement, interest in class, school achievement, educational expectations, teacher student relationship and student wellbeing at school. In addition, student-to-student relationship in class was the only variable shown to not mediate the relation between academic self-concept and an educational outcome. Educational expectations, student interest in class and teacher-student relationship may be influenced directly by the social and cultural contexts of a student´s family and community, particularly where these contexts vary from that of the school environment.

Research Question 1.2.1 inquired whether sociodemographic factors moderate the relation between a young person´s academic self-concept and their educational outcomes. Study 1 determined three sociodemographic variables that had a moderation effect upon the relation in question. These sociodemographic moderators were socioeconomic status, Indigenous status and general value beliefs of achievement. Findings showed that the general value beliefs of achievement as a moderator yielded the greatest effect sizes. Guo et al. (2016) indicated that the value beliefs of achievement influenced the strength of math self-concept as a predictor of student self-reported effort in math (r = .17). Guo et al. (2016) also suggested that value beliefs of achievement influenced the strength of math self-concept as a predictor of teacher-rated student behavioural engagement in mathematics (r = .15). The study by Guo et al. (2016) was assessed as having a medium risk of bias and corresponding moderate quality of evidence. Overall, this study suggests there is some evidence that sociodemographic factors moderate the relation between a young person´s academic self-concept and their educational outcomes.

Research Question 1.3.1 examined whether a young person´s socioeconomic status moderates the relation between their academic self-concept and their educational

outcomes. The role of socioeconomic status as a moderator was investigated in four of the 17 studies in the review. In only one of these studies (Bergeron et al., 2011) was socioeconomic status shown to moderate the extent a young person´s competence belief in mathematics predicted their intention to drop out of secondary school. For high socioeconomic status students, intention to dropout reduced for those students with high competence beliefs in mathematics (high mathematics academic self-concept). However, for low socioeconomic students, their level of competence belief in mathematics is not predictive of their intention to drop out of school. This relation only seems to hold for self-beliefs for mathematics competence but not for self-beliefs in language arts competence. This study had a high risk of bias and low quality of evidence. Although it had a large sample and confounding variables identified and controlled, the sample was not representative, and there was little information regarding the extent and management of missing data. As such, claims about socioeconomic status acting as a moderator of the relation between academic self-concept in math and intention to drop out of secondary school should be considered with some caution. The findings of Studies 2 and 3 of the thesis supports a cautious approach, as the moderation effect of academic self-concept on the relation between socioeconomic status and school non-completion were found to be non-significant in Study 2 and weakly associated in Study 3.

Research Question 1.4.1 inquired whether the relation between a young person´s academic self-concept and their educational outcomes varies according to Indigenous status. Study 1 found that Indigenous status moderated this relation in only one study (Bodkin-Andrews, O'Rourke & Craven, 2010). Bodkin-Andrews, O'Rourke and Craven (2010) indicated that for Indigenous youth, mathematics self-concept was a weaker predictor of student aspirations to complete Year 12 compared with non-Indigenous youth. The study was assessed as having a medium risk of bias and a moderate quality of evidence. However, Indigenous status was shown to not moderate the relation between school self-concept and student participation (Yeung et al., 2013), nor the relation between reading and mathematics self-concepts and student participation (Yeung et al., 2013). Indigenous status was also shown to not moderate the relation between mathematics or verbal self-concept and absenteeism, nor the link between

verbal self-concept and a young person´s aspirations to complete Year 12 (Bodkin-Andrews, O'Rourke & Craven, 2010). There is some evidence that the association between mathematics self-concept and aspiration to complete Year 12 varies for Indigenous students compared with non-Indigenous students. Accordingly, mathematics self-concept acts as a weaker predictor of aspiration to complete Year 12 for Indigenous youth compared with non-Indigenous youth.

The findings of Study 1 prompted further investigation into the role of socioeconomic status as a predictor of school completion for Indigenous and non-Indigenous students, and for students of varying levels of academic self-concept. Drawing upon a quantitative intersectional perspective (Else-Quest & Hyde, 2016a, 2016b) and Boudon's (1974) primary and secondary effects theory, a large statistical modelling analysis was undertaken to test the confidence in the moderation effects of these variables and clarify some of the uncertainty produced by the heterogeneity between studies in Study 1. Heterogeneity between studies was due to differences in predictor and outcome variables, the generally moderate to high risk of bias of the studies, and the small number of studies with significant effects.

7.2.2 The relation between socioeconomic status and school completion

Study 2 used data generated from multilinear regression analyses of a large longitudinal and representative dataset, the LSAY 2003 cohort. The overarching research question this study sought to address was whether higher socioeconomic status was associated with secondary school completion according to student's Indigenous status and varying levels of academic self-concept. The findings of Study 2 as they relate to the Study 2 hypotheses and research questions are outlined here.

Hypothesis 2.1.1 proposed that there is a gap in secondary school completion between Indigenous students and similar-achieving non-Indigenous students. Study 2 tested this assumption and found that for similar-achieving Indigenous and non-Indigenous students, Indigenous students were significantly more likely to not complete secondary school than non-Indigenous students ($\beta = 0.45$, $p < .001$) for the 2003 sample. This finding reproduces previous findings (e.g., Lamb et al., 2015). In the analysis of the LSAY 2009 cohort (see Study 3), a different direct effect was observed. Student

Indigenous status had a non-significant direct effect on secondary school non-completion. This non-significant effect indicates that for the 2009 cohort there was no gap in the secondary school completion rates between similar-achieving Indigenous and non-Indigenous students.

Hypothesis 2.2.1 proposed that there is a gap in secondary school completion between similar achieving students with high and low academic self-concept (including Indigenous and non-Indigenous students). For the 2003 cohort, findings showed that academic self-concept (negatively scored) had a significant direct positive effect on secondary school non-completion ($\beta = 0.44$, $p < .001$). Similar findings were obtained in the Study 3 analysis of the LSAY 2009 cohort. For the 2009 cohort, academic self-concept (negatively scored) had a significant direct positive effect on secondary school non-completion ($\beta = 0.34$, $p < .001$). Both direct effects are demonstrative of a gap in the secondary school completion of students with high academic self-concept compared with similar achieving students with low academic self-concept.

Research Question 2.3.1 inquires whether high socioeconomic status facilitates secondary school completion to the same degree for Indigenous and non-Indigenous students. Investigating this question, Study 2 found that for the 2003 cohort, student Indigenous status had a significant interaction effect with student socioeconomic status on secondary school non-completion ($\beta = 0.36$, $p < .001$). In Study 3, Indigenous status also had a significant interaction effect with socioeconomic status on secondary school non-completion ($\beta = 0.31$, $p < .001$), a finding highly consistent with Study 2. These findings of Studies 2 and 3 advance previous research (e.g., Parker et al., 2021) by demonstrating that the secondary school completion of Indigenous students is stable across the gradient of socioeconomic status, unlike that of non-Indigenous students where high socioeconomic status is associated with higher school completion. As such, socioeconomic status does not facilitate secondary school completion to the same degree for Indigenous and non-Indigenous students of similar ability. Indigenous students appear to gain little advantage from high socioeconomic status in terms of secondary school completion while their non-Indigenous peers are advantaged by higher levels of socioeconomic status. Subsequently, Indigenous students seem to be much less influenced by Boudon's (1974) secondary effects; that is, by class differences

in the expected return of completing an expected education level. This is not to suggest that socioeconomic status is not relevant, only that by itself socioeconomic status has very little association with the school completion outcomes of Indigenous youth.

Research Question 2.4.1 inquired whether socioeconomic status facilitates secondary school completion to the same degree for students with varying levels of academic self-concept. Study 2 showed that for the 2003 cohort, academic self-concept did not have a significant moderation effect on the relation between socioeconomic background and secondary school non-completion. This indicates for the 2003 cohort, that socioeconomic status facilitated secondary school completion to the same degree across students of all levels of academic self-concept. However, in Study 3 (2009 cohort), student academic self-concept had a small but significant interaction effect with socioeconomic status on secondary school non-completion ($\beta = 0.06$, $p < 0.05$). This significant interaction effect for the 2009 cohort indicates that socioeconomic status in this instance did not facilitate secondary school completion to the same degree across the gradient of academic self-concept. Specifically, for equally achieving students, increased socioeconomic status was likely to benefit students with low academic self-concept, but not students with high academic self-concept. Unique to this research, academic self-concept was demonstrated to be a weak moderator of the relation between socioeconomic status and secondary school non-completion. This finding is based on the presence of a moderation effect in the 2009 cohort but not the 2003 cohort.

7.2.3 Cohort year on socioeconomic status and school completion link

In Study 3, I explored whether the cohort year (as indicative of the educational policy context) disrupted the linkage of socioeconomic status and school completion. Study 3 used data generated from multilinear regression analyses of a large longitudinal and representative dataset, the LSAY 2009 cohort, in comparison with similar analyses of the LSAY 2003 cohort. The overarching research question this study sought to address was: is cohort year (before and after national increases to compulsory school leaving age) associated with secondary school completion to the same degree for everyone, including Indigenous and non-Indigenous students, and students with varying levels of

academic self-concept? The findings of Study 3 compared with the findings of Study 2 suggest that after a change to the policy context, the rate of school completion generally increased, as has been shown in the United States (e.g., Rumberger & Lim, 2008). The findings of Study 3 hypothesis and research questions are outlined here.

Hypothesis 3.1.1 proposed that cohort year (before and after lifting the compulsory school leaving age in Australia) is associated with secondary school completion. In a general sense, Study 3 tested this hypothesis and indicates that increasing the age at which a student is able to withdraw from full-time schooling, work or a combination of both, to 17 years is associated with an increased likelihood that students will go on to complete secondary school. However, it appears the difference in school completion before and after policy implementation varies for different student groups. Interestingly, the only group of students to be disadvantaged by the change in cohort year with policy change implications appears to be students with high academic self-concept and high socioeconomic status.

Research Question 3.1.2 inquired whether cohort year (before and after increasing the compulsory school leaving age) is associated with secondary school completion to the same degree for Indigenous and non-Indigenous students. The findings of Study 3 suggest that the moderation effect of cohort year (and inferred effect of increasing the compulsory school leaving age) is not associated with secondary school completion to the same degree for Indigenous and non-Indigenous students. The findings suggest that for the relation between socioeconomic status and secondary school completion, the difference between Indigenous and non-Indigenous students varied across the 2003 and 2009 cohorts. In the 2009 cohort, after the policy reform, Indigenous students were consistently more likely to complete secondary school; however, for non-Indigenous students, the likelihood of school completion varied with socioeconomic status. Non-Indigenous students with low socioeconomic status were more likely to complete secondary school, while non-Indigenous students with high socioeconomic backgrounds received no gain in the 2009 cohort compared with the 2003 cohort. This finding implies that the moderation effect varies with cohort year (that is, before and after the increase to the compulsory school leaving age was implemented). This appears to result in a more equal playing field, especially for those

from low socioeconomic backgrounds, by increasing educational equity through increasing their likelihood of high school completion.

Research Question 3.1.3 inquired whether the gap in Indigenous and non-Indigenous school completion changes with cohort year (before and after lifting the compulsory school leaving age) for similarly achieving Indigenous and non-Indigenous students (that is, controlling for academic achievement). This research question is effectively answered in the response to Hypothesis 2.1.1 earlier in this section. Hypothesis 2.1.1 proposed that there is a gap in secondary school completion between Indigenous students and similar-achieving non-Indigenous students, and this was found to be the case in the 2003 cohort (Study 2) and found not to be the case in the 2009 cohort (Study 3). Given this finding, Study 3 suggests that the gap in similar-achieving Indigenous and non-Indigenous school completion not only narrows between the 2003 and 2009 cohort samples, but that it no longer exists, given that the direct effect of Indigenous status on school completion for the 2003 cohort is significant ($\beta = .45$, $p = .001$) and for the 2009 cohort is non-significant.

Research Question 3.1.4 inquired whether cohort year (before and after lifting the compulsory school leaving age) is associated with secondary school completion to the same degree for students with low academic self-concept compared to those with high academic self-concept (including Indigenous and non-Indigenous students). The results of this research indicate that for equally achieving students in the 2003 cohort and the 2009 cohort, academic self-concept was a significant predictor of secondary school non-completion with similar effect sizes for the 2003 sample ($\beta = .44$, $p = .001$) and the 2009 sample ($\beta = .34$, $p = .001$). However, for the 2009 cohort sample, academic self-concept interacts with socioeconomic status to influence secondary school completion, such that similarly achieving students at the intersection of low academic self-concept and low socioeconomic status benefit the most from the policy reform in terms of increases to their secondary school completion. As such, in response to Research Question 3.1.4, compulsory school leaving age appears not to facilitate secondary school completion to the same degree for students with high academic self-concept compared to students with low academic self-concept. Students with low academic self-concept seemed to benefit more from the policy reform than students

with high academic self-concept, particularly those from low socioeconomic backgrounds.

The three studies of this thesis jointly make unique contributions to the field of education for minority groups. This thesis includes the first systematic review of the relation between academic self-concept and school completion related variables to examine the key moderators and mediators of the relation (Study 1). The analysis of both moderators and mediators, as suggested by Hattie (2021), allowed me to demonstrate the complexity of roles that they play in the relation between the predictor and outcome variables. In addition, Chapter 6 outlines results of the first large-scale longitudinal and representative Australian studies to explore the link between socioeconomic status and school completion for Indigenous Australian students. Studies 2 and 3 suggest benefits of increasing compulsory school leaving age across Australia, by showing that cohort year, before and after policy implementation, was associated with a reduction in the difference in school completion rates for Indigenous youth compared with non-Indigenous youth.

7.3 Study-level discussion

7.3.1 Study 1: Systematic review

A systematic review was used in this study to investigate differences and similarities in academic self-concept across a variety of educational outcomes and across diverse participant populations in 17 studies. In addition, the systematic review provided an opportunity to explore the degree to which differences in academic self-concept varied across numerous social and cultural contexts. The findings highlighted issues relevant to the study of academic self-concept in understanding the often-poorer educational outcomes of marginalised and ethnic minority groups compared to their broader population peers.

As expected, differences in academic self-concept followed the typical pattern of high academic self-concept associated with positive educational outcomes (Marsh & O'Mara, 2008), and low academic self-concept associated with negative educational outcomes. While the studies showed positive effects for academic self-concept as a predictor of positive educational outcomes, the review indicates that at present, the

availability of high-quality evidence is scarce. The scarcity of high-quality evidence is exacerbated by the nature of the inclusion and exclusion criteria of the study, which exclusively invited observational studies as a result of the research questions. Despite this, there is some evidence to suggest that various moderators and mediators of academic self-concept as a predictor of educational outcomes play a role, and differences and similarities exist across sociodemographic contexts. The most important findings from the review are outlined below.

7.3.1.1 Differences in academic self-concept

Research Question 1.1.1 asked what factors have been shown to moderate the relation between a young person´s academic self-concept and their educational outcomes. Effect sizes were small for all moderation effects ($.10 < d < .20$). The effects were for mathematics self-concept on student self-reported effort in mathematics (favouring high value beliefs), mathematics self-concept on teacher-rated student behavioural engagement in mathematics (favouring high value beliefs), mathematics expectancy beliefs on emotional engagement (favouring girls), academic self-concept on student engagement (favouring high prior academic achievement), competence belief in mathematics on dropout intention (favouring low socioeconomic status), intellectual self-concept on student engagement (favouring early adolescents), and mathematics self-concept on aspiration to complete Year 12 (favouring non-Indigenous students).

A prominent finding of the study was that the effect sizes for academic self-concept differences on educational outcomes were domain specific. As such, there were large differences in effect size spanning across mathematics and verbal domains. For instance, while competence beliefs in mathematics were associated with reduced dropout intention for students of high but not low socioeconomic schools, competence beliefs in language were not significant (Bergeron et al., 2011). Another example of this trend showed mathematics self-concept as a stronger predictor of aspiration to complete secondary school for non-Indigenous students than for Indigenous students. However, in the same study, verbal self-concept was not significantly associated with completion aspirations (Bodkin-Andrews, O'Rourke & Craven, 2010). As such, researchers interested in investigating the role of academic self-concept on educational outcomes for specific demographic groups should contemplate appropriate domain-

specific measures. Such consideration is prudent given academic self-concepts seem to be stronger predictors of educational outcomes for mathematics compared to other domains at school and consistent with the work of Möller et al. (2016). Given this trend, interventions may be best focused on improving student self-beliefs and attitudes in mathematics, as opposed to other domains such as verbal/language subjects, particularly where there are greater similarities than differences in effect across moderators.

7.3.1.2 Moderator effects for sociodemographic factors

Although effect sizes were small for all moderation effects, evidence from this study suggests that the following sociodemographic variables may be influential in moderating this link: value beliefs, gender, age, socioeconomic status and Indigenous status. However, the scarcity of research on this topic and lack of reporting of sociodemographic factors in general limit findings in this area. In the current study, less than half of the studies included in the review reported student socioeconomic status, and of those, only half controlled for socioeconomic status. Only one of the 17 studies, Bergeron et al. (2011), tested socioeconomic status as a moderator variable. Only five studies made an ethnic group comparison, and only five studies collected data relating to Indigenous status. In addition, the vast majority of participants in the studies were white, middle-class youth from Western countries. The low reporting of sociodemographic data in the review studies aligns with the findings of a US-based study (Gaias et al., 2020), which found only 27% of empirical studies and 10% of systematic reviews reported participant ethnicity across 96 educational intervention studies and 210 meta-analyses. The same study showed that Indigenous status was reported in only 16% of the intervention studies that reported ethnicity, and in none of the meta-analyses.

It follows that researchers interested in investigating the role of academic self-concept on educational outcomes across minority ethnic groups, socioeconomic status and gender should balance their research interests with consideration for their participants. Involvement of minority ethnic groups in developing, conducting and accessing research about them is important if the research is to be relevant and useful to those groups. Interventions need to be specific to the demographic of the student

group for which they are intended, given the large differences in academic self-concept across some moderators. For example, high competence beliefs in mathematics are associated with reduced dropout intention in high socioeconomic status school samples, but high competence belief has no effect in low socioeconomic school samples (Bergeron et al., 2011). In addition, the findings suggest schools consider targeting interventions to improve academic self-concept on early rather than middle adolescence, to maximise the benefits on educational outcomes. Also, schools should consider targeting girls for interventions to improve academic self-concept to enhance outcomes in mathematics, given the moderation effect of gender.

Another finding of this review is that academic self-concept more weakly predicts secondary school completion aspirations for Indigenous students than for non-Indigenous students (Bodkin-Andrews, O'Rourke & Craven, 2010). Some research has indicated that Indigenous and non-Indigenous students are more similar than they are different in terms of academic self-concept (e.g., McInerney, 2003; McInerney & King, 2013). However, the study by Bodkin-Andrews, O'Rourke & Craven (2010) found Indigenous students had weaker associations between academic self-concept and school completion aspirations compared to their non-Indigenous peers. In support of findings in the following section, it could be argued that research has largely failed to identify cultural factors drawn from Indigenous epistemologies that may contribute to stronger links between academic self-concept and educational outcomes, particularly where the value ascribed to the educational outcome varies (Bodkin-Andrews, Denson & Bansel, 2013).

7.3.1.3 Academic self-concept varies with value beliefs

Of all the moderators investigated in this study, value beliefs was the strongest (approx. d = .16; Guo et al., 2016). Applied to the context of Indigenous students, Guenther and Osborne (2018) have suggested that consideration be given to the idea that the values of Western education have some inconsistences with those of Indigenous people. Denny-Smith and Loosemore (2020, p.1) assert that "one of the problems with government policies for Indigenous Australians is their lack of sensitivity to cultural differences, in particular, they fail to account for Indigenous notions of value". Further, Dillon et al. (2020, p.2) asserts that "where different cultural

values, beliefs, and understandings on education between Aboriginal and the non-Aboriginal students and staff in the school exist, this discrepancy needs to be recognised and responded to accordingly". Not doing so potentially leads to deficit perceptions being held of Indigenous students, obscuring their strengths and educational successes.

Assessing Indigenous students, particularly those in remote communities, based on Western values may mean their strengths are not recognised. Accordingly, if a Westernised curriculum does not enable Indigenous students to use their strengths, then it is not surprising that the students are less likely to value Western education. According to Expectancy-Value theory (Wingfield & Eccles, 2000), a student´s academic self-concept (ability beliefs), expectations of success and how much they value completing high school all influence their motivation and engagement at school, which influences whether they complete high school or not. Where Western education holds little value for Indigenous students, expectancy-value theory suggests that the motivation and engagement of Indigenous students at school declines. Students can descend into a "passive resistance" (Osborne & Guenther, 2013, p. 92) and the end result is that Indigenous students are consequently seen as 'problems to be fixed'. In addition, as suggested by Ferguson (2019), the perception of prejudice for Indigenous students may interfere with student´s ability beliefs, expectancies for success and how they value academic tasks in Western educational contexts. Given the role of (education) value beliefs as a moderator (Guo et al., 2016), it is also likely that Indigenous students will gain less from positive academic self-concept in terms of educational outcomes, unless culturally appropriate responses are provided that incorporate Indigenous viewpoints. Hence, researchers focusing on academic self-concept with interest to improve educational outcomes need to consider the cultural values of Indigenous students, and how well student values align with that of the school and broader educational system. As also asserted by expectancy-value theory (Wigfield & Eccles, 2000), the benefits of high academic self-concept are likely to be reduced where student educational value beliefs are low due to cultural misalignment.

The potential importance of value beliefs, supported by findings of a systematic review by Burgess et al. (2019) and Low et al. (2021), suggests schools, educators and

policymakers engage with Indigenous communities and develop educational curriculums more aligned with Indigenous values, rather than focusing on improving poor engagement and achievement of students who may question the relevance of Western education approaches. Accounting for the different epistemologies, axiologies and ontologies Indigenous people (Guenther, 2021) and ethnic minority groups, compared with the broader majority population, in the way schools teach children is more likely to increase student intrinsic motivation (Deci & Ryan, 2012). Krakouer (2016) suggests that schools and their educators need to be prepared for the Indigenous children, in contrast to preparing Indigenous children for school. Such a paradigm shift encourages partnership between the school and community, rather than reinforcing the idea that teachers are the holders of knowledge. Teachers are invited to learn about the children through their direct experience with them, rather than contemplating how they can 'fix them'. Teachers could work with local Aboriginal teachers or Aboriginal teaching assistants to design lessons that relate aspects of the local culture and values to curriculum development and lesson objectives. For example, when discussing the seasons, the teacher could lead the children in discussing what local activities take place during the different seasons.

7.3.1.4 Previous reviews

Over the last 15 years, all previous systematic reviews and meta-analyses conducted on the topic of academic self-concept on educational outcomes have focused on academic achievement (Marsh & Craven, 2006; Marsh & Martin, 2011; Möller et al., 2009; Schwinger et al., 2014; Wu et al., 2021). As such, this review sought to fill the identifiable corresponding research gap, in focusing on other educational outcomes aside from academic achievement. In this study, a medium effect size was found for school achievement as a mediator of the relation between academic self-concept and intention to drop out of school (r = -0.38; Hardré et al., 2009). This finding is unsurprising given that previous reviews have focused almost exclusively on the reciprocal mediation-relation between academic self-concept and academic achievement.

For example, Marsh and Craven´s (2006) review included an application of the relation across age groups and cross-cultural contexts in non-Western countries. Subsequently,

a number of meta-analyses were conducted to quantitatively validate the findings of Marsh and Craven´s (2006) review (Huang, 2011; Marsh & Martin, 2011; Möller et al., 2009, Wu et al., 2021). In a large meta-analysis of Möller et al. (2009) involving 69 datasets (*N = 125,308*), the effects of math and verbal achievements on math and verbal self-concept were evaluated. The study demonstrated strong correlations between self-concept and academic achievement when the domains were matched (i.e., math self-concept correlated strongly with math achievement). These findings were reiterated by Huang's (2011) review of 39 longitudinal studies which found the only significant moderator of the relation between self-concept and subsequent academic achievement was the globality/specificity of self-concept. Marsh and Martin's (2011) review further determines that prior academic self-concept has direct and indirect effects on achievement. In a more recent meta-analysis targeting developmental phase, Wu et al. (2021) reviewed 68 longitudinal studies to determine that the effect of academic self-concept on academic achievement was stronger for adolescents than for children, among other findings.

With the substantive research focus on the relation between academic self-concept and academic achievement as evidenced above, these reviews highlighted a research gap pertaining to the influence of academic self-concept on other educational outcomes, such as school completion, school dropout, student engagement and student attendance, which the current systematic review has sought to fill. As such, this current review did not include studies with academic achievement as an outcome variable. Despite the small number of studies included, this systematic review has made contributions to the literature as it is the first one targeting the relation between academic self-concept and (non-academic achievement) educational outcomes in consideration of the role of sociodemographic factors. My findings add to the body of knowledge by acknowledging there is some evidence that sociodemographic factors play a role in influencing the strength of the association of academic self-concept on educational outcomes, although more high-quality evidence is needed to consolidate these findings.

7.3.1.5 Strengths and limitations

This systematic review is the first review to target the relation between academic self-concept and educational outcomes such as school completion, dropout, attendance and engagement, whereas all previous reviews have focused predominately on academic achievement as the educational outcome under review. In this section, the strengths and limitations of this study are discussed, along with the implications of the study results for educators, policymakers and researchers.

A strength of this systematic review was that it oriented around the role of sociodemographic factors in the relation between academic self-concept and educational outcomes, particularly as such factors are often overlooked and under-reported. Study 1 highlighted that basic demographic information about study samples was not included in many of the studies, particularly in regard to ethnicity and socioeconomic status. Low levels of reporting sociodemographic data has been shown to be a common trend in analyses of many large systematic reviews and meta-analyses (Gaias et al., 2020). This review also indicated that white middle-class participants are overrepresented in the literature, in support of broader criticisms of research in psychology (e.g., Henrich et al., 2010). While much research has been conducted into the effect of academic self-concept on academic achievement over cross-cultural studies involving non-Western populations, a much smaller body of research exists for academic self-concept in relation to school completion and related educational outcomes. This research has been based on much narrower sample groups, and predominantly from the United States, Australian, and Germany. Future research should take this into consideration and extend research to include a range of populations that are more diverse. In addition, researchers need to report demographic information with greater detail in their studies including the socioeconomic status and ethnicity of study participants. An additional strength of this study was that it built upon the findings of previously conducted research, maximising the research contribution and minimising the personal cost of involvement, particularly for Indigenous participants.

In Study 1, the findings of all investigated studies were qualified by the risk of bias of the study and the imprecision of effect sizes. A study limitation about which I was not

able to draw conclusions about was the moderation effects of sociodemographic factors. This limitation was due to the scarcity and heterogeneity of studies and their moderate to high risk of bias. No studies in the current systematic review were assessed to have a low risk of bias based on the risk of bias assessment, which used the AXIS critical appraisal tool (Downes et al., 2016) and the CASP tool (CASP, 2018). For example, very few studies indicated external reliability of findings as samples were rarely representative of the broader population.

Internal validity concerns are common in systematic reviews. Protocol registration was undertaken in an effort to increase the internal validity of the study (Chambers et al., 2014). The internal validity of studies in the review was generally low as studies often did not control for academic achievement, socioeconomic status or other potentially confounding variables. However, in order to maintain some level of rigour, when conducting this systematic review I used the PRISMA 2020 statement as a quality checklist to guarantee transparent reporting (Page et al., 2020).

A further methodological limitation of Study 1 was that funnel plots were not able to be created to determine the extent of publication bias, due to the low numbers of studies for each category of outcome variable. However, in an effort to reduce potential publication bias, I included unpublished studies in my review search. However, in not all instances was I able to access the identified unpublished studies. As such, it is likely that relevant unpublished studies may exist that have not been included in this review. Research from doctoral theses was not included in this study as the associated process of peer review was deemed insufficiently rigorous.

The inclusion of studies reporting different educational outcomes (e.g., school attendance, school completion, student engagement) was both a strength and limitation of the review. Inclusion of multiple types of outcome variables allowed for the discovery of moderation and mediation effects on the impact of academic self-concept on the different educational outcomes. However, such inclusion added a level of heterogeneity to the review which precluded meaningful meta-analysis, as aggregating across the different outcomes reported by the included studies was not

possible. This difficulty was exacerbated as the number of effect sizes included in the review was low.

Similarly, inclusion of numerous variables under the broader umbrella of academic self-concept, including academic self-efficacy, expectancies of school completion, aspirations to completion, intentions to dropout along with general academic self-concept and academic self-concept related to specific domains was another study limitation. Although these constructs are all academic competency self-beliefs, my study did not differentiate specifically between academic self-concept, academic self-efficacy, academic expectancies, aspirations and school completion intentions.

In common with other systematic reviews and meta-analyses, this review poses difficulties for our ability to determine any form of causality. My research did not allow for a causal inference regarding the relation between academic self-concept and the educational outcomes involved as all the included studies had a correlational study design based on observational studies, therefore reducing quality of evidence, compared with random controlled intervention trials, for example. As the studies were observational, there were risks of confounding variables; that is, variables that influence both the predictor variable and the outcome variable. The risks were exacerbated by the number of studies where confounding variables were not controlled for in study analyses to eliminate their effect, and the modest effect sizes observed in this study.

In comparing the findings of this systematic review with previous reviews, the benefit of focusing on educational outcomes such as school completion may appear small given the limitations of this review (i.e., small study numbers, generally small effect sizes, and study assessments of moderate to high risk of bias). However, theoretically, the incremental benefits identified in this systematic review may be practically meaningful. Positive effect sizes of influences on student achievement have been assessed by Hattie (2009), in his research based on more than 800 meta-analyses of 50,000 research articles. Hattie´s (2009) research suggests that half of the interventions experienced by all students had an effect size lower than .40. While the evidence suggesting the moderation and mediation effects on the relation between

academic self-concept and educational outcomes in the current study are predominantly weak due to the use of observational studies, it should be noted that previous reviews also heavily relied on observational studies in determining their findings. There is a need for well-designed large-scale longitudinal correlation studies to enhance understanding of the more nuanced aspects relating to academic self-concept on educational outcomes (Wu et al., 2021). Further, additional research is required to investigate the interactions between sociodemographic variables.

7.3.1.6 Future directions for research

Development of Studies 2 and 3 was determined in part by the findings of this review (Study 1). This systematic review was oriented around academic self-concept as the predictor variable. The low effect sizes found in this systematic review, along with a study by Parker et al. (2019a) attributing less importance to academic self-concept in predicting educational outcomes, suggested focusing on sociodemographic variables (such as socioeconomic status and Indigenous status) instead. Such a realignment was deemed important particularly given the gaping educational inequities faced by Indigenous young people, and directly informed the research objectives of Study 2 and 3.

7.3.2 Studies 2 and 3: Statistical modelling analyses

The problem of secondary school non-completion was discussed comprehensively in the literature review (Chapter 2). A distinct consistency was that young people who scored low on measures of various educational outcomes are often from specific sociodemographic backgrounds, that is, have Indigenous status or have low socioeconomic backgrounds. In Australia and internationally, Indigenous adolescents have higher rates of school non-completion than their non-Indigenous peers. This research aimed to improve understanding of how socioeconomic differences in secondary school completion plays out for Indigenous and non-Indigenous students, for students with varying levels of academic self-concept and also under different policy contexts. While targeting the Australian context, this research has broader implications for minority, ethnic and historically marginalised groups in countries with similar histories of dispossession and colonisation.

Intersectional approaches to data analysis are highly valued in the literature (e.g., Berg, 2010; Jang, 2019; Penner & Saperstein, 2013) and have provided a valuable approach in this research. As such, the gap in school completion between high and low socioeconomic status was explored in terms of how it varied by Indigenous status and academic self-concept, while controlling for academic achievement. The findings demonstrate that the link between socioeconomic status and school non-completion varied significantly for Indigenous students compared with non-Indigenous students. The findings also showed that academic self-concept was a weak moderator of the link between socioeconomic status and school non-completion. There are indications that major national policy reform, explored through investigating the difference in direct and interaction effects across cohorts, may have impacted these intersections. These various 'intersections', as explored in this thesis, are discussed below.

7.3.2.1 Intersection of socioeconomic and Indigenous status

The main finding from Study 2 (see Chapter 6) was that the risk of Indigenous adolescents not completing secondary school was relatively stable across socioeconomic status. The literature has consistently demonstrated a divide by socioeconomic status for many educational outcomes (e.g., Reardon, 2011). However, based on the data used in this thesis, it appears that for Indigenous students, socioeconomic status has little impact in regard to secondary school completion. One explanation for Indigenous young people being relatively unaffected by socioeconomic status in terms of early withdrawal from school, compared to non-Indigenous students, draws upon the Sen-Bourdieu framework (Pham, 2019).

Under this framework, a student's ability to use their capital to transform economic resources into valued educational capabilities (such as the capabilities required to complete secondary school) can be hindered by the mismatch between a student's *habitus* and their school's policies and practices. A student's *habitus,* their stock of social and cultural capital, (the norms, skills and dispositions of their family background; Bourdieu, 2006) shapes student attitudes to school and their school participation. The different forms of a student's capital and how they interact influences how easily social and cultural capital is transformed into economic capital, and in turn, into educational capability and the perceived availability of educational

and post-educational opportunities. It is readily asserted that Indigenous and non-Indigenous students possess different social (Parker et al., 2021; Walter, 2015) and cultural capital. Policies and practices of the school determine the extent that the forms of capital assist or limit a student's capacity to transfer resources to educational capacity (Pham, 2019) to complete secondary school. Accordingly, schools that fail to acknowledge the culture of Indigenous students may ingrain curriculum and pedagogy into school practices that position students from Indigenous backgrounds unequally in their educational experiences, compared to their peers (Bourdieu, 1977; Burgess et al., 2019; Pham, 2019). *Habitus* mismatches between a student and their schooling context, potentially based on forms of social and cultural capital, may help explain the difference in academic outcomes between Indigenous and non-Indigenous students (Pham, 2019).

A flattening of the socioeconomic status gradient in regard to school completion for Indigenous students may also be due to the forms of social and cultural capital available to non-Indigenous youth that are not as readily available to Indigenous youth. Non-Indigenous youth are likely to benefit from employment opportunities associated with socialising with higher social stature members of the non-Indigenous community. Indigenous youth are less likely to experience these benefits for a variety of reasons (Stanton-Salazar, 2011). Accordingly, Anglo-Australian society may reward 'whiteness' more highly than 'Indigeneity' in terms of access to the capital needed to maximise educational experiences and opportunities (Parker et al., 2021; Walter, 2015).

This research demonstrates socioeconomic status has a weaker association with school completion for Indigenous people, a trend which may also exist for other forms of social mobility. It is fitting that Bourdieu's work is based on the reproduction and maintenance of power relations between social classes (Swartz, 1997). While some argue Bourdieu's work is not entirely suitable for examining how groups with little economic capital may generate social mobility (Modood, 2004), I argue that it is highly suitable for examining how some groups may have limited ability to generate social mobility irrespective of their economic capital. Aligned with this concept, and consistent with the findings of this thesis, other researchers have also found a poor association between socioeconomic status and university entry (Parker et al., 2015) and

school attendance (Guenther, 2021) among Indigenous students compared to their non-Indigenous peers.

Where student *habitus* and school context are aligned, it seems more likely educational outcomes may be achieved. Where the cultural capital of Indigenous youth is valued, for example, in culture-based education in Hawaii, culture may positively influence the educational outcomes of Indigenous students (Kanaʻiaupuni et al., 2017; Lees, 2016). Lowe and colleagues (2019) in their systematic review of the impact of school-based Indigenous cultural programs on Indigenous students in Australia consistently found evidence of the importance of student participation in programs that facilitated immersion in local language and culture. The involvement of Indigenous students in local language and culture programs has been shown to enhance resilience (Armstrong et al., 2012), improve connection to their school, increase wellbeing and strengthen their sense of Indigenous identity (Cairney et al., 2017; Colquhoun & Dockery, 2012), particularly through connection to Country, to kin and to knowledge (Dockery, 2020).

Enhancing student engagement at school for Indigenous students has been the approach of numerous Australian education programs and has direct relevance to school completion. For example, the AIME university-based mentoring program connects Indigenous secondary school students with mentors to increase secondary school completion and has been effective in increasing student aspirations and academic self-concept (Bodkin-Andrews, O'Rourke & Grant, 2010; Fredricks et al., 2017). This approach engenders bi-epistemic practices to build more egalitarian relationships between students, school staff and community and embrace positive cultural identity (Allan et al., 2019; Mooney et al, 2016; Rauland & Adams, 2015).

In Australia, access of young Indigenous people to the labour market is seen as being central to increasing their educational attainment. In areas of higher community capacity, young people are more likely to be rewarded for going to school and to value education more highly (White el al., 2013). However, where there is no opportunity for work or societal involvement, the rewards of schooling for young people become unclear and school engagement is likely to diminish. Australian approaches have

varied considerably compared with New Zealand and Canadian approaches in this respect. In New Zealand and Canada, programs improved educational attainment by reducing the 'culture gap' between school and the local Indigenous students and their community, rather than targeting reducing the gap in educational, and ultimately employment and socioeconomic outcomes, as in Australia. In New Zealand´s Maori population, for example, programs improving educational attainment levels have built relationships between family, community and school, which draw on the existing unique social and cultural contexts of the local Maori population (White et al., 2013). While similar programs exist in Australia, they are generally viewed as highly innovative. For example, North Lakes High School in New South Wales promotes and teaches Indigenous cultural practices with substantially improved rates of Indigenous student attendance at school as a result (Centre for Education Statistics and Evaluation, 2021).

The different focus of the Australian approach compared with the New Zealand and Canadian approaches reflects two distinct schools of thought highlighted by Widdowson and Howard (2013) in regard to Indigenous education approaches in Canada, that of parallelism, and of integrationism. Parallelism argues for Indigenous self-determination with independent schools incorporating Indigenous values and culture at their core. Conversely, integrationism advocates for improving Indigenous educational outcomes from within the conventional schooling system. Both parallelism and integrationism in the context of Indigenous educational attainment share the same goal of helping to realise the enormous untapped potential of Indigenous young people and their communities. It could be argued that Australia, over the last 20 years at least, has adopted a more integrationist approach to Indigenous education, while New Zealand and Canada have adopted approaches more aligned to parallelism. It remains to be seen whether the risk of Indigenous adolescents not completing secondary school would also be relatively stable across socioeconomic status under parallelism educational approaches in New Zealand and in Canada compared with predominantly integrationist approaches in Australia. It seems feasible that parallelism would offer greater potential for increased engagement of Indigenous students with positive knock-on effects for student educational outcomes. However,

the influence of socioeconomic status on the school completion for Indigenous adolescents under a parallelism approach compared to an integrationist approach is not clear, and hence, worthy of further investigation.

Indigenous Australians are similar to Indigenous people from around the world in that they share similar histories of dispossession, colonisation, marginalisation, and minority-group status (Prout & Hill, 2012). Indigenous people internationally also share similar experiences of educational systems which manifest in poor educational outcomes (UNDESA, 2020). The findings of this thesis and the available literature highlight some of these educational outcomes, such as poor rates of school attendance, low student engagement and low levels of school completion, along with possible ways to move forward (e.g., increased compulsory school leaving age). Given the similar histories and experiences of Indigenous people internationally, particularly those from Anglo-colonised countries such as Australia, the findings of this research are relevant to other Indigenous people particularly from similar countries around the world.

7.3.2.2 Intersection of socioeconomic status and academic self-concept

The findings of this thesis indicate a relation between academic self-concept and school non-completion that is nuanced by socioeconomic status, such that academic self-concept is a weak moderator of the relation between socioeconomic status and secondary school completion. As such, high socioeconomic status was more strongly associated with school completion for students with low academic self-concept than for their peers with high academic self-concept. Accordingly, students with low academic self-concept are likely to gain more from additional economic capital than their more confident peers. This finding supports similar results in the literature in terms of the presence of an interaction effect between academic self-concept and socioeconomic status on an educational outcome; however, the results vary in the direction of the effect, as described in the following studies by Bergeron et al. (2011) and Parker et al. (2018). Bergeron and colleagues (2011) found that high socioeconomic status was more associated with decreased intention to dropout of secondary school for students with high mathematics competency beliefs than for their peers with low mathematics competency beliefs. It is worth noting that in the Bergeron et al., (2011) study the relation did not hold when the measure of academic self-concept was

competence beliefs in language arts (i.e., French) as opposed to competence beliefs in mathematics. Alternatively, Parker et al. (2018) found that working class (low socioeconomic status) youth had higher academic self-concept than more socioeconomically advantaged but equally achieving youth in schools stratified for socioeconomic ability. Despite this, the higher academic self-concepts of working-class youth did not seem to translate into higher levels of academic attainment.

The failure for higher academic self-concepts to translate into higher levels of academic attainment is likely due to the 'big fish little pond' effect (Marsh et al., 1987). The 'big fish little pond' effect predicts that students with equal academic abilities will have higher academic self-concepts when they attend schools where the average ability at the school is low, and lower academic self-concept when they attend schools where the average ability at the school is high. The 'big fish little pond' effect is likely to be influential in Studies 2 and 3 of this thesis, particularly for Indigenous students with high academic self-concept attending schools where the average ability was lower for a variety of reasons (Guenther et al., 2016). It is likely that as a result, the academic self-concept levels of Indigenous students may have been somewhat artificially elevated in the findings of both studies compared with other study participants.

The findings of this thesis, that high socioeconomic status makes a bigger difference in reducing the likelihood of secondary school non-completion for students with low academic self-concept compared to those with high academic self-concept, is supported by the Sen-Bourdieu framework (Pham, 2019). Under the framework, high socioeconomic status, that is, having more economic capital and correspondingly more of the social capital conducive to secondary school completion, reduces the barriers that students with low academic self-concept may otherwise experience in converting their stock of capital into the educational capability needed to complete secondary school. For example, a high socioeconomic background may afford greater benefits to students with low academic self-concept, through higher teacher expectations for student schooling outcomes (Turner-Adams & Rubie-Davies, 2019), enhanced teacher-student relations, and student access to more experienced or highly trained teachers. In addition, parental expectations for, and engagement in, their child's education are likely to be greater in high socioeconomic settings, as is the value ascribed to

education within the family (Kraus et al., 2012). Parents can more easily provide learning and remedial opportunities to struggling students with the greater financial resources and well-positioned social connections afforded to high socioeconomic families.

As applied to my research, the Sen-Bourdieu framework also aligns with studies of Han et al. (2015) and others (e.g., Wang & Tong, 2004; Zhang & Chen, 2012), which indicate that family socioeconomic status is significantly positively related to enabling forms of social capital. Furthermore, application of the Sen-Bourdieu framework to my research findings relating to the interaction between socioeconomic status and academic self-concept is also partially aligned with a study by Turnbull et al. (2020). In their study, Turnbull and colleagues tested a theoretical model in which a student's social capital (i.e., relationships with parents, peers and teachers) and cultural capital (resources related to the study of science) were seen as key determinants of a student's academic self-concept in science. Social and cultural factors shown to predict academic self-concept were exposure to a passionate science teacher, and having peers that valued science. Curiously, science-related resources and parents' values in relation to science were not significant predictors of academic self-concept; however, the number of generations within the family who have attended university had a positive association (Turnbull et al., 2020).

7.3.2.3 Effect of cohort year with inference for policy context

Based on the findings of this research, increasing compulsory school leaving age is an intervention that is worth exploring further regarding its potential for improving secondary school completion rates. Previous research has demonstrated that this form of policy intervention is effective in improving the rates of secondary school completion for young people within the United States (Rumberger & Lim, 2008).

Study 2 and 3 demonstrated that while Indigenous students in the 2003 cohort were more likely to leave school early than similar-achieving non-Indigenous students, there was no significant difference between groups in the 2009 dataset. At the same time, it must be noted that this occurred against an overall background trend of rising levels of

Indigenous school completion and a narrowing of the gap in completion between Indigenous and non-Indigenous young people.

The current study found that socioeconomic status had a greater positive effect on secondary school completion in the 2003 cohort compared with that of the 2009 cohort. The results suggest that the conditions of the 2009 sample increased secondary school completion and also reduced the socioeconomic disparities in secondary school completion rates. This research provides support for the idea that increasing the compulsory school leaving age from 15 to 17 years may be advantageous for Indigenous students. The findings of Study 3 show that the reduction in non-completion rates in the 2009 cohort compared with the 2003 cohort was greater for Indigenous students than for non-Indigenous students.

Study 3 also indicated a significant gap between the school completion of similarly achieving Indigenous and non-Indigenous students in 2003. However, for similarly achieving Indigenous and non-Indigenous students there was no difference in their school completion in the 2009 cohort. This points to the potential role of the policy reform in narrowing the gap in school completion between Indigenous and non-Indigenous students, acknowledging that cohort year was used as a weak proxy measure for compulsory school leaving age.

In addition, this thesis indicated that a gap existed in secondary school completion between students with high and low academic self-concept in both the 2003 and 2009 cohorts. As such, the research suggests the change in context between the 2003 and 2009 cohort years did not eliminate the gap in school completion between those with high and low academic self-concept. As the results showed similar associations between academic self-concept and school non-completion for both cohorts, it appears the context including the policy environment made little impact in reducing the gap in school completion between students with low and high academic self-concept while controlling for academic achievement.

Study 3 suggests that the change in context between the 2003 and 2009 cohorts including lifting the compulsory school leaving age, facilitates secondary school completion, given that the 2009 cohort had a higher rate of completion than the 2003

cohort. However, the difference in school completion before and after policy implementation varies for different student groups. The significant interaction effect for the 2009 cohort but not the 2003 cohort indicates that socioeconomic status did facilitate secondary school completion, such that increased socioeconomic status was likely to benefit students with low academic self-concept more than it would benefit similarly achieving students with high academic self-concept, after the policy had been implemented.

It appears that in the 2009 cohort (with increased compulsory school leaving age), the playing field flattened more generally as the likelihood of school completion for Indigenous students, low socioeconomic status and those with low academic self-concept was increased. However, students with high socioeconomic status and high academic self-concept didn't appear to benefit in terms of enhanced school completion in the 2009 cohort compared to the 2003 cohort. It is possible that the increased years of compulsory schooling, for Indigenous, low socioeconomic status and low academic self-concept student groups, may have reduced their levels of school disengagement, resulting in higher completion rates. However, for high socioeconomic, high academic self-concept students, it appears their access to alternative non-school opportunities may be facilitated by the high social and cultural capital of their families (Bourdieu, 2006; Pham et al., 2019), via processes such as opportunity hoarding by their parents. Opportunity hoarding is the process by which wealthy parents pass on their socioeconomically privileged positions to their children through economic devices that regulate access to economic opportunities through exclusionary means (Hansen & Toft, 2021; Tilly, 1999). In addition, the 'insurance function' of parental wealth for high socioeconomic students, which protects against the potentially negative consequences of making risky choices (Friedman & Laurison, 2019), provides a feasible premise for why the school completion of students with high socioeconomic and high academic self-concept did not improve in the 2009 sample. Overall, implementing the policy of increasing the age at which students may leave school could be an intervention with potential to increase the school completion of minority, marginalised, low self-confidence, and poorly-resourced groups of young people who are prone to lower rates of school completion than the broader population.

7.3.2.4 Strength and limitations

Studies 2 and 3 were important as they were the first studies (to the author's awareness) to test the intersection between socioeconomic status and Indigenous status for secondary school non-completion. Furthermore, Study 3 extended these findings and advanced previous research by exploring socioeconomic disparities for both Indigenous and non-Indigenous students across the context of substantive national policy reform requiring young people to complete Year 10 and then remain in full-time study or work, or a combination of both, until the age of 17.

A major strength of this research was the use of secondary datasets which reduced the personal burden of research participation for Indigenous people. This is particularly pertinent given the extensive focus of research on Indigenous groups by governments and universities to achieve their own objectives, with often little benefit in outcomes for Indigenous people (Bainbridge et al., 2015).

Another strength is that the LSAY datasets used in Studies 2 and 3 include PISA data which is representative of the national population of 15-year-olds attending school within a country. A limitation, however, of the PISA datasets is that they do not account for the young people absent from school due to expulsion, truancy, poor attendance or early school departure prior to 15 years old. For low and middle-income countries where children are more likely to leave school younger, this is seen as a bigger issue than in countries such as Australia (Wils et al., 2019). However, Indigenous young people in Australia are more likely to drop out of school earlier than non-Indigenous youth. In addition, the irregular school attendance of Indigenous youth, particularly in some rural and remote communities due to family mobility, precludes those students from taking part in PISA (Prout & Hill, 2012). The exclusion of youth with low school attendance rates and presumably higher propensity to leave school earlier means that the true rate of school non-completion for Indigenous students in the population is likely to be higher than that estimated in this thesis.

Another study limitation is the attrition rate in LSAY and the strong focus of these studies on the traditional age-graded route of secondary school students through school that does not take into account possible alternative pathways to school

completion. It is feasible that Indigenous students may take these alternative pathways through school and, as a result, Indigenous students may graduate later or graduate through alternative channels (Jorgensen, 2020). It is possible that by taking alternative pathways through school this subset of Indigenous students may have missed being included in the datasets. It is possible the 2009 cohort included students who did not continue at school but whom complied with the policy reform requirements by completing Year 10 and then staying in full-time study or work, or a combination of both up to age 17, through a vocational training and/or employment path such as apprenticeships and traineeships. Such students would have been misrepresented in this analysis, that is, identified as not completing school, where in effect they may have gone on to complete an equivalent qualification through an alternative pathway. Highest educational attainment rates tend to be for individuals who take traditional educational pathways based on their development, consistent with the social age-graded schooling transitions. For example, in the United States it is well established that students who take traditional educational pathways at the typical age tend to have better outcomes in terms of secondary school completion than those who use alternative routes such as the General Education Development (GED) test (Rumberger, 2011). Indigenous students who take alternative pathways are likely to have missed being included in the datasets and are more likely to have poorer outcomes with respect to 'traditional' school completion.

In regard to Indigenous youth, the academic self-concept of Indigenous students in very remote areas with exclusively Indigenous students will likely be influenced by the 'big fish little pond' effect (Marsh et al., 1987) as discussed in a previous section. As remote and rural Indigenous schools tend to have lower levels of academic achievement for a variety of reasons (see Guenther and Osborne, 2018), the Indigenous students attending these schools would report higher levels of academic self-concept, with the effect of distorting the research findings somewhat.

While compulsory school leaving age increases were implemented between the data collection of the 2003 and 2009 samples, this occurred against the backdrop of other educational reforms, including implementation of the Australian Curriculum involving consistent national standards; national reporting on schools through the *My School*

website; standardised literacy and numeracy assessments (NAPLAN); and partial implementation of the 'Gonski' needs-based funding reforms. Increases to the compulsory school leaving age occurred also against a backdrop of increasing levels of Indigenous school completion and a narrowing of the completion gap. The findings of this study were consistent with these background trends. Unfortunately, the current study was limited to comparison of only two cohorts, constraining the ability to test the influence of policy context on subsequent cohorts. In addition, it was not possible to isolate the influences of varying reforms, nor investigate the robustness of the finding in datasets from other countries. As a result, the results pertaining to moderation by cohort year should be interpreted as exploratory and preliminary with potential benefits of undertaking future research involving subsequent cohorts to determine consistency of results post-implementation of compulsory school leaving age increases.

7.3.2.5 Future directions for research

Overall, findings from Studies 2 and 3 identify that socioeconomic status has a different association with secondary school completion for Indigenous compared with non-Indigenous students. To a lesser degree, the association of socioeconomic status with secondary school completion also appears to vary for students with varying levels of academic self-concept. These findings have implications for the likelihood of secondary school completion for particular groups of students, particularly ethnic minority and marginalised groups. Hence, researchers should further investigate the role of socioeconomic status for other ethnic minority groups in light of current gaps in the research and the current emphasis on socioeconomic indicators. In addition, further investigation pertaining to improving school completion for Indigenous students should focus on school sector and student language background, along with intersections with other key variables such as location (i.e., urban or remote). Future research also needs to investigate the long-term attainment outcomes of Indigenous and non-Indigenous students who do not complete secondary school. An additional research focus should include development of a model of school completion incorporating intersectionality as relevant to Indigenous Australian students.

Although this study investigated the intersection of Indigenous status and socioeconomic status predominantly, along with gender, no exploration of intersectionality was made from a qualitative perspective. Given the prevalence of qualitative intersectionality research, potential exists for the beneficial application of combined quantitative and qualitative approaches, along with Indigenous and Western approaches to research conducted within the third space (i.e., the space between cultures) (Dillon et al., 2020).

7.4 General discussion and implications for policy and practice

My findings provide evidence that the mechanisms underpinning secondary school completion for Indigenous young people are highly complex and nuanced, likely explaining the seemingly intractable nature of persistent gaps in educational outcomes for Indigenous young people, when viewed from a Western perspective. Further contributing to the intractable nature is the centralised approach to implementing solutions where local voices are often sidelined. Yet the findings of this research, aligned with literature past and present, indicate a clear direction forward. Marcia Langton, prominent Indigenous scholar (2013, p. 11), has said, as articulated at the start of this chapter "some of us have stood at the crossroads where it is possible to choose a path to the good life or the path to continuing poverty and marginalization". Unlocking the vast store of potential of Indigenous young people requires ensuring Indigenous young people can access the crossroads, to have opportunities to choose the path to the good life.

This chapter concludes by outlining themes and directions that are suggested by the research findings and literature that indicate ways of moving forward. In addition, recommendations are made to translate the research findings into policy and practice. The recommendations are for educators, researchers and policymakers interested in enhancing the educational outcomes of Indigenous young people and may also hold relevance for improvements in educational outcomes of other ethnic-minority groups.

7.4.1 Targeting socioeconomic indicators alone is not enough

Disparities in socioeconomic indicators, such as literacy and numeracy, school attendance, secondary school completion, income and employment, between

Indigenous and non-Indigenous people are so often the focus of policy and research. While 'closing the gap' in educational outcomes for Indigenous students is a key goal of the Australian Government (Australian Government, 2020), the findings of this research suggest pursuing equality of educational outcomes by enhancing Indigenous socioeconomic status alone may not be the best approach.

Drawing on Bourdieu (2006), the obstinate differences in educational outcomes between Indigenous and non-Indigenous youth rest in the role of education systems in maintaining the power relations between social classes (see also Perso & Hayward, (2020) discussing the Australian Indigenous context drawing on the works of Friere, 1972, 1976). Bourdieu focuses on how cultural socialisation locates groups within competitive status hierarchies interlocked between domains of conflict, and how groups struggle over valued resources utilising strategies to achieve their interests within these domains. In doing so, group members unwittingly reproduce the social stratification order (Swartz, 1997). While Bourdieu´s work is not entirely suitable in examining how groups with low economic capital may generate social mobility (Modood, 2004), it is useful in consideration of how they may not, based on how the dominant class reproduces its domination. Unequal social and cultural capital of parents directly impacting the educational capacities of their offspring, as outlined in the Sen-Bourdieu framework (Phan et al., 2019), may contribute to the persistent inequality in educational attainment along the lines of race, ethnicity and social origin (Fasang et al., 2014; Grodsky et al., 2008). This is directly relevant to the student groups of interest in this research, Indigenous students and those from low socioeconomic backgrounds, in determining their ability to use their capital to transform economic resources into valued educational capabilities. Such theory is also useful in interpreting stubborn educational disparities for Indigenous young people.

Related ideas are social closure and opportunity hoarding, mechanism by which wealthy parents pass on their socioeconomically privileged positions to their children (Hansen & Toft, 2021; Parkin, 1979), reproducing the social stratification order. Both concepts involve limiting access to economic opportunity by exclusionary devices that regulate who can and cannot enjoy such privileges (Parkin, 1979; Tilly 1999). For example, informal social closure of parent networks in high socioeconomic schools

benefits educational attainment. However, in low socioeconomic schools, social closure lowers educational attainment (Fasang et al., 2014).

In a similar vein and applied to Indigenous communities, White et al. (2013) asserts great potential exists for increasing educational attainment where Indigenous cultures are open rather than closed. In open cultures, bonding (within group) social capital networks are integrated into wider society, for example, through use of the dominant language (English in Anglo-colonised countries), engagement of the community in the wider economy, and through non-exclusionary cultural traditions. The important role of sacred knowledge in Australian Indigenous culture may be an example of an exclusionary cultural tradition in this respect. Open culture can be understood as the dominant cultural group (Anglo-Australian society, in this instance) gaining a clear appreciation of Indigenous culture, which translates into behaviours consistent with Indigenous cultural norms, which facilitates development of relations (White et al., 2013) and allows for bridging social capital (horizonal intergroup group relations) and linking social capital (vertical intergroup relations stratified by class, status and power relations in a society; Woolcock, 2001).

The findings of this research, within the context of the broader literature, suggest that not focusing on socioeconomic outcomes alone, but giving greater emphasis to power-sharing may be beneficial in improving Indigenous educational outcomes. Power-sharing in relation to Indigenous education may be achieved through enhancement of bridging and linking social capital between Indigenous communities and the government and non-government entities of policymakers, educators and researchers. The extent of engagement and collaboration between school and community leaders is important in influencing joint decision-making to accomplish change in student social and academic outcomes (Dillon, 2019). Application of genuine collaborative governance approaches (e.g., Atkins et al., 2019) offers potential for valuable contributions in this area, particularly in facilitating processes through which Indigenous voices can be heard about matters that concern them directly. Conversely, State-preferred modes of organising Indigenous sub-populations have been implicated in the prevalence of Indigenous policy failure across nations (Andersen, 2014; Walter & Andersen, 2016). Promotion of self-determination of Indigenous people through

providing shared decision-making authority at the local level is fundamental to improving Indigenous student educational outcomes (Langton, 2013). As Langton says, "While education is a key ideological battleground in debates about how to address Indigenous disadvantage, there is alarming evidence that the lack of capacity in mainstream education to educate Indigenous children will continue to keep Indigenous families and communities in poverty" (2013, p. 1).

7.4.2 School engagement, cultural identity and aligning values

> "The evidence is clear that nothing happens in Indigenous communities unless there is local ownership of any change process" (Langton, 2013, p. 6).

High levels of engagement of Indigenous students, their families and their communities at the local school is fundamental (Langton, 2013), particularly given a student's early departure from secondary school has been identified as the final step in a longer process of student disengagement (Fredricks et al., 2004; Reschly & Christenson, 2012). Studies have found that teaching practices based on positive, collaborative, reciprocal relationships are foundational to effective strategies for enhancing the engagement of Indigenous students (Beveridge & Hinde 2009; Donovan 2015; Lewthwaite et al. 2015; Martin 2009). Enhancing Indigenous student engagement has also been achieved through reducing the gap between the culture and values of Indigenous students and that of their school, by aligning the school to the local Indigenous culture and values (Darcy & Auld, 2008; James, 2014; Wilson & Alloway, 2013). Accordingly, numerous studies have shown school-based Indigenous language and/or cultural programs also have positive effects on students' sense of cultural identity, on strengthening connection to community and Country, and on the intergenerational sharing of cultural knowledge (Burgess et al., 2019).

The strengthening of cultural identity of Indigenous youth should be promoted and upheld through greater connection to their country, kin and traditional knowledge (Dockery, 2020; Durmush et al., 2021), along with greater appreciation and integration of strong Indigenous cultural identity into broader Australian society. As such, incorporating local Indigenous culture and knowledge into the curriculum of Indigenous students through collaborative processes with local Indigenous

communities should be a key goal of policymakers and educators of Indigenous education. Aligning school values with those of the local Indigenous community and integrating locally relevant Indigenous identity and culture into the mainstream education may serve to improve the relevance of education to ethnic minority groups, and in particular, Indigenous students (UNDESA, 2020).

Interventions and approaches need to be grounded in the reality of the local context and without the assumption that what works for Anglo-based cultures will work for Indigenous and other minority ethnic groups. Similarly, given the diversity of Indigenous cultures, what works for one Indigenous community may not work for another. For Indigenous students to have access to an education that values Indigenous views and understandings, and thrive in terms of cultural identity and connection, teachers need the necessary resources and training to deliver education in a culturally responsive and relevant way (e.g., see Turner-Adams, 2021). Through collaborative governance, the voices and agency of Indigenous people are engaged to determine shared values and the associated actions which can mobilise the energy and engagement of the community to make education more highly valued.

7.4.3 Increasing the compulsory school leaving age

Study 3 suggested that Indigenous students may have benefited substantially in terms of subsequent school completion from national policy reform that increased the compulsory school leaving age to 17 years. Students from low socioeconomic backgrounds and students with low academic self-concept also benefitted. Such a policy reform, however, does not assure that all students are engaged in their current and future learning contexts (Bodkin-Andrews, Denson & Bansel, 2013). Although the findings cannot be attributed directly to the policy reform, the findings are aligned with studies investigating the impact of such reforms within the United States (Rumberger & Lim, 2008). Where school leaving age remains low, policymakers should be aware of the potential of lifting the compulsory school completion age for levelling the educational playing field by reducing disparities in school completion rates for similarly achieving students.

7.4.4 A more holistic approach to research

The quantitative analyses conducted in this research show moderation effects between sociodemographic factors and shed light onto mechanisms underpinning educational inequities for Indigenous youth. While additional analyses could be useful, either using existing datasets or newly collected data, the bringing together of qualitative and quantitative, and Western and Indigenous research methods offers a holistic research approach (Parker et al., 2021) to addressing inequality in school completion outcomes for Indigenous youth. This is in part due to the lack of variables in large databases such as social capital, discrimination, and Indigenous epistemologies and ontologies that are likely to be quantitatively more important for Indigenous youth than for non-Indigenous youth. According to Firebaugh (2008), "qualitative methods are well-suited for providing thick description that can help place quantitative results in proper context" (p. 26). Furthermore, information translates to knowledge only when it's placed in context (Silver, 2012). Applied here, qualitative approaches and Indigenous methodologies allow for inclusion of factors specific to Indigenous people (e.g., cultural practice and significance) in a manner that is amenable to Indigenous communities and would be a step toward putting the context back into large-scale quantitative research (Walters & Andersen, 2016). Accordingly, use of qualitative research along with quantitative analysis of large databases, and combining the research methodologies and knowledges of Western and Indigenous approaches, would offer substantive advances to educational research. Without grounding research qualitatively in the reality of local contexts (and drawing on local insights and knowledges), the application and extrapolation of research from narrowly sampled Anglocentric populations is not justified and unlikely to be relevant.

7.4.5 Strengths-based research

It is important that research approaches are adopted that engage positive strength-based narratives of Indigenous youth, as opposed to focusing on disparity, deprivation, disadvantage, dysfunction and difference (referred to as 5D data; Walter & Suina, 2019) compared to their non-Indigenous peers. Focusing on reducing gaps has often failed to make real progress for Indigenous groups internationally (UNDESA, 2020). Such strengths-based approaches to Indigenous educational research inform the national

narrative and the self-concepts pertaining to Indigenous youth. Furthermore, a strengths-based focus has the potential to counter the influences of earlier deficit discourse that characterised much of the early research on Indigenous young people and their education (Fogarty et al. 2018).

7.4.6 Promote Indigenous data sovereignty

Finally, the ability to ensure the use of, and narratives derived from, Indigenous data is strengths-based and constructive to the desired educational outcomes of Indigenous people is made increasingly difficult with the advent of open publicly held data (Open Data) and Big Data technologies. Indigenous people are exposed to risks associated with Western privacy and ethical principles, and have the need to protect Indigenous knowledge (Dunbar & Scrimgeour, 2017). To mitigate the negative impacts of Open Data and Big Data on Indigenous people, Indigenous data requirements need to be addressed through arrangement to strengthen Indigenous data sovereignty and data governance.

Indigenous people should be involved in data collection and survey set-up so that they collect information and pursue research questions that are meaningful and useful to them. Collaborative processes can therefore be used to integrate Indigenous cultural values, an important factor as indicated in Study 1, and methodologies into research design and implementation in the same way as for enhancing student social and academic outcomes. This integrated approach to research would yield higher quality, more relevant research outcomes as well as promote greater Indigenous sovereignty in research.

7.5 Chapter summary

As outlined in detail in this thesis, Indigenous secondary school completion, like many other socioeconomic indicators, is a target of 'closing the gap' policy objectives. Policies that aim to close the gap seek to reduce the disparity between Indigenous and non-Indigenous outcomes. Secondary school completion is one such educational outcome that is pursued under the assumption that secondary school completion for Indigenous young people is a milestone on the path to the good life. The results of this thesis have demonstrated that socioeconomic status influences secondary school

completion differently for Indigenous students compared to non-Indigenous students. The likelihood of Indigenous secondary school completion does not appear to be influenced by their socioeconomic background alone. As such, pursuit of equality of educational outcomes by enhancing Indigenous socioeconomic status alone is likely to fail. Should seeking equality of socioeconomic outcomes alone be our focus when Indigenous youths' school completion seems to be stable across the socioeconomic gradient, as indicated by this study? Or is there a better way? Current evidence suggests that enhancing student engagement through genuine strengthening of Indigenous youths' cultural identity and aligning schools with the local Indigenous culture and values through genuine power-sharing and collaborative governance is likely to enhance Indigenous student completion. Let us listen to the many voices of Indigenous people about what educational success looks like for their young people, rather than supposing that what works for our non-Indigenous youth works for our Indigenous youth.

Chapter 8: Conclusion

Not completing secondary school is a current and pervasive problem associated with detrimental impacts to an individual´s physical and mental health. Lower incomes and less employment, increased exposure to the criminal justice system and ultimately a shorter life expectancy are all associated with not graduating from secondary school (Lansford et al., 2016; Molla et al., 2004; Muennig, 2007; Rumberger et al., 2011). Given the concentration of school dropout in specific student populations, particularly some ethnic minority groups and Indigenous populations, access to meaningful education that caters to the needs of these minority groups remains elusive for some young people. This is of particular concern for the Indigenous Australian population, given the rate of school completion for Indigenous youth (at 66 percentage-points) remains at 25 percentage-points lower than their non-Indigenous counterparts for 2018-2019 (Australian Government, 2020).

Research has focused on the role that contextual factors play (e.g., psychosocial variables, sociodemographic variables, and systems-level policy) in predicting, facilitating or hindering school completion. However, relatively little research has been undertaken to investigate the intersections between Indigenous status, socioeconomic status, and academic self-concept on a young person´s school completion and the underlying mechanisms by which these relations occur. As such the overarching research objective of this thesis is to understand the interplay between key sociodemographic factors, including academic self-concept, socioeconomic status and Indigenous status, in predicting secondary school completion.

To answer the overarching research question of this research, three interrelated studies were undertaken as part of a quantitative research design, drawing on secondary data.

8.1 This research

Study 1 is a systematic review that sought to examine whether academic self-concept facilitates secondary school completion to the same degree for all students, particularly for students from diverse sociodemographic backgrounds. Study 1 reviewed research identifying factors that influenced the relation between academic self-concept and school completion and related educational outcomes, such as engagement and attendance. Studies 2 and 3 analysed the impact of key micro-, meso- and macro-level influences on the relation between socioeconomic status and secondary school completion. More specifically, in Study 2, I tested the influence of academic self-concept (micro-level) and of Indigenous status (meso-level) on school non-completion. Study 2 utilised a multilinear regression modeling approach of a large longitudinal and representative sample to investigate whether socioeconomic status facilitates secondary school completion to the same degree for Indigenous and non-Indigenous students, and for students with varying levels of academic self-concept. Finally, Study 3 compared the above relations before and after a major government policy reform (macro-level). This was done through multilinear regression modeling of a separate large longitudinal and representative sample. Study 3 aimed to investigate whether cohort year (that is, before and after the implementation of national increases to compulsory school leaving age) was associated with secondary school completion to the same degree for Indigenous and non-Indigenous students, and for students with varying levels of academic self-concept. In drawing on pre-existing secondary data in the studies, I was responsive to calls to spare Indigenous people from more research surveys (Bainbridge et al., 2015).

8.2 Findings of the research

Study 1 results indicated that there is some evidence that various factors may play a role in how academic self-concept (at the micro-level) predicts numerous educational outcomes related to secondary school completion. Some evidence indicated that sociodemographic factors may play a role in moderating this relation, with value

beliefs being the strongest moderator, although effect sizes were small. Other relevant factors were Indigenous status and socioeconomic status. The results supported a shift in the research orientation of this thesis towards socioeconomic status as the predictor variable in the subsequent studies rather than academic self-concept.

Having determined the role of potential variables in the literature, the findings of Study 2 provided strong support for an interaction effect between socioeconomic status and Indigenous status on secondary school non-completion occurring at the meso-level, the most significant unique contribution to knowledge of this thesis. More specifically, the secondary school non-completion of Indigenous students was demonstrated to be fairly stable across the gradient of socioeconomic status, unlike for non-Indigenous students where school non-completion reduced with higher socioeconomic status. An additional finding unique to this study was that academic self-concept was demonstrated to be a weak moderator of the relation between socioeconomic status and secondary school non-completion, in the 2009 sample but not the 2003 sample. Due to the representative nature of the LSAY samples, inferences from the findings could be drawn to the broader population. Additional findings included that there was a gap in secondary school completion between similar-achieving Indigenous and non-Indigenous students for the 2003 sample, highly consistent with that of the 2009 sample. Furthermore, a gap in secondary school completion between similar achieving students with high compared to low academic self-concept existed.

Results from the Study 3 investigation at the macro-level further supported and extended the results of Study 2. In addition, the findings of Study 3 indicated that cohort year (2009 compared with 2003) was associated with increased likelihood that students will subsequently continue at secondary school until the end of Year 12, with cohort year acting as a weak proxy for policy context based on increases to the age at which a student can leave school from 15 to 17 years. While limitations exist in regard to other possible factors that may have influenced higher completion rates in the 2009 cohort, the findings were consistent with other studies. Within the United States, a number of studies indicate that states with higher compulsory schooling ages had lower rates of dropout or higher rates of graduation (Rumberger & Lim, 2008). The

study also found that this effect varied for Indigenous and non-Indigenous students, benefiting Indigenous students more. It was also determined that the effect varied for students with high and low academic self-concept such that students with low academic self-concept stood to potentially benefit more from the policy reform than those with high academic self-concept, especially when they had low socioeconomic backgrounds. This study suggests that the policy reform may have contributed to 'closing the gap' in the school completion of Indigenous youth compared to their non-Indigenous peers.

8.3 Reflections

In Australia, as in similar Anglophone countries, Indigenous young people encounter educational inequities impacted by legacies of colonialism, dispossession, marginalisation and discrimination. These same legacies have enduring influences on the social narratives and worldviews as they relate to identity, culture and knowledge. With this in mind, conducting research of this nature, as a non-Indigenous person with a non-Indigenous worldview, was fraught with challenges, but also provided opportunities for self-reflection. In this, I was aided by my experience of living in Colombia for seven years and working with a not-for-profit organisation running workshops involving Indigenous youth displaced by Colombia's armed conflict. Drawing upon the acumen of my three Indigenous supervisors, I believe I was able to make good progress in addressing challenges and managing the common pitfalls. Overall, the experience has expanded my perspectives and increased my concern for the inequality of injustice.

This research would suggest that the road to successful school completion is highly nuanced for minority and historically marginalised groups, particularly in the face of culture differences. For Indigenous people, their culture differs substantially from the capitalist Western culture that drives the broader Australian society. Despite the many strengths of Indigenous people, including rich and enduring cultures and traditions, deficit narratives exist regarding the educational outcomes of Indigenous students in comparison to their non-Indigenous peers. Indigenous values are not necessarily aligned with the 'learn to earn' orientation of neoliberal educational approaches in

Australia. Indigenous young people have not failed at school; it is more correct to say that the education system has failed Indigenous young people. The gaps in educational outcomes such as school completion for Indigenous youth are demonstrative of the misalignment of the Australian education system in terms of its ability to meet the learning needs of Indigenous youth. It is not ethical, or even pragmatic, to expect Indigenous youth to conform to the norms and expectations of Western education. In pursuit of enhancing the Year 12 attainment rate for Indigenous youth and the opportunities that this entails in terms of quality of life, the path forward must negotiate both Western society worldviews and that of Indigenous lifeworlds, the dual intersubjectivities of first world dispossessed Indigenous people (Walter & Suina, 2019). Indigenous students who thrive in secondary education are more likely to go on to tertiary education. Tertiary education enables individuals with professional capabilities and the associated social, cultural and economic capital (Pham et al., 2019; Bourdieu, 2006) to benefit Indigenous communities through positions of enhanced power to affect change. Having successfully navigated secondary and tertiary education, Indigenous people are more empowered to make Indigenous education more responsive, beneficial and meaningful for Indigenous young people. At the same time, Indigenous young people with university qualifications may provide valuable role models for Indigenous youth.

For schools to be responsive to the needs of Indigenous students and to be effective in facilitating their learning, Indigenous young people, their families and communities must be engaged in the learning process. Student engagement has been shown to increase through student participation in culturally-based education programs which enhance connection to kin and country and strengthen traditional knowledge, language and cultural identity (Dockery, 2020; Durmush, 2021). Given dropout has been defined as the final step in the process of student disengagement from school (Rumberger & Rotermund, 2012), enhancing the engagement of Indigenous students stands to benefit Indigenous school completion rates. Studies have reported that the degree of Indigenous parent and community engagement in their local school is a predictor and indicator of success in remote schools (Guenther et al., 2015; Guenther et al., 2019). It is anticipated that the findings of this research translate into meaningful

change for Indigenous people. However, for this to happen, it is vital that Indigenous voices are heard and their needs addressed in regard to Indigenous education as relevant to their local contexts, and across research, policy, and practice, more broadly. It is fundamental that Indigenous people are not only consulted but central to decision-making processes that affect the education of their children. Genuine collaborative governance processes offer possibilities for working together moving forward (Atkins et al., 2019; Twyfords et al., 2012).

8.4 Recommendations

While this research aimed to understand the interplay between key sociodemographic factors, including academic self-concept, socioeconomic status and Indigenous status, in predicting secondary school completion, future research could expand on the intersections between different sociodemographic variables to develop a model of school completion incorporating intersectionality as it uniquely applies to Indigenous Australian students. This approach should incorporate qualitative research with quantitative analysis of large longitudinal databases, and also incorporate Indigenous and Western research methodologies and knowledges.

The findings of this research and current literature suggest that improvement of socioeconomic indicators alone is unlikely to be effective in improving school completion for Indigenous students. Rather, research has suggested that strengthening the cultural identity of Indigenous youth at school by facilitating connection to country, kin and traditional knowledge appears likely to improve Indigenous student engagement at school (Dockery et al., 2020; Lowe et al., 2021) with potential knock-on effects for school completion rates (Rumberger & Rotermund, 2012). In this, the voices and agency of Indigenous people need to be engaged. In terms of research, it is important the data sovereignty needs of Indigenous people are recognised and met. Furthermore, in countries where school leaving age remains low, increasing the compulsory school leaving age to 17 years may potentially level the playing field in terms of subsequent school completion.

The approach adopted in this thesis has provided a more holistic and rigorous understanding of some of the mechanisms that underpin inequality in school

completion for Indigenous young people, with relevance for ethnic minority groups and historically marginalised groups more broadly. The vast potential of Indigenous young people in Australia at present remains largely untapped. Despite the rich culture and traditions of Indigenous youth, Australia's education system has not worked effectively to capitalise on their strengths to promote their enhanced school participation.

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Appendix A:
Eligibility Criteria for Systematic Review (Study 1)

1) Inclusion of academic self-concept and educational outcome variables

Studies need to include (at least) one academic self-perception variable (for example, self-concept, perceived competence, self-efficacy, expectancy for success, or self-confidence measure) AND (at least) one educational outcome variable (school graduation, school completion, Year 12 completion, high school diploma, school attendance, educational attainment, school engagement, add additional)

2) Self-concept measures needs to be domain specific

That is, self-concept measures are required to be specific to academics or mathematics, numeracy, literacy, science, information technology, etc. General self-concept measures are not included unless related to a school domain. Domain specific measures may include: academic self-concept, reading self-efficacy, general academic self-concept, perceived competence in (education, school, physics, mathematics, reading), a general measure that includes more than one domain (e.g., science and mathematics combined). Measures that are not domain specific may include: self-concept, self-efficacy, self-esteem

3) Quantitative measures and statistical information required

Studies demonstrate a quantitative relationship between an evaluative self-construct such as academic self-concept or academic self-efficacy and educational outcomes, such as school completion, school attendance, grade promotion or student

engagement. That is, studies must include interaction effects or moderation (demonstrated by effects sizes such as Cohen´s *d* coefficient or other relevant values e.g. standardised mean differences, *t* values, f values, and correlation coefficients) or appropriate model goodness of fit (demonstrated by deviance, Fisher scoring algorithm, Akaike Information Criteria or the Hosmer-Lemeshow Goodness of Fit test.

4) Types of study to be included and excluded

Studies will be included if studies meet the following criteria:

- Studies that have quantitative methods or includes a quantitative component
- Papers written in English
- Papers published in any year
- Published full-text papers from peer reviewed journals and books, and unpublished full-text papers (grey literature), such as theses, dissertations, and conference papers
- Studies that used data collected specifically for the study purpose (primary data) or pre-existing data (secondary data)
- Studies involving school-aged individuals, approximately 4 to 18 years old, as anticipated to attend pre-school to Year 12 or equivalent. Participants' age or school participation must be demonstrated.
- Special needs students may be included only where present as part of a broader sample. For example, students with learning disabilities such as dyslexia, may be included as they are not usually separated from a mainstream class environment.
- Studies will be included if the self-concept variable is specific to an academic competency (e.g., academic self-concept, academic self-efficacy, mathematics self-concept, reading self-efficacy, perceived competence in chemistry, STEM self-efficacy).

Studies will be excluded if they meet one or more of the following criteria:

- Published abstracts without a full-text paper.

- Meta-analyses, systematic reviews or literature reviews that report on existing findings.
- Studies where participants are exclusively students with special needs, such as mental or physical disabilities, as related findings may not be relevant to mainstream students.
- Studies where participants are undertaking any form of post-secondary study.
- Studies where the educational outcome variable is academic achievement, academic performance or other score-based measure of cognitive ability will be excluded, as a large body of research has previously affirmed the positive link between self-concept and academic achievement.

Appendix B:
Database Searches for Systematic Review (Study 1)

Search Terms and Search Strategy

ERIC Database

S1= TI (“self-concept" OR "self-efficacy" OR "self-esteem" OR “self-belief” OR “self belief” OR "competenc* perception*" OR "competenc* belief*" OR “perceived competence” OR “self-perceived competence” OR “perception* of competenc*” OR "self-perception*" OR “expecta*" OR “expectancy * success” OR “expectation * success” OR “self-confidence” OR “self-regard” OR “self-evaluat*”)

AND

TI (“dropout*” OR “drop* out” OR “student attrition” OR "school attrition" OR “school completion” OR “school non-completion” OR "school attendance” OR “student attendance” OR "attendance at school" OR “school retention” OR “retention of students” OR “retention at school” OR "retention rate" OR “school leaver*” OR “truan*” OR “school graduat*” OR “school refusal” OR “student engagement” OR “school engagement” OR "engagement at school" OR “educational outcome*” OR “school attainment” OR “school diploma” OR "school certificate" OR "school equivalen* diploma" OR "school equivalen* certificate" OR “school failure” OR “academic failure” OR “school success” OR “year level promotion” OR “grade promotion” OR “student promotion” OR “academic promotion” OR “grade retention” OR "year level retention")

S2 = AB (“self-concept" OR "self-efficacy" OR "self-esteem" OR “self-belief” OR “self belief” OR "competenc* perception*" OR "competenc* belief*" OR “perceived

competence” OR “self-perceived competence” OR “perception* of competenc*” OR "self-perception*" OR “expecta*" OR “expectancy * success” OR “expectation * success” OR “self-confidence” OR “self-regard” OR “self-evaluat*”)

AND

AB (“dropout*” OR “drop* out” OR “student attrition” OR "school attrition" OR “school completion” OR “school non-completion” OR "school attendance” OR “student attendance” OR "attendance at school" OR “school retention” OR “retention of students” OR “retention at school” OR "retention rate" OR “school leaver*” OR “truan*” OR “school graduat*” OR “school refusal” OR “student engagement” OR “school engagement” OR "engagement at school" OR “educational outcome*” OR “school attainment” OR “school diploma” OR "school certificate" OR "school equivalen* diploma" OR "school equivalen* certificate" OR “school failure” OR “academic failure” OR “school success” OR “year level promotion” OR “grade promotion” OR “student promotion” OR “academic promotion” OR “grade retention” OR "year level retention")

S3 = S1 OR S2

PsychINFO Database

S1= TI (“self-concept" OR "self-efficacy" OR "self-esteem" OR “self-belief” OR “self belief” OR "competenc* perception*" OR "competenc* belief*" OR “perceived competence” OR “self-perceived competence” OR “perception* of competenc*” OR "self-perception*" OR “expecta*" OR “expectancy * success” OR “expectation * success” OR “self-confidence” OR “self-regard” OR “self-evaluat*”)

AND

TI (“dropout*” OR “drop* out” OR “student attrition” OR "school attrition" OR “school completion” OR “school non-completion” OR "school attendance” OR “student attendance” OR "attendance at school" OR “school retention” OR “retention of students” OR “retention at school” OR "retention rate" OR “school leaver*” OR “truan*” OR “school graduat*” OR “school refusal” OR “student engagement” OR “school engagement” OR "engagement at school" OR “educational outcome*” OR “school attainment” OR “school diploma” OR "school certificate" OR "school equivalen*

diploma" OR "school equivalen* certificate" OR “school failure” OR “academic failure” OR “school success” OR “year level promotion” OR “grade promotion” OR “student promotion” OR “academic promotion” OR “grade retention” OR "year level retention")

S2 = AB (“self-concept" OR "self-efficacy" OR "self-esteem" OR “self-belief” OR “self belief” OR "competenc* perception*" OR "competenc* belief*" OR “perceived competence” OR “self-perceived competence” OR “perception* of competenc*” OR "self-perception*" OR “expecta*" OR “expectancy * success” OR “expectation * success” OR “self-confidence” OR “self-regard” OR “self-evaluat*”)

AND

AB (“dropout*” OR “drop* out” OR “student attrition” OR "school attrition" OR “school completion” OR “school non-completion” OR "school attendance” OR “student attendance” OR "attendance at school" OR “school retention” OR “retention of students” OR “retention at school” OR "retention rate" OR “school leaver*” OR “truan*” OR “school graduat*” OR “school refusal” OR “student engagement” OR “school engagement” OR "engagement at school" OR “educational outcome*” OR “school attainment” OR “school diploma” OR "school certificate" OR "school equivalen* diploma" OR "school equivalen* certificate" OR “school failure” OR “academic failure” OR “school success” OR “year level promotion” OR “grade promotion” OR “student promotion” OR “academic promotion” OR “grade retention” OR "year level retention")

S3 = S1 OR S2

Web of Science Database

S1= TOPIC: (“self-concept" OR "self-efficacy" OR "self-esteem" OR “self-belief” OR “self belief” OR "competenc* perception*" OR "competenc* belief*" OR “perceived competence” OR “self-perceived competence” OR “perception* of competenc*” OR "self-perception*" OR “expecta*" OR “expectancy * success” OR “expectation * success” OR “self-confidence” OR “self-regard” OR “self-evaluat*”)

S2 = TOPIC: (“dropout*” OR “drop* out” OR “student attrition” OR "school attrition" OR “school completion” OR “school non-completion” OR "school attendance” OR “student attendance” OR "attendance at school" OR “school retention” OR “retention

of students” OR “retention at school” OR "retention rate" OR “school leaver*” OR “truan*” OR “school graduat*” OR “school refusal” OR “student engagement” OR “school engagement” OR "engagement at school" OR “educational outcome*” OR “school attainment” OR “school diploma” OR "school certificate" OR "school equivalen* diploma" OR "school equivalen* certificate" OR “school failure” OR “academic failure” OR “school success” OR “year level promotion” OR “grade promotion” OR “student promotion” OR “academic promotion” OR “grade retention” OR "year level retention")

S1 AND S2

ProQuest Sociology

S1 = TI(“self-concept" OR "self-efficacy" OR "self-esteem" OR “self-belief” OR “self belief” OR "competenc* perception?" OR "competenc* belief?" OR “perceived competence” OR “self-perceived competence” OR “perception? of competenc*” OR "self-perception?" OR “expecta*" OR “expectation of success” OR "expectation for success" OR “self-confidence” OR “self-regard” OR “self-evaluat*”)

S2 = TI(“dropout?” OR “drop* out” OR “student attrition” OR "school attrition" OR “school completion” OR “school non-completion” OR "school attendance” OR “student attendance” OR "attendance at school" OR “school retention” OR “retention of students” OR “retention at school” OR "retention rate" OR “school leaver?” OR “truan*” OR “school graduat*” OR “school refusal” OR “student engagement” OR “school engagement” OR "engagement at school" OR “educational outcome?” OR “school attainment” OR “school diploma” OR "school certificate" OR "school equivalen* diploma" OR "school equivalen* certificate" OR “school failure” OR “academic failure” OR “school success” OR “year level promotion” OR “grade promotion” OR “student promotion” OR “academic promotion” OR “grade retention” OR "year level retention")

S3 = S1 AND S2

S4 = AB(“self-concept" OR "self-efficacy" OR "self-esteem" OR “self-belief” OR “self belief” OR "competenc* perception?" OR "competenc* belief?" OR “perceived competence” OR “self-perceived competence” OR “perception? of competenc*” OR

"self-perception?" OR “expecta*" OR “expectation of success” OR "expectation for success" OR “self-confidence” OR “self-regard” OR “self-evaluat*”)

S5 = AB(“dropout?” OR “drop* out” OR “student attrition” OR "school attrition" OR “school completion” OR “school non-completion” OR "school attendance” OR “student attendance” OR "attendance at school" OR “school retention” OR “retention of students” OR “retention at school” OR "retention rate" OR “school leaver?” OR “truan*” OR “school graduat*” OR “school refusal” OR “student engagement” OR “school engagement” OR "engagement at school" OR “educational outcome?” OR “school attainment” OR “school diploma” OR "school certificate" OR "school equivalen* diploma" OR "school equivalen* certificate" OR “school failure” OR “academic failure” OR “school success” OR “year level promotion” OR “grade promotion” OR “student promotion” OR “academic promotion” OR “grade retention” OR "year level retention")

S6 = S4 AND S5

S3 OR S6

Appendix C:
Risk of Bias Quality Assessment Questions (Study 1)

1. Does the study have a clearly defined research question? (Y/N) For example, is it focused in terms of population studied, predictors and outcomes considered?
2. Is the study design is clearly stated and appropriate to the research question? (Y/N)
3. Is sampling in the study conducted appropriately and to minimise bias? (Y/N) Look for selection bias that might compromise the generalisability of findings, for example, is it clear who the research is about? Was everyone included who should have been? Was the sample representative of a defined population? Was the selection process likely to select subjects/participants that were representative of the target/reference population under investigation? Is there external reliability?
4. Is the definition and measurement of the predictor variable provided and appropriate to minimise bias? (Y/N) For example: have scales been validated? Are Cronbach´s alphas measured and adequately high? (Cronbach´s alpha of .7 and above is good, .8 and above is better, and .9 and above is best.) Were all subjects classified into exposure groups using the same procedure?
5. Are confounding variables identified and taken account of in the design and/or analysis? (Y/N) For example: are confounding variables identified and taken account of in the design and/or analysis? Are confounding variables controlled in the study?
6. Is the definition and measurement of the outcome variable provided and appropriate to minimise bias? (Y/N) For example: did they use subjective or objective measurements? Have scales been validated? Were measurement methods

similar in different groups? Were subjects and/or the outcome blinded to the predictor variable?

7. Is it clear what was used to determine statistical significance and /or precision estimates? (Y/N) For example, p-values and confidence intervals, or beta correlation coefficients, standard errors and p-values, or chi-squared test of difference or other such measures.
8. Was missing data was identified and addressed appropriately? (Y/N) That is, does the study indicate that missing data was identified and addressed appropriately (e.g., through complete case analysis, imputation or other method)?
9. Are the results believable? (Y/N) A big effect size is hard to ignore. Can a big effect size be due to bias, chance or confounding? Are the design/methods sufficiently flawed to make the results unreliable? Does the study have high external validity? Have the results been validated on another cohort? Are success criteria of results provided (e.g., based on metrics in internal validation or external validation?)
10. (For cohort studies only) Was the follow up of subjects complete enough and long enough? (Y/N) That is, have the good or bad effects had long enough to reveal themselves when the outcome variable was measured? Is it possible that persons lost to follow up may have different outcomes than those available to follow up?)
11. Other observations regarding quality assessment.

Appendix D:
Full Regression Results for All Included Variables (Study 2 & Study 3)

Full Regression Results for All Included Variables in the Model – Direct and interaction effects (2003)

Pathways of Influence on school non-completion	**2003 Cohort**	
	Coef.	(S.E.)
Intercept	-1.99	(0.09)
Direct Effects		
Prior Achievement (Maths)	-0.29	(0.07)
Prior Achievement (Reading)	-0.34	(0.06)
Prior Achievement (Science)	-0.09	(0.08)
Socioeconomic status	-0.31**	(0.02)
Indigenous status	0.45**	(0.07)
New South Wales	0.05	(0.10)
Victoria	-0.52	(0.10)
Queensland	-0.47	(0.10)
South Australia	-0.16	(0.12)
Western Australia	0.12	(0.10)
Tasmania	0.40	(0.10)
Northern Territory	0.24	(0.10)
Academic Self-concept	0.44**	(0.02)
Gender (boys)	0.38**	(0.05)
Grade	-0.28	(0.02)
Interaction Effects		
Socioeconomic status × Indigenous status	0.36**	(0.06)
Socioeconomic status × Academic self-concept	0.04	(0.02)

Note. Academic self-concept is negatively scored. *$p < .05$. **$p < .001$, all interactions entered simultaneously.

Full Regression Results for all Included Variables in the Model – Direct and Interaction effects (2009)

Pathways of Influence on secondary school non-completion	**2009 Cohort**	
	Coef.	(S.E.)
Intercept	-2.28	(0.09)
Direct Effects		
Prior Achievement (Maths)	-0.35	(0.12)
Prior Achievement (Reading)	-0.51	(0.13)
Prior Achievement (Science)	-0.11	(0.11)
Socioeconomic status	-0.28**	(0.03)
Indigenous status	0.13	(0.11)
New South Wales	0.37	(0.09)
Victoria	0.52	(0.10)
Queensland	-0.18	(0.10)
South Australia	0.18	(0.10)
Western Australia	0.19	(0.12)
Tasmania	0.40	(0.10)
Northern Territory	0.84	(0.10)
Academic Self-concept	0.34**	(0.02)
Gender (boys)	-0.47**	(0.07)
Grade	-0.08	(0.03)
Interaction Effects		
Socioeconomic status × Indigenous status	0.31**	(0.09)
Socioeconomic status × Academic self-concept	0.06*	(0.02)

Note. Academic self-concept is negatively scored. *$p < .05$. **$p < .001$, all interactions entered simultaneously.