

2018

## Examining the perceived benefit of education for Aboriginal secondary students in Western Australia

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*Edith Cowan University*

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Examining the perceived benefit of education for  
Aboriginal secondary students in Western Australia

This thesis is presented for the degree of

**Doctor of Philosophy**

Mary-anne Georgina Macdonald

Edith Cowan University

School of Education

2018

## Abstract

Indigenous and remote Australians have lower education and employment levels than non-Indigenous and urban Australians and face continued socio-economic disadvantage. Many contemporary voices have called for quantitative evidence for Indigenous education policy. The current thesis responds to this gap in the literature by developing a factor model of Indigenous education engagement, and supports this with regression equations and qualitative interviews exploring the impact of various experiences on Indigenous engagement with secondary school. The current study found that, despite gap in attendance rates, Year 12 completion rates, and tertiary education enrolment and completion, Indigenous and non-Indigenous participants alike ascribed a high value to the benefit of completing secondary education. For both groups, students were more likely to attribute benefit to schooling when they encountered a *Positive School Culture, Promotion of Indigenous Culture, Pathway Development*, and opportunities to develop *Self-Efficacy*. Yet, Indigenous secondary students in this study who ascribed benefit to secondary education appeared to make that decision at an earlier age, and did not often ascribe equal benefit to higher education. Compared with non-Indigenous participants of the current research, Indigenous students make education decisions with the belief that it will be harder for them to attain success in post-secondary education due to lower academic achievement, social discourse and discrimination surrounding Indigenous identity, geographic remoteness, and economic concerns. Furthermore, qualitative analysis revealed that non-Indigenous secondary teachers are likely to look to more superficial aspects of culture, rather than the epistemological and ontological aspects desired by Indigenous students, when developing a culturally inclusive environment. Finally, the Revised Factor Model developed in this thesis explained 46% of the total variance amongst variables measuring student experiences of and attitudes toward the utility of education.

## Acknowledgment of Country

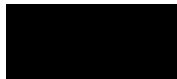
I would like to pay respect to Elders past, present and future for they hold the stories and knowledges of Indigenous Australia. I acknowledge the Whadjuk Nyoongar people, the Traditional Custodians of the land on which this report was constructed. I pay respects to those Indigenous students, educators, and academics who have shared of themselves for the purpose of this research.

## Declaration

I certify that this thesis does not, to the best of my knowledge and belief:

- i. Incorporate without acknowledgment any material previously submitted for a degree or diploma in any institution of higher education
- ii. Contain any material previously published or written by another person except where due reference is made in the text of the thesis; or
- iii. Contain any defamatory material.

Signed:



Mary-anne Macdonald, 5<sup>th</sup> June 2018

Finally, I thank all others who contributed their knowledge, experience, and time to the development of this thesis. In particular to my supervisors Dr Eyal Gringart, Dr Martin Cooper, and Associate Professor Jan Gray.

## Notes

The term 'Aboriginal' is preferred nomenclature amongst Aboriginal people in Western Australia, whereas 'Indigenous' is the preferred term in some other parts of Australia. Throughout this thesis, the terms 'Aboriginal' or 'Torres Strait Islander' are used when this information is known about the individuals or groups mentioned, where discussion refers to literature that has used either terminology, or when discussion specifically refers to the Aboriginal peoples whose homelands are in Western Australia. Where discussion turns to all Aboriginal and Torres Strait Islander peoples of Australia, the term 'Indigenous' is used instead. The author acknowledges that the broad groupings 'Indigenous' and 'Aboriginal' are terms of European origin, covering a multitude of diverse groups, each with their own language, Dreaming, country, and culture.

The term "family" is used to refer to extended family and relatives who are involved in the upbringing of children.

The term "community" is used to refer to people connected to the child, or the child's school. This can include the Traditional Custodians of the land, as well as people of different family and language groups. Aboriginal people may belong to more than one community.

Aboriginal students in this study had connections to the Nyoongar, Martu, Wongutha, Yawuru, Nyikina, and Yamatji people, amongst many others.

## Research Outputs

1. The following journal article was published, arising out of the literature review and theoretical framework for the current thesis:

Macdonald, M., Gringart, E., & Gray, J. (2016). Creating Shared Norms in Schools — A Theoretical Approach. *The Australian Journal of Indigenous Education*, 45(01), 56-69.  
doi:10.1017/jie.2016.9

2. A further journal article is current under final review, reporting the findings of the Interview Chapter, specific to Indigenous students attending boarding schools.
3. The Revised Factor Model has been accepted for presentation at a Conference of the Comparative and International Education Society, in Mexico City, March 2018.

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# Chapter 1 - Introduction

## 1.1 Research Problem

Indigenous health, socio-economic and education indicators are well below those of non-Indigenous Australia. Indigenous Australians are 30% less likely to be employed than their same age non-Indigenous counterparts, are less than half as likely to have completed Year 12 equivalency, and experience a life expectancy approximately ten years lower than that for non-Indigenous Australians, and in fact lower than the global average (Australian Bureau of Statistics, 2015; Health InfoNet, 2016). Western Australian Indigenous students are six times more likely than other students to have attendance so low that it places them at severe educational risk, and 50% of Aboriginal students have attendance below acceptable levels (Auditor General Western Australia, 2015). Education is known to link directly to future socio-economic and employment outcomes (McMahon, 1999), and yet for many Indigenous students it appears there is a perceived irrelevance of education, resulting in reduced educational engagement and poorer utilisation of employment opportunities (Dusseldorp Skills Forum, 2009b; Biddle, 2007; Craven et al., 2005).

Over the past two decades, some inroads have been made into Closing the gap in education outcomes. According to the most recent *Closing the Gap Report* (DPMC, 2017), the proportion of 20-24 year-olds having completed Year 12 has increased significantly from 45.4% in 2008 to 61.5% in 2014-15, whereas non-Indigenous completion rates did not change significantly in the same period. Targets to reduce the gaps in life expectancy, literacy and numeracy achievement, and employment, are not on track. Much research has been undertaken to determine why Indigenous students disengage from education (Biddle, 2014; Bodkin-Andrews, Dillon & Craven, 2010; Lamb, Walstab, Teese, Vickers and Rumberger, 2004), and to suggest engagement strategies that can cause them to re-engage (Abbott-Chapman et al., 2014; Armstrong & Buckley, 2011; Brown & Milgate, 2011; Munns, Martin & Craven, 2008; Storry, 2007) but to date, few of these engagement strategies have been independently or empirically evaluated (Auditor General Western Australia, 2015; Purdie and Buckley, 2010).

## 1.2 Rationale

There is an abundance of literature providing evidence that Indigenous Australians in regional and remote communities are not currently engaging in education and employment at the rate of other Australians. High quality quantitative and qualitative studies have identified many of the factors at play in non-attendance of Indigenous students (Biddle, 2007, 2014; Lamb et al., 2004;

Craven et al., 2005). Educators understand these factors anecdotally and many school-level strategies have been implemented to address factors such as unstable home environments, poverty, lack of role models, disenfranchising school culture, low levels of literacy, and so on (Commonwealth of Australia, 2011; Armstrong and Buckley, 2011).

School level strategies, which aim to improve student engagement can be categorised under the following headings: Building a Positive and Respectful School Culture, Partnerships with Families, Partnerships with the Community, Partnerships with Local Industry, Individual Case Management and Interagency Collaboration, and Transitions to Post-secondary Pathways. Each of these will be discussed in more detail in Chapter 2 - Literature Review. Such programs typically attempt to build student capacity to recognise and access opportunity, and address under-resourced aspects of their lives. In addition, schools may attempt to build culturally aware structures to reduce alienation of students.

In spite of this apparent profusion of strategies, analyses produced by government, industry, and academia have strongly argued that a leading contributor to the intransigence in Indigenous education outcomes, is the implementation of policies and programs without rigorous evaluation of their efficacy against known causes of disengagement (Auditor General Western Australia, 2015; Biddle, 2014; Craven, Bodkin-Andrews & Yeung, 2007; Purdie and Buckley, 2010). Furthermore, where the relevance of individual variables is known, there exists little empirical evidence for proposed models of the underlying causal factors that drive Indigenous education decision-making (Craven, Bodkin-Andrews & Yeung, 2007; Dusseldorp Skills Forum, 2009). A consistent, empirical evidence-based approach to policy would be likely to significantly improve the education outcomes, and hence employment, and social and health outcomes, of Indigenous Australians in remote and regional areas and would enable policymakers to focus their strategies on the areas of highest educational return (Auditor General WA, 2015; Dusseldorp Skills Forum, 2009a; Hughes and Hughes, 2010), as well as to reduce unintended negative consequences of misdirected policy (Biddle, 2014). Furthermore, it is argued by Biddle (2007, 2014) that the particular benefits, and costs, of education to Indigenous students are not well understood or addressed by policymakers. He thus argues that research and policy should look to identify a behavioural model of Indigenous education decision-making, so as to ensure that future funding is efficacious, and does not inadvertently create new barriers to education engagement (Biddle, 2014).



### 1.2.1 Research Aims

The current study aimed to quantitatively measure the effectiveness of school strategies, which have been applied to increase student perceptions of the utility of education, as well as student intentions to attend school regularly, complete Year 12 and continue to further education. By examining the perceptions Indigenous students have of the utility of schooling and higher education, the research utilised behaviour theory to develop new understandings of Indigenous youth' education decisions. The study aimed to further the existing body of knowledge by evaluating the relationship between secondary Indigenous students' perceived benefit of education, and their education intentions in terms of attendance, Year 12 completion, and post-school aspirations. In addition, the research aimed to develop a factor model that provides an empirical measure of the impact of various latent constructs (e.g. socioeconomic status, social support, and school environment) on Indigenous education engagement. Finally, the research incorporated a qualitative investigation in to student perceptions and experiences of their schooling and social environment, to further explore the findings of the quantitative data. By quantitatively examining the correlation of current engagement strategies with students' perceptions and intentions regarding education, we can develop programs which will be more effective in improving the long-term educational engagement of Indigenous students. Industry, government, and school communities will then have tools to provide an equitable and meaningful education to Indigenous youth in Australia. By supporting this work with student interviews, we can preference emic knowledge and further etic understandings that underpin future policy development. The variables to be analysed are presented under *Appendix A – Antecedents to Survey Constructs*.

## 1.3 Research Questions

The overarching research questions were:

*1. What is the relationship between education choices and perceived benefit of education for Indigenous secondary students?*

*Education choices to be measured were: attendance intentions, Year 12 completion intentions and post-school aspirations.*

*2. Which specific engagement strategies contribute to the perceived benefit of education for Indigenous secondary students?*

Specific engagement strategies to be examined were: high academic expectations; awareness of employment pathways; provision of study assistance; collaboration with family; focused transition to employment; positive school culture; exposure to role models; promotion of

Indigenous culture; academic self-concept; student self-efficacy; and student aspirations. The antecedents to these constructs that arose from the Literature Review are discussed in Appendix A.

Throughout this thesis, the term 'aspiration' is used to represent student *intention* to complete various post-secondary pathways. This definition of 'aspiration' should not be conflated with that used by Harwood, McMahon, O'Shea, Bodkin-Andrews and Priestly (2015), who examined how Indigenous student aspirations and education choices were impacted by participation in the AIME program. These authors used the term 'aspiration' to convey the meaning of a life goal, whereas in the current study, 'aspiration' implies a more pragmatic personal decision or expected pathway, which is separate to the individual's actual capacity or desires.

## 1.4 Theoretical Framework

Nakata (2006) identifies that in cross-cultural research, it is appropriate for the researcher to present their personal viewpoint, and hence, I discuss my theoretical framework in the first person voice. According to Indigenous protocol, when on another's land, one should introduce themselves, their relation to the custodian, and acknowledge the custodian's sovereignty (Ardill, 2013). So too, in this section I present my own perspective, justify my research in the Indigenous arena, and acknowledge the right of Indigenous academics to the knowledge presented within this thesis.

### 1.4.1 Author's background

The first five years of my teaching career were located in a small town in WA's remote Northwest. Young and inexperienced, I found myself an unwitting player on the battlefield between two cultures. My positivist paradigm and faith in the superiority of empirical knowledge were slowly eroded in the face of an ancient culture. It took years to absorb the most crucial lesson for a teacher – the necessity of respect before learning can begin; respect for student ways of being and ways of knowing which were utterly foreign to my own. Until I understood the diversity of our paradigms, I was destined to assume that those who did not talk or think in ways familiar to my own, would not succeed in the education world.

My own story is representative of many dominant-culture teachers who find themselves in a cross-cultural schooling environment. The Australian education system, intensely bureaucratic, labours inefficiently to meet the needs of Indigenous students whose geographic, economic and socio-cultural context is often far-removed from that of the curriculum writers and policy makers in cities.

The failure of the Australian government to supply quality education and employment opportunities to Indigenous remote and regional students is evidenced in the third-world health and socio-economic indicators of our Indigenous peoples (Australian Bureau of Statistics, 2015; HealthInfoNet, 2016). Yet for myself and many others, the most powerful argument for change is not the statistics. It is the experiences; the conversations with children and parents ostracised by a system which asserts its moral superiority; the students and teachers trying to create a meaningful classroom, but unprepared and under-resourced for the journey they have before them. It was eminently clear that many of my students felt no ownership over their education and recognised little future benefit that would come from it. Their disengagement in the classroom was understandable, for many of their family and community members had attended the same school system and were jobless or worse. Improving education outcomes, it seemed to me, would therefore rely on improving students' insight into the places that education could take them.

#### 1.4.2 Ontology

Wilson (2003) argues that empirical knowledge, the apogee of Western scientific thought, is at odds with the interpretivist, constructivist, ontology typical in Indigenous reasoning. Pascoe (2011) also reminds the non-Indigenous academic of the ontological differences that define the Aboriginal perspective. As a "dominant-system" academic, my understanding of Aboriginal students and their families has been that of an etic researcher. Although it is challenging to integrate Western and Indigenous knowledge systems, Nakata (2002) argues that to assume they cannot be integrated, creates a falsely simplified dichotomy. Both paradigms are fluid in space and time and founded in complex cultural domains. Nakata calls the 'intersection of Western and Indigenous domains, the *Cultural Interface*' (2002, p. 285). Nakata argues that Indigenous people already interact with both knowledge systems, regardless of how they prioritise each of them. Neither should be ignored, but both can be harnessed, value found in each.

The paradigm applied to the current research is both pragmatic and post-positivist. The post-positivist worldview acknowledges that there is an objective truth, but believes that human understanding of this truth is subjective and challengeable. The pragmatic approach then, is to identify a methodology that will provide new knowledge that has utility and meaning for both Indigenous and non-Indigenous participants and consumers of that knowledge.

The pragmatic paradigm acknowledges that scientific approaches can disadvantage divergent epistemologies, and recognises the disjuncture between the etic and emic understanding of

knowledge. Yet, a quantitative methodology can be used to present the etic voice. This is particularly true when qualitative data are utilised to constrain the research, to identify the critical questions which need to be explored. Quantitative methodologies allow for removal of confounding factors that confuse emic context with emic identity, and can be a useful tool to explain the critical reality of those disadvantaged by a hegemonic system.

### 1.4.3 Epistemology

Bodkin-Andrews and Carlson (2014) remind researchers that Indigenous epistemologies have developed over far longer time frames than Western epistemologies as a way of creating, maintaining, and communicating knowledge. Because Western epistemologies have emerged from hegemonic discourse in European civilization, these authors argue that a focus on empirical research at the expense of qualitative investigation can represent bias against the validity of alternative epistemologies. As a non-Indigenous, quantitative researcher, engaging critically with Indigenous perspectives creates an epistemological tension that transcends the philosophical, and encounters very real differences in praxis and cognition (Jones & Jenkins, 2008; Nakata, 2007). At the heart of Critical Race Theory is the assertion that hegemonic cultures utilise the power structures inherent in education and legal institutions to reinforce their dominance over subjugated cultures (Dunbar, 2008). For this reason, Indigenous researchers are needed to 'write the script' of Indigenous societies' experiences. I, a non-Indigenous researcher, am not immersed and socialised into the ways of being and knowing of Indigenous Australians, and cannot access the subtle knowledges required to understand the full gamut of Indigenous experience.

Nevertheless, Nakata's (2007) Indigenous Standpoint Theory asserts that all researchers, Indigenous and non-Indigenous, should apply rational analysis in order to create a standpoint that is both valid and authentic. The purpose of the current research, and its quantitative underpinnings, is to learn from Indigenous Australians, in this case secondary students, regarding how Australian education can serve Indigenous interests better. Just as personal narrative is a valuable pedagogical tool in Indigenous arenas (Bishop, 2008), empirical evidence is a valuable pedagogical tool in non-Indigenous arenas. The quantitative methodology of this thesis aimed to translate Indigenous knowledges within a structure that is more traditionally understood by non-Indigenous academia and policymakers. The purpose of conducting research within Indigenous contexts is not to create benefit for the hegemonic society intrinsically. It is about utilising the hegemony's preferred epistemology to enable them to recognise Indigenous experience and truth, thus shifting political power to the Indigenous 'other' (Jones & Jenkins, 2008).

Nakata (2007) emphasises that knowledge can be shared, and understood by both 'blackfella' and 'whitefella'. If Indigenous researchers are able to 'decolonise their minds' and interpret knowledge from both the ethnocentric Indigenous perspective as well as from the Eurocentric perspective in which they have been trained by academia, then so too might non-Indigenous researchers have capacity for the same. The unavoidable difference is that of socialisation. Colonised people have often been socialised into binary worldviews from an early age, through (Indigenous) family and through (hegemonic) education. For the colonised, it is a familiar tension to examine the world, themselves, and the ethnic Other, through diverse and often non-complimentary lenses. Yet, I firmly believe that reconciliation, in all its grandiose aspirations, is possible precisely because non-Indigenous individuals can be taught to see new perspectives, just as Indigenous people have done. As Nakata (2007) and Jones and Jenkins (2008) have explained, dual perspectives create tensions which cannot be erased. Often, non-Indigenous researchers try to soften this tension, with the goal of demonstrating empathy and a willingness to collaborate, whilst Indigenous researchers firmly reinstate the tension as a defence against erasure of their ethnic reality. This is not surprising, considering the long history of appropriation of Indigenous cultures, knowledges, and lands, by European nations promising equal collaboration. It has been typical for White educators, politicians, explorers and researchers to believe, parochially, that White experience and White knowledge represent universal experience, and universal knowledge. Hence it is imperative that in writing this thesis, I identify my standpoint in relation to the Cultural Interface.

I identify with the experiences of McGloin (2009); that it is a difficult position for the non-Indigenous researcher at times to work in Indigenous fields. Suspicion and distrust can arise, from both Indigenous and non-Indigenous voices, as to whether one is sufficiently culturally reflexive as to engage in this work, has sufficient life experience and cultural understanding, whether one has a self-serving interest as a 'do-gooder', or is "jumping on the Aboriginal industry bandwagon". Although it is true that Australia's history is full of countless examples of non-Indigenous Australians providing culturally incompetent and racist commentary on Indigenous issues, Nakata's (2007) Cultural Interface Theory suggests that non-Indigenous voices should meaningfully engage with Indigenous issues. If they do not, then there is no Cultural Interface, and there can be no reconciliation between Indigenous and non-Indigenous Australia.

I agree with Martin Nakata (2007), that all cultural standpoints, including non-Indigenous ones, are dynamic, and consist of a multitude of ideas, complexities and tensions. I am not Indigenous, but there may be aspects of Indigenous knowledge and experience that I more easily understand. Nevertheless, all my experience and knowledge of Indigenous people is from the

etic viewpoint, with access to the advantages that belonging to the dominant culture provides. Therefore I invite Indigenous researchers to engage with my discussion, and bring emic perspective to the ideas presented. My interpretations of the perceptions of Indigenous students are unlikely to be perfect, however, so too are my interpretations of the perceptions of non-Indigenous educators.

It can be expected that disagreement on opinions and ideas is part of the natural communication that will occur at the Cultural Interface. Both Indigenous and non-Indigenous people need to employ cultural reflexivity to recognise those understandings of the ethnic 'other' to which they have been consciously and unconsciously socialised. Cultural competency is a two-way interaction, required to reduce the tensions that are an inherent aspect of communication between cultures with a fraught history.

I have the choice of engaging with the Cultural Interface through my research, or I can remain silent because of the dissonance and complexity brought about by examination of my own and others' perspectives. My understandings of these voices will be imperfect, but it is better to engage, and to wrestle with concepts of race and culture, than to allow the tension of the Interface to prevent new contribution to scholarly knowledge. To do so, would be as Ardill (2013) identified, 'silently complicit in the face of social injustice'.

#### 1.4.4 Theory

Hostetler (1997, p. 17) reminds us that "Good intentions do not guarantee good research".

Theoretical framework, ethical considerations, and appropriate methodology are all fundamental components of strong research design. The discussion above introduced Indigenous Standpoint Theory and Critical Race Theory as part of the guiding theoretical framework in this thesis. In addition, and in accordance with the pragmatic paradigm, two well recognised theories from Western scientific thought, Human Capital Theory and Theory of Planned Behaviour, are applied in this thesis to provide rationale for the research questions.

The current study aimed to identify ways to improve Indigenous outcomes within the hegemonic education institution. This goal is grounded in Human Capital Theory (HCT), which attempts to economically quantify the assets (knowledge and skills) contained within the individual. It is acknowledged that a purely economic view of education can lead to undesirable outcomes for individuals and society (Fagerlind & Saha, 1989; Samoff, 1998). The current Australian education system promotes ideologies of privatisation, individualism and capitalism, which can erode the social structure of traditional communities. However, education can also be a tool of anti-

imperialism when it enables people of dominant and minority ethnic groups to interact effectively, establish partnerships and appreciate diversity (Coenders & Scheepers, 2003).

Samoff (1998) deconstructs Human Capital Theory and “rate-of-return analysis” as an ideology that treats individuals and local communities as spokes in the machine of national economic and political development. Written as such, HCT is anathema to an Indigenous worldview that prioritises knowledge at a deeper, and more spiritual level. Yet, within the postmodernist approach, even HCT can contribute meaning. As humans, our ability to construct and communicate knowledge is a valuable tool not only in a monetary economy, but also within a cultural and ideological economy. Hence, education can be viewed as a tool that enables individuals to develop assets which strengthen the whole person, financially, socially, and politically. Within this thesis, there is a focus on the usefulness of education in furthering an individual’s employment opportunities and health outcomes. Such a focus is utilitarian, but not in a coldly scientific manner. Social justice dictates that all Australian youth should experience equal opportunity to achieve good health, gainful employment, and self-fulfilment. The political, health and economic benefits of education have been extensively chronicled (Global Campaign for Education, 2004; Almond, Gabriel & Verba, 1965; Emler & Frazer, 1999; McMahon, 1999). Mirowsky and Ross (2005) explain how education increases knowledge, empowerment, creativity, agency and decision making skills. Learned efficacy has huge implications for productivity, creativity, innovation and other such skills that are necessary for a productive workforce and technological advancement. In addition, individuals with more years of education are more likely to vote, contribute to their communities, have greater self-confidence, be active and articulate, and have a sense of control as well as competence in a political arena (Emler & Frazer, 1999; Almond et al., 1965). Conversely, the current gap in education outcomes and associated political agency between Aboriginal and non-Indigenous Australians is a serious obstacle on the road towards self-determination. The Closing the Gap policy’s approach towards educational parity between Indigenous and non-Indigenous Australians is an important step towards the elimination of discrimination within Australia.

The research questions reveal a further interest in the perceptions which Indigenous students hold regarding the benefit of education. This interest is grounded in the Theory of Planned Behaviour (TPB), which asserts that behavioural intentions are formed by the interplay of three factors: perceived social norms, perceived locus of control, and expected outcomes (Ajzen, 2005). By investigating the manner in which school engagement strategies impact students’ perceptions of what is *normal* for Indigenous students, what is *possible* for Indigenous students, and what is *likely* for Indigenous students, the current study aimed to identify ways in which

schools can affect Indigenous student education *intentions*. It is expected that students would pursue worthwhile post-school pathways if they believe not only in the utility of education, but also in their capacity to access higher education and economic opportunities. Strategies such as exposure to role models, high academic expectations, and pathway development are aimed at building students' agency, and should have an effect on students' perceived norms, locus of control, and expected outcomes.

Finally, it is acknowledged that culture and identity are complex, and not binary notions. The identification of individuals as Indigenous or non-Indigenous, can imply that all Australians fit neatly into acculturated psychological boxes (Hogarth, 2017). Yet, Harwood et al. (2015) demonstrated that Indigenous students vary in their positive affection for and connection with Indigenous identity. In reality, some Indigenous Australians have not been socialised as strongly into Indigenous culture, and have had limited interactions with other Indigenous people, particularly with traditional, or strongly acculturated, Indigenous people. Non-Indigenous Australians may at times have been acculturated with epistemologies that are more similar to Indigenous worldviews, i.e., that are collectivist, spiritual in ways unfamiliar to organised religion, and may have unorthodox attitudes towards Western power structures, forms of personal communication, and knowledge. The current author takes the standpoint that all people exist on a cultural spectrum. Government policies may be written to address large-scale, typical experiences (as evidenced by data), but classroom interactions must address the needs of individuals. The research of this thesis is aimed at the large-scale, and the generalisable, but acknowledges that human experience is diverse within these categories.



## Chapter 2. Literature Review

### 2.1 Introduction

In Australia, many Indigenous youth are choosing not to remain at school, or to engage in post-secondary training and education (Biddle, 2007; SCGRP, 2014). The poor school completion rates for Indigenous youth compared with their non-Indigenous peers have a direct bearing on the future socio-economic outcomes of the Indigenous population (Australian Bureau of Statistics, 2015; McMahon, 1999). As such, closing the gap in secondary education is a key goal for those interested in social justice and equity for Indigenous Australia.

The purpose of the literature review is to examine current knowledge regarding school engagement and retention outcomes for Indigenous Australians. This review will discuss factors contributing to Indigenous students' educational decisions, as well as government policies and current school-level engagement strategies aimed at improving education engagement. As such, this review provides focus and framework for the current thesis, identifying key variables to investigate.

### 2.2 Method

Initial searches were conducted through the scholarly databases ERIC, ProQuest, and A+ Education using keywords (Indigenous/Aboriginal + school/education). Where useful publications were identified, the reference lists for these texts were consulted for further research direction. In some cases information was sought from governmental authorities and through personal communications with published researchers.

The current chapter presents a review of studies, opinion pieces, and governmental reports. The breadth of publications used substantiates the convergence of the review's findings.

### 2.3 Current Socio-economic, Education and Employment Indicators

Although government policy and research energy have long been focused on Indigenous disadvantage, there is no question that Indigenous Australians remain marginalised in the education and employment sectors (DPMC, 2017; SCGRP, 2014; COAG, 2013). This marginalisation is both product and source of ongoing inequity in social, health, justice and economic indicators of Indigenous and non-Indigenous wellbeing. The goal of improving education outcomes is accordingly intended to have an enduring impact beyond the school

years. This section examines the current socio-economic, education and employment indicators for Indigenous Australia, in order to provide background to the research.

### *2.3.1 Social and health disadvantage amongst Indigenous Australians*

The Australian Bureau of Statistics conducts six-yearly surveys into Indigenous health, education, employment and education indicators, as a result of a recommendation from the *National Report into Aboriginal Deaths in Custody* (ABS, 2015; Commonwealth of Australia, 1991).

Education typically raises socio-economic indicators (Johnston, 2004; McMahon, 1999), and hence, this section explores the socio-economic disadvantage experienced by many Indigenous Australians, in order to provide a clear case for the need for educational equity.

The *National Aboriginal and Torres Strait Islander Social Survey 2014-2015* (NATSISS) reveals the present and long-term effects of disadvantage brought about by institutionalised racism and educational loss (ABS, 2015c). According to the most recent NATSISS findings, almost two thirds of Indigenous Australians aged 15 years and over report having a chronic health condition, including mental health conditions. One in three Indigenous Australians have experienced homelessness, a rate more than double that of non-Indigenous Australians. Almost one in five Indigenous Australians live in an overcrowded house, a rate triple that of non-Indigenous Australians reported in the most recent census. Some health and education indicators have improved, with Indigenous Australians less likely to smoke or consume alcohol, and more likely to have completed Year 12 or other qualifications, in comparison with previous surveys. Yet, the gap is still large, with Indigenous adults only half as likely as non-Indigenous adults to report that they were in good or excellent health (ABS, 2015).

Education and employment disadvantage are linked to social disadvantage also. The *NATSISS 2014-2015* found that incarceration rates, and experiences of physical violence and racism, have not improved over time (ABS, 2015). One in five Aboriginal and Torres Strait Islander people 15 years and over reported having experienced or been threatened with physical violence within the last twelve months. Two thirds of women who reported physical violence, experienced this from their partner. One in seven Indigenous adults reported having been arrested within the last five years, and one in ten had been incarcerated in their lifetime. For remote Aboriginal and Torres Strait Islander people, many of these figures are worse. Reports of violence, crime, overcrowded housing and ill health in the community were consistently higher for Indigenous adults in remote areas, than in non-remote areas (ABS, 2015).

### 2.3.2 Education and employment disadvantage amongst Indigenous Australians

In a society where education attainment is significantly and positively correlated with employment, (Australian Bureau of Statistics, 2016), comparatively low education levels are accompanied by high unemployment and thus significant economic and social disadvantage. Although Indigenous education participation rates are improving at both the secondary and post-secondary levels, (Ainley, Buckley, Beavis, Rothman & Tovey, 2011; DPMC, 2017; SCGRP, 2014) Aboriginal and Torres Strait Islander 20-24 year-olds are 25% less likely to have completed Year 12 than their non-Indigenous counterparts, and are just over half as likely to have completed post-secondary qualifications (SCGRP, 2014).

It has long been recognised that absenteeism is a significant factor in the low education levels of Indigenous Australians (Biddle, 2007, 2014; Bourke, Rigby & Burden, 2000; Gray & Partington, 2003; Prout, 2009). The school attendance gap is not decreasing, and differences in attendance rates collectively amount to the loss of more than a year's schooling for Indigenous students by Year 10 (DPMC, 2017; COAG, 2013). This attendance gap has been shown to be directly related to academic attainment (Biddle, 2014), which itself has been shown to correlate with levels of employment and household income (SCRGSP, 2011).

Academic achievement is also an area of significant disadvantage for Aboriginal and Torres Strait Islander students. The *Closing the Gap-Prime Minister's Report 2017* found that on average Indigenous 15 year-olds are 2.3 years behind non-Indigenous 15 year-olds in literacy and numeracy (DPMC, 2017). It is likely that the lower academic results of Indigenous students contribute significantly to lower post-secondary aspirations in comparison with non-Indigenous students, as it is known that where Indigenous and non-Indigenous students have equal attainment in Year 10, they also go on to complete Year 12 and post-secondary education at equal rates (Mahutea, Karmel, Mavromaras, & Zhu, 2015).

At the post-secondary level, the number of Aboriginal and Torres Strait Islander students in higher education courses has nearly doubled from 2005 to 2015, yet, these students are still more than twice as likely as other students to drop out in their first year of tertiary education (DPMC, 2017). Compared with other students completing Year 12, Indigenous students are less likely to go on to complete a further qualification than are other Australian youth, which implies that the schooling experience may not be adequately preparing Indigenous Australians to access post-secondary education opportunities.

Not all statistics imply disadvantage, however. The fact that Year 12 attainment has increased, whereas Year 10 attendance has not, indicates that improvements are occurring in some key

education outcomes, regardless of day-to-day attendance decisions. It is contended that education has a higher economic return for Indigenous Australians than for non-Indigenous Australians (DPMC, 2017; Hunter & Gray, 2012; Junankar, 2003) and higher education rates in particular may lead to improved socioeconomic indicators for Aboriginal and Torres Strait Islander people.

It is not educational attainment per se, but the level of education relative to others, which determines employability. For research or policy aimed at improving long-term socioeconomic indicators for Indigenous Australians, improved secondary school engagement is only a success if it also leads to improved post-school outcomes for Indigenous students. Currently, the Closing the Gap campaign goal of halving the employment gap by 2018 is not on track (DPMC, 2017). One of the last reports from the COAG Reform Council found that whilst Year 12 attainment for Indigenous youth, remote youth, and low socioeconomic status (SES) youth has increased, transition from school to further work or study is less successful for students from the above three groups than for other Australians (COAG, 2013). Worryingly, the risk of not engaging fully in post-secondary work or study is even greater for Indigenous young people than for young people in poverty. The COAG Reform Council found that 61% of Indigenous youth are not fully engaged in work or study, compared with only 42% of youth from the lowest socio-economic backgrounds, and only 26% of non-Indigenous youth, being not fully engaged in post-secondary study or employment (COAG, 2013). Some part of these statistics is likely explained by the younger mean parental age of Indigenous Australians, and that those Indigenous and low SES youth who are engaged in study are less likely to be engaged in full-time study (COAG, 2013). Still, it remains clear that further efforts are needed to increase education and employment engagement of Indigenous youth in order to address employment, health, justice and socioeconomic indicators of the next generation of Aboriginal and Torres Strait Islander people. The following section examines those factors that have been identified, anecdotally and quantitatively, to contribute to the education gap.

## 2.4 Factors Contributing to Education Disengagement among Indigenous Students

In the previous section, it was explained that the measures of school attendance and academic achievement in Australia indicate that there are a greater percentage of Indigenous students than non-Indigenous students who disengage from education. In the hope of creating better education policy and outcomes, many previous researchers have explored the causes of

education disengagement in general, and for Indigenous students in particular (Biddle, 2014; Lamb et al. 2004; Purdie & Buckley, 2010; Reid, 2008; Zubrick et al., 2006). As such, there now exists a wealth of high quality research into the factors driving education disengagement for Indigenous youth. What is currently unknown, is which of these factors are more important in the education decision-making of Indigenous students, and furthermore, which engagement strategies can be proved to successfully address the causes of Indigenous education disengagement.

The ultimate aim of improving Indigenous school engagement, is to improve educational success. Craven, Bodkin-Andrews and Yeung suggested a *Model to Seed Success for Aboriginal Students* (2007) that included five higher-order factors - Quality Teaching, Student Attributes, Schools, Peers and Home. These authors consulted the work of Hattie (2003) to identify the critical interplay of pedagogy and teacher attitudes in building successful student outcomes. Whilst academic achievement is known to be strongly linked to other education outcomes of Indigenous students (Ainley, Buckley, Beavis, Rothman, & Tovey, 2011; Mahutea, Karmel, Mavromaras & Zhu, 2015), this area was outside the scope of the current thesis. Within the current thesis, the intention is to explore more closely the impact on education engagement of experiences outside the classroom. That is, the impact of whole-school policies and educational climate, as well as the impact of social and home factors, on student attitudes. A key aim of the current thesis was to develop a model of the latent constructs that drive Indigenous students' education decisions, and to quantitatively measure the importance of those constructs. A better knowledge of these variables would enable more accurate predictions to be made about the engagement strategies that are likely to have greatest positive impact on Indigenous education outcomes.

The list of factors found to have a significant impact on engagement and retention includes geographic location (Biddle, Hunter, & Schwab, 2004; Bourke, Rigby & Burden, 2000), access to educational institutions and internet as well as overcrowded housing (Biddle, Hunter & Schwab, 2004), dysfunctional family life (Gray & Partington, 2003; Reid, 2008), neighbourhood poverty (Epstein & Sheldon, 2002), sexual abuse as well as childcare responsibilities (Gray & Beresford, 2002), gender, disability, Indigenous status, educational aspirations, post school goals, motivation to learn and academic self-concept, English speaking background, family size, parental education levels, school sector, mean school socio-economic status, mean school achievement and peer aspirations (Lamb, Walstab, Teese, Vickers, and Rumberger, 2004). It was not possible for the current study to measure and explore every one of these factors, but they

could be categorised within the known domains affecting education engagement, presented in the section below.

### 2.4.1 A model of factors affecting education engagement

Following the model proposed by Craven, Bodkin-Andrews and Yeung (2007), Dusseldorp Skills Forum (DSF) produced another model of latent constructs contributing to Indigenous education and employment outcomes, in their report *“Keeping Up: Strengthening transitions from education into work for Indigenous young people”* (2009b, p. 10). In the DSF model, the contributing factors to education and employment disadvantage were categorised within the following Domains:

- Social (e.g. health, housing, community functionality)
- Home (e.g. family stability, parental education)
- School (e.g. appropriateness of curriculum and pedagogy, availability of support structures),  
and
- Individual (e.g. personal needs, academic requirements, attitude towards education, goals).

The current PhD study was grounded in the DSF model, and introduces an additional Domain, students’ perceived benefit of education. It has been observed that perceived benefit of education is both an outcome of other contributing factors, and itself a contributing factor towards education and employment outcomes (Biddle, 2007). As such, it was considered valuable to treat this factor as a unique latent construct, or Domain, during exploration of the model. Each of the other variables listed in the previous section fit more neatly into the four contexts identified by DSF, and are discussed under these headings on the following pages.

A final consideration of the exploratory model, was that there is a powerful interplay between contributing variables that should not be ignored. Lamb et al. (2004) found that programs for helping unemployed youth find work were less effective the more “disadvantage categories” the unemployed person was in. If one category, they were 90% effective, two categories, 60%, 3 or 4 categories, 50%, and five categories, 12% effective. Indigenous secondary students, who are statistically more likely than other Australians to be geographically isolated, have health problems, speak non-standard English at home, have low socio-economic status, larger family size or overcrowded housing, lower parental education levels, lower educational and career aspirations, lower academic self-concept and face alcoholism and violence in their family life, are facing a number of disadvantageous scenarios, each of which can significantly prejudice educational achievement and future employment outcomes. Although the causes of non-

attendance interrelate, each DSF Domain is explained separately in the following sections in order to clarify the scope of the current research.

### 2.4.2 Social and community factors

Under the DSF model, the Social Domain of education engagement can be understood to include health, geographic infrastructure, and social/community economic determinants. This framing is particularly wide, and a full exploration of these factors would require significant resourcing. Within the scope of the current study, only geographic location and community norms are explored.

#### Geographic Location

Remote towns are a unique context. Indigenous culture is often strong, but the remote geographic location carries with it a reduced access to, and increased cost of, education and employment pathways. For students in very remote locations, Year 12 completion is sometimes only made possible by moving to an urban or regional centre, and is accompanied by social and cultural cost. Furthermore, schools in remote contexts often have younger, inexperienced teachers (Prout, 2009) and less resourcing in comparison with large urban schools, limiting the school's capacity for quality education provision.

Lester-Irabinna Rigney (2011) emphasises the much greater challenges faced by geographically remote Indigenous students. Only 14% of remote community residents have finished high school, a rate less than half that of urban Indigenous people (Rigney, 2011). Attendance rates are also much lower for Indigenous Australians in remote and very remote areas, amongst whom less than one third of students attend school more than 90% of the time. Over two-thirds of Indigenous people live outside the major cities (Australian Bureau of Statistics, 2015c), and it cannot be avoided that factors peculiar to the remote experience are negatively and disproportionately impacting on the education and employment outcomes of Indigenous youth.

Although Aboriginal people are mobile (Biddle, Hunter & Schwab, 2004), connections to family and country often prevent them from moving great distances (Schwab, 2006). Additionally, Mander, Cohen, and Pooley (2015a) described the ongoing negative impact for Aboriginal remote students of experiencing social dissonance and cultural disconnectedness when they leave their communities for an urban education environment. As such, secondary and tertiary education rates would probably increase if education and employment opportunities did not necessitate migration to urban centres (Biddle, 2007; Hunter, 2010). The importance of

connectedness as a Social factor affecting education engagement of Indigenous youth is further explored in the next section.

### Community Norms

Within the current study, community support for education and employment engagement is defined as support for school attendance, Year 12 completion, and employment aspirations. According to the Theory of Planned Behaviour, perceived societal norms (such as those based on peer or family) can have a strong influence on behavioural decisions, especially when an individual is strongly motivated to conform to those perceived norms (Ajzen, 2005). In his analysis of data from the *Longitudinal Surveys of Australian Youth* [LSAY] and *Longitudinal Study of Australia's Children* [LSAC] data, Biddle (2010) demonstrated that community norms regarding education and employment engagement are linked to attendance rates, indicating that peer attitudes may influence individual student attitudes towards education.

A number of qualitative studies have investigated the viewpoints of Indigenous students and families regarding school engagement. Parents surveyed by Hayes et al. (2009) felt that schools had become more accommodating, but did not yet do enough to build positive relationships with Aboriginal students and families. Herbert (2000), an Aboriginal educator, reported that Indigenous parents were not always confident talking with the school or being at the school, and felt that educators did not always understand Aboriginal communication and language styles. In short, Aboriginal members of the school community did not feel that their cultural identity was always understood or valued by the school. Although Herbert's research was conducted seventeen years ago, these themes are still relevant when it is considered that there remain many Indigenous parents who themselves did not complete secondary school.

The decision to engage with education may also place students in the crossroads of cultural dissonance. Aboriginal youth who aim to attend university or who aspire to types of employment atypical for Aboriginal people may face societal pressure for "acting white" (Munns & Parente, 2003). When Aboriginal children feel they are surrounded by "foreigners" who seem to pass judgment on them at school, they can show avoidance patterns and absenteeism (Schwab, 2001). Indigenous students, unlike hegemonic youth, must navigate the demands and norms of two cultures when determining their own attitudes towards education. This 'navigation' occurs throughout all four of the DSF contexts, but is most strongly experienced in the juxtaposition of school and home environments.



### 2.4.3 Home factors

A child's home environment can detrimentally impact educational engagement in three ways. The situation at home may be significantly dysfunctional that students are unable to focus on external issues; the home environment may actively reward students for disengaging with school; or the home environment may not provide access to typical support such as internet resources and academic assistance from school or tertiary educated relatives. These ideas are discussed under the headings of Family Stability, and Family Resourcing.

#### Family Stability

The statistics explored in section 2.3 *Current socio-economic, education and employment indicators* revealed that Indigenous Australians are much more likely to have experienced incarceration, homelessness, housing mobility, suicide, racism, family violence, chronic health conditions, and be victims of crime, than non-Indigenous Australians. Furthermore, some of these occurrences occur more frequently amongst Indigenous people living in remote Australia (ABC, 2015c). These crisis statistics do not happen in a vacuum; they reflect the family circumstances of Indigenous students in Australian schools. Such experiences are known to impact significantly on mental health, and have been shown to be correlated with non-attendance at school (Biddle, 2014). Where NATSISS findings reveal that almost two thirds of Aboriginal and Torres Strait Islander people 15 years and over experience mental illness, it could be extrapolated that the rates of mental illness amongst Indigenous secondary school students is likely to be equally high.

Currently, few education policies explicitly acknowledge the higher rates of family crises experienced by Aboriginal and Torres Strait Islander children and youth. It is known that health conditions negatively influence school attendance, even after location, Indigenous status, and socioeconomic status are taken into account (Biddle, 2014), hence, the health impacts of family crises should not be understated when exploring factors contributing to high rates of Indigenous education disengagement. Although measuring such impacts was outside the scope of the current study, future research could look for ways to evaluate and ameliorate the negative impact of family crises on Indigenous education outcomes since these education outcomes have the potential to either ease or entrench further family crises in future generations of Indigenous Australians.

#### Family Resourcing

The statistics described in section 2.3 *Current socio-economic, education and employment indicators* highlighted the lower levels of educational qualification, and higher rates of unemployment, frequently experienced by Indigenous families. Both these indicators are known

to correlate with reduced family income, which can create barriers to education that are direct (poor nutrition, limited access to an adequate study environment, overcrowded housing, transport difficulties) as well as indirect (increased experiences of bullying, lower academic expectations from teachers). Biddle (2010; 2014) shows that two of the variables most strongly associated with education participation are: overcrowding (which prevents a child from studying at home), and level of education of adults in the household (which is an indicator of the level of education support to be found at home). Thus, schools that provide an after-school study environment, and reduce the social cost of education by introducing students to educated and employed role models, should see better engagement and retention.

The experience of poverty, and the associated discourse surrounding students, indirectly reinforces education disengagement. McKay and Devlin's (2016) analysis of successful tertiary students from low SES backgrounds reveals an extant deficit discourse where these students were seen as 'not belonging' in the tertiary environment, and likely to fail. It is possible that the same could be said of discourse surrounding Indigenous students in secondary education. Santoro, Reid, Crawford, and Simpson (2011) stated that whilst non-Indigenous teachers are superficially aware of the poverty and disruptive home life faced by many Indigenous students, they are not sufficiently cognisant of how such experiences affect the students' *ability to engage* with education. Where teachers themselves have not experienced severe poverty, they may be unable to empathise with the 'shame' of having to borrow equipment or uniforms in order to participate in a lesson, and assume that the student is not desiring to engage with learning when they refuse to borrow equipment in order to participate. Without a proper understanding of poverty, teachers also insufficiently appreciate that a child who goes home to a house where there is no desk or computer to study at, where no family member has completed high school, or where the family is struggling to survive on a socio-economic level, is going to have trouble meeting academic expectations, *despite* wanting to obtain successful outcomes for their lives.

Other researchers have discussed the positive value which Aboriginal caregivers place on their children's education (Hayes et al., 2009). Yet, these parents can be less supportive of school attendance if they believe the school will be an unpleasant place for their children (Hunter & Schwab, 2003). In this regard, Indigenous parents' support for education can be dependent on the relative benefit or cost that they believe schooling will have for their child. Particular considerations such as discrimination, discourse and identity effects of the school environment, are discussed further in the following section.

#### 2.4.4 School factors

The third Domain outlined in the DSF model is that of the School. Incorporating curriculum, pedagogy, teacher interactions, support strategies and education resources, this Domain is more within the control of policymakers than any other. Regardless of students' social and home backgrounds, school systems and environments can themselves create educational disengagement where it did not previously exist (Lillemyr, Sobstad, & Marder, 2008). Reid (2008) and Epstein and Sheldon (2002) discovered that an irrelevant school curriculum, poor relationships at school, low achievement, and low school expectations all increased the likelihood of truancy. School academic culture, modelled by Lamb et al... (2004) as mean school achievement and peer aspirations, can also have a consequential impact on engagement, student self-concept and aspirations. This section explores the impact of schools on Indigenous education engagement through the realms of Curriculum and Pedagogy, Academic Achievement, Discourse and Expectations, and Racism and Respect.

##### Curriculum and Pedagogy

Although improvements have occurred in recent decades, the Australian curriculum and teacher pedagogy remain Eurocentric in their epistemological foundations. The curriculum favours written communication of knowledge over oral communication, compartmentalises knowledge into discrete subjects, preferences Western science and interpretations of history over Indigenous knowledge and interpretations, and is taught in a decontextualised classroom setting (Santoro et al., 2011). Conversely, the traditional Indigenous transmission of knowledge occurs in the natural world, is highly contextualised, and is taught as part of a 'whole' body of knowledge rather than in discrete subjects (Santoro et al., 2011). Indigenous students may be used to thinking in a contextualised way, and in an interpretive way. Where teachers use unfamiliar pedagogies with students, the content knowledge may appear less relevant. In Piagetian theory, the new knowledge is more difficult for students to accommodate into their existing schema. In such cases, teacher pedagogy can indirectly contribute to student disengagement from education (Santoro et al., 2011). Furthermore, students who are taught to admire the brave settlers who colonised this country, but not about the history of Indigenous resistance and political action, may rightly believe that their knowledge and cultural reality is undervalued.

For teachers to appropriately recognise Indigenous students' knowledge, they must first understand that Indigenous students do not just have different *content* knowledge to non-Indigenous educators, but also different ways of *producing, processing, communicating, and structuring* knowledge. In the work of Santoro, Reid, Crawford, and Simpson (2011), one

Aboriginal educator explained that she naturally used an experiential learning pedagogy because it fit more naturally with her own cultural method of learning.

Nakata (2003) warns that teachers may make two types of errors even once they are aware of traditional Indigenous pedagogies. Teachers may preference this pedagogy to the point of neglecting other skills (e.g. relying so much on experiential learning that they neglect the content knowledge necessary for functioning in Australian society) or they may infer that Indigenous pedagogies are inferior (i.e. primitive or uncivilised). In the interests of social justice, says Nakata (2003), children should be understood for who they are but provided with the opportunity to perform as successfully as others across mainstream as well as Indigenous education methods.

### Academic Achievement

It is not only curriculum that can be culturally biased, but also assessment. Indigenous underachievement in schools is both a measure of lower education outcomes and a predictor of future education disengagement (Mahuteau, Karmel, Mayromaras, & Zhu, 2015). Although Klenowski and Gertz (2009) acknowledge that culture-fair assessment would likely result in improved relative achievement of Indigenous students, the most recent Closing the Gap document (DPMC, 2017) found that by age 15, Indigenous students are, on average, more than two years behind non-Indigenous students academically. There is no doubt that this statistic is likely to explain a large part of Indigenous disengagement in secondary and post-secondary education.

One important question to address, is whether students who experience less academic success at school, are likely to obtain genuine benefit from Year 12 completion and post-secondary qualifications. Karmel and Liu (2011) asked such a question in their analysis of LSAY data, using self-reported measures of life satisfaction, pay, status, and employment situation, as measures of benefit. The researchers found that regardless of a student's academic success in secondary school, Year 12 completion and higher education or apprenticeships provide benefit through status, income, and life satisfaction. Such outcomes are likely to be accompanied by higher socioeconomic status, mental and physical wellbeing, and political agency (Abbott-Chapman, Martin, Ollington, Venn, Dwyer, & Gall, 2014). It is therefore imperative that research and policy regarding Indigenous education outcomes, continues to look for ways to close the gap in Year 12 completion and also in post-secondary educational attainment, in addition to goals for equity in academic achievement.

### Discourse and Expectations

Recent literature in Australian education has drawn attention to the emphasis of academic and social discourse on Indigenous 'deficiency' in education (Bodkin-Andrews et al., 2010; Harwood et al., 2015; McKay & Devlin, 2016). Deficit discourse suggests that the cause of the education disparity between Indigenous and non-Indigenous Australians lies firmly within factors affecting the Indigenous population, for reasons biological, socioeconomic and cultural. Such discourse argues, for example, that Indigenous students do not engage as well, or achieve academic success, because they often come from a poverty background, or because cultural autonomy means that parents do not force students to attend school, or that Indigenous students are sidelined by Western epistemologies. The present literature review has acknowledged the impact of these factors, but also examines the impact of educator expectations as part of the School Domain.

Deficit discourse emphasises what Indigenous students are not, and why they are not achieving, rather than focusing on what Indigenous students do have, and how these factors can enhance educational success. Furthermore, deficit discourse 'others' Indigenous students (McKay & Devlin, 2016), so that their performance no longer reflects on the educator, or on the education system. In his large scale survey of education professionals in the United Kingdom, Reid (2008) recognised three categories of factors, which education professionals ascribed as causes of school non-attendance: Dislike of school, home difficulties, and mental health concerns. It is instructive to note that in each of these categories, educators place the onus on the student, rather than on the school system. Further, in a New Zealand study, Bishop (2008) ascertained that teachers often pathologised the socioeconomic and cultural deficiency of Maori students in a way that eliminated their own responsibility as an educator to produce equitable outcomes. Conversely, students were most likely to identify the chief cause of education disengagement as the classroom relationship with their teacher, thus also demonstrating a non-agentic position. The different framing of the problem is likely to create a blame environment, and for each group, shifts responsibility for education equity on to other stakeholders. Bishop argues that teachers and educators need to be critically aware of the way in which race and ethnicity construct educational privilege or disadvantage, and in so doing, position themselves as critical contributors to Indigenous student achievement.

### Racism and Respect

It is perhaps no coincidence that Bodkin-Andrews, Denson and Bansel (2012) in a study of over 1500 students in New South Wales, found that Indigenous students simultaneously report higher levels of discrimination from school staff, as well as a lower self-concept, when compared

with non-Indigenous students. Where students believe that teachers have lower expectations of Indigenous students than non-Indigenous students, there are implications for both perceptions of racism, and academic aspirations. These findings are supported by the work of Mander, Cohen, and Pooley (2015a) who identified that overt and covert racism are still experienced by many Aboriginal students in secondary schools.

Osborne (2003) notes that most pre-service teachers' understanding of schooling is built from 12 years' experience in a school system that does not adequately provide for the needs of Indigenous students. These teachers are unlikely to have ever wrestled with the social, cultural, and relational subjectivities of notions such as knowledge, authority, and justice (Santoro, 2009). Such teachers may contribute to Indigenous students' perceptions that non-Indigenous teachers are unnecessarily rule-conscious and punitive, because they do not acknowledge the students' culturally normative right to make decisions that do not excessively impact on others. Further, Indigenous students are more likely to use physical actions to demonstrate their feelings, rather than words. Again, this is not likely to be understood or appreciated by non-Indigenous teachers, whose society preferences verbal communication to resolve conflict. In Aboriginal society, relationships are a key aspect of respect, and are required before knowledge is imparted. Aboriginal people may be less formal and use more deprecating humour, all of which is often not appreciated by non-Indigenous teachers trying to maintain Western structures of authority (Partington, 2004).

In summary, any model of factors affecting education engagement for Indigenous students should aim to measure the impact of cultural dissonance within schools. Whilst the scope of the current study does not include curriculum and classroom practices, nor actual academic achievement of respondents, it intended to examine the effect that student perceptions of cultural respect in the school environment have on education choices.

#### 2.4.5 Individual factors

The final context presented in the DSF model of factors affecting Indigenous education and employment outcomes, the Individual Domain, incorporated psychological factors such as goals, values, self-concept and aspirations. These variables represent motivations driving the individual in their decision-making process. Within the current study, the particular Individual variables of interest are connection to Indigenous Ethnic Identity, and Academic Self-Concept and Education Aspirations.

### Ethnic Identity

Across Australia, Indigenous people experience a diversity of connection to culture. Some Indigenous Australians have grown up with significant exposure to their ethnic community, and been socially acculturated with Indigenous language, epistemologies and values. Other Indigenous Australians have grown up with minimal exposure to their ethnic community, either due to past assimilation policies, or family relationships, sometimes only learning late in life of their Indigenous heritage, and are only beginning their exploration of ethnic identity. Indigenous Australians may live in remote communities, in small towns, or in urban centres, and experience varying meanings of what it is to be Indigenous in Australia in the 21<sup>st</sup> century. It would be a tragic display of ignorance to assume that being Indigenous means the same thing for all of the 600,000 or so Indigenous people currently living in Australia, or that all Indigenous students respond identically to their education experiences. Yet, the meaning which individual students make of being Indigenous within Australia, and within Australian schools, will undoubtedly impact their sense of self, and their response to culturally targeted programs, across the schools in this study. The current study therefore, developed a measure of students' experiences of cultural safety, and cultural respect, in schools.

### Academic Self-Concept and Education Aspirations

Bodkin-Andrews, Dillon, and Craven (2010), identified that Aboriginal students had lower measures of academic self-concept, and lower school aspirations, than their non-Indigenous counterparts, and that for these students, academic self-concept was a predictor of future school attendance and of post-secondary aspirations. Other researchers have similarly used large scale quantitative studies to assess the impact of academic self-concept and secondary school engagement on post-secondary education completion and occupational status for students in Australia (Abbott-Chapman, Martin, Ollington, Venn, Dwyer, & Gall, 2014).

Importantly, Bodkin-Andrews, Dillon, and Craven (2010) demonstrated that Aboriginality was not itself a predictor of academic self-concept. It is other features of Aboriginal students' experiences that determine their perceptions of education. The current study identified particular experiences closely related to student academic self-concept, and by extension, school and post-secondary education engagement.

### 2.4.6 Perceived benefit of education

The current study adds a fifth context to those presented in the DSF model; that of an individual's Perceived Benefit of Education. Although this variable could be described within the Individual Domain, the decision was made to treat Perceived Benefit of Education separately, in order to explore the unique contribution of this construct to education outcomes. In that way,

this variable can be analysed as both an independent variable (as required by Research Question 1) and as a dependent variable (as required within the multiple regression equations) (see section 1.3 Research Question).

Career reasons are the overwhelmingly largest motivator for secondary students to stay at school (Lamb et al., 2004). Research suggests that the poor education participation rates of Indigenous students in remote areas (Biddle, Hunter, & Schwab, 2004) may reflect a lower perceived utility of education for these students (Biddle, 2007; Hillman, 2010). Biddle (2007) proposed that the perceived benefit of education for Indigenous Australians is reduced by the greater social costs many face due to transience, health problems, low English literacy, unsupportive family, under-resourced study environments and social stigma. For non-Indigenous Australians, higher education levels increase the probability and profitability of employment in remote areas, and thus Indigenous Australians should expect the same (Biddle, 2007). Yet, Indigenous Australians, who are likely to live in areas of low socio-economic status, tend to under-estimate the economic benefits of education because they do not have role models in their social circle demonstrating the link between high education levels and employment income (Biddle, 2007). Schwab (2001) suggests that due to cultural attitudes towards sharing resources, Aboriginal people do not view future earning power as powerful an economic incentive as other Australians would. This may be the case, however, in her study of Indigenous career decision making, Helme (2010) found that Indigenous Australians were less likely to know about education and employment opportunities available post-school. If Indigenous Australians make education decisions based on incomplete information, then they may misconstrue education as irrelevant to their future, and be more likely to disengage from school (Epstein & Sheldon, 2002; Reid, 2008).

#### 2.4.7 Final comment on factors contributing to education disengagement amongst Indigenous students

Indigenous students who disengage from education often do so as a result of a multitude of influences within the Social, Home, School, and Individual Domains. Some of these influences are more amenable than others to being addressed by education policy and funding. The next section explores government policy and contemporary school strategies, and what is currently known regarding the efficacy of these strategies.



## 2.5 Strategies and policies to address Indigenous education equity.

School and government responses to Indigenous education disadvantage are varied, and, until the Closing the Gap campaign, had been implemented without a long-term vision (Dusseldorp Skills Forum, 2009a). The efficacy of more recent policies, including Closing the Gap, is now discussed.

### 2.5.1 Government policy

#### National governmental approaches to Indigenous education policy and Closing the Gap

Australian governments have long recognised that Indigenous education and employment policy play a key role in decreasing socio-economic inequity (Auditor General Western Australia, 2015; 2009; Bourke, Rigby & Burden, 2000; DEST, 2011; Purdie & Buckley, 2010). This understanding has been formalised under the *Melbourne Declaration of Educational Goals for Young Australians* (MCEEDYA, 2008) as well as the *National Indigenous Reform Agreements*, reviewed and updated annually, which detail the Council of Australian Government's (COAG's) Closing the Gap targets (COAG, 2017), and the *Australian Professional Standards for Teachers* (the *Standards*) (AITSL, 2014). Four of the Closing the Gap targets are specifically focused on education outcomes: ensure 95% of all Indigenous four year-olds are enrolled in early childhood education by 2025, halve the gap for Indigenous students in reading, writing and numeracy within a decade (by 2018), halve the gap for Indigenous people aged 20–24 years in Year 12 attainment or equivalent attainment rates by 2020, and, close the gap between Indigenous and non-Indigenous school attendance within 5 years (by the end of 2018).

The COAG Education Council's *National Aboriginal and Torres Strait Islander Education Strategy* (the *Strategy*) (Education Council, 2015) was formed as a response to evaluation of existing progress against the Closing the Gap targets. The *Strategy* recognises the role of the AITSL *Standards*, as well as the Australian Curriculum, in guiding teachers towards prioritising Indigenous understandings and knowledges. The *Strategy*, agreed to by state and federal education ministers, lays out principles for improving education outcomes for Aboriginal and Torres Strait Islander Australians. These include: high expectations being held for and by Indigenous people, equity in educational opportunity, accountability for education institutions and sectors, cultural recognition and respect, Indigenous contributions to policy development, local flexibility, and evidence-based policy.

### Western Australia's response

In response to the national *Strategy* document, the Government of Western Australia has published a short policy document *Directions for Aboriginal Education 2016 (Directions)* (Government of Western Australia, n.d.), which references the Department of Education's *Aboriginal Cultural Standards Framework* (the *Framework*) (Government of Western Australia, n.d.) and the four priority outcomes of the *Strategy*. It is this *Framework* document that outlines exactly how schools can improve education outcomes for Indigenous students. The *Aboriginal Cultural Standards Framework* details standards of culturally responsive practice, setting standards for: positive engagement with the local Aboriginal community, development of whole school policy to address Aboriginal student outcomes, and maintaining high expectations of students while utilising culturally appropriate pedagogy, resources and learning environments. Importantly, it is expected that all schools utilise the *Framework*, regardless of the number of Indigenous students they serve. Furthermore, the document provides a continuum for measuring success against these standards, building from cultural awareness, through cultural understanding and cultural competence, to cultural responsiveness (Government of Western Australia, 2015).

The Western Australian Government's response contains many positive policy directions but fails to address all of the suggestions made by the Auditor General Western Australia (2015; 2009). In particular, Western Australia's *Directions* contains no requirement for centralised evaluation and monitoring of school engagement strategies aimed at improving Indigenous education engagement, which would have enabled the Western Australian Government to establish a high-quality analysis of factors affecting attendance, a specific recommendation of the Auditor General Western Australia (2009). Local schools and districts do not have the funding capacity for high quality empirical evaluations of engagement strategies, and without centralised evaluation it is unlikely that successful engagement strategies would be recognised and shared throughout the State. Furthermore, the *Framework* reiterates that teachers should *not* be evaluated against the standards contained therein, potentially reducing the likelihood that all schools will employ the strategies suggested in the *Framework*. Nevertheless, the *Framework* describes many valuable strategies, which forefront the importance of collaboration with Indigenous families and educators. The following section explores the juxtaposition of this intention with some of the neo-colonial aspects of government policy.

### Discussion of Government Policy

Government policies provide an insight into the way governments view the problem of lower Indigenous attendance rates in schools (Biddle, 2014). At all levels, from the broad national

policy of the *Melbourne Declaration* and the *National Aboriginal and Torres Strait Islander Education Strategy*, through to the practice-driven *Aboriginal Cultural Standards Framework*, government policies discuss the importance of educators seeking collaboration with Indigenous communities, and educators being culturally competent, as well as Indigenous people having high academic expectations of themselves (Education Council, 2015; MCEEDYA, 2008; Western Australia, Department of Education, 2015). Research discussed in the previous section (2.4 *Factors contributing to education disengagement amongst Indigenous students*) revealed that presently, educator ignorance of Indigenous culture is an ongoing concern, despite policy proclamations. This suggests that where funding and evaluation are not explicitly linked to culturally proficient practice, national policy will only be implemented in a piecemeal manner within schools. Moreover, it was shown in the previous section that educators who are ignorant of Indigenous culture, and cultural reflexivity, are likely to contribute to Indigenous people having low expectations of themselves. For governments to name cultural competence and high expectations as integral to Indigenous education outcomes, but not link this explicitly to policy, funding or teacher evaluation, reflects a naive government reliance on educator goodwill that is unlikely to result in system-wide change. At worst, it could be contended that governments are content to address weaknesses in the education system only where it does not require acknowledgment of the existence of contemporary racism amongst the current teacher workforce.

Furthermore, it is worth noting that despite many similarities between Australian and Western Australian policy documents, and those of New Zealand/Aotearoa, there is one striking difference. The *Tātaiako: Cultural Competencies for Teachers of Māori Learners* (Ministry of Education, 2011) document produced by New Zealand policymakers describes culturally competent teacher behaviours not just from the educator perspective, but from the student and whānau (family) voice. Through doing so, the New Zealand/Aotearoa framework clearly sets an expectation for systemic cultural competency (or lack of) to be measured by Indigenous people themselves. Such an expectation diverges from the theme evident within Australian policy, which encourages collaboration with community but does not actively engage with Indigenous voice at the evaluation level.

Vass (2015) maintains that Critical Race Theory needs to be applied in the Australian context in order to explain why decades of policy and funding have not created education parity; because hegemonic blindness towards white privilege and individual contribution to racial oppression has not been tackled. Vass, and others, have critiqued the use of NAPLAN to measure academic achievement, because its assessment structure and purpose are most likely to privilege those

who are already educationally advantaged (Schwab, 2012; Vass, 2015). Vass (2015) further argues that the Closing the Gap targets have arisen out of economic justifications for human capital equity amongst Indigenous Australians, rather than out of social justice concerns for human wellbeing. In so doing, contends Vass, the Closing the Gap campaign sits wholly within a Eurocentric paradigm that avoids any critical understanding of race relations (2015). Yet, the current author contends that whilst the targets themselves are empirical measures of human efficacy which consider Indigenous people in deficit in comparison with Eurocentric 'gold-standards', they can still be used as tools of anti-racism. The Closing the Gap targets provide an impetus for change in social discourse precisely because they focus government funding, media attention, and research practice, on the causes and solutions of Indigenous education disparity in Australia. It may be that government discourse has become more open to Indigenous-led research and critical theory of race relations, precisely because these targets have placed a spotlight on the inability of previous policy to successfully create education equity in Australia.

A particularly contentious form of government policy impacting Indigenous students in remote areas is that of mutual obligation. Shared responsibility agreements (SRAs) require governments to provide certain infrastructure and resources, and for communities to promise quantifiable goals. The Improving School Enrolment and Attendance through Welfare Reform Measure (SEAM) implemented as part of the Northern Territory Emergency Response took mutual obligation to a new level by compulsorily linking welfare payments to school attendance in certain areas. The SEAM trials demonstrate a markedly different approach to Indigenous education policy than the collaborative methodology projected in the *Aboriginal and Torres Strait Islander Education Plan 2010-2014* (MCEEDYA, 2010) and the *National Aboriginal and Torres Strait Islander Education Strategy* (Education Council, 2015). The impetus for this measure appears to have been the belief that if families received economic resources regardless of educational standards, then it would directly reduce the perceived utility of education, and hence school engagement, of children in that community (Trudgen, 2000). Yet, research has not shown welfare receipt to contribute any unique explanation to school non-attendance (Biddle, 2014).

### Policy unfounded in research evidence

Government policies indicate awareness of the impact of remoteness, low socioeconomic status, student health, family crises, parental education levels and the availability of quality public schooling, on Indigenous school engagement (DPMC, 2017; Education Council, 2015). What is not known, is which factors have greatest impact, and are hence most critical to address.

One of the most consistent findings in Indigenous education literature is that there is a dearth of high quality evidence on which policy decisions can reliably be founded (Auditor General Western Australia, 2009; Behrendt & McCausland, 2008; Epstein & Sheldon, 2002; MCEEDYA 2010; MCEEDYA, 2008; Purdie & Buckley, 2010; Reid, 2008). Over the last ten years it has been found that: governmental policies have failed to identify or address the factors causing Indigenous non-attendance at school (Auditor General Western Australia, 2015; Gray & Beresford, 2008), there is a lack of coherent government guidance on strategies schools should use (Auditor General Western Australia, 2009; Beresford & Gray, 2006; Reid, 2008), and policies are not grounded in public debate (Behrendt & McCausland, 2008). New research should therefore be empirical, and new programs should be monitored and evaluated so that successful strategies can be replicated (Auditor General Western Australia, 2015; Purdie and Buckley, 2010).

Finally, it should be mentioned that the Auditor General Western Australia's reports (2015; 2009) have been particularly critical of the Western Australian response to absenteeism in schools. The Auditor General found that the Western Australian Department of Education and Training (DET) did not appropriately manage chronic truancy, replicate successful strategies, consistently monitor attendance as part of school evaluations, address well-known causes of school disengagement through targeted initiatives, nor appropriately communicate, monitor and evaluate data. The Auditor General's findings reflect the hectic schedule of schools which may not have time for detailed reflection. Despite the lack of evaluation, many schools have implemented strategies to address Indigenous education engagement.

### 2.5.2 Current school engagement strategies

Although rigorous quantitative evaluation of engagement strategies has been lacking, qualitative research indicates that across Australia, schools and education districts are implementing engagement strategies that have distinct strategic commonalities. These strategies of effective Indigenous school engagement typically focus on student self-concept, aspirations and goals, all hallmarks of the Individual Domain, as well as collaboration and connection to Indigenous family and community members (Social Domain), and meaningful and effective post-secondary transitions (Perceived Benefit of Education Domain). Successful engagement strategies should be long-term, comprehensive and positive (Epstein & Sheldon, 2002) and must clearly identify goals, target groups, guidelines and evaluation criteria (Commonwealth of Australia, 2011; Partington, 2004; Lamb et al., 2004).

An analysis of the Longitudinal Studies of Australian Youth [LSAY] found that student background and previous achievement are not strongly correlated with engagement with school (Hillman, 2010). Therefore, effective school engagement strategies should be able to positively influence student perception of the benefit of school, even where a student has educationally detrimental influences in their social background or academic history.

Brown and Milgate (2011) undertook a meta-analysis of case studies to determine the factors leading to the success of various programs which aimed to improve educational engagement and employment pathways. The authors identified: providing good career information and employment/training links, individual case management, whole school approach, culturally aware structures, data sharing, and building school-community and industry partnerships.

Within the present thesis, school engagement strategies are grouped into the Domains of School (*Positive and respectful school culture*), Home (*Partnerships with families*), Social (*Partnerships with the community*), Individual (*Individual case management and interagency collaboration*) and Perceived Benefit of Education (*Transitions to post-secondary pathways*).

### Positive and respectful school culture

Many of the successful engagement strategies focus on developing an encouraging and welcoming school culture and are non-judgemental of attitudinal differences toward education (Bourke, Rigby, & Burden, 2000; Dinanthompson et al., 2008; Hones, 2005; Munns & Parente; 2003; Rahman, 2010; Whitinui, 2010). Biddle (2007) stresses that students' expectations and aspirations for themselves are a reflection of what they see around them in their own community.

Craven and Parente (2003) detail the behaviours of school staff which promote positive self-concept in Aboriginal children. Staff need to deliver praise and encouragement, and consistent expectations of Aboriginal and non-Indigenous students. Teachers need to develop positive relationships with parents and the community, create a friendly school climate, and prioritise Aboriginal culture, language and studies in the curriculum. Presence of Indigenous adults in the school improves educational outcomes (Bourke, Rigby, & Burden, 2000; Hones, 2005) as it creates a model of success that students can emulate.

The Works Program (Commonwealth of Australia, 2011) reiterates the power of building positive relationships amongst teachers, students, and parents. The report found that successful attendance programs educate school staff and community members alike in language and culture differences so as to limit misunderstandings and promote tolerance. The success of

sports programs such as Kickstart (Dinanthompson et al., 2008; Partington, 2004) similarly reflects the power of positive relationships. Harrison and Narayan (2003) found that school sports and other extracurricular activities allow students a non-academic avenue for success and leadership and give students a positive connection to the school and reduce the likelihood of truancy.

Schools can also empower students at the individual level by actively promoting student agency and cross-cultural understanding. Schools need to teach soft skills such as relating to authority structures, work ethic, responsibility, leadership, and agency, so that they can escape the welfare cycle. Munns, Martin, and Craven (2008) encourage schools to support Indigenous students to aim high, to link school education to future career and study choices, to address barriers of low self-concept, to encourage persistence, and to develop self-regulatory skills. Many of these approaches correspond to recommendations by authors such as Armstrong and Buckley (2011), Hewitson (2007), Hughes and Hughes (2010), Pearson (2009), Purdue and Buckley (2010) and Wilkinson (2009).

Munns, Martin, and Craven (2008) invite schools to leap the divide into viewing themselves as their Indigenous students would. Schools should not believe it is enough to institute policies and programs aimed at supporting Indigenous students, but should actively examine whether Indigenous students believe themselves to be pastorally and academically supported in their curricular and extra-curricular experiences (p. 100). The current study therefore foregrounded student perspectives and experiences of school engagement strategies aimed at promoting education engagement.

### Partnerships with families

Family involvement and community partnerships are a key factor in improving school engagement and retention (Behrendt & McCausland 2008; Epstein, 2008; Lamb et al., 2004; Partington, 2004; Purdie & Buckley, 2010; Schwab, 2006). Epstein and Sheldon's longitudinal study (2002) found that school efforts to build face to face relationships with parents through home visits and parent workshops resulted in improved student attendance. It appears that families and communities who are chronically disengaged from the school system appreciate and respond to individualised treatment delivered with a collaborative and positive attitude. In-principle support from families can be a key source of educational motivation for Indigenous students (Rahman, 2010). Each of the post-compulsory Indigenous students interviewed by Munns and Parente (2003) reported that their families supported their educational aspirations,

even if their parents had not completed school, or could not provide adequate resources at home.

### Partnerships with the community

One way to increase the positive connection between Social and School Domains is for educators to invite community collaboration on the development of education programs. Indigenous Elders view themselves as caretakers of their community and expect to be given a steering role in community schools (Schwab, 2001). Whiting (2010) and Rahman (2010) contend that when Indigenous people self-determine culturally appropriate educational opportunities, the result is a more inclusive and engaging school experience. Programs which encourage partnership and school-community shared goals are likely to bridge the epistemological gap and promote a healthy cooperation between students and families. Such an approach typically privileges Indigenous ways of relating and knowing, negotiates within a local context, challenges the theory of cultural deficit of Indigenous students and families, provides a variety of programs to address different student needs, invites active parental involvement (Gaskell, 1995; Lowe, 2011; Trudgen, 2000) and demonstrates a two-way approach that counters the historical message 'our way is better'.

The Works Program (Commonwealth of Australia, 2011) found that formal agreements give families, students and communities a feeling of a greater stake and share in the child's education. They clarify rights and responsibilities of partners, and provide a basis for evaluation of targets. The principal at Kalkaringi, the first remote NT community school to see Indigenous students graduate Year 12, did this by asking the community what they wanted schooling to do for their young people. The curriculum focus shifted from fulfilling expectations of external policymakers, to stakeholders within the community (Hewitson, 2007).

Schools that establish strong relationships with Aboriginal families need to do so in a culturally sensitive way. Sims, O'Connor, and Forrest's (2003) small-scale study recommends that schools utilise the communal nature of Aboriginal parenting and engage the community as a whole. In this regard, Hunter and Schwab (2003) argue that it is essential that teachers in regional and remote areas particularly, be visible in the community. By interacting with parents socially, through sport etc., they can establish relationships with parents which would improve the teacher's knowledge of the community and also the community's (and thereby students') engagement with the teacher (Luke, Shield, Theroux, Tones & Villegas, 2012). Teachers frequently leave town during weekends and holidays, live in separate parts of town, and generally live separate lives from their students and their families. In an Indigenous community,



all these things are messages to the community that the teachers are not interested in getting to know them, and can be considerable obstacles to the building of quality relationships, which in turn affect the classroom experience.

### Individual case management and interagency collaboration

A number of analyses have found that education outcomes improve with individualised and continuous case management to address the educational disadvantages faced by some students. Learning support, mentoring, reduced class sizes, reduced number of class teachers, attendance rewards and individualised (or online) learning programs can all support the individualised objective (Bourke, Rigby & Burden, 2000; Helme, 2010, Lamb et al., 2004; Partington, 2004). Previous research has found that for more severe at-risk students, interagency collaboration and specialised remedial programs can be very useful pathways to re-engagement.

### Transitions to post-secondary pathways

A key aspect of improving Indigenous students' perceived economic benefit of education relies on building partnerships and links between schools and future employment opportunity. Although such partnerships are not mutually exclusive with higher education endeavours, there is a clear need for vocationally-linked training for those students looking to enter the skilled workforce upon completion of schooling. The Dusseldorp Skills Forum (2009a; 2009b) makes recommendations to address the meaningfulness of school with regard to employment opportunities, which are available in the individual's local (particularly when remote) context. The report indicates that this will be most successfully achieved via collaboration with the local community, and a long term policy approach founded in proper evaluation. Meaningful employment opportunities that allow remote Indigenous Australians to maintain their cultural identity whilst contributing to the community and economy have opened up in industries such as land and resource management (Schwab, 2006).

Osborne (2011) discusses principles from a partnership begun in 2009 at Ernabella Anangu School in remote South Australia which utilised the strengths of Dusseldorp Skills Forum, Dare to Lead, the school and community in order to increase school attendance and strengthen transitions to work. Osborne (2011) recommended that solutions be localised, ethical, politically and culturally aware, flexible, based in trust, and focused on developing long-term sustainability.

The school experience itself also needs to focus on curriculum that promotes successful transitions. Such programs teach students to set goals, plan their career pathway, provide knowledge of the job market, and build students' agency. *The Smith Family Research Report*

highlights the value of participating in accredited vocational training whilst still in school, and also the value of supportive mentors in the school environment, in ensuring successful long term employment outcomes for students (The Smith Family, 2014).

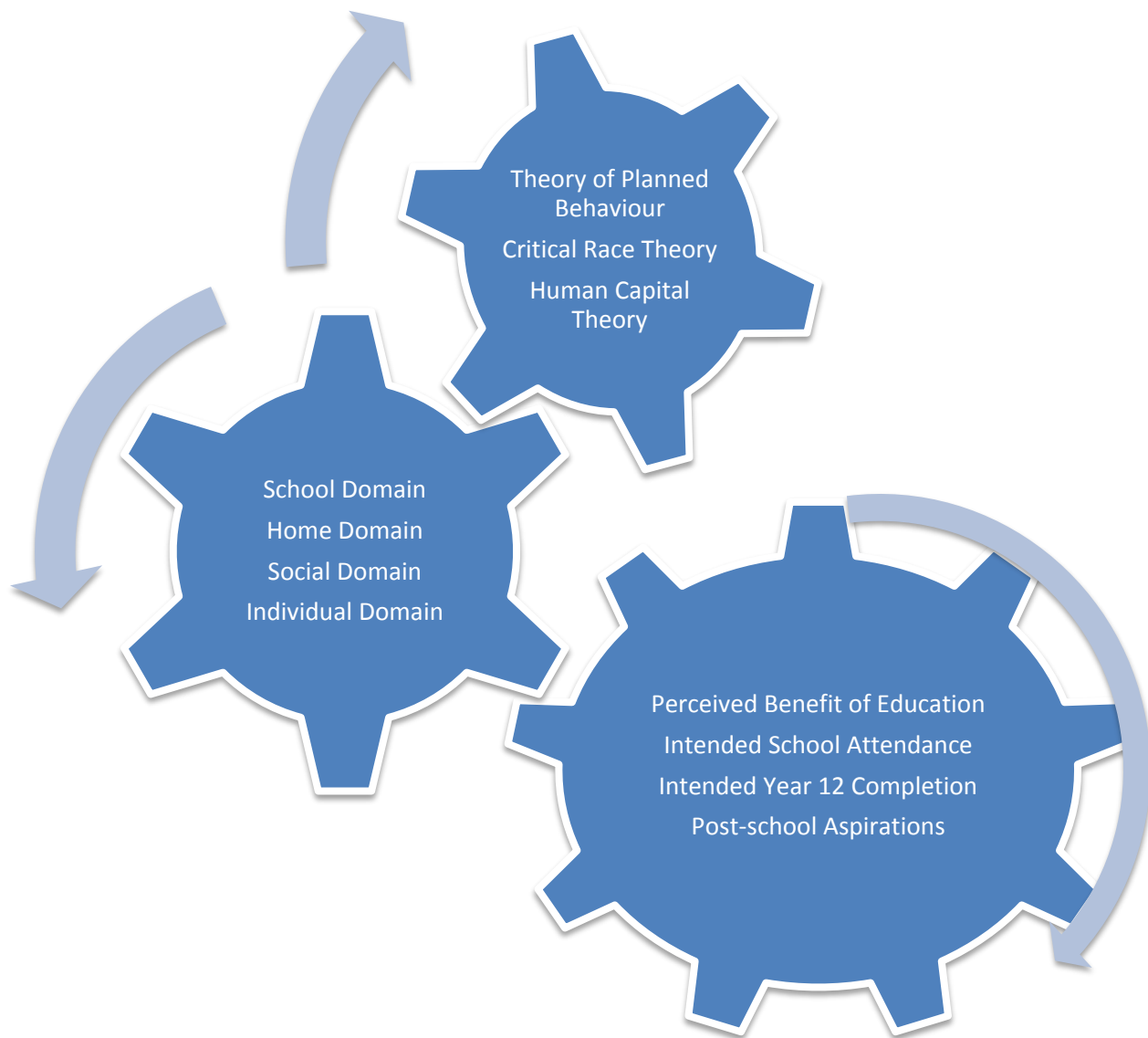
## 2.6 Implications for the current study

The literature review has laid clear the necessity of high-quality empirical research in the area of Indigenous education (Auditor General Western Australia, 2015; Biddle, 2014; Purdie & Buckley, 2010). The review identified factors common to successful school engagement strategies and retention programs, and provides scholarly evidence for the thesis rationale presented in Chapter 1. Namely, that whilst there is much research into *what* factors affect Indigenous education engagement, there is currently little knowledge regarding *which* factors have the greatest impact on, or correlation with, Indigenous education engagement, nor are there high quality quantitative measures of the *efficacy* of engagement strategies and programs. Furthermore, some strategies attempt to address the *perceived benefit* of education (e.g. utility for employment purposes, or self-concept, or social value), whereas others more directly address educational *cost* (geographic location, family obligations, health concerns). Within the current thesis, the aim of developing a factor model required that the sheer number of variables relevant to education engagement be refined to a manageable scope. The decision process for this refinement is described below.

## 2.7 Conceptual Framework

The conceptual framework, presented in *Figure 1*, illustrates the philosophy behind the current thesis. The first gear represents three key theories; the Theory of Planned Behaviour, Critical Race Theory and Human Capital Theory, which underpin the rationale and choice of Research Questions for the current project. As the first gear, these theories 'drive' the conceptualisation of the current thesis. These three theories provide a framework through which student education outcomes can be understood.

The second gear represents student perceptions of their experiences, measured across four key Domains, that of the School, Home, Social and Individual. It was expected that student perceptions of their experiences within these Domains, would reflect the operations of the first gear, those underlying theories which drive human behaviour and education policy. In turn, it was expected that these experiences would predict a substantial portion of education outcomes, measured in the third gear.



*Figure 1: Conceptual Framework guiding the thesis*

The current thesis aimed to contribute to scholarly knowledge by evaluating the correlation between Perception of the Benefit of Education and students' self-reported intentions to engage with secondary and post-secondary education, as well as with student perceptions of current school-level engagement strategies. Hence, the scope of the present study is narrowed to those measures of benefit, which can be obtained from students themselves, or from other sources, without requiring highly sensitive measures of health, socioeconomic status, and family and community experiences. The full range of constructs to be measured are detailed in *Appendix A*

– *Antecedents to Survey Constructs*, although the decision process for placement of constructs within the Domains is presented here.

The Social Domain presented by DSF incorporated ‘health, housing and community function’ (Dusseldorp Skills Forum, 2009b). As health and housing factors were not measured in the current study, the Social Context was interpreted to reflect the wider socioeconomic and education capital in a student’s community and extended network of peers and relatives. That is, it might reflect typical employment and education outcomes in the student’s home region.

The Home Domain as presented in the DSF report, reflected the more particular environment of a student’s own circumstances; that is, the typical education and employment outcomes, and human capital, available in their home and family environment (Dusseldorp Skills Forum, 2009b). Within the scope of the current study, it was possible to measure proxy variables for the home socioeconomic environment, and access to education support. This was done through measurement of the student’s self-reported family education levels and access to homework assistance, and also through measurement of average tertiary education and unemployment levels in the student’s reported home geographic region.

The School Domain presented by DSF focused on variables that reflected the particular environment provided by the school in terms of infrastructure, curriculum and resourcing (Dusseldorp Skills Forum, 2009b). The current study did not measure learning structures within schools, but rather, focused on socioeconomic, cultural and relationship factors affecting the school environment, as well as the influence of the school on student self-concept.

The Individual Domain presented in the DSF report reflected a holistic approach to a student’s ability to engage with school, through physical, academic, behavioural and attitudinal means (Dusseldorp Skills Forum, 2009b). This factor was interpreted more narrowly in the current study, with a focus on student demographics and aspirations.

Finally, the added fifth Domain reflect student perceptions and could have been included in the Individual Context, however, it was decided that it was important to keep this separate from the other ‘predictor’ variables, as it represented a more final sense of student engagement with education and willingness to attend and complete secondary schooling. It was thought that the variables in this fifth context would be strong predictors of the First order outcomes of school attendance and retention identified in the DSF model (2009b).

It is acknowledged that it was beyond the scope of the current study to measure all relevant variables affecting Indigenous school education engagement, as to do so would require more

than one doctoral thesis. Those variables that were identified for measurement, were chosen based on their expected contribution to student education choices and the ease with which they could be ethically and reliably measured.

In order to determine whether the measured variables did in fact fit the proposed taxonomy and model structure, it was necessary to determine any underlying structure apparent in the measured variables. Factor analytical methods were chosen to this end. The following chapter explains the methodology employed in this thesis in light of the literature review, and describes the empirical methods employed to answer the research questions.

## Chapter 3. Methodology and Research Design

### 3.1 Introduction

The literature review presented in Chapter 2 suggested a large number of potential factors, at the level of the individual, school, family and the community, which combine to affect school attendance and completion. The research questions guiding the current study required that these variables be measured by assessing student perceptions of their experiences. Developing a valid survey instrument, which would provide reliable measures of student perceptions regarding school, was thus a major achievement of the current thesis. Furthermore, an identified aim of the present thesis was the development of a model that explained the interrelations between variables, evaluated the appropriateness of categorising these variables within the five Domains of Social, Home, School, Individual and Perceived Benefit of Education identified in the literature review, and evaluated the unique contribution of these variables to student education engagement. The Revised Factor Model which was created during analysis, was a second key achievement of the current study.

In Chapter 1 section 1.4 Theoretical Framework, an argument was presented for the use of quantitative methodology whilst maintaining a paradigm respectful of Indigenous epistemologies. The methodology section of the current chapter continues the case for the use of quantitative methodology within a social science study, with its focus on perceptions and human experience. This is followed by presentation of the rationale for the design of the current study, the sampling method, participants and analysis. Detailed discussion of the development and validation of the survey instrument is set aside until Chapter 4, where the process is presented in full.

### 3.2 Methodology

Researchers debate the most appropriate methods to use in the social sciences. It can be argued that just as last century's rapid advancement in the field of medicine is due to the historically recent innovation of evidence-based research, then the lack of rapid advancement in social policy in education is due to the scarcity of evidence-based research in this field (Silburn & Capretis, 2011). Hunter (2010) states that the avoidance of social experiments is unethical because it results in a paucity of rigorous research evidence to support policy decisions,

however, the research questions of the present thesis are better answered by a correlational study and questionnaire design. Yet, it remains the case that current engagement strategies, supported by anecdotal rather than empirical evidence, in some cases have actually added to psychological distress of recipients (Dudgeon et al., 2012) and resulted in negative consequences. The lack of empirical research in Aboriginal education policy (Purdie & Buckley, 2010) could provide a plausible explanation for the intransigent Gap between Aboriginal and non-Indigenous outcomes in contemporary Australia (O'Keefe, Angus, & Olney, 2012; Zubrick et al., 2006). This being said, the application of Western understandings to Indigenous-specific constructs without sufficient Indigenous-led interpretation, can result in ineffective measurement tools, and ambiguous findings that also limit the production of new knowledge (Bodkin-Andrews & Carlson, 2014).

There are valid reasons for the resistance to quantitative methodology in education, even without the tensions inherent in cross-cultural studies. Qualitative approaches allow for a depth of understanding of student attitudes, essentially an insight into emic knowledge of student perspectives (Creswell, 2008). The richness of student self-concepts cannot be easily measured by quantitative tools, and the disjuncture between etic and emic knowledge which so typically exists in inter-cultural research provides a valid argument for the use of interviews, open-ended questions or observations in the current study (Creswell, 2008; Guba & Lincoln, 1994). It would be irresponsible to presume that a quantitative researcher from an outside culture could create a complete measurement of student attitudes (Guba & Lincoln, 1994), and yet, such research can still contribute to new knowledge by developing a model to be further explored by Indigenous and non-Indigenous researchers (Jones & Jenkins, 2008).

The decision to focus on development of an empirical model is not a reflection of researcher bias against the validity of Indigenous epistemologies (Walter & Andersen, 2013), but is made in response to the clear call in the literature for a high-quality and empirical foundation to policy on Indigenous education (Biddle, 2014; Bodkin-Andrews, O'Rourke, & Craven, 2010; Mellor & Corrigan, 2004; Purdie & Buckley, 2010; MCEEDYA, 2010). Currently, the bulk of research into Indigenous school engagement has been qualitative. The present study aims to fill a gap in the knowledge by providing a quantitative measurement of student perceptions of education engagement strategies within the school environment. Such research can provide a synthesis of currently localised anecdotal knowledge and allow practitioners a more global view when making strategic choices (Creswell, 2008). Nonetheless, the post-positivist paradigm of the researcher in this study allows that qualitative methods can provide a richness of knowledge beyond what is demonstrated by numbers and statistics (Creswell, 2008). For this reason, a

mixed-methods approach was chosen. A parallel mixed-methods approach was utilised in light of time and budget constraints on collecting data from schools across the large state of Western Australia, i.e. to prevent the necessity of two trips to each school. This had the added effect of reducing workload for the school as well as the researcher. The development of an empirical model is founded in the (mostly qualitative) literature, and quantitative data was collected and analysed in parallel with interviews of student and staff perspectives.

The strength of the mixed methods approach comes to the fore in the transformative paradigm of critical theory (Cohen, Manion, & Morrison, 2011). Such a paradigm requires that the researcher demonstrate personal race reflexivity while investigating the methods by which social hierarchies of repression and dominance become entrenched, and aims to empower the powerless individual (Parker & Roberts, 2005). Under critical theory, this research must retain at its core a driving intention to contribute to the emancipation of Indigenous Australians (Cohen, Manion, & Morrison, 2007).

### 3.3 Research Design

The current thesis pursued dual aims of constructing a model that explains education behaviours, and creating rich understanding and accurate interpretation of those behaviours. A large number of variables were identified in *Appendix A – Antecedents to Survey Constructs*, for measurement in this study. These variables were to be measured individually, and also as part of the overarching Domains of Social/Community, Home, School, Individual, and Perceived Benefit of Education. Hence the thesis required development of a survey instrument, which could be used to reliably quantify student perceptions and experiences of the variables in *Appendix A*. Where it was possible to gain further information through publicly available data, these factors were included to add breadth to the model.

The research was designed as a quantitative study utilising a group-administered questionnaire to measure student perceptions, backed up with some short informal interviews of students as well as the principal or another nominated staff member at each of the participating schools. The decision to measure the efficacy of school engagement strategies (e.g. access to role models, homework help, cultural safety) through the lens of student perceptions was deliberate in light of critical theory. Munns, Martin, and Craven (2008) recommended that schools should actively examine whether Indigenous students believe themselves to be pastorally and academically supported in their curricular and extra-curricular experiences. With this mindset,



student perceptions became a useful measure of the effectiveness of school engagement strategies.

### 3.3.1 Instruments

Previous researchers have developed or validated tools that measured Indigenous students' academic and general self-concepts (Bodkin-Andrews, Craven & Marsh, 2005), educational aspirations, parental support for education, experience of career advice and school enjoyment (Craven, Tucker, Munns, Hinkley, Marsh & Simpson, 2005; Godfrey et al., 2001). Yet, the current study presented two issues which highlighted the need for new measures to be developed.

The first consideration, was that of the unique cultural and social demographic of the sample chosen for the present research. Bodkin-Andrews, Ha, Craven and Yeung (2010) reiterate that due to the diversity and heterogeneity of Indigenous populations across Australia, psychometric validation of an instrument for one population should not be automatically considered to apply to all Indigenous Australians. The sample chosen for this study, entirely from Western Australia, included a large portion of boarding students from Australia's remote Northwest, with ensuing strong cultural ties to language, law and traditional practices of these areas.

Furthermore, *Appendix A – Antecedents to Survey Constructs* identified a large number of constructs for which no previous scale was identified in the literature (e.g. awareness of available employment pathways, exposure to role models, provision of study assistance, etc.). Therefore, the first major requirement of this thesis, was the development of a valid measurement tool. This tool was designed to collect some basic demographic data, as well as to elicit students' perceptions of the effectiveness of various school engagement strategies, their knowledge and aspirations of available post-school pathways, and their perspective of the utility of education within their own context. More sensitive data, for example, information on teacher quality, academic achievement, household overcrowding, household poverty, student disability status, or dysfunctional family life were not gathered, although it is known that such factors have a significant impact on educational engagement (Craven, Bodkin-Andrews & Yeung, 2007; Hattie, 2003; Lamb et al., 2004). Such variables were left out of the model due to the difficulty in ethically obtaining accurate information about the respondents within the scope of this study. It is recognised that such factors create 'noise' in the data and are responsible for a component of error in the final model. There is a risk that the effect size of these missing variables may in fact be greater than that of the variables included in the study. Further error could have resulted from confounding variables such as teacher and student interpretation and interaction during

survey administration, school-based seasonal factors, cultural differences in item comprehension, and random aberrations (Seltzer & Rose, 2011).

Chapter 4 of the current thesis records the development, administration, and validation of the survey instrument, the Multi-dimensional Student Perceptions of School Questionnaire (MSPSQ), from conceptualisation through to analysis of survey reliability and validity. The mixed methods approach required the development of an interview schedule for use with school leaders, and for a schedule to use with students. The design of these schedules, as well as procedure and analysis for qualitative data collection, are presented in Chapter 9.

### 3.3.2 Ethics

Approval for the current thesis was granted by Edith Cowan University's Human Research Ethics Committee in 2013. All three school sectors, (Government, Catholic and Independent) were approached for ethics approval for the study. Initial approval was granted by the Catholic Education Office in September 2013, and the Association of Independent Schools of Western Australia (AISWA) advised that individual schools would need to be contacted for research approval. The Department of Education and Training (DET) had a longer ethics approval process, and data collection for the thesis was completed by the end of 2014, prior to any decision being made by the DET human research ethics committee.

The ethics process for the survey involved schools then sending information letters to students and their parents offering the option to opt-out, prior to the day of survey administration. On the day of survey administration, school leaders and the researcher verbally instructed students that the survey was non-compulsory, and that they could retract consent for use of their data at any time. Surveys were conducted without collection of any identifying data.

For interviews, active consent was obtained from students, as well as from parents or guardians where students were less than sixteen years of age. A combination of snowballing technique and self-selection were used to identify students and appropriate school leaders for participation in interviews.

### 3.3.3 Sampling method

Tabachnick and Fidell (2001) state that for factor analysis to be valid, there must be a ratio of at least five observations to each variable. When the number of constructs in this study were considered, there was a demand for no less than 150 Indigenous respondents. Additionally, it is estimated that the population of secondary-school aged Indigenous Australians living in rural

areas is just over 30 000.<sup>1</sup> To obtain generalizability to a population of 10 000 or larger, 370 responses would be required (Bartlett, Kotrlick, & Higgins, 2001). Additionally, as discussed in 3.3.1 Instruments, Aboriginal and Torres Strait Islander language groups and communities across Australia are diverse and heterogeneous. As such, conclusions from this study should be generalised only to the Western Australian population from which the sample was drawn.

Consistent with the research questions, the target population for this study was Indigenous secondary students, male and female, in Year 8 – 12, in Western Australia. For the purpose of comparative analysis, data was also collected from non-Indigenous secondary students in the same year groups at most participating schools. Within the Catholic and Independent sectors, all schools that offered Year 11-12 curriculum, and had at least 20 Indigenous secondary students enrolled, were contacted to ascertain interest in the study. Contact was made with both school principals and with Indigenous Program Coordinators, where these existed. These school leaders then self-selected participation in the study.

The inclusion only of students from Catholic and Independent schools in the study is acknowledged as a source of bias, although indications from school leaders and students themselves was these students were not from economically advantaged families. It is further acknowledged that chronic non-attenders are likely to be missing from this sample, and results regarding school engagement may not be generalizable to this group.

Participant schools accurately reflected the diversity of socioeconomic status in Australia. The Index of Community Socio-Economic Advantage (ICSEA) statistics for each school, as reported by the Australian Curriculum, Assessment and Reporting Authority (ACARA, 2013) ranged from a low of 899 to a high of 1203, with a mean of 1018 and a standard deviation of 96. These statistics closely mirrored the spread of Australian schools overall, with a mean of 1000 and standard deviation of 100 on the ICSEA scale.

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<sup>1</sup> *From the Australian Bureau of Statistics' most recent comprehensive data on the Indigenous population (2015), approximately 44% of Indigenous Australians live in regional areas. It is estimated that secondary students are approximately 13% of the Indigenous population, based on statistics showing that 10-14 year-olds comprise approximately 14% of the Indigenous population, and 15-19 year-olds comprise approximately 12.5% of the Indigenous population. The Indigenous population is predicted to be 2.5% of Australia's total population, which in 2013 stood at approximately 23 million. From this data, it would be expected that the total population of Indigenous students in Year 8-12 (calculated as 13% of the demographic) living in regional areas, would be approximately 32000.*

### 3.3.4 Method of data collection

The initial collection of data for the pilot questionnaire was conducted during Term 1, 2014 with analysis completed by early Term 2, 2014. After this stage, the survey instrument having been further refined, the full study was conducted in Term 3 and Term 4, 2014. The researcher travelled to each participating school to administer the surveys, spending up to two days in each school. Data were collected in the following order.

1. MySchool website and Australian Bureau of Statistics

Information was gathered during 2013 regarding the percentage of Indigenous students in prospective schools, ICSEA for each school, as well as the unemployment rate and tertiary education rate of the local geographic region of each school.

2. Informal Interviews with school leaders

Once approval had been obtained from the Principal of each school, the Principal or nominated other staff member such as Deputy Principal or Indigenous Program Co-ordinator was interviewed in a semi-structured manner to ascertain school perspectives on the successfulness of various engagement strategies on increasing student attendance, retention and post-school aspirations. In the case of some schools, this initial interview was conducted over the telephone. Information was gathered on the program feedback and evaluation methods utilised within the school.

3. Student Survey

Following the school leader interview, dates were set for administration of the MSPSQ student survey. Students completed the survey in school computer labs within class groups with both a teacher and the lead researcher present. In some schools, issues with Internet availability resulted in students completing a hard copy of the survey, later entered into Qualtrics by the researcher. The online survey was conducted using Qualtrics software. Chapter 4 records the sources and handling methods for missing data, as well as validation of the survey instrument.

4. Student Interviews

Student interviews were conducted within the same two-day period in which the survey was administered at each school. All interviews were conducted by the author, with individual students or with small focus groups. The interview method is discussed in detail in *Section 9.2.2*.

### 3.3.5 Participants

Respondents to the survey attended schools in the Catholic (n =278) and Independent (n =258) sectors. For nearly all respondents, enrolment at their school required fee payment, scholarship

application, and/or family support for the choice of a private school education. In the survey, 207 students reported that they lived in a boarding house, 293 students reported that they were day students, and 36 students did not report their residential status. The geographic home regions from which the largest numbers of respondents came were, in order of size, the Midwest (n = 147), the Kimberley (n = 124), Perth (n = 53), and the Wheatbelt (n = 42). The proportion of respondents, by ethnicity and geographic home region, is presented in *Table 1: Percentage of respondents from geographic home region*. Data on students' geographic home region was not collected during the pilot stage.

**TABLE 1: PERCENTAGE OF RESPONDENTS FROM GEOGRAPHIC HOME REGION \***

	Kimberley		MidWest		Perth		Other	
	Indigenous	Non-Indig.	Indigenous	Non-Indig.	Indigenous	Non-Indig.	Indigenous	Non-Indig.
%	16.8	6.6	3.0	24.8	4.3	5.7	7.0	10.6
n	90	35	16	133	23	31	38	57

The study consisted of an almost symmetrical proportion of students by age and Indigenous status, and a small majority of female students by gender, for the 93.6% of respondents who provided full demographic information. 3.6% of students did not report their Indigenous status, 2.6% did not report their gender, and 5.1% did not report their school Year group. This data is presented in *Table 2: Percentage of respondents by school year, Indigenous status and gender*.

**TABLE 2: PERCENTAGE OF RESPONDENTS BY SCHOOL YEAR, INDIGENOUS STATUS AND GENDER**

	Indigenous		Non-Indigenous		Total	Total
	Female	Male	Female	Male	%	n
Year 8	5.1	3.4	0.1	0	8.6	46
Year 9	8.5	2.5	6.4	8.7	26.1	140
Year 10	7.2	3.8	7.6	4.9	23.5	126
Year 11	6.4	3.4	6.8	6.2	22.8	122
Year 12	2.6	2.6	4.9	2.5	12.6	68
<b>Total</b>	29.8	15.7	25.8	22.3	93.6	502

### 3.3.6 Analysis

Data analysis occurred in stages (Oppenheim, 1992) using SPSS and AMOS software. Firstly, the Factor Model identified in the literature review was explored using Factor Analysis so that the appropriateness of the overarching constructs, and the interrelationships between these constructs, could be determined. Factor analysis reduces a large number of constructs to a

smaller set of latent variables (factors) and provides a useful measure of construct validity for self-reporting scales (Williams, Brown, & Onsman, 2010).

An exploratory factor analysis (EFA) was used to determine whether the initial Domains were an accurate and parsimonious reflection of the latent constructs suggested in *Appendix A – Antecedents to Survey Constructs*. EFA was chosen at this point because it is heuristic and investigative, and requires the researcher to make fewer assumptions about pre-existing relationships between variables (Sharma, 1996; Williams, Brown, & Onsman, 2010). EFA did in fact reveal seven latent constructs that while similar to the originally suggested Domains, were sufficiently different as to result in development of a Revised Factor Model. This Revised Factor Model was corroborated by a confirmatory factor analysis (CFA) and used to build a structural equation model explaining the associations between the newly identified Factors affecting the perceived benefit of education, and perceived importance of school attendance and completion, for Indigenous and non-Indigenous students. Differences between these two ethnic groups in Item-to-Factor correlation were also identified at this point.

After Factor Analysis, the research questions were explored using multivariate and univariate analysis. As these analyses rely on assumptions such as random sampling and continuous data which are not the true case in most social science research, including the current study, inferences should only be made through interpolation, not extrapolation (Babbie, 2007).

The first Research Question identified in Chapter 1, section 1.3 Research Questions, was posed to investigate high-inference evidence regarding the link between students' education choices and their perception of the benefit of education. Pearson's correlation coefficient was an appropriate quantitative method to identify the strength and direction of a bivariate relationship between the independent variables, both at an individual, and latent construct, level (Cohen, Manion, & Morrison, 2007; Gravetter & Wallnau, 2009).

The second Research Question identified in Chapter 1, section 1.3 Research Questions, sought to quantify the relationship between engagement strategies, student contexts, and students' perception of the benefit of education. In this thesis, students' perception of the benefit of education was measured through student perspectives of the impact of schooling on future career and economic prospects. These relationships were first measured through Pearson's correlation coefficient, however there was an additional need to determine the unique contribution of multiple engagement strategies, towards student perceptions of the benefit of education. Oppenheim (1992) recommends that when researching a well-understood domain, but the researcher has no power over events, then a multivariate regression analysis is an

appropriate analytical survey design. Hence, correlational sequential multiple regression analysis was conducted to evaluate the combined contribution of multiple independent variables to students' education choices (Martin, 2012). It is acknowledged that the use of a correlational design limits the findings to *whether* an engagement strategy may relate to improved school engagement, rather than how, why, and in what direction causality lies (Gravetter & Wallnau, 2009). Nevertheless, the resultant findings explained a significant portion of the variability in student perceptions of the importance of school attendance and completion.

### 3.4 Summary

The current thesis contained five major stages of analysis, four of which were quantitative, and one qualitative. Firstly, the survey instrument was developed and validated, a process described in detail in Chapter 4. Secondly, the usefulness of the initial Domains in describing the latent constructs underlying student education experiences were examined using factor analysis. The results of exploratory and confirmatory factor analysis are presented In Chapters 5 and 6, along with the Revised Factor Model which was developed. Following the confirmation of latent constructs, bivariate and multivariate methods were used to explore the two guiding research questions, as well as subsidiary questions in Chapter 7. Finally, the newly identified Factors and their included variables were explored through univariate analysis in order to explain differences between Indigenous and non-Indigenous students which were identified within the Revised Factor Model. The results of this univariate analysis are presented in Chapter 8. After quantitative analysis was complete, the findings were corroborated and explored through the qualitative analysis of interviews explained in Chapter 9, before all results were collated for a final discussion of the research questions in Chapter 10. The thesis ends with implications of the research findings, and recommendations for future research in Chapter 11.

## Chapter 4. Development and Validation of the Multi-dimensional Student Perceptions of School Questionnaire

### 4.1 Introduction

Many of the constructs at the heart of the current thesis consist of student experiences and perceptions. Student recollections of experiences constitute a type of concrete data, but perceptions are more abstract, and measuring perceptions reliably requires theoretical grounding and attention to issues that could impair reliability and validity of survey items. An ideal instrument would be feasible and free from bias, and produce data that are valid, reliable, accurate, and rich. This chapter describes the process by which the survey was created, piloted, and analysed for validity and reliability.

In the first section *Development of items for the Multi-Dimensional Student Perceptions of School Questionnaire*, the decision process for creation and inclusion of survey questions (items) is explained. Following this, the administration and validity analysis of the pilot phase is described under the heading *The Pilot Phase*. The third section, *The Second Phase*, describes the administration of the final version of the MSPSQ instrument and analysis of the internal consistency of survey items.

All further analysis in this thesis described in the following chapters, required that the underlying constructs behind individual survey items be formed into latent variables. Exploratory factor analysis was conducted to inform the decision process for the creation of latent variables for the final model. This process is described in the section 4.5 *Creation of Latent Variables*. A full list of the latent variables used in analysis for the current thesis is provided in section 4.5, *Table 8*, at the end of this chapter.

### 4.2 Development of Items for the Multi-Dimensional Student Perceptions of School Questionnaire (MSPSQ)

De Vaus (2014) recommends that attitude measurements should not be written until preliminary in-depth interviews have been conducted to better conceptualise the attitude to be measured. The vast weight of studies investigating student attitudes towards school (Bodkin-Andrews et al., 2012; Craven et al., 2005; Hayes et al., 2009; Helme, 2010; Munns & Parente, 2003) were deemed by the researcher to stand in place of the interview process, as many of the attitudes to be measured represent well-formed constructs in the literature. The boundaries and



description of these constructs have been elucidated in *Appendix A – Antecedents to Survey Constructs*. The next section examines the validity of the MSPSQ in light of instrument development theory and the thesis scope.

#### 4.2.1 Considerations for developing a valid and reliable instrument

Validity encompasses a range of principles regarding the extent to which an instrument measures the intended construct. DeVellis (2012) and Creswell (2008) explain that a test instrument should be measured against three types of test validity; criterion, construct and content. Each is discussed here in relation to the development and administration of the MSPSQ.

##### Improving criterion validity when measuring attitude: A theoretical framework

Criterion validity is the extent to which the measure reflects actual outcomes. In particular, did actual student attendance, Year 12 retention and decision making regarding post-secondary pathways reflect the *intentions* reported in the study? In view of the difficulty inherent in assessing criterion validity within the confines of this study (i.e. without collecting longitudinal attendance and retention outcomes), the researcher relied on the application of behavioural theory to guide item development. Ajzen (2005), found that specific attitudes (towards specific behaviours) do correlate strongly with specific measurable behaviours. Hence, it would be expected that in the survey instrument, generic questions such as “Do you like school?” would have much weaker correlations to actual behaviour than would specific statements e.g. “Will you complete Year 12?”. For this reason, most questions were framed to measure specific attitudes and intentions, so as to improve the likelihood of criterion validity.

##### Improving construct and content validity when measuring attitude: A practical framework

Whilst criterion validity is concerned with the accuracy of an instrument, construct and content validity are concerned with the breadth and richness of the instrument. Content validity is perhaps the most straight-forward of the three types of test validity, requiring only that the instrument measures the content it is intended to measure. Creswell (2008) advises that this type of validity is obtained by the use of an expert panel and clear planning in the item development phase. Survey items were supported by the literature, and careful consideration paid to the wording of items and their response options. Such strategies increase the likelihood that items measure the constructs that they are intended to measure and minimise confounds. The process utilised for the current thesis is described below in the Section 4.2.2 ‘Decision process for item development’ and Section 4.2.3 Consultation Process for Item Development.

Construct validity ensures that items measure the construct they are intended to measure, and is usually tested by measuring correlation with other instruments that are intended to measure related constructs (Cohen, Manion, & Morrison, 2007). It was considered that because of the MSPSQ's length (102 items in the Second Phase of data collection), coupled with respondent literacy rates, and time constraints within secondary schools, deliberate addition of other scales for the purposes of validity testing would have likely contributed to survey fatigue and attrition of respondents, and in fact reduced survey reliability and validity. As a compromise, complex constructs were measured by between two and four items, to improve the chances of construct and content validity being present. It is acknowledged that further use of the MSPSQ would be analytically strengthened by additional validation methods, such as those described above.

Additionally, the provision of response options that reflect the circumstances of respondents is an important part of creating an instrument with construct validity. A decision was made to measure attitude items on a five-point Likert-type scale of two forms, depending on the question wording (Strongly disagree, Disagree, Don't know, Agree, Strongly agree; or Never, Rarely, Sometimes, Most of the time, Always), which provided measurement of both the direction and strength of respondents' attitudes (DeVellis, 2012). The decision to include a neutral response was considered important to allow for students who were not confident of the intended meaning of an item. An additional benefit of this scalar response provision was that it allowed for response categories to be coded as intervals for the purpose of regression analysis (Creswell, 2008).

### Statistical measures of reliability

The above discussion on validity explains the considerations that were involved in measuring the constructs accurately. A related and equally important concept is that of reliability, that is, whether the instrument provided consistent measures of the constructs under consideration.

The concept of reliability is based on the assumption that respondent attitudes are well-formed and crystallised at the time of measurement, and hence would result in consistent responses across similar survey items (De Vaus, 2014). In reality, student responses may be affected by their mood or recent experiences. This threat can be ameliorated by the choice of a large and diverse sample of respondents (Oppenheim, 1992). In addition, Oppenheim (1992) notes that reliability can be affected by a respondent's intentional dishonesty. Typically, this is addressed through the use of complex questions, and multi-directional response options. In the case of the current study, the possibility of acquiescence bias or deliberate dishonesty was weighed against the literacy levels of the respondents. The researcher decided that the risk of survey fatigue and

missing data caused by complex item-wording outweighed the risk of dishonesty due to social desirability factors.

The scope of the current study did not allow for a test-retest, so reliability was measured by proxy through internal consistency analysis after data had been collected (Cho & Kim, 2014). Where the MSPSQ measured the same construct through multiple items, internal consistency testing was used to assess the homogeneity of the instrument by testing inter-item inter-relatedness, or saturation of a general factor, across the tested items (Cho & Kim, 2014; Creswell, 2008). These results are reported later in this chapter.

Of overall importance for survey reliability, was the fact that this instrument had to be readily understood by both Indigenous and non-Indigenous secondary students in urban, remote and rural settings in a range of Australian schooling environments. That is, the instrument needed face validity for respondents. To aid in this likelihood, where possible, a detailed consultation process was used in development of the survey items. The survey instrument was written to be suitable for secondary school students with a reading age of eleven years, as tested through the website SmogReadability.

Bodkin-Andrews, O'Rourke, Grant, Denson, and Craven (2010) raised the important question of whether researchers should assume that Indigenous and non-Indigenous respondents interpret survey items and, indeed, latent constructs, in similar ways. This point was interrogated post-hoc through the use of factorial invariance testing, and difference-in-mean testing, reported in Chapter 6 and 7 of the current thesis.

#### 4.2.2 Decision process for item development.

The preceding discussions of validity and reliability provided criteria for the development of a survey instrument that could provide efficient and useful measures of the required constructs. The established criteria were:

1. The instrument should be short enough for most students to complete in up to twenty minutes.
2. The instrument should be easy to read and comprehend, in line with a minimum reading age of eleven years.
3. The instrument should measure constructs that were well framed and supported by the literature; and
4. The instrument should not contain any wording that might introduce ethnic prejudice or differences of construct comprehension between Indigenous and non-Indigenous, or between rural and urban students.

Following the path set by Macnab, Bakker, and Fitzsimmons (2005), certain criteria were applied to ensure consistency and efficiency of item development:

1. Items should be of apparent relevance to students.
2. Items should target specific attitudes and behaviours, wherever possible.
3. Each item should target one component of a single construct.
4. Constructs that were composed of multiple traits would be tested through multiple items. Constructs that were composed of a single trait would be tested through a single item.
5. Items should not confound respondents by introducing jargon, or by alluding to multiple constructs; and
6. Items should provide a five-point Likert-type scale for responses to allow for differences in strength and direction of response.

#### 4.2.3 Consultation process for item development.

Based on the criteria above, an initial pool of 167 potential items was developed, with a minimum of four per construct. Within the constraints of the current study, the most suitable way to determine which of these items should be selected for piloting was through consultation with a panel of experts. This panel consisted of an experienced Psychology researcher, an Aboriginal researcher, two Education researchers, and a small focus group of high school students ( $n = 18$ ). The input of these four consultative groups is detailed in the following paragraphs.

The first consultants were the Psychology and Education researchers, who had expertise in the field of developing survey instruments. The merits of all possible survey items were discussed, and those that were considered likely to confound the respondents were removed or re-worded. In addition, these experts identified those items that were likely to bias survey participants towards a particular response, and these were removed. At this point it remained unknown whether Indigenous survey participants would interpret items in the manner intended by the non-Indigenous author.

The cultural suitability of item wording was then discussed with an Aboriginal academic. This discussion covered topics such as the use of the terms 'respect', 'family' and 'Indigenous', which have different meanings to different culture groups. A decision was made to remove the term 'Indigenous', and instead use 'Aboriginal or Torres Strait Islander', in line with Western

Australian norms. The word 'respect' was retained, although Aboriginal and non-Indigenous respondents might have slightly different interpretations of the term, these were thought to be similar enough for the intended construct. Also during this discussion, it became apparent that the non-nuclear definition of 'family' commonly used by Indigenous Australians might introduce hidden bias. For this reason, items which referred to students' perceptions of their family were edited to contain the explanation 'family means all the people who are related to you, even if they do not live with you'. This change was intended to lessen bias by directing all participants towards a non-nuclear construction of family. Yet it is possible that this change introduced a new bias, for if non-Indigenous respondents did not highly value the perceptions of non-nuclear family, their responses to these items may have had a lower correlation to the intended constructs.

After consultation with these researchers, the potential pool contained only those items that were considered culturally and methodologically appropriate by experts. It still remained to be determined whether these items would appear logical and relevant to the target population, secondary school students. For this purpose, two informal focus groups were conducted. The two groups consisted of non-Indigenous lower secondary day students (n=13) and Aboriginal senior secondary boarding students (n=5). The boarding students requested that the items regarding study arrangements be re-worded to read "In the boarding house...", as they felt marginalised by item wording that assumed they lived "At home...". This was a useful example of the necessity of testing the items with members of the target population (Cohen, Manion, & Morrison, 2007). Both of the student focus groups requested that comment boxes be provided. Although these were added, they were not used by the majority of respondents in the survey, and hence the data obtained did not contribute to analysis and findings reported in this thesis.

By the end of this consultation process, 102 survey items remained from the original 167<sup>2</sup>. From this point, only a large trial could determine whether each of these items met standards required for reliability, criterion, construct and test validity. The full Pilot Phase, with analysis of item suitability for measuring constructs in the research model, is described in the next section.

### 4.3 The Pilot Phase

Piloting of the initial 167-item survey instrument allowed analysis of construct validity, content validity, and internal consistency (Cohen, Manion, & Morrison, 2007). This section describes the

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<sup>2</sup> The 102-item pilot instrument is not included in the appendices to the thesis, for reasons of parsimony. Should the reader be interested, this can be sought by contacting the author.

aim and method of the Pilot Phase of MSPSQ survey administration. From there, it continues to analysis of missing data, bias and validity. The final, and most statistically involved, focus of the Pilot Phase was analysis of reliability of individual survey items, as measured by the internal consistency for each construct.

The total population of Aboriginal secondary students at private schools in Western Australia was relatively small. Therefore, a decision was made to limit the number of participants required for the Pilot Phase in balance of the potential pool of participants available for the full study. Four criteria were applied to the Pilot Phase.

The Pilot Phase should

1. Identify the usefulness and validity of each item in the measurement tool
2. Identify those items which should be removed from the survey
3. Limit the usage of participants from the target sample of Aboriginal school students
4. Be administered to as high a number of respondents as possible

#### *4.3.1 Participants*

Internal consistency testing, described later in this section, was used to address the first two criteria. In order to meet the third and fourth criteria, a split sample was chosen for the pilot. The Pilot Phase involved Aboriginal and Torres Strait Islander secondary students from Year 9 through to Year 12 ( $n = 80$ ; female = 50, male = 30) from three urban single-sex private schools, as well as a sample of first-year university education and psychology students ( $n = 144$ ; female=118, male=26), who were instructed to fill in the survey by reflecting on their high school experiences. This allowed the Pilot Phase to be sufficiently large as to allow factor analysis and internal validity testing of survey items.

#### *4.3.2 Addressing biases*

The intention of the pilot stage, with accompanying data analysis, was to test the validity of survey items for the target population. The secondary schools in the pilot phase represented demographically different sample groups, due to the schools' differing selection processes. The largest of the school samples ( $n=41$ ), was a private school that did not consider academic background or literacy in their enrolment process, whilst the other two schools had a minimum requirement for both these factors. All schools had a minimal requirement for financial contributions from parents, and students had been assessed as having a sufficient level of family social support to enable them to attend boarding school in Perth. The single-sex, private school

environment of the pilot schools presented an additional bias in terms of the educational experience of these students in comparison with the general school population.

The university students clearly represented a different subsample for a number of reasons. These students were older than the target population, had attended school during a different time period, were almost entirely non-Indigenous, and were unlikely to accurately remember all attitudes and experiences that they may have had during their secondary schooling. Secondly, this subsample consisted of those who had chosen to attend university and who could be assumed to represent a portion of the population who attribute future benefit to the pursuit of higher education. It was thought that the benefit of obtaining a large pilot sample outweighed the disadvantage of the sample's differences from the target population. After data were collected, this assumption was tested through Harman's Single Factor Score. The maximum variance explained by a single factor was 17%, which is < 50% required for Common Methods Bias to be evident (Mat Roni, 2014). It was thus concluded that inclusion of the university student cohort had not introduced excessive skew to the Pilot Phase. These results are displayed in *Appendix B - Common Methods Bias Analysis for Pilot Phase*.

#### *4.3.3 Instrument*

Materials included the 102-item pilot instrument, the information and consent letters for school principals, parents, and students (included in *Appendix C – Information, consent and FAQ forms for schools*) and the student interview schedule (included in *Appendix D – Interview Schedule for Pilot and Second Phase*). The information and consent letters informed participants of the purpose of the research, that their participation was voluntary, and that data collection would not be identifiable. The letters provided the contact details of the researcher, and the university's Research Ethics Officer.

The pilot instrument was prefaced with verbal and written instructions requesting that participants indicate the most appropriate response from the question options provided. Demographic information was sought including school year group, gender and Indigenous status.

#### *4.3.4 Procedure*

The survey was administered to all Pilot respondents over a five-week period in February and March of 2014. First year university students from the School of Education and School of Psychology and Social Science at the researcher's university were invited to participate in an online survey, with the incentive of a \$100 bookshop voucher prize draw. School aged respondents from two schools (n = 71) had the choice of completing the survey either online or

on paper in a group environment during the school day, in the company of the researcher and a school staff member. Respondents from the last school ( $n = 9$ ) completed the survey online and without supervision, after school hours. All online surveys were conducted through the ECU Qualtrics portal. Hard copies of this survey were printed directly from Qualtrics for those participants who wished to respond on paper.

### Collating and coding the data

Internal consistency analysis (through Cronbach's Alpha coefficient) required that variables were uni-directional. Hence, a number of variables were re-coded so that all item response options were numerically directed in ascending order. Care was taken to ensure these coding changes did not affect the actual record of responses collected from participants.

### Missing Values Analysis (MVA) on pilot phase data

A Missing Value Analysis was conducted, along with summary statistics, calculated separately for the Indigenous and non-Indigenous students. The result of Little's MCAR test for the Indigenous school students ( $n = 80$ ) was  $p = .249$ , and for the University students ( $n = 144$ ) was  $p = .420$ . Note that for both samples, Little's MCAR test is not significant, indicating that data were missing completely at random in both samples, and were unlikely to be a source of bias (Bennett, 2001; Cheema, 2014; Little & Rubin, 2001). In light of this, and as the number of missing data were low, values were not imputed at this point of data analysis. These missing value analyses are presented as *Appendix E –Missing Value Analysis and Univariate Statistics for the Pilot Phase*.

### Using Cronbach's Alpha coefficient as measure of internal consistency

Once the data had been cleaned, the instrument was tested for internal consistency. This occurred in two stages: Total Internal Consistency was evaluated as a measure of the instrument's overall content validity, then, the items used within each individual construct were evaluated for inter-item relatedness.

Cronbach's coefficient Alpha ( $0 < \alpha < 1$ ) is the most common statistical measure of internal consistency and reliability, although item-to-total correlation is also frequently used (De Vellis, 2012; Portney & Watkins, 2000; Streiner, 2003). Importantly, Alpha should be considered as a lower bound of reliability (Cho & Kim, 2014). The common cutoff of 0.7 implies that approximately 50% of the variance is shared between variables, although Cho and Kim (2014) argue that the minimum cutoff should be dependent on the level of decision-making required for the data. In exploratory research, they argue that 0.5 could be acceptable. Other authors



argue that 0.6 or 0.65 ( DeVellis, 2012; Cohen, Manion and Morrison, 2007) is the minimum acceptable value of Cronbach’s Alpha for an overall measure in exploratory research.

Given that the MSPSQ instrument was developed as an exploratory model, a minimum value of  $\alpha = 0.6$  was considered acceptable for internal consistency of items within a construct. Measures higher than 0.7 were considered good, and measures above 0.9 were considered to indicate that items were semantic variations of the same construct, and may be removed due to redundancy (Cho & Kim, 2014).

#### 4.3.5 Total internal consistency

The first aspect of testing was to check whether, as a whole, the instrument measured the same general set of constructs. Due to expected differences in homogeneity between the surveys taken by University and school students, the two data sets were analysed separately for internal consistency. All items that consisted of scale data were tested for Total Internal Consistency. Results are recorded in *Table 3* below. The total internal consistency analysis was satisfactory for the pilot survey ( $\alpha=0.69$ ), although as expected (due to the larger sample size), the sample of University students appeared to have a greater homogeneity than the school students in their responses.

*Table 3 – Total Internal Consistency analysis for pilot study, by Indigenous status*

	Indigenous school students	Non-Indigenous University students	Total
Cronbach’s $\alpha$	n = 70 $\alpha = 0.69$ (10 cases excluded <sup>a</sup> )	n = 120 $\alpha = 0.81$ (24 cases excluded <sup>a</sup> )	n = 190 $\alpha = 0.69$ (34 cases excluded <sup>a</sup> )
a. As missing values were not imputed at this stage of data analysis, cases with missing items were excluded from the total internal consistency analysis.			

Because of the gender and demographic differences between pilot schools, it was considered worthwhile to test the total internal consistency for each school. School A was a high socio-economic girls’ school with academic entrance requirements, School B was a low socioeconomic girls’ school without academic entrance requirements, and School C was a high socioeconomic boys’ school with academic entrance requirements. Results are recorded in *Table 4*.

*Table 4 – Total Internal Consistency analysis for pilot study for Indigenous student subsamples*

	School A	School B	School C	Total
Cronbach's $\alpha$	n = 5	n = 41	n = 24	n = 70
	$\alpha = 0.60$	$\alpha = 0.64$	$\alpha = 0.78$	$\alpha = 0.69$
	(4 case exc. <sup>a</sup> )	(6 cases exc. <sup>a</sup> )	(0 cases exc. <sup>a</sup> )	(10 cases exc. <sup>a</sup> )
<sup>a</sup> Listwise deletion was used, so cases with some missing items were excluded from analysis.				

At this stage it appeared that the internal consistency of the survey, or at least, certain constructs in the survey, may have varied for different subsamples of respondents. The total internal consistency for the Indigenous students was close to 0.7, and it was determined that the pilot survey had sufficient total internal consistency for research to proceed. The next stage of testing was to assess internal consistency for sub-scales within constructs.

#### 4.3.6 Validity of individual constructs

The instrument had been developed with between two to four items per construct. Internal consistency of these item subscales was measured using Cronbach's Alpha coefficient. Within each construct, the combination of items that gave the highest Cronbach's Alpha coefficient, whilst maintaining construct validity, was chosen for continuation to the next phase of the study. Items which decreased construct validity and internal consistency were removed or replaced<sup>3</sup>. Of the fifteen variables for which items were trialled in the Pilot Phase of the survey, four variables did not have any combination of sub-scale items which met the minimum requirement of a Cronbach's Alpha coefficient ( $\alpha > 0.6$ ) for the current study. Three variables satisfied the minimum ( $0.6 < \alpha < 0.7$ ), five variables measured internal consistency above 0.7, two variables varied by consistency between sample groups, and one variable was measured by single items only. This information is summarised in *Table 5*.

*Table 5: Summary of internal consistency analysis for Pilot Phase, by variable*

Domain and Variable	$\alpha < 0.6$	$0.6 < \alpha < 0.7$	$\alpha > 0.7^a$
<i>Domain - School</i>			
Positive School Culture – 3 items		0.66	
Promotion of Indigenous Culture – 3 items			0.99
Student Academic Self-Concept – 2 items			0.77
Student Self-Efficacy– 3 items		0.60	

<sup>3</sup> The full decision process for acceptance, deletion, or editing of survey items that did not contribute to the overall internal consistency of each construct at the pilot stage is available on request, but has not been included in the thesis submission as it is a lengthy additional document.

High Academic Expectations – 2 items	0.35		
Awareness of Employment Pathways – 2 items	0.41		
Exposure to Role Models – 2 items	0.25		
Provision of Study Assistance		Single item only	
Focused Transition to Employment – 4 items			0.71
<i>Domain – Individual</i>			
Post-school Aspirations – 2 items		0.68	
<i>Domain - Home</i>			
Access to Home Study Environment– 3 items	0.54		
Family Education Levels – 2 items			0.71
Collaboration with Family – 3 items		0.69 <sup>a</sup>	0.74 <sup>b</sup>
<i>Domain - Social</i>			
Social Support for Education – 6 items			0.78
<i>Domain – Perceived Benefit of Education</i>			
Perception of Benefit of Education – 2 items	0.14 <sup>a</sup>		0.71 <sup>b</sup>

<sup>a</sup>. Indigenous students only

<sup>b</sup>. University students only

#### 4.3.7 Conclusion of Pilot Phase

The aim of the Pilot Phase was to gather information on the suitability of the survey design, administration, and operationalization of constructs, in order to increase the likelihood that the instrument would be valid and reliable. Some compromise was required regarding the age of participants in order to obtain a sample large enough for internal consistency to be evaluated.

The Pilot Phase proved invaluable in identifying which of the survey items worked well, in terms of reliability and construct validity. The identification of item subscales that were internally consistent allowed the removal of extraneous variables and subsequent reduction of the total instrument size. The total internal consistency of the pilot survey instrument was acceptable, although it did vary between sample groups. For all variables where  $\alpha < 0.6$ , new items were trialled in the Second Phase of data collection. Note that the Second Phase was not a pilot, and hence, new items that did not pass validity testing in that phase were dropped from the research model.

For those five constructs which measured low internal consistency on the pilot items, an attempt was made to identify existing psychometrically sound scales in the academic literature. As a result, four new scales were identified as reference points, although only one had been previously used with Aboriginal respondents, and this had not been statistically validated. These scales were: *General Self-Efficacy Scale* (Jerusalem & Schwarzer, 1981), *Perceptions of their teachers by Aboriginal students*, (Godfrey et al., 2001), *Assessing Role Model Influences on Students' Academic and Vocational Decisions* (Nauta & Kokaly, 2001) and the *Career Values*

*Manual and User's Guide* (Macnab et al., 2005). Where no applicable scale was identified, new items were written based on the literature review. After this revision, the updated instrument contained 73 items, and was ready to be administered to a sample of the target population.

## 4.4 The Second Phase

In this section, the administration and validity analysis of the Second Phase of the MSPSQ survey instrument is described. The theoretical discussion of validity and reliability that was included in the Pilot Phase also underpinned analysis of the Second Phase and is not repeated here.

Following this discussion is the analysis of Common Method Bias and Total Internal Consistency for the full survey, along with presentation of results of internal consistency analysis for all variables, and a list of the final latent constructs used for analysis in this thesis.

The primary objective of the Second Phase was data collection. With 73 items to be tested, and up to five respondents required per item in order to conduct advanced statistics such as regression analysis, factor analysis and structural equation modelling, the goal of this Phase was to bring the sample size to over 500 secondary school respondents. The final total for the Second Phase was less than this ( $n = 449$ ), yet when this is added to the data collected from Indigenous secondary students during the pilot phase ( $n = 80$ ), a sufficient sample size for factor analysis was achieved ( $N=529$ ) (Cohen, Manion, & Morrison, 2007).

A second objective of the Second Phase was the validation of those items that had been added after the Pilot. The full instrument used during the second phase of data collection is presented in *Appendix F – Second Phase Survey*.

### 4.4.1 Participants

A total of eleven schools and 449 students (female = 256; male = 179; gender unstated or data missing = 14) attempted the survey in the Second Phase of data collection. At five of the schools, only Indigenous students were invited to participate in the survey, in accordance with the wishes of administrators at those schools. Of these schools, one was an urban boys school in a high-socioeconomic location ( $n = 4$ ), three were co-educational urban schools in low-middle socioeconomic location ( $n = 32$ ,  $n=23$  and  $n = 7$ ) and one was a co-educational, low-socioeconomic school in a regional location ( $n = 6$ ). At the other six schools, all students in the target year levels were invited to participate in the survey. Of these schools, one was co-educational, middle socioeconomic, in a regional location ( $n=170$ ), two were co-educational, low socioeconomic, in a regional location ( $n=69$ ,  $n=10$ ), two were co-educational, low socio-economic, in a rural location ( $n=77$ ,  $n=33$ ), and one was co-educational, low socio-economic, in a

remote location (n=18). For the purpose of the above descriptions, 'urban' is defined as a city, 'regional' is defined as a town (population < 50 000), 'rural' is defined as within one hour's drive of a small town (population > 10 000), and 'remote' as greater than one hour's drive from a small town. Each of these schools provided administrative support to the collection of consent forms, as well as time for the survey to be administered during the school day.

#### 4.4.2 Instrument

The materials for the Second Phase included the 73-item Multi-Dimensional Student Perceptions of School Questionnaire (included in *Appendix F – Second Phase Survey*), information and consent letters for school principals, parents, and students (included in *Appendix C – Information, consent and FAQ forms for schools*) and the student interview schedule Section B (included in *Appendix D – Interview Schedule for Pilot and Second Phase*).

#### 4.4.3 Procedure

The survey was administered to Second Phase respondents between July and December of 2014. As a token of thanks to the school communities which expended effort for the study, a prize draw consisting of a \$100 Woolworths voucher was allocated at random to three parents of participating respondents. In addition, a random prize draw of a \$20 iTunes voucher was allocated to one student from each school.

All students had the option of completing the survey either online through the ECU Qualtrics portal, or on a hard copy. The only exception to this was the remote school (n = 18), where Internet access and student literacy were limited. For this group, the researcher read out questions to students individually or in groups of two, and recorded oral student responses on to the paper survey.

#### 4.4.4 Cleaning the data

##### Collating and coding the data

Data from each of the individual school surveys were downloaded from Qualtrics and combined into a single SPSS spreadsheet. Of the 485 cases obtained in the second phase of data collection, 31 were defined by Qualtrics as "Unfinished Surveys". Reasons for students not finishing surveys included

- a) Internet troubles causing students to begin a survey online, and then switch to a paper version
- b) Students running out of time to complete a survey due to low literacy levels, and
- c) Students electing not to continue the survey.

The first reason was the most frequent, and occurred chiefly at non-urban schools. Students who made this switch had generally logged into the survey, but not completed any consequential part. A decision was made to delete all “Unfinished” surveys to ensure that those respondents who switched from the online to the paper version were not included twice. It is possible that due to this decision some unique data were also lost. Five further cases had > 40% missing data and were deleted, resulting in a total of 449 cases for analysis.

It was discovered that Qualtrics had not coded response options identically for questions that were in both the pilot and the second phase, due to changes in question order and wording. Response options were re-coded appropriately. To ensure that re-coding did not introduce error, a frequency distribution was run to verify that all values fitted within the expected range of coded values. Additionally, multiple response items had to be re-coded with individual dummy items, which resulted in the initial 73 survey items becoming 109 coded items in SPSS. Once the data were coded and cleaned, the causes of missing data were analysed.

#### Missing Values Analysis (MVA) on second phase data

An initial calculation for missing values for all respondents to the second phase survey (n = 449), for all 109 variables, is provided in *Appendix G – Missing Value Percentages by variable for Second Phase*. In each case where respondents had a much higher number of missing items than was the mean across all schools, the causes were able to be categorised as either Missing at Random or Missing Completely at Random, and did not jeopardise generalizability of the study findings (Bennett, 2001; Cheema, 2014; Newman, 2014). From *Table 6* below, it can be seen that on the 85 non-skip logic variables, only two had greater than 5% missing data. These items had sufficiently low percentages that the presence of missing values would not overly bias statistical results (Young, Weckman, & Holland, 2011).

*Table 6: Percentage of missing values for non-skip logic variables.*

Respondent Status	Number of variables in each of Young et al.’s categories		
	<5%	5 – 15%	>15%
Indigenous (n = 147)	83	2	0
Non-Indigenous (n = 254)	85	0	0

*\*Three respondents did not identify their Indigenous status. Forty-five respondents across three schools were advised to ignore certain questions (e.g. homework provisions, local employment provisions) that were not relevant to their school’s academic structure or geographic location.*

### Treatment of missing data

Although the number of missing data were low, both factor analysis and hypothesis testing tend to rely on a complete case analysis. Scholars agree that maximisation likelihood methods of data imputation are the most robust methods available when data are known to be Missing at Random, because they maintain accurate estimates of parameters, and have a strong statistical foundation (Bennett, 2001; Karanja, Zaveri & Ahmed, 2013; Newman, 2014). Expected Maximisation was therefore utilised to create a complete case data set for all analyses set forth in the current thesis.

Data were checked for monotone responses and other multivariate outliers using Mahalanobis for the fifty three interval variables, using a criterion of  $p < 0.001$ . No cases were identified as multivariate outliers.

At this point, the survey data were ready for validity testing. Internal consistency of items in this phase of data collection was again tested through the use of Cronbach's Alpha coefficient.

#### 4.4.5 Total internal consistency

As with the Pilot Phase, the consistency of the entire survey was measured first to ensure construct validity. Note that only scale variables could be included in this test. As discussed under heading *Treatment of missing data*, imputation by Expected Maximisation has minimal impact on correlation, and is unlikely to bias results (Newman, 2014). This was further assessed by comparison of Cronbach's Alpha coefficient for each construct on both the imputed data and the original data.

For the 65 scalar items, the Cronbach's Alpha coefficient was high ( $\alpha = 0.85$ ,  $n = 449$ ), which indicated that the Second Phase Survey had strong total internal consistency. The Alpha Coefficient was noticeably higher for the Second Phase survey than for the Pilot survey, which may reflect the deletion of poor performing questions, and also the larger sample size and semantic similarity between items.

Common Methods Bias was checked by conducting unrotated principal components analysis for scalar latent variables and extracting a single component. Harman's single factor score was 25%, indicating that a total of 25% variance can be explained through any single factor, hence Common Methods Bias was not a concern for the current study. These calculations can be found in *Appendix H –Common Methods Bias Analysis for Second Phase*.

#### 4.4.6 Conclusion of Second Phase

The previous section described the administration and total internal consistency analysis of the Second Phase of data collection. A number of new items were added for the Second Phase of data collection, and as well as testing whether the survey as a whole had acceptable internal consistency, it was appropriate to determine whether the constructs had between-item internal consistency. In the Pilot Phase, this analysis was based on the originally conceptualised item-to-construct structure. Although internal consistency testing was able to determine whether survey items did belong to the latent construct for which they had been written, it did not allow analysis of whether items were better suited to *other* constructs measured in the survey. With the larger sample size that was possible once the Pilot and Second Phase data were collated, an additional level of rigour was applied to validity testing of latent constructs, in the form of factor analysis.



## 4.5 Creation of Latent Variables

Many of the initial survey constructs detailed in *Appendix A* had been tested through multiple survey items in the MSPSQ instrument. The aim of so doing was to capture all aspects of given constructs, i.e. to increase the construct validity of the instrument. These items needed to be re-combined to form a single scalar measure of the identified latent constructs before univariate and multivariate analyses were conducted. One of the benefits of combining individual items to create a latent variable, is to 'smooth' measurement error (Speelman, 2013). Individual behaviour patterns can be erratic, with a significant amount of statistical noise. Summating items can reveal a more consistent underlying trend in the individual's attitude. Yet, Speelman (2013) cautions, the use of a latent variable, and the reporting of 'mean' responses, can give the impression that greater consistency exists in an individual's behaviour than is actually present. In this case, the size of the entire sample can reduce the relative error produced by the erratic nature of individual perceptions.

A principal component analysis was conducted with Varimax rotation so as to maximise variance between factors and distinguish individual constructs. Coefficients  $< 0.3$  were suppressed. KMO = 0.85 indicated that a sufficient amount of variance was explained by the factors (or constructs). Bartlett's Test of Sphericity was significant ( $p < 0.05$ ), indicating that the dataset was suitable for factor analysis (Tabachnick & Fidell, 2001). The results of this exploratory factor analysis (EFA) are presented in *Appendix I - Exploratory Factor Analysis to inform construction of Latent Variables*. In some constructs, EFA revealed that items across variables shared common explanatory factors. In these cases, the theoretical model was re-examined to ensure that any modifications reflected both the literature and statistical analysis. After the final list of valid items for each construct was identified, latent variables were formed using the arithmetic mean of all scalar items within the construct. An excerpt of this process is provided on the following page reflecting the rigour applied in this stage of analysis.

#### 4.5.1 Excerpt from analysis of Validity of Individual Constructs and Creation of a Latent Variable – Positive School Culture

Current questions	Question Code	Data Type
School makes me feel good about myself	PosSchClc2	Scale
I like school	PosSchClc4	Scale
I feel like I fit in at school	PosSchClc5	Scale
<i>Composite of items</i>		Scale
Because of [program name]:		
1) I feel happier at school	PROGPOSCULT	(Composite score out of 3)
2) I feel like I fit in at school		
3) I want to come to school every day.		
My teachers push me to do well in school	HAcExp4	Scale
Through school, I meet people who help me to make good choices in my life	RolMod6	Scale
At school, I have met adults who I want to be like	RolMod7	Scale

#### Discussion

This variable was originally written to contain items PosSchClc2, PosSchClc4, PosSchClc5 and PROGPOSCULT. These items showed internal consistency,  $\alpha = 0.79$  for EM data,  $n = 449$  and  $\alpha = 0.79$  for non-EM data,  $n = 384$ . The new item, PosSchClc5, was consistent with other items in the variable. The item PROGPOSCULT was only provided to Indigenous Scholarship respondents and referred specifically to Indigenous students programs. For this reason, the item PROGPOSCULT was removed from the construct and added to the item PRMINDCLT, a decision that was supported by the Exploratory Factor Analysis (see *Appendix I*).

Furthermore, under Exploratory Factor Analysis (see *Appendix I*), it became evident that items HAcExp4, RolMod7 and RolMod6 correlated positively with items in this construct. For this reason, the construct was re-interpreted. That is, while the Variable - Positive School Culture is concerned with the student's sense of belonging and value at school, it appears this is intrinsically related to the student's experience of positive relationships with teachers and other adults at school. After Pilot and Second Phase data were collated ( $N=366$ ,  $\alpha = 0.81$ ), the following latent variable was created for this construct:

*POSCULT*

$$= \frac{\text{PosSchClc2} + \text{PosSchClc4} + \text{PosSchClc5} + \text{HAcExp4} + \text{RolMod6} + \text{RolMod7}}{\text{number of valid responses}}$$

After latent variables were created, they were checked for normality. This analysis is presented in *Appendix J – Normality, skewness and kurtosis of interval latent variables*. All latent variables violated the assumption of normality as tested by Kolmogorov-Smirnov due to excessive skewness, kurtosis, or both. This skewness is expected because of the bias inherent in the sample. That is, the student sample chosen for this study was chosen because they represent marginalised groups; Indigenous students and students at non-urban schools. This is not surprising given that the respondent sample was chosen entirely from students studying at private schools, who had agreed to participate in the study. Those respondents who were more disengaged from school, and might have responded on the alternative extreme to most respondents, were less likely to participate in the survey. Given that the sample size is large, parametric tests are robust against violations of normality, and both parametric and non-parametric tests could be confidently utilised (Hair, 1998; Tabachnick & Fidell, 2014).

#### *4.5.2 Internal consistency analysis for individual constructs in full data set.*

Based on internal consistency and principal components analysis (detailed in the previous section 4.5 *Creation of Latent Variables*), some changes were made to the construct conceptualisation and item-groupings<sup>4</sup>.

*Table 7* on the following page summarises the internal consistency results for the full data set (Pilot and Second Phase combined).

Two variables did not reach the minimum acceptable level of Cronbach's Alpha ( $\alpha > 0.6$ ). The first, High Academic Expectations, was removed as it was thought to be poorly conceptualised. The second, Collaboration with Family, was retained, as it was thought that the low alpha value reflected the wide scope of the construct.

Ten of the combined-scale variables met the minimum requirement a Cronbach's Alpha coefficient ( $\alpha > 0.6$ ) sufficient for the exploratory nature of current study (Cho & Kim, 2014), and five variables had acceptable internal consistency ( $\alpha > 0.7$ ). Such results indicated the survey was a useful tool in measuring the perceptions and experiences of Indigenous secondary students with regard to individual, family and school levels of educational support and aspirations.

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<sup>4</sup> *A full discussion of the internal consistency results, and the decision-process on inclusion or removal of items for each survey construct, is available on request from the author. An excerpt of this discussion was presented in section 4.5 Creation of Latent Variables.*

Table 7: Summary of internal consistency analysis for interval variables

Domain and Variable	$\alpha < 0.6$	$0.6 < \alpha < 0.7$	$\alpha > 0.7$
<i>Domain - School</i>			
Positive School Culture <sup>a</sup> – 6 items			0.81 <sup>a</sup>
Promotion of Indigenous Culture – 4 items		0.62	
High Academic Expectations – 2 items	0.54		
Provision of Study Assistance – 2 items			0.77
Awareness of Employment Pathways <sup>b</sup> – 7 items			0.82
Exposure to Indigenous Role Models		Single item only	
Relationships with Staff		Single items only	
<i>Domain – Individual</i>			
Prior Aspirations		Single item only	
Student Self-Efficacy <sup>c</sup> – 7 items			0.82
<i>Domain – Home</i>			
Collaboration with Family – 4 items	0.56		
Access to Home Study Environment – 2 items		0.63	
Computer with internet		Single item only	
Family Education Levels		Single item only	
<i>Domain – Social</i>			
Family Support for Education – 3 items			0.73
Peer Support for Education – 3 items			0.73
<i>Domain – Perceived Benefit of Education</i>			
Future Aspirations – 2 items		0.62	
Perception of Benefit of Education – 4 items		0.61	
Importance of School Attendance and Completion – 3 items		0.64	

<sup>a</sup>. Variable RolModGen was combined with Variable Positive School Culture, as per exploratory factor analysis.

<sup>b</sup>. The variables “Awareness of Employment Pathways” and “Focused Transition to Employment” were combined, as per exploratory factor analysis.

<sup>c</sup>. The variables “Student Academic Self-Concept” and “Student Self-Efficacy” were combined as per exploratory factor analysis.

## 4.6 Conclusion of Survey Development

This chapter presented the theoretical and analytical considerations that guided the development, administration, and validation of the MSPSQ instrument. The instrument needed

to be suitable to Indigenous students and low literacy students in secondary schools in Western Australia, and measure the constructs in *Appendix A – Antecedents to Survey Constructs*. The instrument development was a necessary part of the current thesis, but not the sole goal of the research. Should the MSPSQ be used further, additional validity testing would be advisable. In particular, criterion validity could be measured by comparing student responses with actual behaviours over time, construct validity and social desirability bias could be measured by assessing responses against other scales measuring similar constructs, and reliability could be measured through a test-retest procedure. The survey instrument had good internal consistency and item constructs had a strong basis in the literature. The results of the analysis presented here suggest that the MSPSQ could provide a valid measure of student perceptions of schooling.

Finally, this chapter demonstrated the rigour applied to development of the latent variables, which were used for all further statistical analyses presented in this thesis. The full list of latent variables, their codes and their descriptions, is provided in *Table 8* on the following pages. After validation of constructs was completed, the next stage of analysis involved determining whether the original five Domains identified in the Dusseldorp model (Dusseldorp Skills Forum, 2009b) provided a statistically appropriate set of latent factors for the variables measured in this study. This was done using exploratory factor analysis on the newly created variables, detailed in the following chapter.

Table 8: Glossary of latent variables used in statistical analysis, grouped according to the a priori Domain model

Domain and Variable	Variable Code	Latent Variable Description
<b>Demographic Variables</b>		
Indigenous Status	Q97IndigStatus	Indigenous status of student. Coded 1 – Aboriginal or Torres Strait Islander, 2 – non-Indigenous.
Gender	Q98Gender	Gender of student. Coded 1 – Male, 2 – Female.
Year Group	Q100Yeargrp	School year attended by student. Proxy for age of student.
School Name	SchoolName	Identifier of school attended. Coded from 1 to 14.
Residential Status	Q125Boarding	Residential status of student. Coded 1 – Boarding student, 2 – Day student.
Home Geographic Region	GEOGHOME	Geographic region of Western Australia considered to be home by the student.
<b>Domain – School</b>		
Positive School Culture	POSCULT	The student’s perception of belonging and positive self-image at school, and experience of positive relationships with teachers and other adults at school.
Awareness of Employment Pathways, and Focused Transition to Employment	PATHDEV	Frequency and type of experiences provided by the school to develop students’ knowledge and skills for job-seeking, work readiness and career decision making.
Relationships with Staff	STAFFADM	Existence of particularly strong relationship with at least one staff member (Categorical)
Impact of Staff on School Attendance	STAFFATT	For those students that answered STAFFADM affirmatively, this item examined whether a student was more likely to attend school due to the above relationship
Perceived usefulness of Study Assistance	STUHELP	Frequency and perceived usefulness of study assistance provided by the school

Provision of Study Assistance	STUHELPAV	Existence of study assistance provided through school (Categorical)
Promotion of Indigenous Culture	PRMINDCLT	The student's perception that Indigenous culture was valued, understood and accepted at school.
Indigenous Academic Role Models	ROLMODINDEXP	Student perception that Aboriginal staff place importance on Indigenous students achieving academic success (Indigenous students only)
Mean School Attendance Rate by Indigenous Status	MEANATTINDST	Mean overall attendance rate, by Indigenous Status, for students in Year 1 – 10 in 2014 obtained from <a href="http://www.myschool.edu.au">www.myschool.edu.au</a> for each school.
School Socioeconomic Index	SCHSOCIND	Socioeconomic Index of School, as reported on <a href="http://www.myschool.edu.au">www.myschool.edu.au</a>
Tertiary Education Rate in School's Geographic Region	TEREDRATE	% Population in school geographic region, by Indigenous status, with post-secondary qualifications (Certificate, Diploma or Degree) for adults 15 years and over.
<b>Domain - Individual</b>		
Student Self-Efficacy	SSEFF	Student self-perception of their ability to control outcomes, and succeed in academic, career, and social endeavours.
Prior Aspirations	PREVASP	Students reported what their post-secondary aspirations had been when they started high school
<b>Domain - Home</b>		
Collaboration with Family	FAMCOM	Frequency and nature of communication between student's family and school staff
Access to Home Study Environment	STENV	Frequency of access to a quiet study environment and homework assistance at student's place of residence

Access to Computer with internet	COMPINT	Frequency of access to a computer with Internet for homework purposes at their place of residence
Family Education Levels	FAMED	Highest level of education obtained by any member of the student's family
<b>Domain - Social</b>		
Domestic responsibilities	FAMRESP	Frequency of school non-attendance due to domestic responsibilities
Family Support for Education	FAMSUP	Student perception of the importance their family members placed on school attendance, Year 2 completion, and employment.
Peer Support for Education	PEERSUP	Student perception of the importance their peers placed on school attendance, Year 2 completion, and employment.
Unemployment Rate in Student's Home Geographic Region	GEOGUNEMPRATE	Unemployment Rate for adults the student's home geographic region (statistical levels SA3 or SA4), by Indigenous status, identified from the 2011 Census (ABS)
Tertiary Education Rate in Home Geographic Region	GEOGTEREDRATE	% Population in student's home geographic region, by Indigenous status, with post-secondary qualifications (Certificate, Diploma or Degree) for adults 15 years and over.
<b>Domain – Perceived Benefit of Education</b>		
Future Pathway Intentions	FUTPLAN	Categorical variable describing student's post-secondary career or educational pathway intention
Future Aspirations	FUTASP	Student perception of the value of obtaining career status and a good income
Student Perception of the Benefit of Education	PERECBEN	Student perception of the income, career and life benefits of completing Year 12
Perception of the importance of schooling	SCHOOLIMP	Student perception of the importance of school attendance and Yr 12 completion
Motivation for School Attendance	MOTATT	Categorical variable describing most important reason for attending school



## Chapter 5 – Exploring the Factor Model

### 5.1 Introduction

In addition to the two guiding research questions, a key aim of this thesis was the development of a model describing the impact of the various measured constructs on students' educational choices. Such a model, when empirically validated, has the potential to guide public policy by identifying the relative weighting of family background, school experiences, individual aspirations and other important variables on Indigenous education outcomes. Although the literature review uncovered an existing potential model (Dusseldorp Skills Forum, 2009b), it remained to be investigated whether the a priori Domain Model was an appropriate fit for the constructs measured in the current study.

Three levels of variable measurement were utilised in the current study: individual items, latent constructs, and overarching Domains (or Factors). The latent constructs that were initially theorised within the Five Domain model, were detailed in *Appendix A – Antecedents to Survey Constructs*, and from these constructs, individual survey items were developed for the MSPSQ instrument. Although grounded in literature, this model needed to be explored for statistical validity before the research questions could be answered with accuracy.

The first stage of this exploration involved analysis of the items themselves, and validation (and refinement) of the latent constructs. This process was explained in Chapter 4 - Development and Validation of the Multi-dimensional Student Perceptions of School Questionnaire.

The next stage of the thesis involved exploration of the underlying Factors that explained variance in these latent constructs. The current chapter describes the factor analytic methods that were used to identify these Factors, and compares the newly revealed Factors with the Domains of the a priori Model. Finally, the new Factors were tested for difference in means by gender and Indigenous status, so as to explore whether these constructs operated differently between Indigenous students and non-Indigenous students, or between male and female students.

The exploratory factor analysis presented in this chapter began the process of refining current scholarly understandings of an appropriate behaviour model for Indigenous school engagement. The

model which was arrived at through EFA was further investigated through a structural equation modelling approach, presented in Chapter 6 of this thesis. Only after the Factor Model was confirmed, were univariate and multivariate analyses conducted in response to the guiding research questions.

## 5.2 Methodology and Method

Factor analysis is a statistical data reduction technique that is useful for identifying underlying constructs affecting different variables. Furthermore, factor analysis can identify the strength and direction of relationships between overarching Factors and measured variables (Tabachnick & Fidell, 2014; Williams, Brown, & Onsman, 2010), an important goal for model development in the current thesis.

Factor analysis can be exploratory (when no guiding model exists) or it can be confirmatory (requiring a hypothesis test of an existing model). Often when an a priori model exists, Confirmatory Factor Analysis (CFA) would be an appropriate choice to empirically test the validity of the model, however, in the present case, the a priori Domain Model, and the placement of constructs within this model, was not based on a quantitative model development process, nor did it identify relative weightings of the various Domains. The latent constructs identified in Chapter 4 had been placed within a proposed Domain Model based on the qualitative literature, hence, there did not exist sufficient grounds for a quantitative hypothesis test of the a priori Domain model. For this reason, exploratory factor analysis (EFA) was used to determine whether there existed overarching Factors that explained the latent variables measured in the current study, and if so, whether these Factors did in fact fit the five identified Domains of School, Individual, Home, Social, and Perceived Benefit of Education.

Even once the need for an exploratory factor analytic technique was decided, there remained the question of whether to use EFA, or the closely related method of Principal Components Analysis (PCA). Although EFA is similar to Principal Components Analysis (PCA), a key difference is that EFA attempts to identify shared variance between variables, whereas PCA attempts to explain all variance in the variables (Fabrigar & Wegener, 2011; Hair, 1998; Tabachnick & Fidell, 2014). That is, EFA is more theoretically appropriate when the aim is to identify and conceptualise underlying factors that explain correlation between groups of variables, whereas PCA is more appropriate if the aim is purely data reduction. In the present study, where the aim was to identify how the latent constructs measured in the MSPSQ instrument best fit together, EFA was thus most appropriate.

Although numerous factor extraction techniques are possible within EFA, scholars do not agree on a single best method (Tabachnick & Fidell, 2014; Williams, Brown, & Onsman, 2010). Of the factor analysis extraction techniques available in SPSS, Maximum Likelihood Factoring was chosen because only this method provides a goodness of fit test for the significance of the factor model.

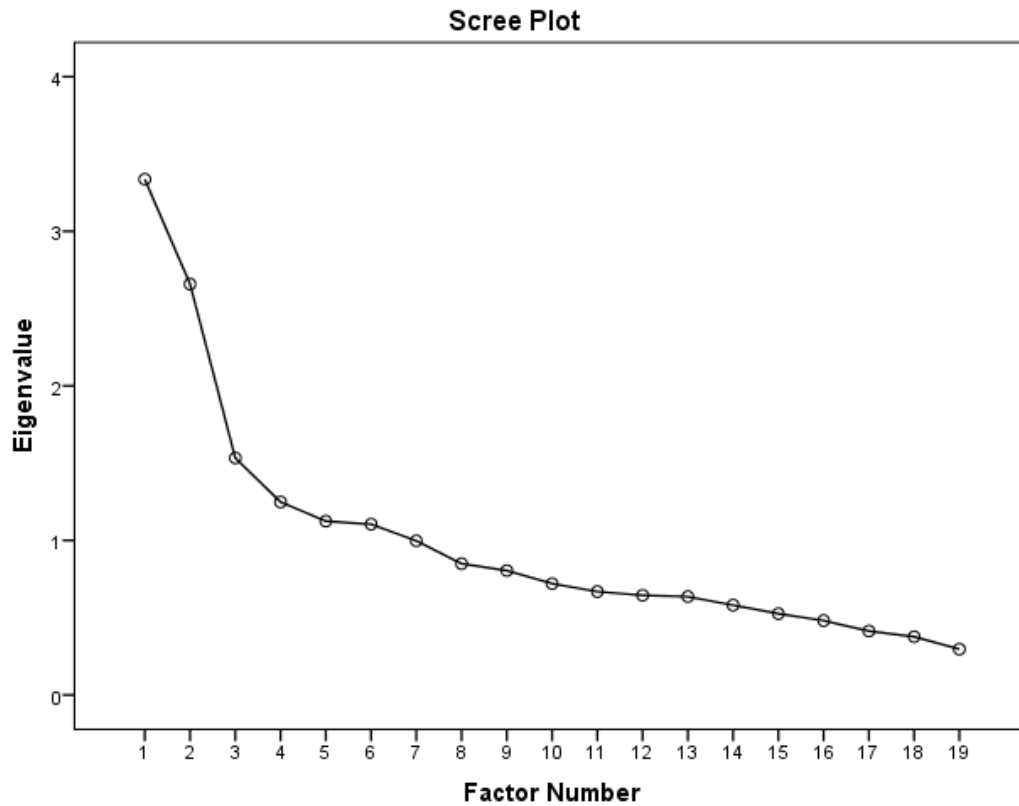
A number of checks were conducted to ensure that the use of factor analytic methods was appropriate for this data set. Although it is preferable for variables to display multivariate normality and linearity, these are not essential (Hair, 1998; Tabachnick & Fidell, 2014). Furthermore, the identification of underlying constructs requires that there be multiple significant correlations between variables (Tabachnick & Fidell, 2014). The existence of multicollinearity is evidenced in *Appendix I - Exploratory Factor Analysis to inform construction of Latent Variables* and *Appendix K – Zero-order correlations between interval latent variables*. In order to determine the overall significance of the correlation matrix, Bartlett's Test of Sphericity was determined to be significant,  $p < .001$ , and the Kayser-Meyer-Olkin (KMO) measure of sampling adequacy (.746), indicated that factor analysis was appropriate for these data (Sharma, 1996; Tabachnick & Fidell, 2014). Finally, Tabachnick and Fidell (2014) suggest that a sample size over 300 is usually sufficient to identify a solution, particularly if the case-to-item ratio was  $> 5$ . In this study there was a 24-to-1 ratio of observations to variables.

Perhaps the most important decision according to Tabachnick and Fidell (2014), is the number of factors to be extracted. Too few factors, and insufficient variance is explained. Too many factors, and parsimony is lost. Although the a priori model had five Domains, the exploratory approach (explained above) required that this was not assumed without sufficient statistical grounds.

The first statistical criterion applied was the Latent Root Criterion (Hair, 1998), i.e., that each factor should account for at least the variance of a single variable, that is, have an eigenvalue greater than 1. This test is expected to provide a reasonable estimate of the number of factors as long as there are between 20 and 40 variables, and the sample size is large (Hair, 1998; Tabachnick & Fidell, 2014), which was the case in this analysis. The Latent Root Criterion indicated that seven factors had eigenvalues greater than one, accounting for 46% of the shared variance in the model. The second criterion applied was the Scree Test (Hair, 1998; Tabachnick & Fidell, 2014), see *Figure 2* on the following page, which suggested between five and seven factors were appropriate, however, this was a more subjective measure (Tabachnick & Fidell, 2014).

Under EFA, multiple options are possible for the way variables are grouped, depending on the rotation method used and the number of factors to extract. Scholars agree that the final decision about appropriate factor grouping lies with the researcher, and should create the most conceptually meaningful constructs in light of the existing body of knowledge (Sharma, 1996; Tabachnick & Fidell, 2014; Williams, Brown, & Onsman, 2010).

Figure 2: Eigenvalue plot for Scree Test criterion



After a decision to extract seven factors was finalised, a factor rotation technique was chosen. Rotation techniques are used to find the ‘best’ solution out of a number of mathematically equivalent solutions. Factor rotation techniques can either assume that latent factors are uncorrelated (orthogonal rotation), or allow correlation between latent factors (oblique rotation) (Tabachnick & Fidell, 2014). Given that the factors affecting student education outcomes are complex and often inter-related, and that the goal of the analysis is to obtain conceptually meaningful constructs, oblique rotation was initially considered appropriate for this analysis (Hair, 1998; Tabachnick & Fidell, 2014). There is a disadvantage in oblique rotation, however, in that it does not specify the percent of variance accounted for by each factor, due to the nature of the shared correlation. To determine whether the shared correlations were sufficiently strong as to justify use of oblique rotation, the inter-factor correlations based on the oblique rotation factor structure were calculated (see *Table 9*) on the following page.

Table 9: Inter-Factor Correlation Matrix for Oblique Rotation

Oblique-Rotation Loadings							
Variables	Factor I	Factor II	Factor III	Factor IV	Factor V	Factor VI	Factor VII
Factor I	1.00	.					
Factor II	-.22	1.00					
Factor III	.02	.19	1.00				
Factor IV	-.11	.29	-.03	1.00			
Factor V	.08	-.11	.17	-.13	1.00		
Factor VI	-.00	.14	.18	-.03	.17	1.00	
Factor VII	.05	.25	.34	.06	.26	.29	1.00

The strongest correlation, of .34,  $p < 0.001$ , was between Factors III and VII, with a number of other weak correlations. Hence it was apparent that the factor structure did not contain sufficient correlation as to warrant oblique rotation, and orthogonal rotation (Varimax) was utilised instead.

### 5.3 Results

The Varimax rotation identified seven Factors, accounting for 46% of the variance in the variables, (see *Table 10* on the following page). Twenty-three factor loadings  $> .30$  were identified, which is the minimum for practical significance (i.e. the factor accounts for ~10% variance in the variable), although between .50 and .70 is preferable (Hair, 1998). The communality (or amount of the variance explained by the extracted factors) should be at least .50 for any variable to be considered adequately explained by the factor model (Hair, 1998). From the communalities in *Table 10*, it is apparent that a number of unidentified factors would be required to fully explain most variables. Four variables scored very low ( $< .15$ ) communalities; (STUHELP, ROLMODINDEXP, FAMRESP and STAFFADM), that is, they were not easily explained by any of the extracted Factors, hence these were removed from the factor model.

Table 10: Orthogonal Rotation of Component Analysis Factor Matrix (Varimax Pattern Matrix)

Variables	Varimax-Rotation Loadings							Extraction
	Factor I	Factor II	Factor III	Factor IV	Factor V	Factor VI	Factor VII	Communality
POSCULT	.755							.654
PATHDEV	.583							.415
SSEFF	.542							.491
MOTATTtype	.369				.310			.259
PRMINDCLT	.487							.262
GEOGUNEMPRATE		.984						.999
GEOGTEREDRATE		.452			.363			.600
FAMCOM		-.359						.198
SCHSOCIND			.966					.999
TEREDRATE			.410					.426
MEANATTINDST			.309					.206
SCHOOLIMP				.604				.458
PERECBEN	.325			.588				.493
FUTPLANrank					.500			.302
PREVASP					.447			.216
FAMED					.368			.249
COMPINT						.939		.999
PEERSUP							.656	.465
FAMSUP				.327			.475	.381
STENV								.177

^Variable STENV did not load significantly on to any single factor.

The importance of each of the seven Factors was determined by the amount of variance explained by the Factor (Tabachnick & Fidell, 2014). These values are presented in *Table 11* below.

*Table 11: Variance explained by each of the extracted Factors*

Factor	Rotation Sums of Squared Loadings		
	Total	Percent of Variance	Cumulative Percent of Variance
I	2.02	10.08	10.08
II	1.54	7.72	17.79
III	1.29	6.42	24.21
IV	1.17	5.86	30.08
V	1.17	5.83	35.90
VI	1.14	5.70	41.60
VII	0.93	4.64	46.25

The Chi-squared statistic for the factor solution,  $\chi^2(129) = 64.5$ ,  $p = 1.000$ , indicated that the model was a good fit. The adequacy of the Varimax rotation method was confirmed by no variables loading  $> .40$  on multiple factors (*see Table 10*) (Tabachnick & Fidell, 2014).

## 5.4 Discussion of Factors

Factor analysis provided a conceptually meaningful factor structure, with each factor grouping variables according to conceptually meaningful unique latent constructs. These factors shared similarities with the a priori model, but revealed a new taxonomy. The seven Factors are described below.

Factor I accounted for 10.1 % of the covariance amongst variables, with factor loadings from .369 to .755. Factor I contained five variables, which each related to positive experiences within the School context. These were; perception of an affirming environment within school (POSCULT), perception that school assisted in pursuing employment goals (PATHDEV), self-evaluation of ability to achieve goals at school and otherwise (SSEFF), experiences of respect and understanding for Indigenous



culture amongst the school community (PRMINDCLT) and the type of motivation students attributed to school attendance (MOTATTtype). PERECBEN loaded more highly onto Factor IV and was not included here. Scores on Factor I were created by equally weighting all variables except PRMINDCLT, which was not measured for non-Indigenous students. A high score on this factor indicated that a student felt that school attendance had present utility for their personal development due to the presence of positive daily experiences that affirmed the student's sense of self, and developed skills for the future. Conversely, a low score on this factor would indicate that a student did not attribute immediate benefit to school attendance. This factor was labelled *Perceived Current Benefit of Schooling*.

Factor II, accounting for 7.72% of the variance, contained three items with loadings from -.359 to .984. These items each reflected socioeconomic capital in the student's home community. The highest loading variable was the unemployment rate in the student's home region (GEOGUNEMPRATE), followed by the percentage population of post-secondary educated adults in the student's geographic home region (GEOGTEREDRATE) and the student's self-reported evaluation of the amount of communication between family members and school staff (FAMCOM). The variable FAMCOM was negatively correlated, indicating that a higher unemployment rate in the student's home community is associated with lower levels of communication between school and family. This reflects the univariate analysis, where it became apparent that this variable reflected geographic and economic difficulties often facing the families of Indigenous boarding students. Scores on Factor II were created by summing GEOGTEREDRATE with FAMCOM, then subtracting GEOGUNEMPRATE, so that a higher score was associated with a higher level of post-graduate qualification in the student's home community, higher levels of family communication with school, and lower levels of unemployment in the home geographic region. This variable was labelled *Education and Employment Engagement in the Community*.

Factor III represented 6.42% of the covariance amongst all variables, with factor loadings from .309 through to .966. These items also belonged to the School context, but differed from Factor I in that each reflected socioeconomic and education capital aspects of the student's school and peer environment. The highest loading factor was school socioeconomic index (SCHSOCIND). School attendance rates (MEANATTINDST) and the percentage population of post-secondary educated adults in the school locality (TEREDRATE) also loaded onto this variable. Scores on this factor were created by creating a weighted sum of the three variables, so that a higher score was associated

with a greater level of economic resourcing, peer school attendance (engagement), and education capital within the school community. It should be noted that school attendance rates were more closely correlated with socioeconomic indicators than with other school factors, thus demonstrating that whilst social and economic barriers to education affect attendance, this does not imply that low socioeconomic status students will allocate a reduced benefit to education. This variable was labelled *Socioeconomic Capital in the School*.

Factor IV accounted for 5.86% of the covariance, and contained two items with loadings from .588 to .604. These items measured perception of the economic utility of school (PERECBEN) and importance of school attendance and completion (SCHOOLIMP). That is to say, Factor IV precisely reflected the fifth Domain presented in the a priori model. Although a third variable, FAMSUP, loaded onto this factor, it loaded more highly onto Factor VII and was not included here. Scores on the two items were summed to create a factor score, so that a higher score was associated with a greater likelihood that the student had high levels of motivation to attend and complete school and perceived future employment benefit associated with school attendance. This factor was labelled *Perceived Future Benefit of School*.

Factor V accounted for 5.83% of the covariance, and initially contained five variables which reflected the education capital and aspirations in the student's family and individual context. Two of these items loaded more highly onto other factors, and the final Factor V contained three variables that loaded between .368 and .500. The remaining variables related to student post-secondary training or employment aspirations and were, in order of loading size; student post-secondary aspirations prior to entering secondary school (PREVASP), highest education level within the family (FAMED) and current student post-secondary aspirations (FUTPLANrank). The factor appeared to measure the interaction between education capital in the Family and student education aspirations. This variable was labelled *Education Aspirations*.

Factor VI accounted for 5.70% of the variance, and contained one variable that loaded at .939. This item measured frequency of access to a computer with Internet for homework purposes (COMPINT) and was the only variable from the original Home context that appeared in the factor model. Given that the variable that measured access to a suitable home study environment (STENV), did not load on to this factor, it is likely that this factor acted as a proxy for home economic resourcing. This variable was labelled *Socioeconomic Capital at Home*. This single variable explained nearly as much

variance in the seven Factor model as did Education Aspirations, thus highlighting the impact of poverty and geography on education experiences and outcomes for students.

Factor VII accounted for 4.64% of the variance, and contained two variables that loaded at .475 and .656. Both items measured social support that students received for school attendance, retention, and employment aspirations, either from extended family (FAMSUP), or from peers (PEERSUP). Initially it had been expected that these variables belonged in the separate contexts of Home (FAMSUP) and School (PEERSUP), however, it appeared that these were more strongly related to each other than to other School or Home factors. A higher score on this variable was associated with higher levels of support for education and employment goals within the student's social network. This variable was labelled *Social Support for Education*. Factor VII reflected a conflation of home, school and community contexts, and recognises that often the family, peer and community environments overlap for students.

Nineteen of the twenty-six variables included in EFA were sufficiently explained by the extracted seven Factors, indicating that these Factors indeed represented underlying constructs impacting student experiences and perceptions regarding schooling. Even so, some of the measured variables did not sufficiently load on to any of these factors. Those variables that did were not placed within this factor model were: access to a suitable home study environment (STENV), expectation of student fulfilling domestic responsibilities (FAMRESP), provision of study assistance (STUHELP and STUHELPAV), respectful relationships with staff (STAFFADM and STAFFATT), exposure to Indigenous role models (ROLMODINDEXP) and future aspirations (FUTASP).

With the exception of Factor V-Education Aspirations and Factor VII-Social Support for Education, each of the seven factors arising from the EFA shared similarities with one of the five Domains proposed in the a priori model. Nevertheless, comparison of *Table 12: Glossary of latent variables used in statistical analysis, grouped according to Exploratory Factor Analysis* on the next page, with the previous variable grouping presented in *Table 8* in Chapter 4, revealed some major shifts in the conceptualisation of the underlying Factor groupings to which some latent constructs belonged.

## 5.5 Full List of Latent Variables and their Descriptions, according to New Factor Model

Table 12: Glossary of latent variables used in statistical analysis, grouped according to Exploratory Factor Analysis

Domain and Variable	Variable Code	Latent Variable Description
<b>Demographic Variables (not included in the Factor Model)</b>		
Indigenous Status	Q97IndigStatus	Indigenous status of student. Coded 1 – Aboriginal or Torres Strait Islander, 2 – non-Indigenous.
Gender	Q98Gender	Gender of student. Coded 1 – Male, 2 – Female.
Year Group	Q100Yeargrp	School year attended by student. Proxy for age of student.
School Name	SchoolName	Identifier of school attended. Coded from 1 to 14.
Residential Status	Q125Boarding	Residential status of student. Coded 1 – Boarding student, 2 – Day student.
Home Geographic Region	GEOGHOME	Geographic region of Western Australia considered to be home by the student.
<b>Factor I – Perceived Current Benefit of Schooling</b>		
Positive School Culture	POSCULT	The student’s perception of belonging and positive self-image at school, and experience of positive relationships with teachers and other adults at school.
Awareness of Employment Pathways, and Focused Transition to Employment	PATHDEV	Frequency and type of experiences provided by the school to develop students’ knowledge and skills for job-seeking, work readiness and career decision making.
Promotion of Indigenous Culture	PRMINDCLT	The student’s perception that Indigenous culture was valued, understood and accepted at school.
Student Self-Efficacy	SSEFF	Student self-perception of their ability to control outcomes, and succeed in academic, career, and social endeavours.
Motivation for School Attendance	MOTATTtype	Most important reason for attending school (Intrinsic/Integrated = 1, Extrinsic/Introjected = 0)
<b>Factor II – Education and Employment engagement in the community</b>		
Collaboration with Family	FAMCOM	Frequency and nature of communication between student’s family and school staff
Unemployment Rate in Student’s Home Geographic Region	GEOGUNEMPRATE	Unemployment Rate for adults the student’s home geographic region (statistical levels SA3 or SA4), by Indigenous status, identified from the 2011 Census (ABS)
Tertiary Education Rate in Home Geographic Region	GEOGTEREDRATE	% Population in student’s home geographic region, by Indigenous status, with post-secondary qualifications (Certificate, Diploma or Degree) for adults 15 years and over
<b>Factor III Socioeconomic Capital in the School</b>		
School Socioeconomic Index	SCHSOCIND	Socioeconomic Index of School, as reported on <a href="http://www.myschool.edu.au">www.myschool.edu.au</a>
Mean School Attendance Rate by Indigenous Status	MEANATTINDST	Mean overall attendance rate, by Indigenous Status, for students in Year 1 – 10 in 2014 obtained from <a href="http://www.myschool.edu.au">www.myschool.edu.au</a> for each school.
Tertiary Education Rate in School’s Geographic Region	TEREDRATE	% Population in school geographic region, by Indigenous status, with post-secondary qualifications (Certificate, Diploma or Degree) for adults 15 years and over
<b>Factor IV – Perceived Future Benefit of School</b>		
Student Perception of the Benefit of Education	PERECBEN	Student perception of the income, career and life benefits of completing Year 12
Perception of the Importance of Schooling	SCHOOLIMP	Student perception of the importance of school attendance and Yr 12 completion
<b>Factor V – Education Aspirations</b>		

Prior Aspirations	PREVASP	Students reported what their post-secondary aspirations had been when they started high school
Family Education Levels	FAMED	Highest level of education obtained by any member of the student's family
Future Pathway Intentions	FUTPLANrank	Interval variable describing student's post-secondary career or educational pathway aspiration
<b>Factor VI – Socioeconomic Capital at Home</b>		
Access to Computer with internet	COMPINT	Frequency of access to a computer with Internet for homework purposes at their place of residence
<b>Factor VII – Social Support for Education</b>		
Family Support for Education	FAMSUP	Student perception of the importance their family members placed on school attendance, Year 12 completion, and employment.
Peer Support for Education	PEERSUP	Student perception of the importance their peers placed on school attendance, Year 12 completion, and employment.
<b>Variables not explained by the Factor Model</b>		
Domestic responsibilities	FAMRESP	Frequency of school non-attendance due to domestic responsibilities
Future Aspirations	FUTASP	Student perception of the value of obtaining career status and a good income
Access to Home Study Environment	STENV	Frequency of access to a quiet study environment and homework assistance at student's place of residence
Relationships with Staff	STAFFADM	Existence of particularly strong relationship with at least one staff member (Categorical)
Impact of Staff on School Attendance	STAFFATT	For those students that answered STAFFADM affirmatively, this item examined whether a student was more likely to attend school due to the above relationship
Perceived usefulness of Study Assistance	STUHELP	Frequency and perceived usefulness of study assistance provided by the school
Provision of Study Assistance	STUHELPAV	Existence of study assistance provided through school (Categorical)
Indigenous Academic Role Models	ROLMODINDEXP	Student perception that Aboriginal staff place importance on Indigenous students achieving academic success (Indigenous only)
Perception that Indigenous status is accepted within the school environment.	FITINCLT	Student perception that Indigenous status affected whether it was easy to 'fit in' at their school,

## 5.6 Relationship with Gender and Indigenous Status

It was necessary to apply a final interrogation to the newly created seven Factors, to determine whether these Factors operated identically across students of different ethnic status or gender. To this purpose, independent samples t-tests were conducted to determine the effect of gender or Indigenous status on each of the seven Factors (Harris, 1995). The number of parametric tests applied in this thesis resulted in use of a significance level of  $\alpha = .001$  (see section 8.2). The independent samples t-tests in *Table 13* below revealed significant differences in Factors II, IV, V and VI, by Indigenous status.

### Differences in factors by Indigenous status

*Table 13: Difference in Means for Factors extracted under EFA, by Indigenous Status*

Factor	Ethnicity	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Factor I	Non-Indigenous	11.22	2.00	-1.31	.191
	Indigenous	11.46	2.09		
Factor II	Non-Indigenous	85.14	2.40	60.9	.000***
	Indigenous	40.52	8.85		
Factor III	Non-Indigenous	269.56	10.83	-.95	.341
	Indigenous	270.96	16.28		
Factor IV	Non-Indigenous	8.38	1.05	-3.75	.000***
	Indigenous	8.75	.905		
Factor V	Non-Indigenous	7.82	1.92	5.84	.000***
	Indigenous	6.63	2.40		
Factor VI	Non-Indigenous	4.25	1.12	6.29	.000***
	Indigenous	3.42	1.66		
Factor VII	Non-Indigenous	8.47	.98	2.15	.032*
	Indigenous	8.26	1.22		
<i>M = Mean, SD = Standard Deviation</i>					

Results in the above table revealed that Indigenous students scored significantly differently than non-Indigenous students on four of the seven Factors in the Model. The largest difference by far, was reflected in Factor II - Education and Employment Engagement in the Community,  $t(189.8) = 60.9$ ,  $p < 0.001$ , Cohen's  $d = 6.65$ . This statistic is particularly high, indicating that Indigenous students in this study were significantly more likely than non-Indigenous students to come from a community where poverty and unemployment were prevalent. This is not surprising, given the

high number of Indigenous boarding students on scholarships in the study, but nevertheless, highlights the significant impact of private school boarding experiences on education opportunities for Indigenous secondary students in Western Australia. Whilst the difference between groups for Factor IV, Perceived Future Benefit of School, was also significant, in real terms this difference was small,  $t(403) = -3.61, p < 0.001$ , Cohen's  $d = 0.376$ . Significant differences existed also for Factor V, Education Aspirations,  $t(403.0) = 5.84, p < 0.001$ , Cohen's  $d = 0.548$ , with Indigenous students reporting lower levels of personal educational aspiration and family education achievement. Finally, significant differences existed for Factor VI,  $t(403.0) = 6.29, p < 0.001$ , Cohen's  $d = 0.622$ , with Indigenous students reporting categorically lower levels of access to computer and Internet at home. There were no significant differences by Indigenous status for Perceived Current Benefit of Schooling, Socioeconomic Capital in the School or Social Support for Education. That is, Indigenous students in the current study attended schools with equally engaging environments and socioeconomic resourcing as did non-Indigenous students, and experienced equal levels of support amongst family and peers for their education decisions.

In light of the known deficit discourse regarding Indigenous students in education (Bodkin-Andrews & Carlson, 2014), it is important to note here, that whilst it is mathematically appropriate to say 'the effect of Indigenous status', this should not be interpreted to mean that it is being Indigenous per se that resulted in reduced education aspirations. The analysis of differences explored in the table above does not signify cause and effect, but relationship. That is, it is not justifiable from a mathematical perspective, let alone a sociological perspective, to conclude from the above results that Indigenous status causes students to have lower education aspirations/expectations. What the above results do signify, is that there likely exist a set of variables/experiences affecting Indigenous students more frequently, which do affect student education expectations and experiences. The factor model has highlighted that some of these are socioeconomic, and the following chapters explore whether some of these variables may be socio-cultural.

#### Differences in factors by gender

The Difference in Means tests by gender are reported in *Table 14*, below. When compared by gender, only Factor V, Education Aspirations,  $t(462) = -3.35, p = 0.001$ , was significantly different across the groups, with male students reporting lower levels of combined personal educational aspiration and family education achievement than females. It should be mentioned, however, that differences between gender on Factor I – Perceived Current Benefit of Schooling were only just below the accepted level of significance ( $p = .001$ )

Table 14: Difference in Means *t*-test for Factors extracted under EFA, by Gender

Factor	Gender	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Factor I	Male	11.62	2.01	2.98	.003**
	Female	11.08	2.05		
Factor II	Male	70.06	21.75	1.89	.059
	Female	65.81	23.21		
Factor III	Male	269.62	15.40	-.70	.488
	Female	270.65	11.88		
Factor IV	Male	8.52	1.04	-.02	.983
	Female	8.52	.99		
Factor V	Male	6.85	2.28	-3.31	.001***
	Female	7.55	2.15		
Factor VI	Male	3.85	1.50	.15	.883
	Female	3.83	1.45		
Factor VII	Male	8.33	1.20	-.56	.588
	Female	8.34	1.05		

*M* = Mean, *SD* = Standard Deviation

It is important to note that of the significant differences identified in the above analyses, only *Factor V – Education Aspirations* measured a difference in student perceptions. That is, differences on other *Factors* were easily explained by socioeconomic and geographic factors and did not indicate conceptual differences between genders or ethnic groups. Further analyses were required to determine whether the differences between groups on Factor V were due to differences in conceptualisation, or experience. This was done through factorial invariance testing and path analyses in Chapter 6, and univariate analyses reported in Chapter 7.

## 5.7 Conclusion of Exploratory Factor Analysis

The Exploratory Factor Analysis refined the taxonomy proposed by Dusseldorp Skills Forum (2009b) by elucidating the behavioural and socioeconomic effects separately of experiences within the Home, Individual, School and Social Domains, and by demonstrating that for some factors (e.g. Factor VII, which correlated family and peer attitudes towards education) these Domains overlapped sufficiently to result in conflation of constructs. Some of the measured variables in this study did not load onto any of the above categories during factor analysis, which



suggests that the a priori Five Domain model was not an adequate taxonomy.

In order to explore the effect of Indigenous status and gender on the seven Factors explaining student experiences and perceptions of schooling, difference in means tests were also conducted. Only Factor V- Education Aspirations differed significantly by gender, with female students more likely to aspire to tertiary education. Four of the seven factors differed significantly by Indigenous status. Two of these factors (Factor II and Factor VI) measured Socioeconomic Capital in the Community, and at Home, indicating that the Indigenous students in this study came from community and home environments that were significantly under-resourced in comparison with non-Indigenous students in this study. The other two factors which differed significantly by Indigenous status were linked to Indigenous engagement with future educational goals: Factor IV -Perceived Future Benefit of School, and Factor V - Education Aspirations, with Indigenous students likely to have a slightly higher perceived benefit of schooling, and moderately lower aspirations for their post-secondary education.

It had been argued in the thesis Rationale presented in Chapter 1, that a contributing factor to the ongoing intransigence of education disengagement was the poor quality statistical evidence used by policymakers. The new Factor Model identified in the current chapter provides a significant step forward in this regard, by identifying an underlying structure to the relationships between individual variables anecdotally known to impact Indigenous education outcomes. Although the identified seven Factors shared some conceptual similarities with the Domains first identified by the Dusseldorp Skills Forum (2009b), the differences presented here are sufficiently meaningful to justify further analysis and development of the new seven Factor Model. The following chapter continues this refinement through the use of structural equation modelling to quantify the relationships between the seven Factors, and to compare the efficacy of the quantified Model across Indigenous and non-Indigenous respondents.

## Chapter 6 - Verifying the Revised Factor Model through Confirmatory Factor Analysis and Path Analysis

### 6.1 Introduction

The rationale for the current thesis, presented in Chapter 1, proposed two dependent variables which could be used as measures of Indigenous school engagement: Student Perception of the Benefit of Education (PERECBEN), and Perception of the Importance of Schooling (SCHOOLIMP). Additionally, a large number of independent variables thought to contribute to PERECBEN and SCHOOLIMP were proposed, and grouped according to seven latent Factors during exploratory factor analysis (EFA). What EFA was not able to measure, was the size and direction of relationships *between* these seven factors. After the Seven Factor Model was obtained, it was considered prudent to validate the robustness and generalizability of the model through confirmatory factor analysis (Hair et al., 1995), and to analyse the relationships, or paths, between Factors. This was done through structural equation modelling, of which confirmatory factor analysis (CFA) and path analysis are special types (Ullman, 2014).

This chapter presents confirmatory factor analysis (CFA) of the model developed in Chapter 5 and presents fit indices as measures of the Factor Model's adequacy. The Factor Model was tested for factorial invariance across gender and Indigenous status, and identified to be an adequate fit for both genders, and for Indigenous students, but not for non-Indigenous students. Path analyses were then conducted, to explore the causes of variation in the model between Indigenous and non-Indigenous students. Finally, a Revised Factor Model is presented providing the best-identified fit for Indigenous respondents on the constructs measured in the current thesis.

### 6.2 Confirmatory Factor Analysis of the Factor Model

Structural equation modelling is an analytic method that allows hypothesis testing of simultaneous regression relationships between multiple dependent and independent variables (Sharma, 1996; Ullman, 2014). Importantly, the adequacy of the model can be tested for the entire sample as well as for groups within the sample, and allowed improvements to be made to model adequacy.

#### ***Discussion of Fit Indices***

Five key measures were used to evaluate the adequacy of the model fit against the null hypothesis that the Factors are unrelated, or independent. These were: Chi-squared, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and the Probability that the RMSEA is accurate (PCLOS). The initial Chi-squared statistic should be non-significant to indicate exact model fit, but is sensitive to multivariate non-normality and sample size. Hence, when divided by the degrees of freedom (*df*) the Chi-squared statistic should be between 2 and 5 (Homes-Smith, 2012). The Comparative Fit Index (CFI) can be used with small samples to determine whether the estimated model provides an improved fit to the data than if the variables were unrelated (independence model), or incrementally less-related, than the hypothesised model. In a good model, CFI > .95 (Tabachnick & Fidell, 2014). A further incremental fit index that is often reported is the Tucker-Lewis Index (TLI), which should be above .90 to indicate acceptable model fit (Hair, 1998). Where a model is not exact, the Root Mean Square Error of Approximation (RMSEA) can be used to estimate the closeness of fit. RMSEA < .06 indicates that, relative to the degrees of freedom, the model is a good fit (Tabachnick & Fidell, 2014). Finally, the probability that a Type I error is not being made, i.e. that the RMSEA has correctly evaluated the model fit (PCLOS), should be >0.50.

### ***Modification of the initial model***

It is recommended that the sample set be split in half when conducting CFA and EFA on the same study. In this study, doing this would have created a sample too small, comparative to the number of variables, to provide for confirmatory factor analysis. Hence, a confirmatory factor analysis (CFA) was conducted on the whole data set in SPSS AMOS, using Maximum Likelihood Estimation for parameter estimation. Maximum Likelihood was used as it performs better than other methods when multivariate normality is violated (Tabachnick & Fidell, 2014). The initial Seven Factor Model, identified in Chapter 5, did not provide an acceptable fit. Modification indices were calculated to identify improvements to the initial model, detailed below.

The variable SCHSOCIND (*School Socioeconomic Index*) was removed from the model, as the high kurtosis of this variable had a large impact on model fit. Hence, all analyses of *Factor III – Socioeconomic Capital in the School* which were conducted without SCHSOCIND are referred to as *Factor IIIa* (or, in diagrams, as *Factor 3a*). Furthermore, the variable FAMCOM (*Family Communication with School*) was also removed from the model, as it did not behave uniformly in successive iterations of the model. This variable had only low communality in the EFA, indicating that it was not well explained by any of the latent Factors, which further corroborated the decision to remove the variable from CFA. Similarly, all analyses of *Factor II– Education and Employment*

*Engagement in the Community* which were conducted without FAMCOM are referred to as *Factor 11a* (or, in SEM diagrams, as *Factor 2a*).

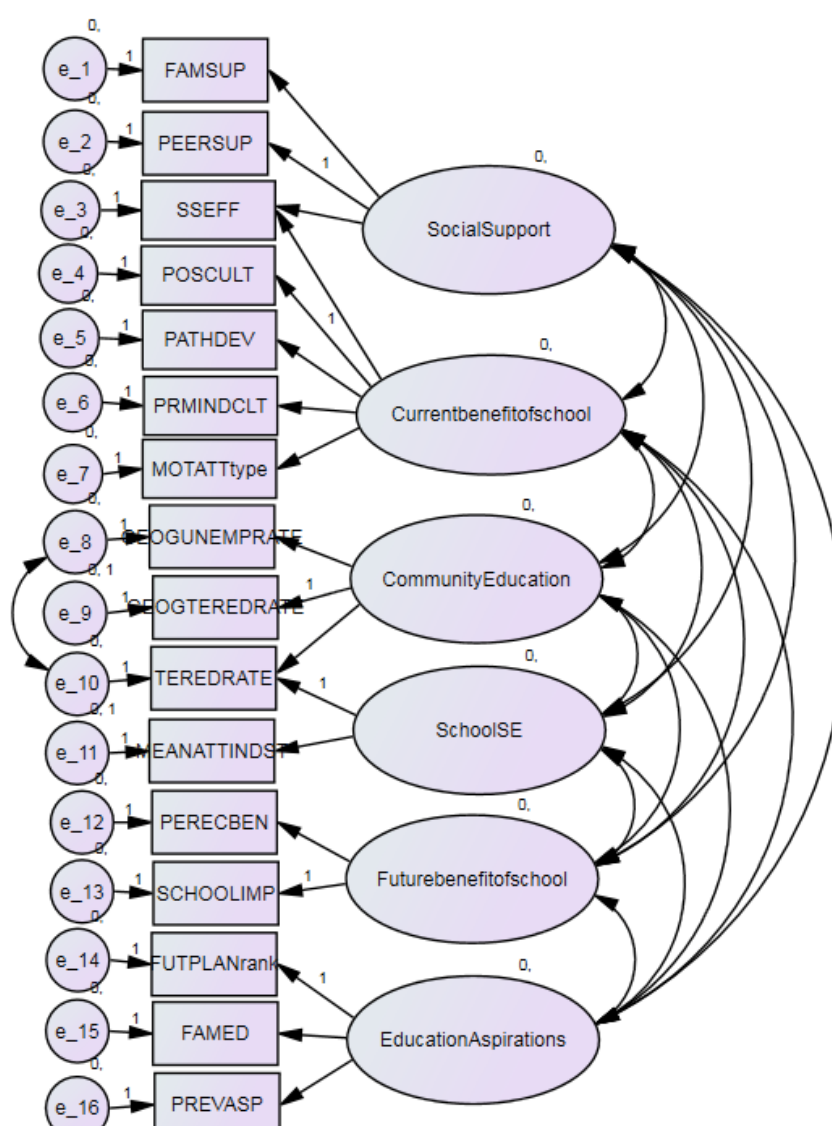
*Factor VI – Socioeconomic Capital at Home* was removed, as this Factor consisted of a single variable and brought the parsimony indices below an acceptable level. This resulted in the final model containing six factors rather than the initial seven. Future research could develop a robust set of items that can adequately measure Socioeconomic Capital at Home, as inclusion of this Factor, may strengthen the Model. Such factors might include parental income and parental engagement in the workforce, which were beyond the scope of the current study.

There were also significant covariances between the variable TEREDRATE (*Tertiary Education Rate in School's Geographic Region*), and GEOGTEREDRATE (*Tertiary Education Rate in Home Geographic Region*), which is unsurprising as for non-boarding students, the school locality and the geographic locality were the same. Furthermore, there were significant covariances between GEOGTEREDRATE and GEOGUNEMPRATE (*Unemployment Rate in Student's Home Geographic Region*), due to the relationship between education level and employment status. These covariances were added to the CFA model to improve adequacy of the model fit. After these changes were made, a second CFA was conducted, and model fit indices were assessed.

### 6.2.1 Results of CFA for the six Factor Model

The six-factor model presented below in *Figure 3* was an acceptable fit,  $\chi^2(102) = 261.47, p < 0.05$ , CFI = .93, TLI = .90, RMSEA = .06, PCLOSE > .05. Standardised regression weights were significant and above .3 for all items, indicating that each item contributed meaningfully to the factors. That is, the six-Factor Model provided an adequate structure for the variables measured in this study. Interested readers can view the six Factor Model complete with regression coefficients and factor loadings in *Appendix L – Confirmatory Factor Analysis of six factor model*.

Figure 3: Path diagram on six-factor model



### 6.2.2 Factorial invariance testing across gender and Indigenous status

Whilst the model was an acceptable fit for the entire sample, a question remained of whether the model was an equally good fit across groups, when students were compared by gender or Indigenous status. Such testing has been recommended by Bodkin-Andrews, O'Rourke and Craven (2010) when constructs may be sensitive to cultural differences between groups. In Chapter 6 it had already been highlighted that five of the seven factors differed significantly by means between Indigenous and non-Indigenous students, but it remained to be seen whether these differences only impacted item weightings within factors, or whether they also affected relationships *between* factors, that is, on regression weightings and covariances between the six latent Factors. The

recommended technique for testing a factor model is through factorial invariance testing (Byrne, 2010). Through this analysis, five increasingly restrictive models are compared. If the test statistics degrade between models, then the acceptability of model fit has been lost by the added restrictions (Tabachnick & Fidell, 2014). The first model allows that the two groups do not share any common parameters (unconstrained). The next model holds factor loadings to be invariant across the two groups, and is the minimum requirement necessary for factor models to be considered invariant. The third model holds both factor loadings and intercepts invariant, the fourth model holds factor loadings, intercepts and covariances invariant, and the fifth model holds that all parameters must be invariant across the two groups (constrained model). Generally, the final two tests are considered unnecessarily restrictive (Byrne, 2010). The results of factorial invariance testing across all five layers of the above six Factor Model are presented in *Table 15* and *Table 16* on the next page.

*Table 15* indicates that the six-factor model presented in *Figure 3* met the minimum requirement for factorial invariance across groups when compared by gender. That is, factor loadings were equivalent for both male and female respondents in the study  $\chi^2(218) = 547.5, p < 0.05$ , CFI = .93, TLI = .91, RMSEA = .05, PCLOSE > .05, indicating that the same latent Factor structures applied to responses from students of both genders (Tabachnick & Fidell, 2014).

*Table 15: Factorial Invariance Tests on the six Factor Model, by gender*

Model	$\chi^2$	df	p	$\chi^2/df$	TLI	CFI	RMSEA	PCLOS
Unconstrained	504.9	204	.000	2.48	.91	.93	.05	.152
Factor loadings invariant	547.5	218	.000	2.51	.91	.93	.05	.105
Factor loadings/intercepts	663.3	235	.000	2.82	.89	.90	.06	.002
Factor loadings/intercepts and covariances invariant	680.5	256	.000	2.66	.90	.90	.06	.015
All values invariant	732.6	272	.000	2.69	.90	.90	.06	.007

*Table 16: Factorial Invariance Tests on the six Factor Model, by Indigenous Status*

Model	$\chi^2$	df	p	$\chi^2/df$	TLI	CFI	RMSEA	PCLOS
Unconstrained	611.1	174	.000	3.51	.83	.88	.07	.000
Factor loadings invariant	743.7	187	.000	3.98	.80	.85	.08	.000
Factor loadings/intercepts	1057.9	203	.000	5.21	.72	.77	.09	.000
Factor loadings/intercepts and covariances invariant	1598.8	224	.000	7.14	.60	.62	.11	.000
All values invariant	1972.1	239	.000	8.25	.52	.52	.12	.000

Table 16 indicated that even the unconstrained model was not equivalent between groups when compared by Indigenous status. That is, the latent Factor structure in the six Factor Model did not apply equivalently to both ethnic groups. Factor loadings were not statistically equivalent for Indigenous and non-Indigenous respondents in the study  $\chi^2(187) = 743.7$ ,  $p < 0.05$ , CFI = .85, TLI = .80, RMSEA = .08, PCLOSE < .05, indicating that the regression weighting (or predictive power) of items and factors varied for students by Indigenous status. In order to further investigate the sources of invariance between Indigenous and non-Indigenous students, Structural Equation Modelling path analyses were conducted for both item-to-factor and factor-to-factor correlations.

### 6.2.3 SEM path Analyses for Indigenous and non-Indigenous students.

#### *Item-to-Factor correlations for the six Factor Model*

The standardised regression weightings (which can also be interpreted as correlation coefficients) for items to factors are presented in *Table 17* below. All regression coefficients were significant at the .001 level. For those items where the difference in correlation across groups was significant, the significance level is reported in brackets. Although in Chapter 5 it was identified that significant differences existed in the mean responses of Indigenous and non-Indigenous students on five of the seven Factors, the analysis in *Table 17* demonstrates that only two Item-to-Factor correlations differed significantly at the .001 level between these groups. These two items, GEOGUNEMPRATE and TEREDRATE, both measured socioeconomic constructs, and did not represent differences in conceptualisation due to culture, but rather, economic differences between groups already identified in the current thesis. Item-to-Factor correlations explain how well variables fit into the proposed Factor, thus the finding that all other variables were statistically similar between groups in their relationship to proposed Factors indicates that the same construct conceptualisations applied to Factors I, IV, V and VII for both Indigenous and non-Indigenous respondents. These conceptualisations are discussed below. For these regression coefficients, the squared multiple correlations determine the amount of variance in each item explained by the latent factor. These variances are discussed below for each Factor.

*Factor I – Perceived Current Benefit of Schooling* explained a significant amount of variance amongst construct PATHDEV (Awareness of Employment Pathways, and Focused Transition to Employment), accounting for 40% of the variance amongst Indigenous responses, and 35% of the variance amongst non-Indigenous responses. The Factor was also a significant positive predictor of POSCULT (Positive School Culture) explaining 67% of the variance in Indigenous responses to the construct, and 61% of non-Indigenous responses.

*Table 17: Item-to-Factor Correlations for the six Factor Model, by Indigenous status*

Standardised Regression Coefficients (Indigenous/Non-Indigenous)( $\alpha$ )						
Variables	Factor I	Factor IIa	Factor IIIa	Factor IV	Factor V	Factor VII
POSCULT	.82/.78					
PATHDEV	.63/.60					
SSEFF	.53/.57					
MOTATTtype	.36/.47 (*)					
PRMINDCLT	.78/ ---					
GEOGUNEMPRATE		-.58/.77 (***)				
GEOGTEREDRATE		.99/.98				



TEREDRATE	.65/.84(***)		
MEANATTINDST	.99/.98		
SCHOOLIMP		.60/.73(*)	
PERECBEN		.81/.66(*)	
FUTPLANrank			.49/.51
PREVASP			.69/.30(*)
FAMED			.48/.40
PEERSUP			.62/.63
FAMSUP			.68/.76

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\*Difference is significant at the 0.05 level

\*\* Difference is significant at the 0.01 level

\*\*\* Difference is significant at the 0.001 level

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Factor I was also a significant and positive predictor of SSEFF (Student Self-Efficacy), although the effect differed between ethnic groups, with Factor I accounting for 39% of the variance in Student Self-Efficacy amongst Indigenous students, but 54% of the variance in Student Self-Efficacy amongst non-Indigenous students. The latent factor was also strongly correlated (78% variance explained) with Indigenous students' perception that the school environment promoted Indigenous culture (PRMINDCLT). Factor I was a weaker predictor of the type of attendance motivation (integration or introjection), explaining just 13% of the variance for Indigenous students, and 22% of the variance for non-Indigenous students.

*Factor IIa – Education and Employment Engagement in the Community* was almost a perfect positive predictor of Tertiary Education Rates in the Geographic Region (GEOGTEREDRATE), explaining 98% and 97% of the variance in responses for Indigenous and non-Indigenous students respectively. As identified above, Factor II behaved significantly differently for the variable Unemployment Rates in the Geographic Region (GEOGUNEMPRATE) amongst Indigenous and non-Indigenous students, exhibiting a negative correlation for Indigenous students (34% variance explained) and a positive correlation for non-Indigenous students (60% variance explained). Finally, the necessity of removing item FAMCOM (Collaboration with Family) from the Model due to its instability across successive iterations of EFA indicated that Factor II was unlikely to be a significant predictor of this variable.

*Factor IIIa – Socioeconomic Capital in the School* was an equally strong positive predictor of Mean Attendance Rates at School, by Indigenous Status (MEANATTINDST), explaining 99% and 96% of the variance respectively for Indigenous and non-Indigenous students. As identified already, the

difference between the two groups was significant for Tertiary Education Rates in the School's Geographic Region (TEREDRATE), with 58% of the variance explained by Factor III for Indigenous students, but 97% of the variance explained for non-Indigenous students. That is, for Indigenous students in the study, school attendance rates were less strongly correlated with education capital in the school region, than for non-Indigenous students. This is likely explained by the much larger proportion of Indigenous respondents than non-Indigenous respondents from socioeconomically disadvantaged areas attending boarding schools in high socioeconomic areas.

*Factor IV – Perceived Future Benefit of School* was a positive predictor of Student Perception of the Economic Benefit of Education (PERECBEN) for both groups, although the correlation was stronger amongst Indigenous students (66% variance explained) than amongst non-Indigenous students (44% variance explained). The importance of Factor IV between the two groups was reversed for Student Perception of the Importance of School Attendance and Completion (SCHOOLIMP), with the factor explaining 37% of the variance in this variable for Indigenous students, but 53% of the variance for non-Indigenous students. This indicates that in this study, perception of educational utility was more strongly related to future employment aspirations, and less strongly related to daily education choices, for Indigenous students' than for non-Indigenous students.

*Factor V – Education Aspirations* was a positive predictor of Future Aspirations (FUTPLANrank), explaining 24% of the variance in responses amongst Indigenous students, and 26% of the variance amongst non-Indigenous students. The Factor explained 23% of the variance in the item highest level of education in the family for Indigenous students, and 16% of the variance in this item for non-Indigenous students. The relationship between current *Factor V - Education Aspirations* and student aspirations prior to entering secondary school (PREVASP) was much stronger for Indigenous students (49% variance explained) than for non-Indigenous students (8% variance explained). This finding suggests that Indigenous students' post-secondary aspirations were less likely to have changed since they entered high school.

*Factor VI – Socioeconomic Capital at Home*, was not included in the six Factor Model, for reasons explained earlier in this chapter.

*Factor VII – Social Support for Education* explained 46% of the variance in Family Support for Education and Employment (FAMSUP) amongst Indigenous respondents, and 58% of the variance amongst non-Indigenous respondents. The Factor was an equally strong indicator of peer support for education and employment for Indigenous and non-Indigenous students (38% and 40% variance explained, respectively).

### Summary of item-to-factor path analyses

Of the fifteen interval constructs that were tested for both Indigenous and non-Indigenous respondents in the six Factor Model, only two varied significantly between the groups. That is, the factorial invariance in the Model identified in *Table 16* was explained by only two item-to-Factor correlations. The similarity in strength and direction of correlations between the remaining thirteen constructs (called items under CFA) and the six Factors for both groups, indicated that the current model did in fact provide an adequate overall structure of latent Factors for the majority of variables measured in the current study for both Indigenous and non-Indigenous respondents.

### Factor-to-Factor Correlations for the six Factor Model

Since the factorial invariance testing in *Table 16* found significant difference between Factors themselves across groups for the unconstrained Model, it was not possible to determine from that testing alone whether significant differences between groups also existed in the way Factors were related. Thus, it remained to be investigated whether socioeconomic capital at home and community, and school experiences, were equally weighted in importance for education aspirations for both Indigenous and non-Indigenous students. Hence, factor-to-factor path analyses were conducted to examine the invariance structure of the six Factor Model across ethnic groups. The results of this analysis are presented in *Table 18* below.

*Table 18: Factor-to-Factor Correlations for the six Factor Model, by Indigenous status*

Variables	Factor Correlations (Indigenous/Non-Indigenous)					
	Factor I	Factor IIa	Factor IIIa	Factor IV	Factor V	Factor VII
Factor I – <i>Perceived current benefit of schooling</i>	1.00	-	-	-	-	-
Factor IIa – <i>Education and Employment Engagement in the Community</i>	-.39/.00(***)	1.00	-	-	-	-
Factor IIIa – <i>Socioeconomic Capital in the School</i>	-.37/.16(***)	.37/.74(**)	1.00	-	-	-
Factor IV – <i>Perceived future benefit of school</i>	.77/.82	-.19/-.14	-.27/.21(**)	1.00	-	-
Factor V – <i>Education Aspirations</i>	-.11/.65(***)	.09/.16	.38/.47(**)	.32/.68(***)	1.00	-
Factor VII – <i>Social Support for Education</i>	.13/.74(**)	.16/-.11	.12/.28	.33/.99(***)	.55/.80	1.00
*Difference is significant at the 0.05 level						
** Difference is significant at the 0.01 level						
*** Difference is significant at the 0.001 level						

The correlations in *Table 18* revealed five inter-factor correlations that behaved significantly differently between groups, that is, five of the relationships between Factors for Indigenous and non-Indigenous students were significantly different at the 0.001 level. These five differences are categorised as those where a stronger inter-factor relationship existed for Indigenous students, and those where a stronger inter-factor relationship existed for non-Indigenous students.

For Indigenous students, *Factor I - Perceived Current Benefit of Schooling* was more strongly, and also more negatively, correlated with both *Factor IIa - Education and Employment Engagement in the Community* ( $r = -.39$ ), and also *Factor IIIa - Socioeconomic Capital in the School* ( $r = -.37$ ), whereas amongst non-Indigenous students, these factors were only very weakly related. That is, Indigenous students in the current study appeared to attribute a higher benefit to schooling when they came from communities with lower levels of education engagement or attended schools of lower socioeconomic capital. Furthermore, Indigenous respondents in the present study appeared more likely to have been influenced by what they saw in their communities, and at their schools, and have made a conscious decision to counter negative socioeconomic experiences through positive school engagement. This may reflect the fact that Indigenous students in this study were more likely to come from low socioeconomic areas than were non-Indigenous students in this study, and more likely to attend urban private boarding schools.

There were also three factors where non-Indigenous students were identified as having a much more strongly positive inter-factor correlation, significant at the 0.001 level. These were between *Factors I* and *V*, *Factors IV* and *V*, and *Factors IV* and *VII*. Between *Factor I* and *Factor V* (*Perceived Current Benefit of Schooling*, and *Education Aspirations*), Indigenous students perceived only a very weak, and negative relationship ( $r = -.11$ ), whereas non-Indigenous students saw a moderately positive relationship between these variables ( $r = .65$ ), indicating that positive engagement with secondary school for Indigenous students was not as positively correlated with post-secondary aspirations as it was for non-Indigenous students. Between *Factor IV* and *Factor V* (*Perceived Future Benefit of School* and *Education Aspirations*), non-Indigenous students also perceived a much stronger relationship ( $r = .68$ ) than did Indigenous students ( $r = .32$ ), indicating that for Indigenous students again, there was less correlation between intention to go on to post-secondary pathways, and daily education choices. Finally, there existed an almost perfect correlation between *Factor IV* – *Perceived future benefit of school* and *Factor VII* – *Social Support for Education* for non-Indigenous students ( $r = .99$ ), but only a weak positive relationship for Indigenous students ( $r = .33$ ), indicating that Indigenous students were much less reliant on the attitudes of their families and peers when considering their own beliefs about the importance of school completion and employment.

*Summary of factor-to-factor path analyses*

Of the fifteen factor-to-factor correlations, five differed significantly at the 0.001 level, and another four differed significantly at the 0.01 level. Thus, there existed a greater number of significant differences between Indigenous and non-Indigenous students on the relationships between latent Factors, than there were within Factors. This finding is critically important, in light of the previous factorial invariance testing and item-to-factor path analyses. Together, these results indicate that the latent Factor conceptualisations in the current thesis were appropriate for both ethnic groups, yet, significant differences existed between groups in the importance of the latent Factors for education decision making. Such a finding indicates that it is crucial for policymakers to have an accurate behavioural model explaining Indigenous secondary students' education decision-making, as more culturally generic understandings may not be appropriate.

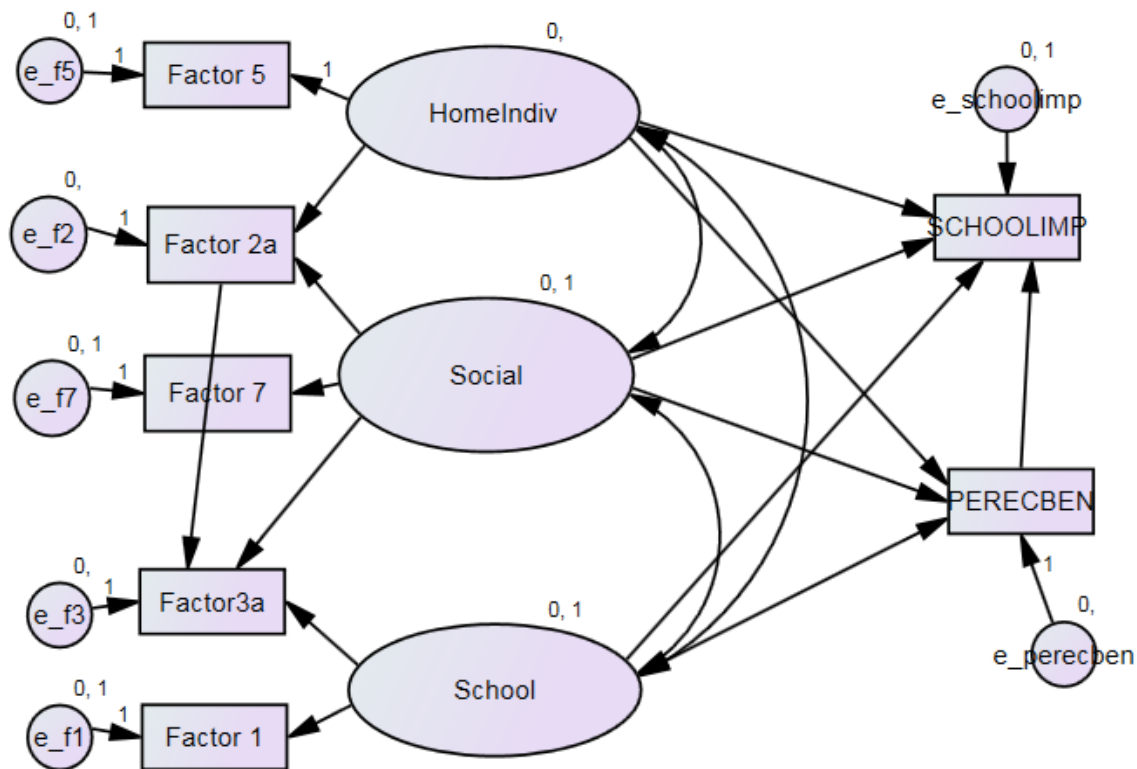
Finally, whilst the analyses in this section highlighted the fact, and causes, of the six Factor Model's statistical variance between Indigenous and non-Indigenous respondents, these analyses did not indicate which group of respondents was a better fit to the existing Model, nor did they indicate the direction of relationships between Factors in the Model.

### 6.3 The Revised Factor Model for Indigenous students' education choices

As explained in the introduction to this Chapter, conceptualisation of the behaviour model developed in this thesis considered both Student Perception of the Benefit of Education (PERECBEN), and Perception of the Importance of Schooling (SCHOOLIMP) to be key dependent variables. Secondly, although the a priori Domain Model had not been accurately reflected in the Factor structure arrived at through EFA and CFA, it remained clear that the latent Factors exhibited similarities with the original structure of Home, Social, Individual and Social Domains impacting student decisions.

In order to further refine the Model developed over the preceding Chapters, a final effort was made to create a Structural Equation Model (SEM) that accurately illustrated the strength and direction of relationships between Factors. A Structural Equation Model (SEM) path analysis was conducted to provide pictorial representation of the Factor Model, provided in *Figure 4*, below. Note there are two key conceptual differences between this Model, and that illustrated in *Figure 3*; firstly was the decision to treat *Factor IV – Education Aspirations* separately as the two dependent variables, PERECBEN and SCHOOLIMP, and secondly, to group the five remaining latent Factors according to Domains given in the DSF model.

Figure 4: Exploratory SEM of six-factor model, for Indigenous students only



Due to the known variation when students were grouped by gender and by Indigenous status, the Structural Equation Model above was tested for goodness of fit for each of these groups separately. Results of this analysis are presented in *Table 19* below.

The initial model was found to be an exact fit across the whole student sample, with non-significant  $p$ -values, and remained so for Indigenous students, male students, and female students, when tested separately. The model did not provide a close fit for non-Indigenous students when they were considered apart from other respondents.

Table 19: Goodness of fit indices for path analysis, by gender and Indigenous status

Model	$\chi^2$	df	$p$	$\chi^2/df$	TLI	CFI	RMSEA	PCLOSE
All respondents	9.09	6	.169	1.51	.97	.99	.03	.749
Non-Indigenous	39.6	6	.000	6.56	.53	.90	.15	.000
Indigenous	7.08	6	.314	3.02	.63	.92	.09	.072
Male	5.61	6	.468	.936	1.00	1.00	.00	.738
Female	8.32	6	.216	1.18	.99	.99	.02	.861

Following goodness of fit testing for the newly structured Factor Model, an attempt was made to create separate path models that would provide best fit for Indigenous students, and for non-Indigenous students, separately. Despite repeated attempts, it was not possible to create a model for non-Indigenous students that proved a better fit than that provided above in *Figure 4* and *Table 19*. Utilising expected maximisation and modification indices, it was possible to improve the *Figure 4* model for Indigenous students, through removal of *Factor IIa*, which had not operated consistently for these students due to the high number of Indigenous students at boarding schools. The best fit model for Indigenous students, renamed the Revised Factor Model, is provided in *Figure 5* on the following page, with goodness of fit testing presented in *Table 20*. Note that only significant paths are shown.

*Table 20: Goodness of fit indices for path analysis for Revised Factor Model for Indigenous students*

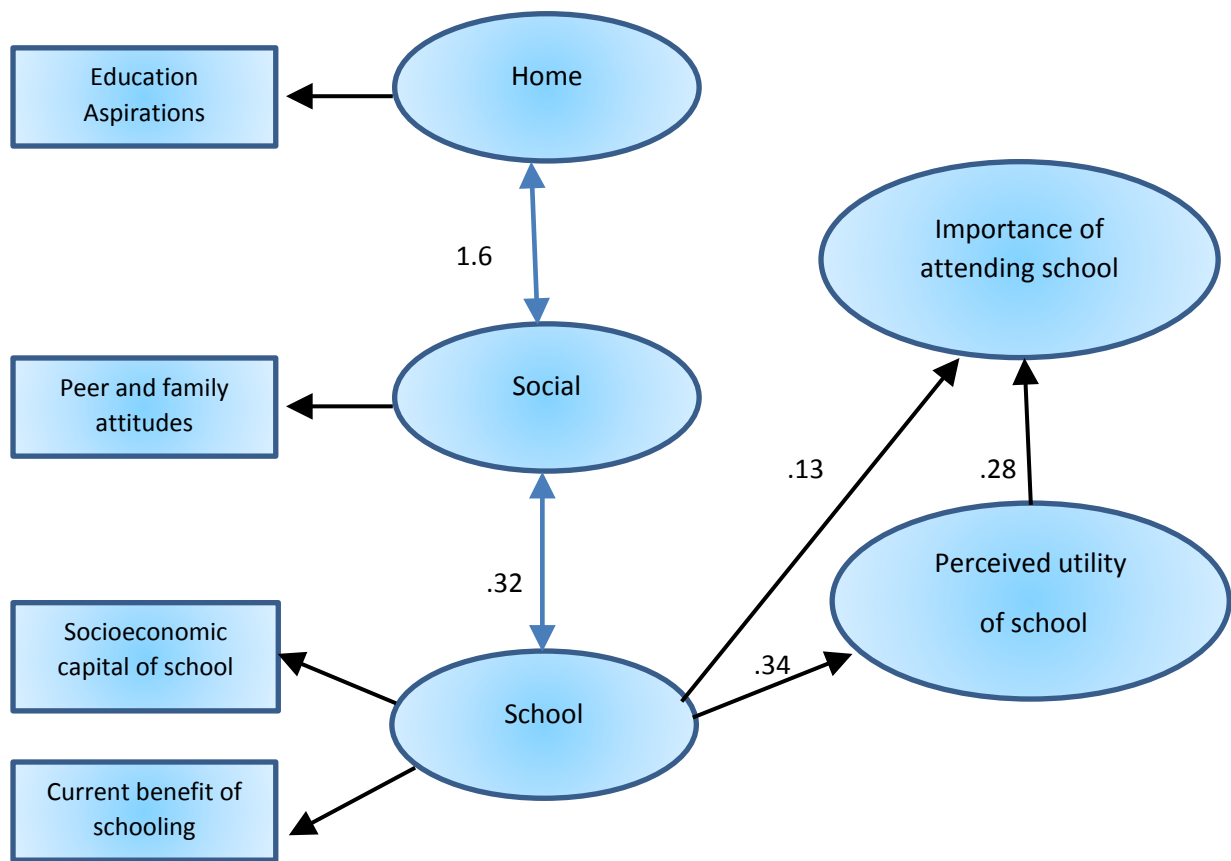
Model	$\chi^2$	df	p	$\chi^2/df$	TLI	CFI	RMSEA	PCLOSE
Indigenous	6.76	6	.344	1.13	.98	.99	.02	.680

The Revised Factor Model reiterates the interaction between the home and social domains for Indigenous students as seen by the covariance of 1.6, but also that home experiences regarding education capital do not directly and significantly impact Indigenous student attitudes towards the importance of secondary schooling. Furthermore, experiences in the School domain do not impact as strongly on daily education choices (as modelled through student beliefs in the importance of daily school attendance and Yr 12 completion) as on student perceptions of the future benefit of school. That is, schools can influence Indigenous student beliefs on the utility of school, but this may not be replicated in attendance behaviours due to other determinants impacting Indigenous students' education decision-making.

## 6.4 Conclusion

The confirmatory factor analysis presented in this Chapter identified significant differences by Indigenous status, but not gender, in interactions between the latent Factor Model. The structural equation model was a close fit for the whole sample under consideration, and separately for male students, female students, and Indigenous students, but not for non-Indigenous students. The model was modified and a more exact fit was identified for Indigenous students that corroborated the body of scholarly knowledge regarding the interaction between home, school and the individual. No ideal model fit was obtained for non-Indigenous students.

Figure 5: Exploratory SEM of Revised Factor Model, for Indigenous students only



Factorial invariance testing revealed that the greatest differences between Indigenous and non-Indigenous respondents was not at the Item-to-Factor level, but at the Factor-to-Factor level. That is, the identified Factors shared similar predictive relationships with the latent constructs for both Indigenous and non-Indigenous respondents, except in areas specifically related to geographic and socioeconomic experiences.

The creation of the Revised Factor Model describing those Factors which were most strongly predictive of Indigenous students' education beliefs and choices, and identifying interrelations between Factors, was a key accomplishment of the current thesis. The Revised Factor Model provides empirical evidence for the structural relationship between socioeconomic factors, school experiences, home support, and students' education engagement. Furthermore, the Revised Factor Model clearly differentiates the influence of these Factors on student perception of the benefit of education, separately to student belief in the importance of attending school and completing Year 12.



Having completed the exploratory and confirmatory Factor Analysis required for development of a conceptual model of Indigenous education engagement, the thesis now turns to analysis of the guiding Research Questions. Following on from the finding of the present Chapter that significant differences existed between Indigenous and non-Indigenous students in the way certain Factors affected student decision-making, it was thus expected that significant differences may also exist between Indigenous and non-Indigenous respondents in relation to the two Research Questions guiding the present thesis. Such a finding would have significant implications for future Indigenous education policy, particularly if replicated across other samples of Indigenous Australian students, and thus requires a robust statistical evidence base. The following chapter explores the contribution of each of the individual latent variables to student perceptions of the benefit of education, and also to education choices, through multivariate and bivariate analysis.

## Chapter 7 - Results of Research Questions

### 7.1 Introduction

The Revised Factor Model which was developed in the previous Chapter provides a conceptual model of the interactions between student experiences in the School, Home, and Community Domains, and student engagement with secondary education. This Model furthers the body of quantitative support for scholarly knowledge in this field, much of which has been based on previous qualitative and anecdotal studies. Having established the validity of the Revised Factor Model, analysis now turns to the two Overarching Research Questions identified in Chapter 1. These questions are reproduced below.

*1. What is the relationship between education choices\* and perceived benefit of education for Indigenous secondary students in Western Australia?*

\*attendance, Year 12 retention and post-school aspirations.

*2. Which specific engagement strategies contribute to the perceived benefit of education for Indigenous secondary students?*

These Overarching Research Questions are accompanied by three secondary questions regarding the existence of relationships between student experiences and perceptions highlighted through anecdotal evidence in the literature. These secondary research questions were

*3. Amongst Indigenous and non-Indigenous students, which variables predict student intentions to attend and complete school?*

*4. Is the relationship between current benefit of schooling and perceived future benefit of schooling independent of home and community socioeconomic factors?*

*5. What relationship exists between student perceptions of Indigenous culture being valued within the school environment, and other measures of wellbeing and engagement at school?*

This Chapter presents analysis of the Overarching Research Questions first, followed by those secondary questions that arose out of the literature review. In the case of Research Question 1, bivariate techniques are applied at the latent variable level to explore the strength and direction of correlation between perceived future benefit of schooling, and intended education choices. In the case of Research Question 2 and Research Question 3, multiple regression techniques were applied to isolate the unique contribution of individual variables towards student perception of the benefit of school, and student intentions to attend school and complete Year 12. Finally, in Research

Question 4 and Research Question 5, partial correlations are analysed in order to explore the influence of possible confounding factors on some of the key findings of the current thesis.

Where bivariate relationships were identified, Pearson's product-moment correlation coefficient was utilised as a measure of linear relationship. The zero-order correlations between non-demographic variables are presented in *Appendix K – Zero-order correlations between interval latent variables*. Throughout the chapter,  $p$  values are presented exact to three significant figures, unless SPSS provided a value of  $p = 0.000$ , in which case the value reported here is  $p < 0.001$ . Because multiple parametric tests were carried out, a Bonferroni adjustment was applied. In total, 39 parametric tests were carried out, hence the applied significance level was  $.05/39 = .001$ . Hence, statistical significance is determined by  $p < 0.001$ ,  $r > 0.3$ .

Where appropriate, differential analysis was conducted for students by gender and Indigenous status. The need for such differentiation was highlighted in Chapter 6, and furthers the current body of knowledge by exploring the extent to which these groups replicate findings of previous studies (Abbott-Chapman, Martin, Ollington, Venn, Dwyer, & Gall, 2014; Biddle, 2007; Bodkin-Andrews, Denson, & Bansel, 2012; Bodkin-Andrews, O'Rourke, & Craven, 2010; Epstein & Sheldon, 2002; Helme, 2010; Hones, 2005; Karmel & Liu, 2011; Lamb et al., 2004; Munns & Parente, 2003; Reid, 2008).

Of the above Research Questions, only Research Question 4 explored relationships between constructs at the *Factor* level. The other four Questions aim to explore the contributions of individual latent variables in order to provide specific knowledge regarding the key experiences that contributed to Indigenous education engagement in the current study. Throughout this Chapter, latent variables are referred to by their abbreviated codes, which are tabulated and defined in *Table 12* found in Chapter 5.

## 7.2 Overarching Research Questions

### *Research Question 1: What is the relationship between education choices and the perceived benefit of education for Indigenous secondary students Western Australia?*

Within Research Question 1, education choices were defined to be attendance, Year 12 retention and post-school aspirations. It was not within the scope of the present study to collect actual attendance or Year 12 completion data, hence these were modelled by the latent variable SCHOOLIMP (Student perception of the importance of daily school attendance and Year 12

completion), and MOTATTtype (a dummy variable measuring whether students reported an integrated or introjected motivation for attending school). Students' post-secondary career or educational pathway aspirations were modelled by FUTPLANrank (Future Pathway Intentions) whereas perceived benefit of education was modelled by variable PERECBEN (Student Perception of the Economic Benefit of Education).

Exploratory Factor Analysis had already identified a strong positive correlation between SCHOOLIMP and PERECBEN, which were combined to create *Factor IV – Perceived Future Benefit of School*. The zero-order bivariate correlations between perceived benefit of education and education choices MOTATTtype, SCHOOLIMP and FUTPLANrank are presented in *Table 21* below. Although the Research Question aims to investigate correlations for Indigenous students, the relationship for non-Indigenous students was also analysed for comparative purposes.

*Table 21: Pearson's correlation coefficients for PERECBEN with Education Choices*

	Indigenous			Non-Indigenous		
	Female	Male	Total	Female	Male	Total
<i>PERECBEN with MOTATTtype</i>	.42***	.18	.33***	.37***	.13	.30***
<i>PERECBEN with SCHOOLIMP</i>	.48***	.45***	.48***	.51***	.46***	.48***
<i>PERECBEN with FUTPLANrank</i>	.14	.25	.20*	.15	.34***	.17***
* Significant at the 0.05 level						
***Significant at the 0.001 level						
<i>PERECBEN</i> = Student Perception of the Economic Benefit of Education, <i>MOTATTtype</i> = Motivation for School Attendance, <i>SCHOOLIMP</i> = Perception of the Importance of Schooling, <i>FUTPLANrank</i> = Future Pathway Intentions						

The first row in *Table 21* reveals a difference between males and females of both ethnic groups in the correlation between perceived benefit of education and attendance motivation type. The variables MOTATTtype and PERECBEN were positively, although weakly, correlated for Indigenous ( $r = .42$ ,  $p = .001$ ) and non-Indigenous ( $r = .37$ ,  $p = .001$ ) females, indicating that female respondents who believed in the economic benefit of school completion were more likely to have integrated daily school attendance into their sense of self as a student. The effect was small, however, as for both ethnicities of female students, student perception of the economic benefit of school accounted for less than one fifth of the variance in motivational type. Amongst male students of both ethnic groups, there was no significant correlation between MOTATTtype and PERECBEN, indicating that male students were less likely than female students to have integrated their perceived benefit of education into their identity as a student. Later univariate analysis (Chapter 8)

revealed that there was no gender difference in the distribution of either of these variables, hence the difference identified here reflects a true difference in gender attitudes.

The second row of *Table 21* identifies a consistency amongst all groups, that students who believed more strongly in the future economic benefit of completing school were also more likely to attribute importance to daily attendance and school completion (Indigenous respondents,  $r(154) = .48, p < 0.001$ ; non-Indigenous respondents  $r(251) = .47, p < 0.001$ ). Yet, the size of these correlations reveals that belief in the future benefit of education accounts for less than one quarter of the variance in student perceptions of the importance of school attendance and completion.

Finally, as revealed in the third row of *Table 21*, only amongst male non-Indigenous students, was there a significant correlation between perception of the future economic benefit of school and intention to complete post-secondary education ( $r = .34, p < 0.001$ ), although again this correlation was low.

This finding provides further information regarding the relationship between *Factor IV – Perceived Future Benefit of School*, and *Factor V – Education Aspirations* identified in *Table 18* in Chapter 6, which was much weaker for Indigenous students than for non-Indigenous students (Indigenous:  $r = .32$ ; non-Indigenous:  $r = .68$ ). From *Table 21* it would appear that both for Indigenous students, and for female non-Indigenous students, belief in the importance of school attendance, Year 12 completion, and the future economic benefit of school completion only correlated weakly with post-secondary education aspirations.

In conclusion, the above analysis provides an answer to the first research question “Is there a relationship between education choices and the perceived benefit of education?” There was in fact a positive relationship between student beliefs in the future benefit of completing education and student motivation to attend school daily and achieve Year 12 completion.

Female students were moderately likely to have integrated their beliefs in the economic benefit of school into an intrinsic motivation for daily school attendance, whilst male students did not exhibit any correlation between belief in the future economic value of school attendance, and their attendance motivations.

When evaluated separately by gender and Indigenous status, only male non-Indigenous students exhibited a correlation between their post-secondary aspirations and perceptions of the economic benefit of education. Yet even for this group, perceived benefit of education accounted for only 14% of the total variance in student post-secondary aspirations. It thus appears that for many of

the students in this study, belief that completing Year 12 carried future economic benefit, did not imply a belief that post-secondary education was equally beneficial.

### *Research Question 2: Which specific engagement strategies contribute to the perceived benefit of education for Indigenous secondary students?*

The second Overarching Research Question aimed to quantify the impact of various school engagement strategies on respondents' perception of the benefit of education. Those engagement strategies to be analysed were detailed as part of the Research Question in Chapter 1. When Pearson's Correlation Coefficients were calculated between variables (see *Appendix K*), only five school engagement strategies were found to be significantly correlated with the variable PERECBEN ( $p < 0.001$ ,  $r > 0.3$ ). These were: Positive School Culture (POSCULT), Promotion of Indigenous Culture (PRMINDCLT), Pathway Development (PATHDEV), Motivation for School Attendance (MOTATTtype), and Student Self-Efficacy (SSEFF). In addition, one variable from the Social Domain, Family Support (FAMSUP), was also significantly correlated with student perception of the benefit of education. Under Exploratory Factor Analysis, the five school-level variables mentioned above were summated in *Factor I – Perceived Current Benefit of Schooling*. The correlation between *Factor I* and *Factor IV - Perceived Future Benefit of School* was also moderately positive for both Indigenous  $r(149) = .52$ ,  $p < .001$ , and non-Indigenous  $r(249) = .61$ ,  $p < .001$ , respondents. Hence, students who attended schools where there is a positive culture, career knowledge development opportunities, and promotion of Indigenous culture and student self-efficacy, were likely to have a higher perception of the future benefit of education.

The above results established that aspects of the school environment did have a significant correlation with student perception of the benefit of school, at both the individual variable and *Factor* level. From there, it was considered valuable to ascertain the unique contribution of each of these school engagement strategies on student perceptions of the importance of school above and beyond the most highly correlated variable.

Standard multiple regression was performed, treating student perception of the economic benefit of school as the criterion variable and positive school culture, student self-efficacy, family support and pathway development as the predictors. (Promotion of Indigenous Culture and Motivation for School Attendance were not included in the full regression as they were not measured for all respondents). Residual plots indicated that normality, linearity and homoscedasticity assumptions were met. Independence of errors was tested with the Durbin-Watson statistic =1.86, indicating that the independence of errors assumption had been met. *Table 22* displays the correlations

between the variables, the unstandardised regression coefficients (B) and intercept, the standardised regression coefficients ( $\beta$ ), the semipartial correlations ( $sr^2$ ),  $R^2$ , and adjusted  $R^2$ .

Table 22: Standard Multiple Regression of school engagement variables on students' perception of the economic benefit of education

	Variables	Unstandardised Coefficients		Standardised Coefficients	t	Zero-order Correlation with DV	Unique contribution $sr^2$
		B	Std. Error	Beta			
Model 1	(Constant)	1.575	.217		7.252***		
	PATHDEV	.179	.029	.289	6.18***	.47	.06
	POSCULT	.142	.037	.195	3.47***	.46	.03
	SSEFF	.159	.046	.166	3.81***	.42	.02
	FAMSUP	.174	.043	.169	4.06***	.30	.02

$R^2 = .35$ , adjusted  $R^2 = .34$ . Unique variability = .13; shared variability = .21.

\*\*Significant at the 0.01 level

\*\*\*Significant at the 0.001 level

*PATHDEV* = Awareness of Employment Pathways, and Focused Transition to Employment, *POSCULT* = Positive School Culture, *SSEFF* = Student Self-Efficacy, *FAMSUP* = Family Support for Education

The multiple regression equation was significant,  $F(4, 410) = 54.34$ ,  $p < 0.001$ . The adjusted  $R^2$  value of .34 indicates that one third of the variability in student perceptions of the economic benefit of education was predicted by pathway development, positive school culture, family support and student self-efficacy. The equation is given below:

$$PERECBEN = 1.575 + .179(PATHDEV) + .142(POSCULT) + .159(SSEFF) + .174(FAMSUP)$$

The four independent variables in combination contributed a larger share of variability than did the variables individually. Of these four, however, pathway development opportunities at school was most important, as indicated by the semipartial correlations.

In conclusion, the size and direction of the relationships suggest that a higher value is placed on secondary education by those students who experienced pathway development opportunities and positive culture at school, have a higher self-efficacy and experience family support for education. The single engagement strategy of highest impact was pathway development opportunities. From this it can be suggested that schools in the current study that focus on building a positive school

culture, greater student self-efficacy and working to improve family support for education are likely to witness an improvement in student perceptions on the benefit of education beyond what could be attained by each strategy uniquely.

## 7.3 Secondary Research Questions

### *Research Question 3: Amongst Indigenous and non-Indigenous students, which variables predict student intentions to attend and complete school?*

The previous two Research Questions identified that certain school engagement strategies did impact student perceptions of the benefit of education, and that student perceptions of the benefit of education were positively correlated with education choices, for respondents to this study. The question then arose, as to whether these school engagement strategies could be shown to predict student education choices, particularly, student intentions to attend and complete secondary school (SCHOOLIMP).

The Pearson's Correlation Coefficients in *Appendix K*, reveal that the same four school engagement strategies (POSCULT, PRMINDCLT, PATHDEV and SSEFF) were found to be significantly correlated with the variable SCHOOLIMP ( $p < 0.001$ ,  $r > 0.3$ ), as was Family Support (FAMSUP). Motivation for School Attendance (MOTATTtype) no longer had a sufficient level of correlation.

To identify the unique contribution provided by each of these variables to the dependent variable SCHOOLIMP, a standard multiple regression was employed. This regression equation was built separately for Indigenous and non-Indigenous students. Demographic variables were also considered, although only school year group was significant.

The results for non-Indigenous students are presented and analysed first, followed by results, regression equation and analysis for the Indigenous students. *Table 23* displays the results for non-Indigenous students.



Table 23: Standard Multiple Regression of variables on non-Indigenous students' beliefs in the importance of school

	Variables	Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	Zero-order Correlation with DV	Unique contribution <i>sr</i> <sup>2</sup>
		B	Std. Error	Beta			
Model 1	(Constant)	.129	.336		.385		
	POSCULT	.066	.056	.075	1.17	.41	.00
	SSEFF	.275	.067	.256	4.13***	.48	.04
	Year Group	.101	.029	.169	3.45***	.17	.03
	PERECBEN	.269	.066	.248	4.08***	.47	.04
	FAMSUP	.348	.070	.274	5.01***	.48	.06

$R^2 = .42$ , adjusted  $R^2 = .40$ . Unique variability = .17; shared variability = .23.

\*\*Significant at the 0.01 level

\*\*\*Significant at the 0.001 level

*POSCULT* = Positive School Culture, *SSEFF* = Student Self-Efficacy, *PERECBEN* = Student Perception of the Economic Benefit of Education, *FAMSUP* = Family Support for Education

The multiple regression equation for non-Indigenous students was significant,  $F(6, 244) = 29.29$ ,  $p < 0.001$ . The adjusted  $R^2$  value of .40 indicates that two fifths of the variability in student perceptions of the importance of attending school and completing Year 12 is predicted by student self-efficacy, student year group, perception of the economic benefit of school, and family support. Whilst positive school culture shared significant correlations with SCHOOLIMP, it did not explain any unique variance beyond that explained by the other four variables. The four independent variables in combination contributed a larger share of variability than did the sum of the variables individually.

The final regression equation is given below:

$$SCHOOLIMP = .248(PERECBEN) + .169(YearGroup) + .256(SSEFF) + .274(FAMSUP)$$

Thus, for non-Indigenous students in the current study, the size and direction of the relationships suggest that a higher value was placed on school attendance and Year 12 completion by students who attributed future economic and employment benefit to school completion, who were in higher years of schooling, had a higher self-efficacy, and experienced family support for education. The three non-demographic variables had almost equal weightings, which implies that each of these

variables (PERECBEN, SSEFF and FAMSUP) contribute equal weight to student beliefs in the importance of school.

The results for Indigenous students are presented in *Table 24* below. The same variables were tested, however, those that were clearly non-significant in Model 1 were removed so that a more accurate model (Model 2) could be obtained. Variable FUTASP (Future Aspirations) was also found to be significant for Indigenous students, and was included in the regression analysis.

*Table 24: Standard Multiple Regression of variables on Indigenous students' beliefs in the importance of school*

	Variables	Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	Zero-order Correlation with DV	Unique contribution <i>sr</i> <sup>2</sup>
		B	Std. Error	Beta			
Model 1 <sup>a</sup>	(Constant)	1.732	.364		4.76***		
	POSCULT	.024	.049	.039	.48	.34	.00
	SSEFF	.177	.071	.201	2.50*	.43	.03
	Year Group	.037	.028	.090	1.32	.19	.01
	PERECBEN	.256	.078	.267	4.08***	.48	.05
	FUTASP	.123	.046	.198	2.67**	.40	.03
	FAMSUP	.077	.061	.089	1.27	.23	.01
Model 2 <sup>b</sup>	(Constant)	1.984	.308		6.44***		
	SSEFF	.199	.067	.226	3.07**	.48	.07
	PERECBEN	.288	.073	.301	3.93***	.43	.04
	FUTASP	.139	.045	.222	3.07**	.40	.04

a.  $R^2 = .34$ , adjusted  $R^2 = .32$ . Unique variability = .13; shared variability = .19.

b.  $R^2 = .33$ , adjusted  $R^2 = .32$ . Unique variability = .15; shared variability = .17.

\*\*Significant at the 0.01 level

\*\*\*Significant at the 0.001 level

*POSCULT* = Positive School Culture, *SSEFF* = Student Self-Efficacy, *PERECBEN* = Student Perception of the Economic Benefit of Education, *FUTASP* = Future Aspirations, *FAMSUP* = Family Support for Education

The multiple regression equation for Indigenous students was significant,  $F(3, 150) = 24.44$ ,  $p < 0.001$ . The adjusted  $R^2$  value of .32 indicates that nearly one third of the variability in Indigenous student perceptions of the importance of attending school and completing Year 12 is predicted by

future aspirations, perception of the economic benefit of school, and student self-efficacy. The final regression equation is given below:

$$SCHOOLIMP = 1.984 + .301(PERECBEN) + .226(SSEFF) + .222(FUTASP)$$

For Indigenous students in the current study, the size and direction of the relationships suggest that a higher value is placed on school attendance and Year 12 completion by students who attribute future economic and employment benefit to school completion, have a higher self-efficacy and aspire to a career of high income or status.

It is worth noting at this point that family support for schooling and employment aspirations were predictive of student attitudes towards the importance of schooling for non-Indigenous students, but not for Indigenous students, and that future aspirations was predictive of attitudes towards schooling only for Indigenous students. Furthermore, the school year attended was a predictive factor of attitudes towards the importance of school for non-Indigenous students, but not for Indigenous students. Hence, there are clear differences in the impact of individual intervention strategies on education engagement for Indigenous and non-Indigenous students.

#### *Research Question 4: Is the relationship between current benefit of schooling and perceived future benefit of schooling independent of home and community socioeconomic factors?*

Table 18 in Chapter 6 revealed significant Factor-to-Factor correlations between socioeconomic capital (*Factor IIa* and *Factor III*) and current school engagement (*Factor I – Perceived Current Benefit of Schooling*), but not between socioeconomic capital (*Factor IIa* and *Factor III*) and perceived utility of education (*Factor IV - Perceived Future Benefit of School*). These findings suggest that socioeconomic experiences impact actual education choices, but not students' belief in the benefit of secondary education. Furthermore, these findings suggest that schools which effectively develop those engagement strategies within *Factor I* (e.g. positive school culture, development of pathways, etc.) may also see an increase in student perceptions of the benefit of education, regardless of socioeconomic background.

To further investigate this idea, a hypothesis was posed that the relationship between student engagement with school and perceived future benefit of education would be independent of socioeconomic factors, as has been identified previously by Abbott-Chapman et al. (2014). Against

this hypothesis, the actual and partial correlations between *Factor I - Perceived current benefit of school* and *Factor IV - Perceived future benefit of school* were calculated, controlling for the effect of other *Factors*. The results of this analysis, presented in *Table 25* below, support the hypothesis.

*Table 25: Partial Correlation for Factors I and IV, controlling for other Factors*

	Zero-order Correlation of Factor I and Factor IV r	Partial Correlation of Factor I and Factor IV r
<b>Overall</b>		
<i>Education and Employment in the Community (Factor II)</i>		.58***
<i>Socioeconomic Capital in the School (Factor III)</i>		.54***
<i>Education Aspirations (Factor V)</i>	.59***	.56***
<i>Socioeconomic Capital in the Home (Factor VI)</i>		.58***
<i>Social Support for Education (Factor VII)</i>		.56***
* Significant at the 0.05 level		
**Significant at the 0.01 level		
***Significant at the 0.001 level		

There was a moderate and significant relationship between student engagement with school on a day-to-day basis (as modelled by *Factor I*), and student engagement with school completion and the benefit of education (as modelled by *Factor IV*),  $r(400) = .59, p < 0.001$ . This relationship was found to be independent of socioeconomic factors in the home community or in the school, and also independent of social support for education or post-secondary aspirations.

### *Research Question 5: What relationship exists between student perceptions of Indigenous culture being valued within the school environment, and other measures of wellbeing and engagement at school?*

Much attention has been paid to schools improving the level of cultural connection which Indigenous students experience in the school environment, in order to improve student wellbeing and engagement at school (Brown & Milgate, 2011; Commonwealth of Australia, 2011; Munns, Martin & Craven, 2008; Rahman, 2010; Wilkinson, 2009). This is often especially a focus for urban schools that take on Indigenous boarding students from remote parts of Western Australia.

This research question was investigated in two ways. Firstly, it was explored whether students' perception that their culture was accepted at school (FITINCLT) impacted measures of school engagement such as perceived positive school culture (POSCULT), perceived benefit of education (PERECBEN) and perceived importance of school attendance and completion (SCHOOLIMP). Secondly, it was explored whether the correlation between promotion of Indigenous culture (PRMINDCLT) and perceived positive school culture (POSCULT) was independent of other factors in the school environment.

In the current study, the item FITINCLT measured whether students felt that Indigenous status affected whether it was easy to 'fit in' at their school, that is, whether their culture was accepted and provided for at school. A One-Way ANOVA was conducted to determine whether perceived acceptance of one's culture affected student engagement at school, using the school engagement variables POSCULT, PERECBEN and SCHOOLIMP. For non-Indigenous students, the analysis of variance showed that perceived respect for one's culture did not significantly impact student perceptions of whether the school had a positive environment, on perceived economic benefit of education, or perceived importance of school attendance and completion. For Indigenous students, however, the analysis of variance showed that perceived respect for one's culture measured through FITINCLT significantly and positively impacted on student perceptions of whether the school had a positive environment  $F(2, 236) = 7.88, p < 0.001, \eta^2 = 0.067$ , and on perceived importance of school attendance and completion  $F(2, 155) = 8.71, p < .000, \eta^2 = 0.101$ . As with non-Indigenous students, perceived respect for one's culture did not have a significant impact on perceived economic benefit of education. Hence, the first analysis for this research question identified that for Indigenous students, a perceived acceptance of their culture had a significant positive moderate effect on perception that the school was a positive place to be, and a significant positive large effect on student perceptions that it was important to attend school daily and complete Year 12. The lack of impact of the variable FITINCLT on non-Indigenous students may well reflect that none of these students in this study attended a school where they were in a cultural minority, and thus were limited in their ability to recognise and differentiate the effect of hegemonic privilege on their experiences.

The second analysis used to investigate this research question looked at whether the existence of significant correlations between student perceptions that Indigenous culture was valued within the school environment (PRMINDCLT) and other measures of wellbeing and school engagement, could be explained by the correlation between POSCULT and PRMINDCLT.

For the purposes of this analysis, the measures of wellbeing and school engagement found to have significant positive correlations with PRMINDCLT were POSCULT  $r(249) = .51, p < .001$ , SSEFF  $r(249)$

= .30,  $p < .001$ , FUTASP  $r(247) = .27$ ,  $p < .001$ , STAFFADM  $r(247) = -.24$ ,  $p < .001$  and PERECBEN  $r(159) = .28$ ,  $p < .001$ . These last four variables were also significantly correlated with POSCULT. To determine whether the relationship between PRMINDCLT and student engagement and wellbeing variables was independent of the general relationship between positive experiences at school (POSCULT) and student engagement, a partial correlation for these variables was calculated, controlling for POSCULT. The findings are presented in the *Table 26* below.

*Table 26: Partial correlation of student engagement variables with student perception that Indigenous culture is promoted within the school*

	Zero-order Correlation with PRMINDLT	Partial Correlation with PRMINDCLT, after controlling for POSCULT
	<i>r</i>	<i>r</i>
<i>Student Self Efficacy (SSEFF)</i>	.30***	.10
<i>Future Aspirations (FUTASP)</i>	.27***	.07
<i>Positive Relationship with School Staff (STAFFADM)</i>	-.24***	-.10
<i>Perception of the Economic Benefit of School (PERECBEN)</i>	.28***	.06
* Significant at the 0.05 level		
**Significant at the 0.01 level		
***Significant at the 0.001 level		

From the results in *Table 26*, it is evident that the apparent relationships between PRMINDCLT and the variables SSEFF, FUTASP, STAFFADM and PERECBEN cannot be separated from the relationships these variables have with POSCULT. This finding indicates that for Indigenous students, perceived respect for Indigenous culture in the school environment (PRMINDCLT) is not separately related to school engagement, but is in fact part of the greater construct of perceived respectfulness and positivity in general in the school environment. This finding does not suggest that promotion of Indigenous culture is irrelevant, but rather, that the importance of promotion of Indigenous culture is intrinsically linked to the impact of cultural respect on Indigenous students' perception that the school is a positive place for them.

## 7.4 Conclusion

The analyses presented in this Chapter addressed five Research Questions that arose, based on scholarly knowledge discussed in the literature review. Four of these questions explored the relationship between student experiences at school and at home, and student perceptions of the benefit and importance of education. In answer to the primary research question, student perception of the benefit of school was clearly, although only moderately, associated with education choices, for Indigenous as well as non-Indigenous secondary students.

It was found that school experiences and student self-efficacy had a greater impact on student education intentions than did home and community variables that were measured in this study. In particular, socioeconomic capital at home and in the school did not affect the relationship between school engagement and student perceptions. These findings of multivariate and bivariate analysis, closely reflect those of the Revised Factor Model in Chapter 6.

Amongst those variables that were found to be predictors of student attitudes towards both the economic benefit of school and also student beliefs in the importance of school, two clear domains emerge; those of school and community. The most powerful predictors of student beliefs in the value of school for both groups of students were factors from within the school domain: positive school culture and career pathway development opportunities.

The final question in this Chapter investigated the impact on Indigenous students of cultural connectedness at school. Indigenous students who felt their culture was treated respectfully at school were more likely to report a positive sense of school culture, and more likely to report an intention to complete school, although this did not carry through to post-secondary aspirations.

Having identified the unique contribution of key variables to student education choices through multivariate methods, the final stage of quantitative analysis was to identify the current state of students' school experiences and perceptions through univariate analysis of each latent variable. Such analysis further developed understanding of operationalization of the seven Factors and their included variables, and identified similarities and differences in the univariate parameters for Indigenous and non-Indigenous students. These analyses are presented in Chapter 8 – Univariate analysis of variables and Factors.

## Chapter 8 - Univariate Analysis of Variables and Factors

### 8.1 Introduction

The research rationale guiding the current thesis recognised that a plethora of strategies have been implemented to improve Indigenous education outcomes across remote, rural and urban schooling, and argued that it was essential to measure the efficacy of such strategies. The actual influence of these school strategies on education choices and perceived benefit of education, were measured in Chapter 7. Moving from large scale analyses to small scale analyses, the next stage of analysis involved looking again at the latent variables within factors, and exploring these for difference in mean between groups at the univariate level.

The motivation for this univariate analyses was two-fold. Firstly, the second research question examines the relationship between individual school engagement strategies and students' perception of the benefit of school. A basic requirement of answering this research question, is to gain an understanding of how well each individual engagement strategy is operating across the schools included in the current study, and to compare the perceived efficacy of each strategy across students when grouped by school, gender, and Indigenous status.

The second motivation for univariate analysis involves exploration and corroboration of the findings of factorial invariance testing and path analyses presented in Chapter 6. In that chapter, it was identified that the Revised Factor Model was a better fit for Indigenous students than non-Indigenous students, and that this appeared due mainly to differences between Factor-to-Factor correlations, rather than at the Item-to-Factor Level. Where differences in Factor responses by gender or Indigenous status had been identified in Chapter 5 (*Table 13* and *Table 14*), it was not yet known which variables within the Factors had contributed to those differences. Where these differences existed at the Item-to-Factor Level (that is, where Indigenous and non-Indigenous students experienced the latent variables differently), then differences in means between these groups should be evident in univariate analyses of Factors and items with Factors.

This Chapter presents descriptive and inferential univariate analyses of Factors and their endogenous variables. Each variable was examined for differences in responses between schools, and between Indigenous and non-Indigenous students. Where the literature had identified the likelihood of difference by gender, this was also explored. The univariate analysis was structured by Factors, in order of weighting under the Exploratory Factor Analysis. The EFA Seven Factor Model was utilised to structure these analyses because it provided a more complete explanation of the latent variables across all students than the Revised Factor Model.



In summary, the guiding questions for univariate analyses were as follows:

1. What were the descriptive statistics (*M*, *Mod*, *SD*) for the variable?
2. Is there a difference between Indigenous students and non-Indigenous students in the means for each variable?
3. Is there a difference between schools in the means for each variable?
4. Where previous research has indicated that gender is a relevant factor, is there a difference between male and female students for the variable?
5. Where variables measure factors in the home or family, is there a difference between residential (boarding) and day students for the variable?

## 8.2 Method and Results

The following pages present the results of descriptive and inferential analyses of the latent variables. All variables measuring student perceptions were scored on a five-point Likert-type scale. Parametric tests were applied because they are more statistically powerful than non-parametric tests, that is, they reduce the likelihood of a Type II error (failure to reject the null hypothesis when it is false) (Sharma, 1996). Choices regarding the most appropriate statistical tests were made with reference to the decision tables presented by Cohen, Manion, and Morrison (2007), and Gravetter and Wallnau (2009). For comparison of Indigenous and non-Indigenous students, the independent samples t-test was used to test the null hypothesis, that the two samples have equal distributions (Gravetter & Wallnau, 2009). *Table 27* presents the descriptive statistics as well as results of the independent samples t-tests. As the data were non-normally distributed, both mean (*M*) and mode (*Mod*) are reported. For comparison between schools, MANOVA was used. *Table 28* presents the descriptive statistics of the latent variables, by school. For categorical variables, a chi-squared test was applied to test for goodness of fit, with the non-Indigenous sample used to provide hypothesised proportions in each category. *Table 29* presents the results of the Chi-squared tests by gender, school and Indigenous status.

For a difference in means to be considered significant, a 95% confidence interval is usually used in the social sciences. As described in the Introduction to Chapter 7, the large number of parametric tests conducted in this thesis led to a significance level of  $\alpha = 0.001$  being applied. Where results were non-significant, they are not discussed unless the non-significant finding is of interest.

The large sample size increased the likelihood that small effect sizes would achieve statistical significance. For this reason, discussion of significant findings also reports Cohen's  $\eta^2$  as a measure of effect size, with  $\eta^2 > .14$  considered a measure of large effect (Cohen, Manion, & Morrison, 2007). Another consideration when assessing differences between groups is that where the difference in means did not represent a difference in categories, this difference may not have practical meaning. This is more of a consideration across categorical and ordinal variables than scale variables.

Table 27: Descriptive and Inferential statistics, by Indigenous status

Variable		<i>M</i>	<i>Mod</i>	<i>SD</i>	Gender		Indigenous Status		School Name	
					<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>F</i>	<i>p</i>
Positive School Culture	Indigenous	3.59	3.50	.85						
	Non-Indigenous	3.48	4	.73						
	Total	3.52	4	.79	2.28	.024	1.64	.101	6.19	.000***
Promotion of Indigenous Cult.	Indigenous	2.99	3.00	.84	1.42	.158	N/A	N/A	3.78	.000***
Student Self-Efficacy	Indigenous	4.04	4	.59						
	Non-Indigenous	3.99	4	.59						
	Total	3.99	4	.60	-.09	.928	.79	.430	3.08	.000***
Pathway Development	Indigenous	3.12	4	.96						
	Non-Indigenous	2.98	3.58	.89						
	Total	3.03	4	.93	4.21	.000***	1.74	.083	8.50	.000***
Geographic Unemployment Rate	Indigenous	16.7	15.3	3.31						
	Non-Indigenous	3.79	4.10	.84						
	Total	8.86	4.10	6.67	-1.83	.068	-48.3	.000***	65.8	.000***
Geographic Tertiary Education Rate	Indigenous	53.7	55	6.59						
	Non-Indigenous	85.3	86	3.71						
	Total	72.9	86	16.2	1.81	.071	55.2	.000***	105.0	.000***
School Socioeconomic Index	Indigenous	1022.2	1043	83.6						
	Non-Indigenous	1006.9	1068	80.3						
	Total	1009.2	1068	83.4	.611	.542	-1.96	.051	N/A^	N/A^
Mean Attendance Rate by Indigenous Status	Indigenous	85.6	89	11.2						
	Non-Indigenous	91.7	93	3.86						
	Total	89.0	93	8.50	1.46	.145	6.81	.000***	330.0	.000***
School Region Tertiary Education Rate	Indigenous	73.1	82	14.7						
	Non-Indigenous	72.9	76	5.32						
	Total	73.0	76	10.8	-1.66	.098	-.232	.816	N/A^	N/A^
Indigenous Role Models	Indigenous	4.08	5.00	1.67			N/A	N/A	5.39	.002
Collaboration with Family	Indigenous	3.05	3.50	1.42						

	Non-Indigenous	3.61	3.50	.75						
	Total	3.33	3.50	1.15	3.29	.001***	-5.66	.000***	13.4	.000***
Provision of Study Assistance	Indigenous	3.21	1	1.75						
	Non-Indigenous	2.74	1	1.41						
	Total	2.96	1	1.60	-1.47	.142	2.87	.004	5.75	.000***
Previous Aspirations (1 – 3)	Indigenous	2.03	3	.98						
	Non-Indigenous	2.32	3	.91						
	Total	2.18	3	.95	-4.16	.000***	-3.32	.001***	3.44	.000***
Family Support	Indigenous	4.57	5	.60						
	Non-Indigenous	4.59	5	.50						
	Total	4.56	5	.56	-.19	.849	-.50	.619	1.96	.022
Peer Support	Indigenous	3.70	3.67	.83						
	Non-Indigenous	3.88	4	.70						
	Total	3.79	4	.77	-.70	.485	-2.74	.006	4.01	.000***
Family Responsibilities	Indigenous	2.29	3	1.07						
	Non-Indigenous	2.00	1	.96						
	Total	2.15	2	1.03	.417	.677	3.26	.001***	6.15	.000***
Study Environment	Indigenous	3.66	4	1.04						
	Non-Indigenous	3.49	3.50	.92						
	Total	3.56	4	1.00	-.397	.691	1.92	.055	7.43	.000***
Computer Access	Indigenous	3.42	5	1.66						
	Non-Indigenous	4.25	5	1.11						
	Total	3.85	5	1.45	.149	.882	-6.45	.000***	26.91	.000***
Perception of Economic Benefit	Indigenous	4.13	4	.54						
	Non-Indigenous	3.99	4	.59						
	Total	4.05	4	.57	1.62	.106	2.39	.017	35.9	.000***
School Importance	Indigenous	4.59	5	.52						
	Non-Indigenous	4.38	5	.64						
	Total	4.46	5	.61	-1.74	.091	3.67	.000***	31.5	.000***

\*\*\*Significant at the 0.001 level.

^ ANOVA cannot be calculated for school regional data as there is no within school difference.

Table 28: Descriptive statistics for interval latent variables, by school

Variable	M (SD)	School A (n = 24)	School B (n = 47)	School D (n = 32)	School E (n = 70)	School F (n = 22)	School I (n = 67)	School J (n = 32)	School K (n = 10)	School L (n = 18)	School N (n = 164)
Positive School Culture		3.38 (0.91)	3.10 (1.05)	3.13 (0.74)	3.42 (0.77)	4.03 (0.65)	3.59 (0.76)	4.18 (0.54)	3.71 (0.96)	4.06 (0.44)	3.55 (0.67)
Promot Indigenous Culture		3.04 (0.71)	2.56 (0.96)	2.71 (0.83)	2.78 (0.54)	3.30 (0.82)	2.97 (0.70)	3.58 (0.53)	2.75 (1.13)	3.47 (0.77)	2.77 (0.49)
Student Self-Efficacy		4.08 (0.46)	4.00 (0.59)	3.85 (0.55)	3.78 (0.65)	3.86 (0.45)	4.08 (0.59)	4.30 (0.54)	4.28 (0.79)	4.24 (0.59)	4.03 (0.57)
Pathway Development		3.26 (0.99)	2.42 (0.79)	2.63 (0.93)	2.83 (0.94)	3.48 (0.77)	3.25 (0.79)	4.04 (0.56)	3.14 (0.94)	3.28 (0.96)	3.05 (0.87)
Exposure to Role Models		3.71 (2.01)	4.70 (0.87)	3.97 (1.77)	2.43 (2.17)	4.45 (1.18)	4.39 (1.32)	4.43 (1.38)	N/A	4.06 (1.77)	N/A
Collaboration with Family		2.77 (1.93)	1.79 (1.81)	3.76 (0.67)	3.33 (0.82)	3.23 (1.14)	3.57 (0.71)	3.40 (0.81)	3.10 (1.52)	3.32 (0.83)	3.74 (0.67)
Provision of Study Assistance		2.87 (2.05)	3.20 (2.20)	4.18 (0.73)	2.13 (1.25)	2.00 (1.33)	2.79 (1.38)	2.04 (1.36)	N/A	N/A	2.92 (1.43)
Previous Aspirations (1 – 3)		2.08 (0.97)	2.38 (0.90)	2.00 (1.02)	1.87 (0.93)	2.05 (0.95)	2.26 (0.87)	1.75 (1.05)	N/A	N/A	2.40 (0.89)
Family Support		4.54 (0.61)	4.67 (0.40)	4.58 (0.57)	4.47 (0.51)	4.20 (0.94)	4.64 (0.53)	4.59 (0.58)	N/A	N/A	4.63 (0.47)
Peer Support		3.82 (0.64)	3.76 (0.84)	3.69 (0.86)	3.85 (0.68)	3.32 (0.85)	3.96 (0.81)	3.43 (0.96)	N/A	N/A	3.92 (0.64)
Family Responsibilities		N/A	N/A	1.75 (0.80)	2.40 (2.05)	3.00 (0.67)	2.07 (1.02)	2.87 (1.04)	N/A	N/A	1.83 (0.89)
Study Environment		4.29 (0.79)	4.10 (0.73)	3.89 (0.89)	3.29 (0.97)	3.63 (0.94)	3.69 (0.83)	2.59 (1.29)	N/A	N/A	3.49 (0.90)
Computer Access		4.78 (0.52)	4.30 (0.83)	4.00 (1.39)	3.60 (1.31)	1.67 (1.37)	3.76 (1.61)	1.34 (0.75)	N/A	N/A	4.44 (0.95)
Family Education		2.96 (1.30)	3.31 (0.97)	3.09 (1.33)	3.04 (1.04)	2.05 (1.36)	2.83 (1.29)	2.06 (1.16)	N/A	2.27 (1.03)	3.38 (1.04)
Perception Econom Benefit		N/A	N/A	3.87 (0.43)	3.82 (0.60)	4.10 (0.64)	3.99 (0.64)	4.42 (0.45)	N/A	4.45 (0.46)	4.08 (0.53)
School Importance		N/A	N/A	4.57 (0.46)	4.15 (0.67)	4.55 (0.64)	4.56 (0.55)	4.72 (0.40)	N/A	4.52 (0.67)	4.45 (0.61)

\*Data has not been reported for schools with n<10 respondents (School C, G, H and M). Some data only collected in Second Phase of data collection.

Table 29: Chi-square test for difference in distributions, for categorical variables.

Variable		Gender		Test of Difference in Distribution across:			
		<i>t</i>	<i>p</i>	Indigenous Status		School Name	
				$\chi^2$	<i>p</i>	$\chi^2$	<i>p</i>
Family Education	Total	.26	.795	29.0	.000***	6.04	.000***
Staff Admiration	Total	-2.27	.024	.044	.834	34.2	.001***
Staff Attendance	Total	-.105	.916	34.0	.000***	58.6	.000***
Future Plans	Total	-4.10	.000***	26.1	.000***	20.7	.078
Motivation for Attending School	Total	.59	.555	4.21	.240	16.9	.204
***Significant at the 0.001 level.							

## 8.3 Findings

The following discussion addresses the guiding questions provided in the Introduction of this Chapter. Variables are grouped according to the Seven Factor Model.

### Factor I – Perceived Current Benefit of Schooling

Exploratory Factor Analysis identified five latent variables that contributed to *Factor I – Perceived Current Benefit of Schooling*. These variables were *Positive School Culture*, *Pathway Development*, *Student Self-Efficacy*, *Promotion of Indigenous Culture*, and *Motivation for Attending School*. The correlation coefficients of these items with the overarching Factor were presented in Table 17 in Chapter 6. Findings of the univariate analyses of the five variables are presented below.

#### Positive School Culture

The majority of survey respondents reported a neutral or slightly positive sense of school culture ( $M = 3.52$ ,  $Mod = 4$ ,  $SD = .79$ ), both within individual schools and as a combined sample.

Analysis of variance showed that the effect of treatment (SchoolName) on *Positive School Culture* was significant, with a large effect size;  $F(13, 527) = 6.19$ ,  $p = .000$ ,  $\eta^2 = .136$ . Indigenous status had no significant impact. Hence, whilst some schools were more effective than others in building a sense of positive school culture, it appeared those that did so were equally effective for both Indigenous and non-Indigenous

students. This finding could not be tested post hoc as only six of the fourteen schools in the study had non-Indigenous respondents.

### Promotion of Indigenous Culture

Only students who indicated that they were Aboriginal or Torres Strait Islander were provided with the opportunity to respond to this variable. Both the Mean (2.99) and the Mode (3.00) indicated that in general, students held directionally neutral opinions on the level of Indigenous Cultural promotion within their school environment. This may be supported by interview data that found that many Indigenous students had experienced racism from some non-Indigenous staff or teachers within the school environment, as well as positive cultural engagement activities (e.g. NAIDOC) and relationships.

The effect of treatment (SchoolName) on *Promotion of Indigenous Culture* was significant and large,  $F(13, 235) = 3.78, p < .001, \eta^2 = .173$  indicating that some schools were better than others at promoting Aboriginal and Torres Strait Islander culture. The two schools with >95% Indigenous populations recorded the highest mean responses on this subvariable.

### Student Self-Efficacy

The majority of survey respondents reported a positive sense of self-efficacy ( $M = 3.99, Mod = 4, SD = .59$ ), both within individual schools and as a combined sample. The effect of Indigenous status was not significant, that is, there was no statistically significant difference between Indigenous and non-Indigenous students' perceptions of their own self-efficacy.

The effect of treatment (SchoolName) on *Student Self-Efficacy* was significant and moderate,  $F(13, 511) = 3.08, p = .000, \eta^2 = .073$ . This does not necessarily indicate that the school environment contributes to students' sense of self-efficacy, as students with greater self-efficacy may have self-selected certain schools. It is worth noting that there was no statistically significant correlation between student self-efficacy and school socioeconomic index (SEI). That is, students with higher self-efficacy appeared no more likely to attend high SEI schools.

### Pathway Development

The majority of survey respondents reported a medium level of pathway development experiences, ( $M = 3.03, Mod = 4, SD = .93$ ).

*Pathway Development* was the only variable in *Factor 1* for which gender was a significant predictor of student responses. Females reported categorically lower levels of pathway development experiences ( $M = 2.89, Mod = 2$ ) than males ( $M = 3.24, Mod = 3.58$ ), indicating that female students in this study were not provided with the same exposure to work experience and other activities designed to assist students enter the workforce.

The effect of treatment (SchoolName) on *Pathway Development* was significant and large,  $F(13, 513) = 8.50$ ,  $p < .001$ ,  $\eta^2 = .177$ , indicating that choice of school was an important factor in the pathway development opportunities available to students who participated in this study.

### Motivation for Attending School

There was no significant difference in responses by Indigenous status, gender, or school attended indicating that students at all schools, exhibited statistically similar frequencies of introjected or integrated motivation for attending school.

### Summary of Factor I – Perceived Current Benefit of Schooling

The lack of significant differences across both genders and ethnic groups indicates that most variables were responded to in similar ways by these groups. The significant differences across schools might mean that there were conceptual differences in understanding the constructs at each school, possibly as a result of differences in survey administration. Another, more likely, interpretation is that students at each school understood the five variables in Factor I in conceptually similar ways, but had markedly different experiences from students at other schools, these differences being reflected in responses to the variables. Given that some schools in the study were single sex and some schools had >95% Indigenous populations, any differences in the conceptual understanding at these schools should also have been evident in the analyses by gender and Indigenous status, were the differences conceptual rather than actual.

## Factor II – Education and Employment Engagement in the Community

Exploratory factor analysis identified that geographic region unemployment rate (GEOGUNEMPRATE), geographic region tertiary education rate (GEOGTEREDRATE), and frequency of communication between school and home (FAMCOM) each loaded significantly on to *Factor II -Education and Employment Engagement in the Community*.

When differences between Factors by gender and Indigenous status were presented in *Table 13* in Chapter 5, Factor II was found to exhibit significant and very large differences in means for students when grouped by Indigenous status,  $t(189.8) = 60.9$ ,  $p < .001$ , Cohen's  $d = 6.65$ .

### Geographic Tertiary Education Rate

Very large and significant differences were evident in the post-secondary education rates of the geographic home regions of students, when grouped by Indigenous status  $t(225) = 55.2$ ,  $p < .001$ , indicating that Indigenous students in this study were much more likely to come from geographic regions where they had



limited exposure to adults with post-secondary levels of education (Indigenous:  $M = 53.7$ ,  $SD = 6.59$ ; non-Indigenous:  $M = 85.3$ ,  $SD = 3.71$ ).

The effect of treatment (SchoolName) on *Geographic Tertiary Education Rate* was significant and very large,  $F(9, 397) = 105.0$ ,  $p < .001$ ,  $\eta^2 = .704$ , indicating that school communities in this study had significantly different levels of exposure to post-secondary educated adults.

### Geographic Unemployment Rate

The unemployment rates of the students' home geographic region were significantly different for students when grouped by Indigenous status  $t(172.4) = -48.3$ ,  $p < .001$ , indicating that Indigenous students in this study were much more likely to come from geographic regions with high rates of unemployment (Indigenous:  $M = 16.70$ ,  $SD = 3.31$ ; non-Indigenous:  $M = 3.79$ ,  $SD = .84$ ). The size and direction of this difference was also evident in the Item-to-Factor correlations presented in *Table 17* in Chapter 6.

As with GEOGTEREDRATE, the effect of treatment (SchoolName) on *Geographic Unemployment Rate* was significant and very large,  $F(9, 397) = 65.8$ ,  $p < .001$ ,  $\eta^2 = .698$ , indicating that school communities in this study had significantly different levels of exposure to unemployment amongst the adult population in the school geographic region.

### Collaboration with Family

Residential students reported significantly and categorically lower levels of communication between school and family than day students,  $t(498) = -5.90$ ,  $p < .001$ ,  $\eta^2 = .065$ . As many Indigenous students in the study boarded at schools a long way from home, a post hoc test was conducted to determine whether residential status was a confounding variable for the relationship between Indigenous status and *Collaboration with Family*.

When residential students were analysed separately by ethnic status, Indigenous boarding students scored significantly lower than non-Indigenous boarding students on *Collaboration with Family* (Indigenous:  $M = 2.82$ ,  $SD = 1.58$ ; Non-Indigenous:  $M = 3.43$ ,  $SD = .69$ );  $t(148) = -3.66$ ,  $p < .001$ ,  $\eta^2 = .065$ , yet there was no corresponding difference by Indigenous status for day students. Hence, residential status was a confounding factor for the difference in means between Indigenous and non-Indigenous students. This difference indicates that Indigenous boarding students, more often than other boarding students, experienced low levels of communication between the school and their family. This may have been due to the particularly large distances often existing between Indigenous students' schools and their family location, and inconsistent access to Internet or working telephones in the family's community impacting on the frequency and effectiveness of communication between the school and family.

Although the initial analysis revealed a gender difference on this variable,  $t(505.8) = 3.29, p = .001$ , this difference was not detected when responses were further analysed by schools. That is, differences in gender were in fact a result of differences between schools, some of which were single sex.

An analysis of variance showed that the effect of treatment (SchoolName) on *Collaboration with Family* was significant and large,  $F(13, 514) = 13.4, p < .001, \eta^2 = .253$ . This statistic was expected given the previous discussion of the impact of residential environments on school collaboration with family.

### Summary of Factor II – Education and Employment Engagement in the Community

The above findings indicate that some schools in this study had a student enrolment with exposure to much higher levels of education and employment engagement in the community than other schools. It is likely that these very large differences in socioeconomic and education capital between school regions, and between home communities of Indigenous and non-Indigenous students, may explain the significant difference in means by Indigenous status in *Factor II* identified in *Table 13* in Chapter 5.

## Factor III – Socioeconomic Capital in the School

Under EFA, the third most important Factor was *Socioeconomic Capital in the School*. Three items loaded on to this factor under EFA; school socioeconomic index (SCHSOCIND), tertiary education rates within the school's geographic region (TEREDERATE), and mean attendance rate by Indigenous status at school (MEANATTINDST). For the first two variables, there was no significant difference by gender, nor Indigenous status. Furthermore, it would have been meaningless to calculate a one-way ANOVA for the treatment [SchoolName] for these three variables, as all respondents within a given school had the same score. Hence, *School Socioeconomic Index* (SCHSOCIND) and *School Region Tertiary Education Rate* (TEREDRATE) are not discussed individually within this section.

### Mean Attendance at School, by Indigenous Status

Given the wealth of research evidence for differences in attendance by Indigenous status, it was not surprising that there was a significant and large difference by Indigenous status in this variable  $t(203.6) = 6.81, p < .001, \eta^2 = .107$ .

Schools in this study experience significant and large differences in their mean attendance rates,  $F(9, 379) = 330.0, p < .001, \eta^2 = .887$ . Again, this is not surprising, given the diversity of geographic region and socioeconomic indices of schools represented in the study.

### Summary of Factor III

Neither Indigenous status nor gender, were determining factors in the socioeconomic status or education capital of the schools attended by students in this study. Hence, findings related to Indigenous status or gender across this study cannot be attributed simply to differences in the socioeconomic and education capital of schools attended by these students. Yet, there were large and significant differences in the socioeconomic capital and attendance rates between schools, which contributed to students at different schools experiencing different levels of support for, and peer engagement with, education.

## Factor IV – Perceived Future Benefit of School

The fourth factor identified by the Exploratory Factor Analysis, *Factor IV - Perceived Future Benefit of School*, measured the long-term engagement of students with the education system. Almost half of the variance of the two variables, Student Perception of the Benefit of Education (PERECBEN), and Perception of the Importance of Schooling (PERECBEN), was explained by this Factor. A third variable, FAMSUP, also loaded on to *Factor IV* under EFA, but loaded more heavily on to *Factor VII* and was moved there.

### Perception of Economic Benefit

This subvariable consisted of four items measuring student perception of the economic benefit of school. Student responses were positive, ( $M = 4.05$ ,  $Mod = 4$ ,  $SD = .57$ ), hence, the majority of students in this study attached a high future economic value to secondary education.

The effect of treatment (SchoolName) on *Perception of Economic Benefit* was significant, with a medium effect size,  $F(9, 405) = 4.42$ ,  $p < .001$ ,  $\eta^2 = .098$ .

### School Importance

This subvariable consisted of three items asking students to rate the importance of school attendance and Year 12 completion, as well as their level of commitment to completing Year 12. Again, student responses were strongly positive, ( $M = 4.46$ ,  $Mod = 5$ ,  $SD = .61$ ), indicating that the majority of students in this study attached importance to school attendance and Year 12 completion. The difference between Indigenous and non-Indigenous respondents was significant, but small, with Indigenous respondents recording a slightly higher mean on this variable;  $t(383) = 3.67$ ,  $p < .001$ ,  $\eta^2 = .030$ .

The effect of treatment (SchoolName) on *School Importance* was also significant, with a medium effect size,  $F(9, 401) = 3.43$ ,  $p = .001$ ,  $\eta^2 = .075$ .

### Summary of Factor IV – Perceived Future Benefit of School

Both PERECBEN and SCHOOLIMP recorded high means and small standard deviations, thus, there was a consistently positive perception of the importance and benefit of school across the respondents in this study. Although in *Table 13* it was identified that a small significant difference existed between Indigenous and non-Indigenous students' responses to *Factor IV*, this difference was small, and applied only to SCHOOLIMP. This indicates that Indigenous and non-Indigenous students alike, as well as students across both genders, had similar perceptions of the future benefit of schooling.

### Factor V – Education Aspirations

The fifth factor identified by exploratory factor analysis, *Factor V – Education Aspirations*, measured the highest level of education in the family (FAMED), education aspirations prior to entering secondary school (PREVASP), and current education/employment aspirations (FUTPLANrank).

In Chapter 5, analysis presented in *Table 13* and *Table 14* revealed that *Factor V* differed significantly by gender  $t(462) = -3.35, p = .001$ , and also by Indigenous status  $t(403.0) = 5.84, p < .001$ , Cohen's  $d = .548$ , with non-Indigenous students reporting higher scores on this factor than Indigenous students, and female students reporting higher scores than male students.

#### Previous Aspirations

The most common aspiration for both Indigenous and non-Indigenous prior to entering secondary school was post-secondary education, although the data were negatively skewed. Mean responses were significantly lower for Indigenous students ( $M = 2.03, Mod = 3, SD = .98$ ) than for non-Indigenous ( $M = 2.32, Mod = 3, SD = .91$ ) students;  $t(477) = -3.32, p = .001, \eta^2 = .022$ , although the difference was non-categorical and the effect size small.

Recent literature has highlighted the difference in post-secondary aspirations that can be attributed to gender (Karmel & Liu, 2011). For this reason, an independent samples t-test was also conducted to evaluate differences in students' previous aspirations that might be attributed to male gender ( $M = 1.97, SD = .98$ ) or female gender ( $M = 2.33, SD = .91$ );  $t(482) = -4.16, p < .001, \eta^2 = .034$ . The effect of gender was larger than that of Indigenous status, with female students more likely to aspire to post-secondary education. Importantly, the difference in means between genders was categorical.

The effect of treatment (SchoolName) on *Previous Aspirations* was significant although moderate,  $F(11, 485) = 3.44, p < .001, \eta^2 = .072$ . Given that this variable measures a perception in place before the student began

secondary school, the finding of significant differences in means between schools is likely a reflection of the self-selection operating in student decisions regarding their choice of secondary school.

### Family Education

Indigenous students reported significantly lower levels of family education ( $M = 2.73/\text{Year } 12, SD = 1.28$ ) than did non-Indigenous respondents ( $M = 3.31/\text{TAFE}, SD = 1.04$ );  $\chi^2(4) = 29.0, p < .001$ . *Table 30* reveals that over one third of Indigenous students in the study reported having no family members with post-secondary qualifications, compared with only one-fifth of non-Indigenous students.

*Table 30: Highest level of education in the family, by Indigenous status.*

	In my family, the highest level of education someone has is:				
	< Yr 12	Yr 12	TAFE	University	Other
Aboriginal or Torres Strait Islander	15.4	20.9	17.9	40.1	5.1
non-Indigenous	7.1	12.6	16.5	67.5	1.6

The effect of treatment (SchoolName) on *Family Education* was also significant  $\chi^2(12) = 68.3, p < .001$ , thus, the peer environments at some schools had higher numbers of students without tertiary educated family members than at other schools.

It should be recognised that the item measuring family education levels, which asked students to consider the *highest* education level of any family member, may have confounded the results because it did not record the *typical level* of family education for some students. An item measuring modal or ‘most common’ level of education amongst a student’s family members may have exhibited a stronger correlation with student attitudes towards the economic benefit of education, and importance of school attendance and completion.

### Future Plans

A Chi-square goodness-of-fit test, presented in *Table 31*, revealed that the difference between future pathway aspirations for Indigenous and non-Indigenous students was statistically significant  $\chi^2(5) = 26.1, p < .001$ , with Indigenous students being twice as likely to report that they wanted to get a job after secondary school without pursuing further training or studies.

The effect of gender was also significant,  $t(508) = -4.10, p < .001$ , with female students reporting categorically higher mean levels of future education aspirations.

Table 31: Post-secondary pathway plans, by Indigenous status.

After I finish high school I plan to:	Find a job	Study at TAFE or University	Do an apprenticeship internship or traineeship	Don't know	Other
Aboriginal or Torres Strait Islander	28.3	38.9	13.3	13.7	6.0
non-Indigenous	14.0	51.9	20.5	10.5	3.1

### Summary of Factor V – Education Aspirations

*Factor V* highlighted some key differences between the education capital and education intentions of Indigenous and non-Indigenous students in this study. Indigenous students reported lower maximum levels of education amongst their families, had entered high school with lower educational aspirations, and during high school, still reported lower post-secondary education aspirations than their non-Indigenous counterparts.

Differences between gender were also present. Despite reporting equal levels of family education to male students, female students reported higher education aspirations prior to entering secondary school, and higher education goals during secondary school. These variable differences may account for the findings of *Table 14* regarding the Factor-level difference in means by gender for *Factor V*.

## Factor VI – Socioeconomic Capital at Home

Factor VI consisted of a single item, access to computer and Internet at home (COMPINT).

### Computer Access

While the most common answer for both Indigenous and non-Indigenous students was 5/Always, mean scores for Indigenous respondents ( $M = 3.42$ /Sometimes,  $SD = 1.66$ ) were significantly and categorically lower than for non-Indigenous respondents ( $M = 4.25$ /Most of the time,  $SD = 1.11$ );  $t(472) = -6.45$ ,  $p < .001$ ,  $\eta^2 = .572$ . Note that the effect size was very large.

Where students attended boarding school, this item measured students' access to computer and Internet within the boarding environment. For these residential students, there was no significant difference in scores for Indigenous and non-Indigenous respondents. For non-residential students, there was a significant and

categorical difference in scores for Indigenous ( $M = 3.59$ /Sometimes,  $SD = 1.57$ ) and for non-Indigenous respondents ( $M = 4.41$ /Most of the time,  $SD = 1.01$ );  $t(284) = -5.12, p < .001, \eta^2 = .085$ , indicating that residential status was a confounding factor affecting students' access to a computer with Internet for the purposes of homework. That is, Indigenous students were not more likely than non-Indigenous students to attend a boarding school with computer and Internet access, but they were more likely to be without computer and Internet in their home.

The effect of treatment (SchoolName) on *Computer Access* was significant  $F(11, 480) = 26.91, p < .001, \eta^2 = .381$ , and remained significant when tested separately for residential students  $F(10, 189) = 30.98, p < .001, \eta^2 = .621$ , and for non-residential students  $F(9, 282) = 6.27, p < .001, \eta^2 = .167$ . This result echoes the findings regarding differences in the socioeconomic indices of the school environments and community in *Factors II and III*.

Access to a computer with Internet at home was significantly correlated with levels of tertiary education in the geographic home region  $r(384) = .45, p < 0.001$ , and negatively correlated with unemployment rates in the geographic home region  $r(384) = -.41, p < 0.001$ .

### Summary of Factor VI – Socioeconomic Capital at Home

This single-item factor accounted for almost the same amount of variance as each of *Factor IV - Perceived Future Benefit of School* and *Factor V - Education Aspirations*. Univariate analysis of this item revealed that amongst students attending boarding schools, Indigenous status was not an indicator of access to computer with Internet, presumably as this resource is often provided in the boarding environment. Amongst non-boarding students, Indigenous status was associated with more limited access to computer and Internet. Noting that Internet access tends to be less consistent in remote areas, this item measured both socioeconomic status, and access to infrastructure in the geographic home region. This single variable represented more difference between students by Indigenous status, and by school, than any other variable, indicating that socioeconomic and geographic factors remain a significant barrier to education for Indigenous students.

## Factor VII – Social Support for Education

The last factor identified by the exploratory factor analysis, *Factor VII - Social Support for Education*, contained two variables which measured students' perceptions of their peers' and families' attitudes towards school attendance, completion and future employment.

## Family Support

Most respondents to this survey reported very high levels of family support for education (*Mean* = 4.56/*Most of my family*, *Mode* = 5/*All of my family*, *SD* = .56). Neither Indigenous status, nor SchoolName had any significant impact on student perceptions of the level of family support they experienced for education and career goals.

## Peer Support

In general, students perceived categorically lower levels of support for their educational and career goals from peers than from family (*Mean* = 3.79/*Some of my friends*, *Mode* = 4/*Most of my friends*). Indigenous status was not a significant indicator of this variable.

The effect of treatment (SchoolName) on *Peer Support* was significant and moderately large,  $F(13, 495) = 4.01, p < .001, \eta^2 = .095$ , hence, the effect of the peer environment in some schools was likely to be more negative than at other schools.

## Summary of Factor VII – Social Support for Education

Factor VII revealed that both Indigenous and non-Indigenous students reported statistically similar levels of peer and family support for education, although amongst both groups, peer support was slightly lower than family support. Whilst it may be that students who participated in this study were more likely to come from social networks that supported education, it appeared that despite differences in other experiences related to school, social support is generally equal amongst non-Indigenous and Indigenous students.

## Miscellaneous Variables

There remained six variables that did not fit any of the above seven Factors when the initial EFA was conducted. Five of these variables had communality  $< .20$ , indicating that they addressed constructs not covered by the Seven Factor Model. The sixth variable (STAFFATT) was not included in the EFA as it had a high number of missing data. Despite not being included in the Revised Factor Model, these variables were retained for univariate and multivariate analysis as they measured constructs that had been identified as of interest during the literature review. The univariate analyses of these variables are presented below.

### Indigenous Academic Role Models

Many Indigenous students felt that Aboriginal school staff placed importance on their academic success ( $M = 4.08, Mod = 5$ ), although there was a high standard deviation ( $SD = 1.67$ ), indicating that respondents had a diversity of experience regarding the level of academic encouragement that they received from Aboriginal staff.



The effect of (SchoolName) was significant and large,  $F(12, 228) = 5.390, p < .001, \eta^2 = .221$ , hence, some schools exposed Indigenous students to a higher standard of expectation from Indigenous staff. This may be in part due to the differences between schools in the number of Indigenous staff employed at the school, as well as the education experience of those staff.

### Provision of Study Assistance

Among students who did attend a school homework club, scores on the frequency and usefulness of attendance were categorically higher for Indigenous ( $M = 3.21/\text{Sometimes}, SD = 1.75$ ) than for non-Indigenous ( $M = 2.74/\text{Rarely}, SD = 1.71$ ) respondents;  $t(381) = 2.87, p = .004, \eta^2 = .021$ , although the result was not significant after Bonferroni adjustment.

The effect of treatment (SchoolName) on *Provision of Study Assistance* was also significant and large,  $F(11, 371) = 5.75, p < .001, \eta^2 = .146$ , most likely due to the variation in quality of homework support, and social acceptability of attendance at a homework club, between schools.

### Family Responsibilities

The frequency of school absence due to family responsibility was significantly higher for Indigenous students than for non-Indigenous students, although the effect size was small:  $t(503) = 3.26, p = .001, \eta^2 = .021$ .

Although the effect size was small, the discrepancy between modes for Indigenous students ( $Mod = 3/\text{Sometimes}$ ) and non-Indigenous students ( $Mod = 1/\text{Rarely}$ ) indicated that the impact of domestic responsibilities on school attendance was categorically higher for Indigenous students.

There was no statistically significant difference between male and female students in the reported frequency of school absence due to family responsibilities.

The effect of treatment (SchoolName) on *Family Responsibilities* was significant  $F(13, 509) = 6.15, p < .001, \eta^2 = .136$ , with more frequent absences due to family responsibility occurring at remote and rural schools.

To investigate the possibility of a relationship between student absenteeism due to domestic responsibilities and family disengagement from the education system, the Pearson product-moment correlation coefficient between FAMRESP and FAMSUP was computed separately for Indigenous and non-Indigenous students. In each case, there was no significant correlation between the two variables (Indigenous:  $r(247) = -0.016, p = 0.806$ ; non-Indigenous:  $r(258) = -0.074, p = 0.235$ ), indicating that student absenteeism due to family obligations does not imply a lower perceived value of education amongst the student's family.

### Home Study Environment

Indigenous status was not a statistically significant factor affecting student access to a suitable study environment  $t(477) = 1.92, p = .055$ .

It was hypothesised that students would find the provision of a study environment more useful if they did not have access to this at home. In fact, no significant correlation existed between a student's access to a suitable study environment at home, and their perception of the utility of the school homework assistance  $r(381) = -.065, p = 0.202$ ).

For residential students, the effect of (SchoolName) on *Study Environment* was significant and very large  $F(10, 193) = 9.65, p < .001, \eta^2 = .333$ , but for non-residential students, (SchoolName) had no significant effect  $F(9, 283) = 1.45, p = .162$ . That is, some boarding schools were perceived to provide a more suitable study environment than were others.

### Staff Admiration

This subvariable consisted of a single, dichotomous-response item asking students “*Can you think of any staff member at school whom you really look up to?*” A Chi-square goodness-of-fit test found no significant difference by Indigenous status, or gender, indicating that Indigenous status and gender were not a factor affecting the frequency of respectful student-staff relationships in schools.

The effect of treatment (SchoolName) was significant  $\chi^2(13) = 34.2, p = .001$ , indicating that at some schools the existence of a respectful teacher-student rapport was much more prevalent than at other schools.

### Staff Attendance

For those students who had answered the previous item in the affirmative, a second item asked “*Do you ever come to school just to keep the respect of that person?*” Student responses are presented in *Table 32* below.

*Table 32: Student attendance due to respectful relationships with a staff member, by Indigenous status*

<i>(If there is a staff member whom you really look up to)</i>		
Do you ever come to school just to keep the respect of that person?	Yes	No
Aboriginal or Torres Strait Islander	73.4	25.1
non-Indigenous	42.1	57.9

A Chi-square goodness-of-fit test found that the difference between the two groups was significant  $\chi^2(1) = 34.0, p < .001$ , with Indigenous students almost twice as likely to indicate that they would attend school in order to keep the respect of a staff member.

The effect of treatment (SchoolName) on *Staff Attendance* was also significant  $\chi^2(12) = 58.6, p < .001$ .

## 8.4 Conclusion of Univariate Analyses

Univariate analyses provided the opportunity to explore trends in students' experiences of current school engagement strategies aimed at improving education outcomes, as well as the role of schools themselves in student perceptions of the efficacy of those strategies. These findings, once collated with results of multivariate and qualitative analysis, are explored in the Discussion Chapter. A more immediate benefit of the findings presented in the current Chapter, was the opportunity to obtain further explanation of the differences by gender and Indigenous status that had become evident during Factor Analysis.

Only four of the twenty-three latent variables differed by gender. Three of these reflected student experiences of pathway development opportunities, and post-secondary aspirations, indicating that career aspirations and development experiences were a key point of difference between male and female students in the study. The fact that these differences were small or moderate in size, and limited to only two factors in the Revised Factor Model, is the likely reason why the overall model fit was acceptable for both the male and female groups.

Eleven of the twenty-three latent variables available to all students were found to have significant differences in means by Indigenous status. These variables were: Geographic Unemployment Rate; Geographic Tertiary Education Rate; Mean Attendance at School; Collaboration with Family; Previous Aspirations; Family Responsibilities; Computer and Internet Access; Importance of School Attendance and Completion; Family Education; Staff Attendance and Future Plans. After students' residential environments were taken into account, Study Assistance and Home Study Environment were also found to have significant differences by Indigenous status. Almost all of these variables are linked to economic and educational resourcing in the home. Notably, the only variable for which analysis indicated a possible genuine difference in conceptualisation between Indigenous and non-Indigenous students, was Staff Attendance (that was, Indigenous students were more likely to attend school where they had established a strong positive relationship with a school staff member). On other variables that measured individual students' attitudes such as Self Efficacy, Motivation to Attend School, Future Aspirations, or experience of social support for education, e.g. Family Support and Peer Support, there was no statistically significant difference between the experiences or attitudes of Indigenous and non-Indigenous students.

The far more powerful influence affecting student experiences and perceptions appears to be the school environment. Nineteen of the twenty-three latent variables were found to have significant differences in means by SchoolName. This finding suggests that the school attended by students has a greater influence on

a greater number of outcomes, and reflects a greater number of geographic and socioeconomic issues affecting students, than did gender or Indigenous status.

Of particular interest, is that none of the variables identified in the regression analyses presented in Chapter 7 (PERECBEN, SCHOOLIMP, PATHDEV, POSCULT, SSEFF, FAMSUP and FUTASP) were identified to differ significantly between Indigenous and non-Indigenous students at the univariate level of analysis. That is, although differences existed regarding which engagement strategies and home variables influenced Indigenous and non-Indigenous students' perception of the importance of schooling, this result could not be ascribed to actual differences in students' experiences of those strategies and variables. This finding corroborates analysis of Item-to-Factor correlations in Chapter 6, that Indigenous and non-Indigenous students in this study did not *experience* these strategies differently, but they did *respond* to them differently. Such a finding places greater importance on the influence of cultural paradigms on education engagement, and could suggest that policymakers should engage with Indigenous stakeholders at the level of conceptual paradigms, in addition to social and economic levels.

This Chapter completes the analyses of quantitative data collected for the current thesis. The following section, Chapter 9 presents analysis of the qualitative data, student and school leader interviews, and explores these texts in light of the guiding research questions.

## Chapter 9 – Perceptions ‘on the Ground’

### 9.1 Introduction

The two primary research questions guiding this study focused on identifying quantitative relationships between student experiences, their perceptions of the benefit of education, and ultimately, their education aspirations and choices. In Chapter 7, multiple regression equations were created to model these relationships and evaluate the amount of variance that could be allocated to each student ‘experience’. Certain elements of a student’s home and school environment, namely Pathway Development, Positive School Culture, Student Self Efficacy, and Family Support, did in fact have significant, quantifiable and unique correlations with student perceptions of the benefit of education for the participants of this study. Furthermore, it was shown that these perceptions correlated with actual attendance and Year 12 completion intentions, and that, for the Indigenous student group, Year 12 completion intentions did not correlate with post-secondary education aspirations.

Having determined which factors in the school environment were significantly correlated with student education aspirations and intentions, the study had already achieved one key aim, that of providing empirical evidence to policymakers and funding bodies regarding school strategies that may improve Aboriginal education outcomes. Yet, the quantitative results also lead to further questions.

- Why were Indigenous students much less likely to consider post-secondary education or training to be of benefit, even for those who considered secondary schooling to be important and beneficial?
- Why did promotion of Indigenous culture not significantly contribute to perceived importance of school, even whilst it was a key factor in student perceptions that school was a positive place to be?
- Why was access to Indigenous role models not more strongly correlated with future education aspirations?

The quantitative analysis in the previous chapters has helped explain what is effective, but not why. Yet without a rich depth of understanding as to how student perceptions are formed, educators and policymakers are at risk of missing the mark when creating programs to address Indigenous education outcomes. Furthermore, there is always the risk that a researcher analysing results in a university computer lab might interpret, or misinterpret, statistics in a way that silences the voices and meanings of the survey respondents.

In Chapter 3 of the current thesis, it was explained that this research was guided by a post-positivist paradigm. Hence, a parallel mixed methods approach was employed from the outset of this study, to allow

the voices of Indigenous respondents to provide interpretation and clarity to quantitative findings. At each school, interviews were conducted with a sample of staff and students, with the intention that after quantitative analysis was exhausted, qualitative analysis might provide complementarity by elaborating on and illuminating the meaning of the survey findings. The current chapter presents a phenomenological investigation of student and staff experiences in order to further explore the findings presented in previous Chapters. The Chapter begins with presentation of the methodology and research design of this stage. The findings are then presented separately for staff interviews and student interviews, with discussion exploring staff and student understandings of key themes that had arisen from the comprehensive literature review and previous analysis.

## 9.2 Method

### 9.2.1 Theoretical framework

The quantitative approach to this research is based on a belief that experiences provide evidence of true theories and relationships (Cohen, Manion, & Morrison, 2011). Yet, the researcher also utilised an interpretive approach, characterised by an understanding that individuals make subjective understanding of their experiences. This dual paradigm, pragmatic in nature, opened the door to a qualitative methodology to complement the findings of the quantitative study, and to explore the ways in which students, both Indigenous and non-Indigenous, develop their perceptions of the importance and utility of school. The use of interviews to corroborate quantitative data is grounded in an ethnomethodological tradition, which allows individuals to explain their perceptions of the environment in which they find themselves (Creswell, 2008).

As discussed in Chapter 1, Western and Indigenous understandings of identity are fundamentally different (Nakata, 2007). Bodkin-Andrews and Carlson (2014) contend that non-Indigenous researchers cannot properly understand Indigenous self-perceptions because each culture has its own unique psychological background. The non-Indigenous author of this thesis admits to being unqualified to understand the full impact on Aboriginal students of attending school in a Eurocentric system (Nakata, 2007). The interpretations and dialogue presented in the current Chapter, then, should not be viewed as the author attempting to speak in place of Aboriginal students, but rather, as a contribution to advancements in inter-cultural understanding within Australian education. As with all discourse at the Cultural Interface, these interpretations present one viewpoint that contributes to ongoing mutual discussion and knowledge.

### 9.2.2 Research design and procedure

Two groups were identified for collection of qualitative data. The first group was school staff, and the second was students.

At all fourteen schools, an in-person, semi-structured interview of approximately one hour was conducted with a staff member involved in leadership of Indigenous programs in the school (most often Principal or Indigenous Student Coordinator). At eight of the fourteen schools, consent was obtained for these interviews to be formally recorded and analysed. The recorded interview sample consisted of eight male non-Indigenous interviewees and four female Indigenous interviewees.

At seven schools where the number of survey respondents was sufficient to allow anonymity ( $n > 10$ ), permission was obtained to conduct semi-structured twenty-minute interviews with a purposive sample of students. According to Australian Bureau of Statistics Remoteness Structure categories (ABS, 2011), three were urban schools, two were regional, one remote, and one very remote. All schools in this stage of data collection serviced both day and residential, Indigenous and non-Indigenous students. Gatekeeper staff were asked to identify potential interview candidates who represented the spectrum of student engagement within the school, including those with aspirations towards university, vocational training, family employment, and without employment or education aspirations, as this was deemed relevant to ensure an informed sample.

Thirty-one secondary students, thirteen males and eighteen females, participated in the study. Of these participants, twenty-five were Indigenous boarding students (nine males and sixteen females). Students ranged in school year attended from Year 8 through to Year 12, with the majority in their final two years of schooling ( $M = \text{Yr } 11$ ,  $SD = 1.25$ ). The students interviewed were chosen purposively, so that data collected would be more likely to be transferable to the wider population. The participants came from a diverse range of geographic backgrounds, from remote communities, farms, regional towns and urban environments. Many of the students interviewed in the study had experienced multiple school environments, and were able to make clear comparisons between their experiences at boarding schools, and in their home towns and communities.

Interviews were conducted over a nine-month period by the principal investigator, with all interviews conducted on school premises. Students were interviewed after they had sat the questionnaire and within two days of survey completion. Students were interviewed individually, or with a peer at schools where multiple students of the same gender and age were interviewed. Ethics approval was obtained from the Edith Cowan University Human Research Ethics Committee, and passive parental consent obtained through introductory letters sent out to participants through their school, as well as active consent from the participants themselves. Participants were provided information in writing and verbally on the purpose and

procedure of the interviews. Active verbal consent to written recording of the interview was obtained at the outset of the interview. Interviewees were informed that their participation was voluntary and that they could withdraw consent at any time without consequence. All interviews were transcribed by the researcher during or immediately after the course of each interview.

### 9.2.3 Materials

For school Principals and Indigenous Program coordinators, a semi-structured interview protocol was developed to elicit understandings of staff perceptions of the thesis themes. The full protocol is presented in *Appendix D*. The key questions were:

- 1) What are the key needs of Indigenous and non-Indigenous students in your school?
- 2) What programs and strategies do you have in place to address attendance, retention and school engagement, for students in your school?
- 3) What post-secondary choices are typically made by students from your school?
- 4) Where [geographically and language group] are your Indigenous students from?
- 5) How well do teachers in your school understand Indigenous culture and students?
- 6) What are the greatest obstacles facing education engagement for Indigenous and non-Indigenous students in your school?

For students, a semi-structured interview schedule was created consisting of open-ended questions that closely followed the variables measured in the survey (see *Appendix D –Interview Schedule for Pilot and Second Phase*). Open-ended questions were used to fulfil three aims: to identify whether the multiple-choice responses provided in the questionnaire adequately covered the range of responses that might be provided when respondents were offered a free response option, to allow students to provide in-depth explanations of responses recorded in the survey, and to allow the respondents the opportunity to introduce opinions and issues that might have been missed by the etic research understanding of student experiences. At the end of the interview, participants were provided an opportunity to present additional thoughts that they believed relevant to the themes of Perceived Benefit of Education, Self-efficacy, and Supportive School Environment. Key themes and statements were transcribed during the interview.

In both staff and student interviews, participants were encouraged to provide any further information that they thought was relevant to the researcher's understanding of the benefit of education.

A pilot interview was conducted with four female participants at School B in order to confirm face validity of the questions as described in Section A of *Appendix D–Interview Schedule for Pilot and Second Phase*.



#### 9.2.4 Data analysis method

The qualitative data collection was intended to provide a considered examination of the experiences and interpretations of school students, and those staff who worked most closely with them. As such, an Interpretative Phenomenological Analysis (IPA) was employed to investigate the meanings made by interviewees.

Atypically for an IPA analytical approach, a combination of inductive and a priori coding was used to analyse responses after preliminary exploratory reading of the interview material (Johnson & Christensen, 2012). This was considered to be appropriate given that during development of the questionnaire, and analysis of the quantitative results, a large amount of literature and data had been analysed to identify relevant themes. Where responses contained themes specifically measured in the questionnaire, a priori coding was used to link the interview responses to the data gathered from the quantitative tool. Where respondents raised ideas that were not measured in the questionnaire (which occurred frequently in the staff interviews), an inductive approach was used to generate new codes using the emic terminology.

The researcher reviewed the interview notes methodically and over a number of iterations to identify emergent codes and concepts that were significant insights into the participants' perspective (Cohen, Manion, & Morrison, 2011; Creswell, 2008). These were highlighted, coded and re-coded according to a comparative method.

A data display matrix was used to track codes before a hierarchical classification system was applied to link together thematically similar categories of codes that arose across interviews (Creswell, 2008). Emerging themes were corroborated through inter-subject consensus and consensus with quantitative results (Creswell, 2008).

### 9.3 Findings and Interpretations for Staff Interviews

From the beginning of this study, the researcher intended to preference student perceptions and intentions, with the belief that they were the key knowledge-holders, and stakeholders, at the core of the research questions. By interviewing school leaders, the researcher was able to gain a snapshot of the nature of the school environments that students experienced, as well as to investigate issues affecting student engagement considered most pressing by school leaders 'on the ground'. The school leader interview protocol provided sufficient room for school leaders to develop a broader narrative than that strictly allowed by the research questions. That is, interviews with school leaders did not focus only on student perceptions of the utility of education from an employment perspective, but discussed other aims and benefits of

education, e.g., health. School leaders' specific opinions were also sought on variables identified in the literature review as affecting Indigenous student outcomes, such as socioeconomic disadvantage, geographic remoteness, cultural dissonance, access to educated adult role models, teacher quality, student self-efficacy, and employment utility of school.

During analysis of these interviews, it became apparent that responses addressed two themes: Success Criteria/Aims of the program, and Obstacles to Success, identified in *Table 33* on the following page. These themes represented the interaction between school leader intentions, school environment and student dynamics. Whilst the purpose of the interview schedule was to investigate these topics, the perspectives that emerged were sometimes unexpected and introduced richer meaning to the study. The following sections will discuss these themes, with reference to the literature.

*Table 33: School leader interviews: Themes and Sub-themes.*

Themes	Subthemes
<b>Aims and Success Criteria</b>	<i>Improving Health Outcomes</i> <i>Improving Cultural Knowledge</i> <i>Awareness of Employment Pathways, and Focused Transition to Employment</i>
<b>Obstacles to Success</b>	<i>Difficulties with geographic remoteness</i> <i>Social troubles</i> <i>Invisible Racism</i>

### 9.3.1 Aims/success criteria

Most of the school leaders interviewed applied a pragmatic approach to addressing social and economic disadvantage faced by students. When asked to describe their aims and self-identified success criteria, school leaders typically spoke of *Improving Health Outcomes*, *Improving Cultural Knowledge*, and providing *Awareness of Employment Pathways, and Focused Transition to Employment*. These criteria closely replicated those same factors identified in the literature review as affecting student engagement, hence the same coding has been used.

Each school applied their available resourcing to the above four criteria in different proportions. Some chose to focus almost solely on immediate pastoral care requirements, without strong transition strategies in place to assist students in their post-secondary aspirations. Some had a parallel focus of pastoral care and career development, although this typically required a level of resourcing that was not available to all schools.

### *Improving Health Outcomes*

School leaders frequently explained that their highest priority with Indigenous scholarship students was to develop students' social, physical and mental health. That health should be a higher priority than academic achievement is unsurprising given the concerning statistics of domestic violence, life expectancy and psychological distress (Australian Bureau of Statistics, 2015c) affecting young Indigenous people, as mentioned in the literature review of this study. However, there is a very real possibility that in prioritising outcomes other than the academic, schools do create a social position for students based on lower expectations of educational success. Although measures of health and social trauma were not included in the survey, they remained an important theme raised by interviewees.

The types of health issues that took priority for school leaders often reflected the student demographic at the school. For example, at one urban school with a large number of boarding students from the remote Kimberley, an Aboriginal staff member stated:

*"For some of my [students], I will consider myself a success if they complete Year 12 without getting pregnant, and know how to recognise and avoid bad relationships."*

Indigenous Program Co-ordinator, School B

This school leader was not suggesting that her students had nil knowledge of basic reproduction or contraception, but that they came from communities where teen pregnancy and abusive relationships were common, and that she hoped to break this cycle for them.

At an urban school with working class families, the Indigenous Program Coordinator expressed a desire to develop students' ability to set health goals and engage in self-assessment. She wanted to bring a nutritionist in to *'talk to kids about what they need to eat for a healthy body, healthy mind'*, and develop a 'health passport' which would enable students to do a voluntary self-check of their physical and psychological health.

It has been suggested that the origin of education and employment disengagement lies in the political and financial disempowerment experienced by communities over successive generations in modern Australian history (Dudgeon et al., 2012; Ivory, 2009; Trudgen, 2000). One Indigenous Program Coordinator raised the issue of disempowerment and welfare dependency on students' resilience:

*"I am happy to see the kids not graduate if it develops resilience and strength. It is frustrating to see kids expecting welfare and expecting tutors to do their work for them. In these kids' lives, there is suicide and trauma. I want to build the resilience and independence; coping mechanisms."*

Such thoughts echo recommendations of many scholars that a vital aspect of improving Indigenous student outcomes is the empowerment of students through programs that develop self-esteem, self-regulation, agency, and leadership (Armstrong & Buckley, 2011; Hughes & Hughes, 2010; Pearson, 2009; Wilkinson, 2009). Furthermore, this understanding is supported by the findings of Chapter 7, which identified that *Student Self-Efficacy* was a significant predictor of variance in both students' perception of the value of education (PERECBEN), and also students' intentions to attend school and complete Year 12.

There was a clear culture amongst school leaders of promoting student agency and ability to make healthy decisions, in recognition that students often came from environments which reinforced negative lifestyle choices. As such, many school leaders working with students from remote communities had a deliberate focus on health matters in their curriculum, and expressed frustration at having insufficient finances or access to agencies to deal with the high needs of the clientele that they worked with.

#### *Improving Cultural Pride*

Many school leaders felt that any opportunity students received to celebrate Indigenous culture was of great importance in changing students' self-perception and pride. The need to help students find positive recognition as an Aboriginal person was of even greater concern in urban schools where Aboriginal students were often outnumbered by students of non-Indigenous backgrounds, or had limited experiences of culturally safe interactions with non-Indigenous people. Unfortunately, in these schools, it was often non-Indigenous educators who were responsible for making decisions as to how Indigenous culture could be promoted within schools. Because Western and Aboriginal understandings of identity are fundamentally different, attempts by non-Indigenous school staff to frame Indigenous student experiences of 'culture' at school are likely to result in silencing of Indigenous knowledge (Bodkin-Andrews & Carlson, 2014; Nakata, 2007).

At one urban school, the Indigenous Program Coordinator hoped to obtain funding to take students out on country so that she could help students identify with the land, what it means to be an Aboriginal person, and to understand the impact of industry on traditional Indigenous lands and ways of living. Other school leaders focused on providing students with opportunities to positively identify with contemporary Aboriginal culture by participating in fishing trips on country, making Indigenous music, attending Sorry Day and promoting Reconciliation and NAIDOC (National Aboriginal and Islander Day Observance Committee) events within the school. The work of Dobia et al. (2014), has identified that amongst Indigenous secondary students, resilience is particularly linked to experiences of community support, participation in cultural events, and respect for Aboriginal protocols within the school environment.

One effect of centuries of assimilation policies including forced removals and silencing of Indigenous language, culture and history is that some Indigenous students, particularly in urban areas, have little knowledge of their traditions and language. The Indigenous Program Coordinator (a non-Indigenous man) at School A stated: *"The [students] come here and I have to teach them words from their own language... it's important to do that so they can rediscover a sense of what it means to be Noongar"*. Although the teaching of Indigenous languages is an important aspect of culturally competent school curricula, the experience of learning one's traditional language from a non-native speaker must also impact students' understandings of their ethnic identity.

Non-Indigenous school leaders often expressed a sense of shock at the limited cultural knowledge of urban Aboriginal students. It is likely that this 'shock' in fact reflects the continual stereotyping in mainstream Australian culture of Aboriginality as only genuine in its pre-colonial form. Whilst building a strong knowledge of traditional culture is important, so too, is recognition of the diversity of expressions of Aboriginality in contemporary Australia.

A secondary cultural issue occurred at schools that hosted residential students from different language groups. Where this occurred, cultural programs were harder to institute as often students would be unwilling to participate in learning language, dances, or other cultural traditions of a language group they did not belong to. Some Indigenous Program Coordinators attempted to address this issue by gaining appropriate permission from Elders and families for the passing on of traditions to students who were from other areas. At other schools, staff were not sufficiently knowledgeable about cultural protocols to recognise the influence that traditional knowledge ownership had on students' willingness or ability to engage with cultural events.

#### *Awareness of Employment Pathways, and Focused Transitions to Employment.*

The final sub-theme that emerged when school leaders discussed their success criteria for students was career pathway education and transition strategies. Again, this finding corroborated the results of analysis in Chapter 7, where it was demonstrated that the variable PATHDEV was a significant predictor of student perceptions of the benefit of education. During interviews, school leaders consistently shared a belief that providing employment and education opportunities was a key aspect of making secondary education meaningful for students. As one Principal stated, creating educational success meant:

*"...that each child has a plan for their future and the practical skills to get a job."*

Principal, School J

Few schools had established effective transition strategies for students returning to remote areas upon completion of Year 12. A future focus of funding and policy may do well to address this area to ensure that the benefit of Year 12 completion is not lost for those students who return home to their communities. At larger schools, school staff had developed a raft of approaches to building students' capacity and knowledge of career pathways. These included taking students to Perth to visit university campuses, bringing successful alumni back to talk to current students, guest speakers from industry, work experience programs, and Careers Weeks that involved students visiting, networking with, and interviewing employers.

Where schools worked primarily with students from remote communities or from backgrounds of socioeconomic disadvantage, these students often did not have sufficient academic standards or work habits to consider tertiary education, and did not have clear employment goals. Many of these students had peer networks that were not attending school, were unemployed, and caught up in substance abuse. These anecdotal findings mirrored results from previous studies regarding the more limited utilisation of employment opportunities and perceptions of the future employment benefit of schooling in remote areas (Biddle, 2007; Dusseldorp Skills Forum, 2009). In these environments, school leaders had spent time developing curriculum and programs that developed students' capacity to create meaningful goals, and be work ready. Typically, such programs included driving license acquisition, literacy and numeracy, computer literacy and job readiness 'soft skills' e.g., punctuality, workplace discipline etc. At two schools that dealt with students who had disengaged from 'regular' schooling, the Principals attributed the engagement of students in part to the provision of an independent and flexible learning environment where the curriculum was adjusted for the needs and stage of learning of each student.

The principal at School J, a rural senior secondary campus, had created a program where all students had the opportunity to obtain a drivers' license, engage in paid work experience and obtain basic qualifications (Certificate I and II), with the dual purpose of developing students' self-confidence as well as their capacity to capitalise on work opportunities once they returned home. The school used government grants for scholarships and residential allowances to create a pay-scale for students as they developed work skills from on-site unskilled work through to off-site skilled work. The paid work experience program was intended to allow students to experience the economic value of work, and perceive the higher pay off which accompanies higher qualifications. Whilst there were graduates from this school who had failed to transition into successful post-secondary employment or education outcomes, the principal reported that an equal number had chosen to remain at the school beyond the legally required age. These students had previously been disengaged at other schools, but had chosen to remain at a school where they received qualifications that had meaning in the employment world, and earned an income from their hard work.

The principal explained the impetus of his work in this way:

*“The board know that a meaningful job is what is going to effect change in the life of the next generation. Too many young people see that others who went to boarding school just get pregnant, sit around, do drugs, and the circle goes around again. So students don’t always see the value of education. We’re trying to help students break the cycle; to have the confidence and resilience to see the way out of that you know; see a way forward...The students that have been at this school [and returned home] stand out as being more confident, a higher percentage engaged in employment and in making a contribution to the community that they live in”.*

Principal, School J

The above anecdote and quote illustrate the finding of this and many other studies (Epstein & Sheldon, 2002; Lamb et al., 2004) that Year 12 retention is closely attached to student perception of the employment utility of secondary education. Shedding further light on this relationship in the context of Indigenous education outcomes, some Indigenous Program Coordinators (IPCs) in this study voiced their frustration that many school programs focused on sporting and arts as a vehicle for student engagement. Such a narrow view of career possibilities in the current knowledge economy would prevent many Aboriginal students from achieving financial independence, and likely contribute to generational economic and social disadvantage for Aboriginal Australia (Smith Family, 2014).

Whereas every school leader recognised the importance of improving students’ perception of the economic benefit of education, none of these spoke of historic oppression of Indigenous people in the education and employment sectors as a reason for Indigenous students’ lower levels of engagement with education.

Although this study is by no means exhaustive, it would certainly be cause for concern if school staff throughout Australia remain ignorant of the effect of intergenerational trauma on Indigenous youth (Zubrick et al., 2006). If schools and policymakers believe that disengagement is only due to current poverty and social issues in Indigenous communities, they are far less likely to attempt to acknowledge historical abuses through school curricula, or redress these abuses through deep engagement with Indigenous worldviews in true reconciliation.

Although previous studies have found that Indigenous students tend to receive less support and information regarding tertiary education opportunities (Helme, 2010; Munns & Parente, 2003), some of the schools in this study present a vanguard movement aiming to provide meaningful, timely and accurate career pathway education opportunities to Aboriginal students.

#### *Summary of Success Criteria*

Throughout the interviews, school leaders demonstrated keen awareness of the background factors affecting student engagement with school and employment outcomes and acknowledged that their principal focus was building students' capacity to lead healthy and productive lives. Furthermore, school leaders and Indigenous Program Coordinators linked cultural awareness and pride intrinsically to student self-confidence and attempted to ensure that the school environment promoted respect for Indigenous culture. A great level of diversity was evident in the career education provided to students at each school. Whilst this was in part due to access to resources, and the academic background of students, it was apparent that across the different schools, staff held a range of viewpoints as to the types of guidance that would provide best outcomes for their students.

The narrative of school leaders' aims for their students suggested a holistic approach to wellbeing and future success. School leaders demonstrated a very clear and consistent interpretation of what educational benefit for students looked like. These 'desirable education outcomes' extended beyond this study's focus of employment, income or post-secondary qualifications, and whilst the comprehensiveness of this approach is commendable, a number of schools in the study suffered demonstrably under the resource-strain created by the multiplicity of their students' needs.

In any school, the most important resource is the staff themselves. The impact on student aspirations of school staff, as witnessed by school leaders, is described in the next section.

### 9.3.2 Obstacles to success

Limiting factors affecting educational engagement amongst remote students and amongst Indigenous students have been the focus of many previous studies (Biddle, 2010; Biddle, Hunter & Schwab, 2004; Lamb, Walstab, Teese, Vickers and Rumberger, 2004; Lillemyr, Sobstad & Marder, 2008; Prout, 2009; Rigney, 2011; Storry, 2007). In that regard, interviews with school leaders did not raise hereto-unknown considerations, but provide an insight into contemporary perspectives amongst school leaders of Indigenous student disengagement.

#### *Difficulties with geographic remoteness*

Although not a key measure in the current study, school leaders in remote and rural areas lamented the tyranny of distance when trying to ensure effective post-secondary outcomes for students. One principal reported that the fear of the unknown in having to move to Perth dissuaded some students from going to university. At another school where students were focused on transitioning directly to employment after Year 12, the principal reported that because students came from a wide variety of communities, each



thousands of kilometres from the school, it was very difficult to establish links with employers in students' home communities. This principal felt that sometimes years of good work were undone when students returned home to communities of high unemployment and social issues, without access to support:

*"The difficulty is, we know once a student leaves [school], there may not be that person available in their new lives who will take a personal interest in mentoring them. That can be where it sometimes breaks down. Some come home to their communities and end up in their old lives, not employed, pregnant, or sometimes worse."*

Principal, School J

### *Social troubles*

All school leaders and Indigenous Program Coordinators discussed at length the effect of social trauma in the home community on individual students, intra-student body relationships, and staff mental health. High rates of Indigenous suicide, domestic violence, and community unemployment were daily factors affecting the health of the student body, and by extension, the health of the school community.

Often, school leaders reported that parents had enrolled student into schools some distance away from home in order to remove them from negative peer networks, or from access to sly grogging and drugs. Yet these students, although removed from previous 'trouble', were still highly traumatised individuals with very limited self-regulation, and now faced the added emotional strain of coping with being removed from their family, country, and familiar support networks. Some schools had effective programs and experienced staff to respond to such needs, and utilised the opportunity to provide students with a safe and stable living environment, good pastoral care, development of life skills, and to surround them with peers who were motivated and making constructive choices.

At other schools, the difficulty of obtaining quality staff and sufficient resourcing meant that the school environment at times became as volatile as the home communities that students had left. One principal at a remote school confided that few students lasted more than a year due to such issues. Whilst parents tried to encourage students to stay, at this school a group of six students had walked home a distance of nearly one thousand kilometres, rather than remain in an unhappy environment. This principal estimated that to provide adequate care, he would need a minimum staffing ratio of approximately one staff member to ten students, which the school could not afford.

School leaders understood the importance of working in partnership with families to create better school engagement amongst students. Although this was difficult to establish due to the distance between the school and families, many school leaders utilised signed agreements to establish shared expectations for student attendance and behaviour. Amongst fee-paying students, school leaders tended to report high levels

of family support. Families had chosen the school because of its reputation, believed it would provide a good social and academic environment, and were supportive of school expectations.

At two schools in this study, school staff related that parents themselves were part of the negative network which students had been removed from. This was more prevalent at schools that had an open admission policy, or chose not to place criteria on the level of support expected from the enrolled child's family. At one school, the principal discussed problems of residential students being provided with alcohol and substances by visiting family, which at times fuelled volatile or criminal activity from sections of the student body. These same family members were often uncontactable when school staff needed to communicate, due to limited telephone and internet access, or due to substance misuse. At another school, one quarter of the Indigenous scholarship students were in the care of the Department of Family and Children's Services.

Having numbers of these students in one school environment placed significant strain on staff. This was a particular issue for principals and Indigenous Program Coordinators who took on legal guardianship of residential students. At one remote school where students had burned down a building in an attempt to be sent home, the principal's family had housed the students overnight to protect them from community retribution until the police could arrive the next morning. Such school leaders demonstrated an extreme level of commitment to the care of their students, but there was an evident impact on the school leaders' own mental health and desire for longevity in their role.

### *Invisible Racism*

Within the research world, only very recently has academic discourse become cognisant of epistemological racism and its influence on the continuance of a deficit discourse regarding Indigenous Australians (Bodkin-Andrews & Carlson, 2014). The researcher interview schedule (refer *Appendix D*) omitted any overt question on racism in the school environment, a fact that may vindicate concerns of current Indigenous academic scholars on the ability of etic researchers to explore Indigenous issues without epistemological bias (Bodkin-Andrews & Carlson, 2014). Nevertheless, there was not one interview where school leaders organically discussed cultural dissonance or racism as a source of student disengagement at school, despite this theme occurring amongst student interviews.

That non-Indigenous school leaders identified socioeconomic and geographic factors affecting Indigenous engagement much more easily than they identified racism and discrimination in the curriculum, in expectations, in understanding of identity, and in student adaptability to school system requirements, highlights the very need for improved cultural competence of school staff that has been argued by Macdonald, Gringart and Gray (2016), amongst others. When it is further considered that, as reported in

Chapter 8, socioeconomic and family factors have far less impact on student education aspirations than do teacher and school environment factors, it stands to reason that racism within the school may be a considerable issue affecting Indigenous student engagement with the education system.

Bodkin-Andrews et al. (2012), found that when school environments support multiculturalism, individual experiences of racial discrimination have a magnified negative effect on engagement and academic self-perception. Hence, attempts to promote Indigenous culture at the whole school level can potentially backfire if school leaders do not acknowledge and address forms of racism in teacher-student or student-student relationships (Macdonald, Gringart and Gray, 2016).

Such racism is often covert, and invisible to perpetrators. The literature is clear that many teachers in Australia do not have sufficient cultural competence to understand how constructions of norms impact classroom behaviours (Luke, 2013). Teachers are often resistant to examining the impact of cultural norms, believing that to do so would itself be discriminatory (Mahon, 2006), or to identifying the nature of white privilege and cultural relativism, as to do so can threaten the teacher's own sense of identity (Aveling, 2006; Picower, 2009). In doing so, non-Indigenous teachers maintain a hegemonic discourse that the source of disadvantage for Indigenous students lies in their home life, is not due to institutionalised racism, and is not something that educators are responsible to directly address through their own practice (Picower, 2009). As long as school engagement policies rely on somewhat superficial non-Indigenous perspectives of culture, true improvements in cultural competence may be limited.

### 9.3.3 Summary of findings and interpretations from staff interviews

Interviews with staff revealed school leaders' perspectives on what 'benefit of education' meant within their school's student demographic, and revealed strategies that school leaders apply to foster engagement and positive outcomes. The findings present an insight into the interaction between student needs, school responses, and successful student outcomes in a more detailed manner than was addressed by the quantitative stage of the study.

School leaders were focused on improving social and health outcomes for students, and in constructively building student capacity and life skills to deal with difficult life situations. They did this through a focus on identifying curricula that increased the utility of schooling for students, supported students towards building healthy lifestyles and coping strategies, and attempting to utilise culturally responsive strategies to build self-confidence.

School leaders typically cited socioeconomic and geographic sources of disadvantage for students, and utilised available resources to address these meaningfully, with mixed success across different schools.

Participants did not identify that racism of either an overt or a systemic nature might have a continuing influence on student willingness or ability to engage in their schools, although racist experiences would be a recurring theme amongst student interviews. Neither did school leaders relate current student disengagement to historical systemic oppression of Aboriginal people, which may be an indication that school staff do not fully appreciate that this history is an integral part of the complex causes of Indigenous socioeconomic and education disadvantage in modern Australia (de Plevitz, 2007). This finding echoes that of Russel Bishop (2008), who similarly found that teachers overwhelmingly identified deficits within the home and socioeconomic background of Maori students as the leading influence on educational achievement, thus positioning themselves as not responsible for disparity in education outcomes. The silence of school leaders, and the initial research focus, on Indigenous perceptions of cultural discrimination are evidence of the ongoing effect of colonial sidelining of Indigenous knowledge (Ardill, 2013).

These findings from staff interviews might begin to address two of the questions in the Introduction to this chapter which arose from the quantitative analysis, that of why Indigenous students were less likely to aspire to post-secondary education, and why promotion of Indigenous culture did not impact on perceptions of the importance or benefit of school.

In relation to the first question, many secondary schools in Western Australia with significant Aboriginal populations are very focused on the immediate needs of their students. These schools often allocate significant resources to addressing literacy, numeracy, health outcomes, and Year 12 completion for their students, and less resources to future needs, such as establishing meaningful post-secondary transitions and aspirations. Where schools aspire only to make Indigenous students 'healthy', but do not (or are not sufficiently resourced to) prioritise employment preparation as part of secondary education, schools may reinforce expectations of low social position for Indigenous Australians.

Only some larger schools in this study were able to resource targeted career pathway knowledge development and transition strategies that addressed specific requirements of Aboriginal and boarding students. If these students are aware that post-secondary training or education would not come with the level of support required to overcome social, economic, cultural, academic and geographic barriers, they may have been less likely to aspire to those pathways. Furthermore, where students are not already receiving encouragement and role modelling of post-secondary aspirations from their families, their lower aspirations are compounded by school staff having low expectations and providing little knowledge about post-secondary pathway options.

The second question from the Introduction section that can be examined in light of Staff Interview responses, is that of the surprising disconnect between Promotion of Indigenous Culture, and Perceived Benefit of Education. When school leaders spoke of strategies to address Indigenous cultural awareness and pride at school, they at times focused on celebratory events, scholarship programs, dance programs and the like, but appeared unaware of institutionalised racism, and ‘white-washed’ curricula, within their schools. This suggests that activities which school leaders use to promote Indigenous culture, may be perceived as tokenistic by students when they perceive discrimination in the education environment through experiences such as lower expectations from teachers, judgment from school staff for non-attendance required by cultural protocols, or an epistemologically biased curriculum. Students who encounter such experiences may well believe that they need to make the most of their time at school, but not believe that pursuit of further education will be a positive experience.

The analysis of themes which emerged from staff interviews provided insight into possible explanations of causes of disconnect that are still occurring in the areas of cultural competence, and post-secondary aspirations. Yet, it is the voices of the students themselves that is likely to shed most light on both the primary research questions, and the further questions, which arose during quantitative analysis. The next section of this chapter explores these in relation to the student interviews.

## 9.4 Findings and Interpretations for Student Interviews

Whereas the quantitative measurement tool was able to explore student attitudes and experiences through a series of survey questions, student interviews allowed the researcher to address the primary research questions in a more direct manner. What did students believe was the benefit of education, and how did that affect their attendance and completion intentions? How much benefit did students attribute to experiences such as role models, family and staff support, career development programs, etc.? The interview questions focused on student perception of the benefit and importance of school, but used wording more appropriate to the academic level of teenagers (see *Appendix D*).

The themes that arose closely mirrored those in the Staff Interviews, hence a similar thematic framework was utilised: Success Criteria-What makes a good school, the Influence of Family, and Obstacles to Success. These themes, listed in *Table 34* below, represented the interaction between school environment and student aspirations, and family dynamics, with the school community demographic. In the following section, each of these themes and subthemes is discussed and illustrated with quotes from the student interviews.

*Table 34: Student interviews: Themes and Sub-themes.*

Themes	Subthemes
<b>Success Criteria – What makes a good school?</b>	<i>Positive, respectful school culture</i>
	<i>Developing pathways to employment</i>
	<i>Healthy Social Environment</i>
	<i>Respect for Indigenous culture</i>
<b>Influence of Family</b>	<i>Influence on Education Engagement</i>
	<i>Influence on Employment Aspirations</i>
<b>Obstacles to Success</b>	<i>Difficulties with geographic remoteness</i>
	<i>Juxtaposition of school environments</i>

During analysis, student interviews were interrogated for responses that might illustrate the findings of the quantitative analysis, and inform discussion surrounding the questions that were presented in the Introduction of this chapter.

Student interviews were more structured, and shorter, than staff interviews. The Student Interview Schedule is attached at *Appendix D*.

#### 9.4.1 Success criteria-What makes a good school?

When asked about the experiences that led students to form an opinion of the benefit of school, responses fell into four broad categories: *Positive and respectful school culture*, *Developing Pathways to Employment*, *Healthy Social Environment*, and *Respect for Indigenous Culture*. These categories somewhat mirrored the Criteria for Success categories that arose in the staff interviews, although differences in student perceptions of what these themes 'looked' and 'felt' like provide insight into the circumstances that cause students to engage with secondary schooling.

##### *Positive, respectful school culture*

Quantitative data analysis identified *Positive School Culture* as one of only four variables in this study that was significantly related to student perceptions of the benefit of education, and many authors have written about the need for staff to establish positive and respectful relationships with students. Such relationships are typified by high expectations, non-judgmental attitudes, friendly personal interactions, and encouragement (Bourke, Rigby & Burden, 2000; Dinanthompson et al., 2008; Hones, 2005; Munns & Parente; 2003; Rahman, 2010; Whitinui, 2010). When asked to explain what made them feel respected, students in this study mentioned these same characteristics.

A common theme in interviews was that teachers earned respect when they gave students both independence and responsibility. Students respected teachers who held high expectations of them, provided practical support with homework and classwork, and who expressed a belief that students would achieve their dreams.

*"...they help you with your work and demonstrate what you got to do. They help you with your homework. There are lots of teachers to respect, which makes it a good school.*

Yr 12 Indigenous female, School I

*"The teachers here want you to pass and want to see you achieve your opportunities and they help you achieve your dreams. That is the biggest thing."*

Yr 12 Indigenous female, School E

Marzano (2011) reminds teachers that respect is a matter of student perception. Whether or not a teacher feels positively about a student, it is the interactions, level of encouragement and verbal feedback that students experience, which informs the students' perception of respect. It was apparent that at some schools, the influence of staff created more disengagement than engagement, particularly in those

residential schools where staff were not knowledgeable about the various socioeconomic, cultural and geographic issues that their students grappled with.

Teachers from middle-class backgrounds can be unaware of the impact of poverty on homework completion, academic engagement, and absence from school, instead assuming that a student who cannot complete work at home or come to school 'prepared' is less interested or engaged with schooling, or less interested in achieving a 'successful' and financially independent future (Santoro, Reid, Crawford & Simpson, 2011). Similarly, teachers may frequently be ignorant of social background, and conflate differences in student behaviours in relation to authority, goal setting and self-regulation with lower capacity or aspirations (Castro, 2010). When teachers hold low expectations of students, this can quickly become self-fulfilling as students take on a lower self-concept in reflection of teacher expectations (Hones, 2005).

Research with Aboriginal secondary students in Australia has identified that students frequently experience lower expectations from teachers, and that these experiences are negatively associated with student engagement (Bodkin-Andrews, O'Rourke, Grant, Denson, & Craven, 2010; Denson & Bansel, 2012). Hence, it seems that teacher training, both pre-service and in the field, needs to concentrate on helping teachers explicitly identify the impact of cultural, social and economic background on student engagement at school. Furthermore, teachers need to be made aware of their own implicit bias in relation to these areas, in order to recognise unintentional but very real discrimination, and support students to feel respected and hence engaged at school.

Prout (2009) highlighted the fact that rural schools often place transient, inexperienced teachers in classrooms with disenfranchised students by necessity, which can impede the establishment of respectful relationships between students and staff, and hence hamper student re-engagement with school. It is recommended that school leaders focus on training staff specifically in the development of good relationships and building a respectful school culture. Creation of such an environment could have the added effect of promoting teacher longevity in remote schools, as well as better outcomes for students.

### *Developing Pathways to Employment*

Other Australian research over the last decade has highlighted the lower perceived utility of schooling amongst Indigenous school students, particularly for those in remote areas (Biddle, 2007; Hillman, 2010), as well as more limited access to career knowledge and aspirational support from school staff (Munns & Parente, 2003). The interviews conducted in this study revealed that Indigenous students in particular were aware that their choice of school was critical for development of employment skills and knowledge. This connection between perceived employment utility of education and school engagement, verbalised across



many of the interviews, echoes the findings of other major studies (Epstein & Sheldon, 2002; Lamb et al., 2004; Reid, 2008), as well as analysis presented in Chapter 7. Some schools were recognised by students for promoting better chances of academic success and tertiary education opportunities, whereas other schools had been chosen specifically for the access to traineeships and work experience they provided.

Regardless of the academic or vocational focus of each school, most students reported attending schools that gave a significant level of practical career support to students, such as helping them find apprenticeships, vocational training or work experience, providing job interview skills, holding career expos, subject counselling, visits to universities and TAFE campuses, and arranging opportunities for students to meet with prospective employers such as mining companies or the Australian Defence Force Academy.

Students from remote communities spoke explicitly about the benefits they had gained from attending larger boarding schools with access to a well-resourced career education programme. In particular, students from remote areas greatly appreciated the opportunity to work towards their drivers' license through the school.

*"Things they teach us here are better 'cos they teach us about work and you get opportunity to go into town and work. This school they set you up for the future and they set you up with [drivers'] license."*

Yr 12 Indigenous male, School J

Indigenous students from remote or rural areas also emphasised a desire that careers education and staff encouragement to pursue employment aspirations needed to focus on options that would allow them to live near their family and 'country', whilst contributing meaningfully to the community. At some schools, career counsellors had clearly worked with students to identify appropriate education pathways to enable them to transition to employment when they left the residential school environment.

One Year 12 student from Kununurra had a keen interest in becoming an Indigenous Tour Guide at a Kimberley cattle station. The school had helped her arrange work experience there, and was guiding her education choices to enable her to meet her goals.

*"I've been at [School J] for one and a half years. First I did Tourism Cert I and now I'm doing Cert II for Outdoor Recreation and Tourism. [My teacher] told me these two Certs work well together..."*

*[This school] has saved my life, and given me an education. I would have had no life and didn't know what to do... I wasn't going to school hardly [before enrolling at this school].'*

Yr 12 Indigenous female, School J

Other students spoke of frustration that school staff sometimes lacked sufficient knowledge to recommend options other than sport or mining as real career choices. Students looking to find meaningful employment, and to stay in their home region, needed career education that allowed them to develop a wider skillset.

*"The other place [previous boarding school] only taught about sport and you don't get money from that. But here [I'm] Working on Business Cert II at the moment, will probably do one more Cert before leaving."*

Yr 12 Indigenous male, School J

For some students, the higher academic standards, and levels of resourcing and support at the larger urban schools had provided new career aspirations. This was particularly true for Indigenous students from disadvantaged backgrounds, now introduced to older mentors who had succeeded academically through programmes such as AIME (Australian Indigenous Mentoring Experience). One senior student explained that if he had remained in his hometown he would have '*dropped out already*', but that meeting successful Aboriginal mentors had caused him to aspire to university study:

*"[Because of] people I've met, who've gotten through universities, you know that you can do something after you finish school, that you're not gonna be a dropkick for the rest of your life".*

Yr 12 Indigenous male, School A

A fellow student then chipped in to explain that such experiences enabled Indigenous students to build a positive academic self-concept, in opposition to the discourse they had previously experienced.

*"...as an Indigenous person to graduate, well not many Indigenous people get these opportunities."*

Yr 12 Indigenous male, School A

These statements demonstrated that for some students, access to successful Aboriginal role models had meaningful positive impact on student aspirations. Initially, such statements appeared at odds with the finding of the bivariate analysis that Exposure to Indigenous Role Models was *not* significantly correlated with student aspirations, and with other recent research (Luke, 2013) that positive role models alone did not increase school outcomes for Aboriginal students. Yet, the explanation for this contradiction may lie in the items used to measure Exposure to Indigenous Role Models in this survey. The survey for this study referred to all Indigenous adults in the school who 'wanted [students] to succeed' as 'role models'. Perhaps, as suggested in the above student quotes, the most effective Indigenous role models are those who have demonstrated through their own life journey that post-secondary aspirations are achievable.

It was not uncommon for interviewees to state that either they, or a sibling or cousin, would be the first member of their family to complete Year 12. This achievement was a source of pride to youth dealing with a dominant social discourse that reinforced negative concepts of the Indigenous self. The quotes from

students in this section provide further clues to the question of why Indigenous respondents to the survey were less likely to attribute benefit to post-secondary education. If these students, who were often the most academically successful of their peer network, did not believe they were capable of success, how much more might other Indigenous secondary students believe that they were unlikely to achieve success beyond high school. Certainly this suggestion needs further research, yet there would appear to be a powerful argument that the existing negative academic self-concept amongst Indigenous secondary students is likely to play an important part in explaining the lower post-secondary educations of this group.

### *Healthy Social Environment*

Statistics show that Indigenous communities experience higher rates of violence, unrest and incarceration (ABS, 2015b; ABS, 2015c). Hence, Indigenous school students are more likely than non-Indigenous students to have experienced themselves, or family members who have experienced, significant violence, involvement with the justice system and community unrest. These factors, and also socioeconomic disadvantage, are related to high levels of psychological distress.

Many of the residential students interviewed at low to middle fee paying private schools, spoke of coming from difficult social backgrounds where there was “trouble” (e.g. drinking, walking the streets, drugs, violence). Where these students attended schools that provided a positive social environment, they spoke of the critical difference this made in their lives and sense of identity.

*“(School J) made me feel like a changed man, without (School J) I would be nothing. I want a good reputation and work experience.”*

Yr 12 Indigenous male, School J

*“The (last) time that I got expelled I was thinking I’m not gonna do it any more, cos if I was gonna do it again I would ruin my life and didn’t want (my) families thinking I’m a bad man. This school is a very big difference, especially ‘cos there are more older students here so I snapped out of childhood and matured up. I decided I wanted to get a good job and career and do what’s good for me and make my family proud.”*

Yr 12 Indigenous male, School J

Some schools in the study focused specific resourcing and policy on improving mental, physical and social health outcomes for students from disadvantaged backgrounds. At these schools, as discussed in staff interviews, school leaders focused heavily on creating a safe social environment and a positive discourse around students. In effect, school leaders were attempting to create a new social norm that would aid students to make behavioural change (Ajzen, 2005).

### *Respect for Indigenous Culture*

According to the Australian Bureau of Statistics (2015c), one third of all Aboriginal and Torres Strait Islander adults 15 years and over, reported experiencing racial discrimination. During interviews with Aboriginal students, interviewees were asked:

“Do you think this school is a place that respects Indigenous culture? Can you give some examples to explain your thoughts?”

### *Appendix D –Interview Schedule for Pilot and Second Phase*

In Chapter 7, quantitative analysis identified that *Promotion of Indigenous Culture* was a key part of the broader construct *Positive School Culture*. Dobia et al. (2014), when utilising constructs of Indigenous identity in research with Aboriginal high school students, found that for these students, school engagement was linked to student perceptions of opportunities to participate in cultural events and learn about Aboriginal history. Other authors have argued that it is no accident that the emergence over the last twenty years of culturally inclusive practices has coincided with better educational achievement amongst Indigenous peoples (Bodkin-Andrews & Carlson, 2014).

As far back as 2008, Munns, Martin and Craven asked schools to investigate whether Aboriginal students believed the school to be a culturally inclusive and supportive environment. These authors wrote that while many schools implement programs aimed at increasing cultural awareness and experiences within the school environment for Aboriginal students, school leaders did not take the time to evaluate the perceptions students themselves have of what is being done.

Personal anecdotes, and ‘yarning’, are an Indigenous discursive strategy to communicate objective truth, and should be an important part of academic discussion in Indigenous fields (Aveling, 2013; Nakata, 2006). A traditional academic approach might delimit the personal voice, but Nakata argues that this should not occur when investigating Indigenous knowledge. The research therefore presents the voices of students themselves and asks readers to engage with Aboriginal voices on perceptions of cultural awareness.

One interaction between the researcher, an Aboriginal Yr 12 student, and a non-Indigenous teacher School C highlighted the difference between Indigenous and non-Indigenous understandings of culture.

Researcher: *Do you have many cultural experiences at [this school]?*

Student: *No.*

Teacher: *Hang on, what about NAIDOC, that special assembly we had, and the food we ate?*

Student: *Oh, yeah.*

Researcher: [Student name], *what did you think I meant when talking about cultural experiences?*

Student: *you know...like cultural stuff.*

Researcher: *You mean like women's business, that sort of culture?*

Student: *Yeah.*

This conversation illustrated a subtle but important understanding for school staff working with Aboriginal students. Activities such as NAIDOC promote understanding and recognition of Indigenous culture for non-Indigenous students, and perhaps also cultural pride for Indigenous students, but they represent only a very superficial understanding of what it means to be Aboriginal. Students sometimes explained that though their teachers thought themselves to be 'culturally aware', in fact, students perceived most teachers to be ignorant of Indigenous ways of being and knowing. This ignorance caused students to feel discriminated against, even as teachers were unaware that their actions were creating friction and disengagement for students.

*"I don't think they know what it feels like to be an Aboriginal but they aren't racist".*

Yr 12 Indigenous male, School A

This quote illustrates a theme that became apparent in many of the interviews; that Aboriginal students differentiated between cultural discrimination/ignorance and intentional racism. Scholars may well argue that cultural discrimination and ignorance by teachers is a product and also driver of the systemic racism in Australia that silences Indigenous ontology and ignores the reality of cultural relativism (Ardill, 2013; de Plevitz, 2007); or that Indigenous Australians have been so completely colonised 'in the mind' that they do not recognise systemic cultural discrimination as a form of racism (Smith, 1999).

Perceived racial discrimination from teachers is significantly more common amongst Indigenous students than non-Indigenous students and has been found to negatively affect student engagement (Bodkin-Andrews, Denson & Bansel, 2012; Bodkin-Andrews, O'Rourke, Grant, Denson & Craven, 2010). During the interviews, students recounted a diversity of experiences that left them feeling as though teachers were ignorant of Aboriginal dialects, ways of learning, and ways of being. Where Aboriginal students felt that their culture was respected in the school, they did not attribute this to 'cultural' traditions such as Acknowledgment of Country, specific curriculum or NAIDOC and Reconciliation Weeks. Rather, Aboriginal students felt respected when teachers allowed them to think and act in Aboriginal ways without being penalised for their differences.

*"This school gives proper respect for Aboriginal culture ... 'cos the teachers and the students understand what it means. Things like respect for Elders, don't talk about certain Aboriginal stuff."*

Yr 11 Indigenous female, School J

*"I don't think they do (respect Aboriginal culture) because they correct your English when you speak like where you're from instead of White English."*

Yr 9 Indigenous female, School B

*"Kids sometimes are not used to this type of school, trying to sit at the back of the class and work out how each classroom works and how people interact. But the teacher might pressure them to interact."*

Yr 8 Indigenous female, School B

In particular, students recognised differences between themselves and school staff regarding cultural understandings of family and community. For many students attending boarding school, the cultural importance of remaining strongly connected to family, was not perceived to be valued by school staff. Furthermore, students felt that school staff were ignorant of kinship relations and the way that 'family' is constructed in Aboriginal society.

During school photographs, one school refused to allow Aboriginal students to have 'family' photographs with other students who were not birth siblings, which left interviewees feeling discontented with the school, and discriminated against. The school had explained its policy by stating that if they allowed Aboriginal students to have a group photo, then they would have to allow all ethnic groups to do the same. This response conveyed the message to students that Indigenous Australians had no particular cultural rights within their own land beyond those afforded to immigrant races, further alienating students from the school and furthering the negative social discourse that Aboriginal Australians do not have the right to proudly carry on their culture.

Many students referenced family obligations when discussing factors that affected school attendance, or even the likelihood that they would remain at school to complete Year 12. These obligations included funeral planning and attendance, caring for sick elderly or children, cultural business, and solving feuds or conflicts. One Year 11 student who had been through initiation stated that he would not finish Year 12 if his grandparents died, and was juggling pressure from school staff to engage at school, with pressure from home to assist the family with issues they were facing. This student made a point of emphasising:

*"...teachers just need to understand Aboriginals' family are the most important people in our life."*

Yr 12 Indigenous male, School A

Students also spoke of experiencing overt racism from other students, particularly when they attended schools where Aboriginal students were an ethnic minority.

*“Some of the day boys try to joke around but they take it too far sometimes... they do all the stereotype stuff, walk up to you asking for drugs, do accents”.*

Yr 12 Indigenous male, School A

Two students attending a school through financial sponsorship explained that they were often in a position of having to defend their placement to other students who were ignorant of the interaction between socioeconomic disadvantage and Aboriginal status in Australia.

*“Normally they’re like “youse get everything, youse don’t have to pay for everything, where we have to work hard” and that happens quite a bit.”*

Yr 12 Indigenous female, School I

Her friend then added

*“The first couple of times you explain it and then you just go yeah well I’m not going to explain if they’re not trying to understand”.*

Yr 12 Indigenous female, School I

This peer racism occurred from both sides of the ethnic divide, with students who boarded at private schools in Perth frequently relating that they experienced lateral racism when returning home to remote towns, and had to re-establish their Aboriginal status amongst peers. Such discourse can create an expectation amongst Aboriginal students that attempts to ‘better’ themselves through schooling come at the cost of identity and acceptance within some sections of their community. If the school environment is equally unaccepting, Aboriginal students may find themselves between two worlds.

### *Connection to Quantitative Results*

The four categories which students felt described “a good school” further corroborated the findings of the Pearson’s correlation as to which variables had a significant correlation with *Perception of the Benefit of Education*. The bivariate analysis had identified *Pathway Development*, *Positive School Culture*, *Promotion of Indigenous Culture*, *Family Support* and *Student Self Efficacy* (Appendix K – Zero-order correlations between interval latent variables) as being significantly correlated ( $r > 0.3$ ,  $p < 0.001$ ) with student perceptions of the benefit of school. The first three variables above exactly mirrored categories identified in Success Criteria, with *Self-Efficacy* also reflecting similarities with the mental, emotional and social health aspects of the Healthy Social Environment category. Whilst Family Support was not mentioned above because it does not

reflect the school environment, it was a critical factor affecting engagement and retention according to student interviews, and is treated in the section below.

Student interviews were conducted and recorded well before quantitative analysis began, and whilst the variables of the quantitative analysis informed interview coding, the fact remained that students had provided very significant comments and discussions on the particular matters of positive school culture, staff competency in Aboriginal protocols, and career education opportunities, prior to these variables being identified as the most significant factors in the quantitative analysis. In this regard, the qualitative analysis adds strength to the findings presented in Chapter 8.

### 9.4.2 Influence of family

#### *Influence on Education Engagement*

The multiple regression equation provided in response to Research Question 2 identified that Family Support for education was a significant predictor of students' own perceptions of the benefit of education.

Importantly, the quantitative analysis of Research Question 2 and Research Question 5 revealed a distinction between Family Support for education in terms of attitudes, and wider social support at home as reflected by Family Education levels and Peer Support for Education. It appears that the support of highly influential individuals within the family was an important predictor of students' educational intentions and aspirations, whereas the attitudes of the wider family network were less relevant.

The influence of family education backgrounds, career knowledge, and support, on student aspirations have been heavily emphasised in previous research (Lamb et. al, 2004; Rahman, 2010). The education level of adults in the household is significantly correlated with education participation (Biddle, 2010), and might go some way to explaining lower education participation amongst Indigenous students. According to the Australian Bureau of Statistics, the proportion of Indigenous Australians aged 15 years and over who had completed Year 12 equivalent was up from 20% in 2008 to 26% in 2014, but compares with an Australian average Year 12 equivalent education rate of 74% of adults 15 and over (ABS, 2015a; 2012). Yet, amongst the interview sample, as in previous research by Rahman (2010), Indigenous students reported high levels of in-principle support for education from key family members, even if these family members themselves had not completed schooling.

*"Dad's been hard on me, would have made sure I graduated. He went to Year 11 and has been employed since then."*

Yr 11 Indigenous male, School A



The decision to send students away for boarding can carry social cost for the family (Biddle, 2007), bringing homesickness and the uncertainty of a child being brought up in a distant place. Students reported guardians having a two-fold rationale for sending them away for schooling: families hoped that boarding school would remove students from communities with high rates of violence and crime, and could also lead to better education and employment outcomes for students.

*“Because most of my older family they didn’t end up finishing so they know that I need to go to school.”*

Yr 12 Indigenous female, School J

Another student had returned home from boarding at the end of Year 11 with the intention of staying home, because she had found the homesickness difficult to bear. She made the decision to return to school after her mother said:

*“Please just go back there and make me proud, because I didn’t finish Year 12.”*

Yr 12 non-Indigenous female, School J

The high level of family support experienced by boarding students is unsurprising, given that the decision to send children away for large amounts of time, often to a school away from traditional homelands and without strong understanding of culture, requires a significant decision and commitment by the student’s guardians.

Some previous research has identified that Aboriginal parents, who often give their teenagers a large degree of autonomy, may not ‘enforce’ school attendance, particularly if they know the school environment is unpleasant for the student (Behrendt & McCausland 2008; Munns & Parente, 2003; Schwab, 2001). Less-culturally competent educators might interpret this child-rearing strategy to believe that Aboriginal parents are not supportive of education systems, however, other researchers have found Aboriginal families are frequently misunderstood and therefore, discriminated against within schools (Gower & Byrne, 2012; Luke, 2013; Santoro, 2009; Santoro, Reid, Crawford & Simpson et al., 2011). It is therefore important that school staff are properly educated regarding Indigenous social and cultural issues that affect education participation.

### *Influence on Employment Aspirations*

Amongst both Indigenous and non-Indigenous students, family attitudes were influential not only for education aspirations, but for career aspirations. Students often referenced the career choices of family members when discussing their own career goals. This may be in part due to the smaller communities and towns which some students came from, where word-of-mouth was more important in finding employment

opportunities. It also may reflect the fact that some schools provided students with very limited career development information that was relevant when they returned home. Hence, residential students were more reliant on their family networks when investigating employment opportunities.

*“My dad works (at a mine) and thinks I might do the same. He says get a job straight away when I finish school so I’m not doing nothing.”*

Yr 11 Indigenous male, School I

Family obligations have previously been identified as a cause of absence from school, or early school leaving, amongst Aboriginal students (Prout, 2009). Through both interviews and survey responses, Aboriginal respondents identified domestic duties, carer roles, cultural business and funeral attendance as key reasons that they may be required by their families to be absent from school at times. Rather than placing judgment or blame on Aboriginal families for this prioritisation of the family needs, schools might do well to use this cultural value in order to increase education participation. When asked how she felt schools could best gain a family’s commitment to keeping an individual in school even when there were needs at home, one student had a brilliant response.

*“Maybe tell them that if your child finishes school they can do a nursing course and be able to give more help when you’re sick than what they can now”.*

Yr 12 Indigenous female, School J

If schools utilised such an approach, they could demonstrate respect for Indigenous family values, whilst encouraging higher education engagement from students and their families.

### 9.4.3 Obstacles to success

Many of the students in this study were from remote and regional locations. The fear of the unknown and of distance from family and home when attending boarding school was a frequent theme for students, as was the internal dissonance students experienced when moving between schools that had very different levels of resourcing and engagement. Two themes arose in this discussion: *Difficulties with geographic remoteness*, and *Juxtaposition of school environments*.

#### *Difficulties with Geographic Remoteness*

One student explained that he was in the process of deciding whether to pursue further education or work on the mines. For him the decision was challenging because further education meant moving to the city, away from family. For many students who have close ties to family and country, the prospect of spending

years away from this safety net is quite daunting, and can be the sole reason that students do not pursue further education. This type of internal conflict is commonly faced by Indigenous students from remote areas (Biddle, 2007; Rigney, 2011; Schwab, 2006).

### *Juxtaposition of School Environments*

A second source of internal conflict for students from remote areas was the juxtaposition of norms between well-resourced, urban schools and under-resourced remote or regional schools. Students who had experienced multiple school locations sometimes reported perceiving lower utility of the remote or regional school environment.

*“Here, if someone’s ahead, they let them be ahead and make everyone else catch up, but at home, if you’re ahead, they make you stay back and get everyone else to keep learning.”*

Yr 9 Indigenous female, School B

Student academic self-concept can be lowered when students experience the shock of being further behind than their peers at a new school. The way that this is dealt with in the school environment can have a big impact on students’ sense of self-efficacy as in the quote below.

*“My standards of where I wanna be has lowered since I’ve been here (at this boarding school) because of the workload and expectations. It hits you how hard it is to finish Year 12 so I can go to university. When I was in (my home town) and knew I was coming (here) I thought I could do it all.”*

Yr 10 Indigenous female, School B

Without an appropriate conceptual framework with which to understand the obstacles they face when aiming for higher education, the stress of limited academic achievement can cause students to either ascribe an internal cause to their failure, or to believe that Indigenous students will not be afforded success in an urban, middle class, or ‘white’ environment (Harwood, McMahon, O’Shea, Bodkin-Andrews and Priestly, 2015). The work of Lazarus and Folkman (Lazarus, 2006; Lazarus & Folkman, 1999) explains such thinking as a coping mechanism. The experience of limited success at school creates stress for Indigenous students, which in turn causes students to make a cognitive appraisal that further education will be a threatening experience, and therefore less valuable as an individual goal. For this reason, all staff working with Aboriginal boarding students would do well to create a safe framework for students to receive educational scaffolding and tuition, whilst holding on to their self-worth and aspirations. The impact of schooling experiences on academic self-concept should be explored further as a possible factor in low retention rates of Aboriginal tertiary students (DPMC, 2017), and additionally, be part of an evaluation framework with which to identify successful practice for Aboriginal boarding students in secondary school.

A further cause of dissonance for boarding students was the comparison of economic norms at larger urban private schools with those in their home community. This had the potential to create positive motivation for students to achieve, as explained here.

*"It makes me angry, jealous, but then makes me want to achieve more. When I see little rich spoilt kids complain about they don't get enough it makes me wild. It makes me walk away and think I got less but I'm still happy."*

Yr 12 Indigenous male, School A

Schools who take on boarding students would do well to consider the 'social shock' that residential students might feel when comparing their new school environment with their previous one. Large and small schools each have their own advantages that should be clearly explained to students and their families. Staff working at boarding schools, need to be cognisant of holding high expectations of students whilst also supporting students to have a strong academic self-concept. Students who are experiencing cognitive dissonance in their new school environment may need the opportunity to discuss this openly in a safe environment, where they can be assisted to identify the cultural, geographic and socio-economic factors leading to differences between schools in a way that does not confirm a negative self-concept.

#### 9.4.4 Summary of findings and interpretations from student interviews

The student interviews allowed the researcher to hear an emic perspective on the factors which affected Indigenous school engagement, and to compare and contrast the perceptions of students and school staff.

Students spoke very highly of school environments where they experienced respect, encouragement, support and high expectations from staff, and these strategies did seem to be promoting the healthy lifestyle choices, sense of autonomy and positive self-esteem that staff interviews had indicated they were intended to address.

Students equally spoke highly of school environments where they believe they were developing skills that they could see would lead to meaningful employment and successful life outcomes. Again, this closely mirrored the findings of staff interviews; that practical skills, academic support and opportunities to obtain meaningful career education and training would lead to successful engagement of students.

It was in the area of racism and cultural understanding that student interviews revealed a different discourse to that of staff interviews. Many Aboriginal students felt that Aboriginal ways of being, of knowing, and relationships with family, were only poorly understood by non-Indigenous school staff. Students tended to interpret this as ignorance rather than racism, although academics who have written on this issue might not have been so generous (Bodkin-Andrews & Carlson, 2014). That institutional racism is experienced by Aboriginal students on a daily basis, was a very clear message that arose in the student interviews, and one

that needs to be communicated to those school staff who believed they were doing well at promoting cultural understanding in schools.

Amongst all students interviewed, family members played a key role in promoting school engagement, and in role modelling choices about whether or not to pursue education further. Schools can collaborate with families to increase the chances that students will make education decisions that result in the best long-term outcomes, but need to provide support for those who are experiencing homesickness and distance from family and culture.

Finally, it was apparent that urban schools that take on Indigenous boarding students needed to make their staff aware of the level of cultural, academic and economic dissonance experienced by students. Navigating the social scripts of the boarding environment can be a mentally taxing experience (Mander, Cohen & Pooley, 2015b). Where students are forced to do so by culturally incompetent staff, this can reinforce the notion that education institutions are racist, discriminatory, or culturally ignorant, one of the key reasons for Indigenous disengagement with higher education. Indigenous secondary students have much to benefit from the experience of learning to code-switch, and engage with the culturally different boarding school environment, but this is not multiculturalism, unless members of the hegemony also learn the same. Currently, too often it is the Aboriginal student who must do the work of learning to be culturally reflexive, and bear the burden of engaging with unfamiliar social scripts. In schools where staff are culturally competent, they can utilise appropriate methods to establish new social norms with students and promote an expectation of success, vital aspects of ensuring integrated motivation and promoting positive behavioural change (Macdonald, Gringart and Gray, 2016).

Lastly, student interviews provided meaningful insights into the third question raised in the introduction to this chapter. It is possible that the weak correlation between Indigenous role models and future education aspirations evident in the quantitative analysis is actually a reflection of ambiguity in the initial construct. Where Indigenous role models are able to mentor students through their own lived experience of educational success, these role models may well have a significant impact on student aspirations.

## 9.5 Conclusion

The interview findings provided meaningful insights into the three questions raised in the Introduction to this Chapter.

Regarding the lower perceptions of benefit which Indigenous students ascribed to post-secondary education and training in the questionnaire, there remains a significantly negative discourse surrounding Indigenous

secondary students' potential for success. This discourse affects and reflects students' own self-concept, experiences of social and educational disadvantage, and did not appear to be addressed by many schools in a holistic or comprehensive manner. Even amongst Indigenous students who had obtained scholarships to academic private schools, there existed a deep-rooted doubt that they had the capacity to attain genuine academic and employment success. This lower aspiration reflects expectations and experiences formed within the Indigenous community due to colonialism and ongoing racism in schools, but was reinforced by school systems which denied Indigenous epistemology, history, and ontology. At many schools, staff still focused on Year 12 completion as an endgame, rather than viewing this goal as a stepping point towards the ultimate goal of educational parity between Indigenous and non-Indigenous students. Hence, programs such as AIME which make post-secondary education a realistic aspiration may be incredibly important in providing more students with the social capital required to achieve tertiary education qualifications. Similar programs which introduce students from disadvantaged homes to Indigenous mentors who have successfully achieved vocational qualifications may be equally expected to improve post-secondary aspirations. Finally, the ongoing experiences of assimilation, colonisation and racism within Australian schools need redressing.

This links to the second question posed in the Introduction to this chapter, that of the apparent unimportance of activities that Promote Indigenous Culture in improving student perceptions of the benefit of schooling. Interviews revealed a disturbing disconnect between the understandings of non-Indigenous school leaders, and Indigenous students regarding what cultural competency need look like in Australian schools. Non-Indigenous staff spoke of NAIDOC, Aboriginal art, and Aboriginal scholarship programs as positive cultural initiatives. Indigenous students and school leaders, however, often felt that schools enacted only a superficial engagement with Indigenous culture, and demonstrated a willing ignorance of Aboriginal epistemologies, worldviews and value systems. Hence, students often felt that they were placed in a position of being misunderstood and discriminated against. This discrimination created a sense of disillusionment, frustration and disengagement for students who felt they fought a silent battle against white privilege. At some schools, non-Indigenous teachers had established strong and respectful relationships with students, but this only occurred where the non-Indigenous teachers had fully engaged with respecting Aboriginal culture.

Finally, the third question posed in the Introduction appears to have been summarily answered. Indigenous mentors who are from the same background as students, and have achieved positive post-secondary outcomes, are in fact valuable mentors. The items that measured this construct in the questionnaire were more ambiguously worded, and revealed only that 'positive' Indigenous role models in the school were not a sufficient condition for student engagement.

Qualitative analysis was the last of the three stages of data analysis in the present thesis. The following chapter synthesises these analyses in a final discussion of the Research Questions.

## Chapter 10 - Discussion Chapter

### 10.1 Introduction

This thesis had a three part aim, set out in the Rationale of Chapter 1. The research set out to quantify the relationship between student perception of the benefit of education and student education choices, to identify those areas where school engagement strategies could have a positive impact on student perception of the benefit of education, and to develop a factor model explaining the contribution of factors in the Home, School, Community and Individual Domains, to school engagement.

The current Chapter collates the findings of the factor analyses, multivariate and univariate analyses, and interviews, in order to provide a thorough and triangulated response to the guiding research questions. In addition to the two Overarching Research Questions guiding this thesis, two Discussion Questions arose during the course of analysis, and are addressed in this Chapter. These questions were:

*Discussion Question: How do socioeconomic and cultural factors, as well as social discourse, affect Indigenous students' perception of the benefit of education, and education choices?*

*Discussion Question: How do the findings from the factor analysis inform scholarly knowledge?*

In this Chapter, discussion of the two Research Questions and two Discussion questions are broken into sub-questions, which provide opportunity for robust discussion of the full breadth of topics covered in the current thesis. To assist the reader, the four key questions and their sub-questions are set out below.

*Research Question 1 – What is the relationship between education choices\* and perceived benefit of education for Indigenous secondary students?*

*-RQ1a: What is the current state of education choices, and of perceived benefit of education amongst Indigenous and non-Indigenous secondary students in the current study?*

*-RQ1b: What is the nature and strength of the relationship between perceptions of the importance and benefit of secondary school, and perceptions of the benefit of post-secondary education or training?*

*Research Question 2 – Which specific engagement strategies contribute to the perceived benefit of education for Indigenous secondary students?*

*-RQ2a: Which school engagement strategies impact perception of the benefit of school?*

*-RQ2b: Did the same variables impact perceived importance of school for Indigenous and non-Indigenous students?*

*-RQ2c: Did these school engagement strategies impact post-secondary aspirations?*



*-RQ2d: What is the applicability of behaviour theory in explaining the impact of significant school engagement strategies?*

*-RQ2e: Which school engagement strategies were found to NOT be significant?*

*Discussion Question 3 –How do socioeconomic and cultural factors, as well as social discourse, affect Indigenous students’ perception of the benefit of education, and education choices?*

*-DQ3a: What is the influence of family education, economic disadvantage and social issues, on education engagement?*

*-DQ3b- What is the influence of racism and cultural discrimination on perceptions of the utility of education, and education choices?*

*-DQ3c – What is the influence of social discourse on Indigenous students’ self-perceptions of academic capability, and education aspirations?*

*Discussion Question 4 – How do the findings from the factor analysis contribute to scholarly knowledge of factors affecting Indigenous school engagement?*

Throughout this Chapter, correlations are reported only where it is valuable to highlight the difference between findings for Indigenous and non-Indigenous students. At all other times, the reader is referred to *Appendix K – Zero-order correlations between interval latent variables*.

## 10.2 Discussion of Research Question One (RQ1): What is the relationship between education choices\* and perceived benefit of education for Indigenous secondary students?

*\*attendance, Year 12 retention and post-school aspirations.*

### 10.2.1 Introduction

The first research question in this thesis was concerned with the strength and nature of the relationship between Indigenous students’ education choices, and their perception of the benefit of education. Over the preceding chapters, this question has been examined through the lens of quantitative and qualitative methods. The current discussion brings together the findings of univariate, bivariate and multivariate

analyses, as well as the interviews, to create a whole that synthesises the unique contributions of each section. To structure and contextualise this discussion, some subsidiary questions are addressed:

RQ1a: What is the current state of education choices, and perceived benefit of education, amongst Indigenous and non-Indigenous secondary students in the current study?

RQ1b: What is the nature and strength of the relationship between perceptions of the benefit of *secondary education*, and perceptions of the benefit of *post-secondary education* or training?

Discussion of the subsidiary questions further explores the differences between the post-secondary aspirations of Indigenous and non-Indigenous students.

Throughout the Discussion Chapter, reference is made to the work of Harwood, McMahon, O'Shea, Bodkin-Andrews, and Priestly (2015), who have argued that the term aspiration is often used by researchers to convey a message that Indigenous students have different, or lower, goals and desires for success in education and employment pathways, in comparison with non-Indigenous students. Hence, in Chapter 1 of the present thesis, it was clarified that the term aspiration was defined to imply *intended behaviour choices*, rather than *personal desires or values*. It thus should not be interpreted that discussion of lower Indigenous post-secondary aspiration in the context of this study implies that the researcher ascribes lower personal capacity, lower desire for personal success, or lower educational interest, to Indigenous students.

RQ1a: What is the current state of education choices, and perceived benefit of education, amongst Indigenous and non-Indigenous secondary students in the current study?

Attendance rates for Indigenous students in this study were slightly higher than the national average. According to the most recent *Closing the Gap Report* (DPMC, 2017), the 2016 national average attendance rate for Aboriginal and Torres Strait Islander students was nearly a full ten percentage points lower than that of non-Indigenous students.

In the present study, mean school attendance rates were on average 6% lower for Indigenous students than for non-Indigenous students. Despite this statistically significant difference, Indigenous students ascribed a slightly higher importance to school attendance and completion, although they reported lower levels of intention to complete post-secondary qualifications.

Regarding the current state of perceived benefit of education, it had been expected that Indigenous students would have lower perceptions of the economic benefit of education than non-Indigenous students, due to the frequency with which they come from communities with higher unemployment and lower levels of tertiary education (Biddle, 2007; Helme, 2010; Munns & Parente, 2003). The finding of this study that Indigenous and non-Indigenous students alike ascribed a high value to the benefit of completing secondary education is not incongruent with the work of previous researchers, but could reflect a difference in the way the construct was measured. In this study, students were not asked to quantify the future income benefit that they believed might accompany school completion or post-secondary qualifications, but rather to identify whether they believed that secondary and post-secondary education might improve their employment and income prospects.

Certainly, the current situation reflects the manner in which ongoing disparities in socioeconomic status impact education choices and achievement, and ultimately limit gains in socioeconomic equality between Indigenous and non-Indigenous Australians.

#### RQ1b: What is the nature and strength of the relationship between perceptions of the importance and benefit of secondary school, and perceptions of the benefit of post-secondary education or training?

Prior to data collection and analysis, it was hypothesised that there would be a positive relationship between *all* education choices, and perceived benefit of education, for all students. This relationship was particularly expected for Indigenous students, who Biddle (2007) had identified as being able to obtain a greater economic payoff for post-secondary education than for non-Indigenous students, especially in remote areas.

Analysis at the individual variable level (*Appendix K – Zero-order correlations between interval latent variables*), and the Factor Model level (*Table 18* presented in Chapter 6) revealed there was indeed a positive, moderate correlation between secondary education choices, and perceived benefit of education, for all students. Amongst all groups, students who believed school to have value to their economic futures were also more likely to consider school attendance and completion to be important goals. It is thus likely that schools in this study can improve attendance and Year 12 completion rates for all students, by improving student perceptions of the benefit of school. Yet, the size of the correlation in the relationship discussed above indicated that less than one quarter of the variance in student attitudes towards the importance of attending and completing school can be explained by student perceptions of the future economic benefit associated with schooling. Hence, improving student attitudes towards the importance of

completing school requires a broader approach than simply improving student perceptions of the future economic value of school completion.

Despite there being an evident link between student perception of the benefit of secondary school, and willingness to attend school and complete Year 12, for all students in the study, results diverged when perceptions of post-secondary education were included in the analysis. In *Table 18* of Chapter 6, it was found that the correlation between *Factor IV - Perceptions of the Future Benefit of School*, and *Factor V - Education Aspirations*, was weakly positive for Indigenous students ( $r = .32$ ) where for non-Indigenous the correlation was twice as strong ( $r = .68$ ). This result suggests that Indigenous students perceive a weaker link between the utility of secondary education, and the utility of post-secondary education, than do non-Indigenous students. Analysis against the first Research Question in Chapter 7 further supported this finding. This suggests that whilst many Indigenous students engaged with secondary school for the purpose of finding meaningful employment in their future, these students did not often consider tertiary education or training as a useful, realistic, or important aspiration. This finding echoes the work of Oliver et al. (2013) who found that Indigenous tertiary students sometimes battled an internal dialogue that being Indigenous meant they were likely to be unsuccessful in tertiary education institutions. This disconnect may explain the lower levels of aspirations towards post-secondary qualifications that were identified in the previous section. Certainly, these lower aspirations, or intentions, may not be a measure of Indigenous students desiring lower levels of educational and economic success, but rather, a measure of a higher personal cost which Indigenous students ascribed to entering the tertiary education system (Harwood et al., 2015; Oliver et al., 2013).

Finally, there were also significant differences by gender in student responses to survey items on the benefit of education, and associated aspirations. Female and male students in the study ascribed equal levels of importance and benefit to secondary schooling, but female students were more likely to aspire to post-secondary education, and had entered high school with higher mean education aspirations. In their analysis of LSAY (Longitudinal Study of Australian Youth) data, Karmel and Liu (2011) similarly identified that females are more likely to aspire to post-secondary education. These authors believed the likely reason was that in Australia, many of the economically gainful careers that do not require tertiary qualifications are typically pursued by males. Therefore, female students obtain a higher mean economic benefit from post-secondary education, and hence, are more likely to be motivated towards further educational engagement (Hunter & Gray, 2012; Karmel & Liu, 2011). This relationship might explain the difference between male and female non-Indigenous students' perceptions of the benefit of post-secondary education. Within the context of Indigenous students, a more likely explanation for the greater propensity of females to aspire to tertiary studies, is that Indigenous females are further in front academically than Indigenous males (DPMC, 2017),

and academic achievement at the Year 10 level is a strong predictor of Year 12 completion and post-secondary education engagement (Mahuteau, Karmel, Mayromaras, & Zhu, 2015).

### 10.2.2 Conclusion to Research Question One

The first research question guiding this thesis was clearly answered. For respondents to the present study, there existed a positive, moderate correlation between Indigenous students' perceptions of the benefit of secondary school, and their secondary education choices. This correlation did *not* extend to aspirations towards post-secondary education. Furthermore, *Perceived Benefit of Education* accounted for only 25% of the variance in student education choices, indicating that there are other variables (explored under Research Question 2), which contribute significantly to education decision-making processes.

## 10.3 Discussion of Research Question Two (RQ2): Which specific engagement strategies contribute to the perceived benefit of education for Indigenous secondary students?

### 10.3.1 Introduction

This second research question had at its centre a very pragmatic enquiry. What practical things could schools do to improve Indigenous education engagement? This study measured the effect on student perceptions of a number of commonly employed strategies, such as career transition programs, exposure to role models, homework assistance, and a welcoming school environment, amongst others.

In this section, the relationship between school engagement strategies and perceived benefit of education is explored, and also, whether there is evidence that such strategies might also impact education choices at the secondary and post-secondary level. This section is partitioned into discussions of these subsidiary questions:

RQ2a: Which school engagement strategies positively impact perception of the benefit of school?

RQ2b: Did the same variables impact perceived importance of school for Indigenous and non-Indigenous students?

RQ2c: Did these school engagement strategies impact post-secondary aspirations?

RQ2d: What is the applicability of behaviour theory in explaining the impact of significant school engagement strategies?

RQ2e: Which school engagement strategies were found to NOT be significant?

**RQ2a: Which school engagement strategies positively impact perception of the benefit of school?**

Bivariate and multivariate analyses in Chapter 7 revealed the following school engagement strategies to contribute significantly to student perception of the benefit of school: *Pathway Development*, *Positive School Culture*, *Promotion of Indigenous Culture*, and *Student Self Efficacy* (refer Appendix K – Zero-order correlations between interval latent variables). This finding corroborates the work of Brown and Milgate (2011), and was further confirmed by analysis at the Factor level, which identified a moderately positive correlation between school strategies (Factor I) and student perceptions of the future benefit of school (Factor IV). This relationship was independent of socioeconomic capital in the school, community or home, as well as peer and family attitudes towards education. The implication then, is that the school environment can have a positive impact on student engagement with schooling regardless of the social or socioeconomic environment a student experiences. This finding suggests that educators should not ascribe student socioeconomic background as the sole reason for poor student engagement, and places the onus for improved outcomes further in the School Domain rather than the Home Domain.

The limitation of these school variables should be mentioned here. The sequential regression reported in Chapter 7 found that the three variables of pathway development, positive school culture and student self-efficacy, together explained just one third of the total variance in student perceptions of the benefit of education. Hence, other, unmeasured, factors have greater summative influence on student attitudes towards the benefit of schooling.

Nevertheless, it is suggested that the significance of the relationships identified above, for both Indigenous and non-Indigenous students, indicates that schools which focus resources and programs on the above areas, may positively influence student engagement with education. The four strategies will now be discussed individually.

The first strategy found to have a significant correlation with student perceptions of the benefit of school was *Pathway Development*. Regardless of Indigenous status, students who attended school environments that provided a greater focus on post-secondary transitions, and who had knowledge of a greater variety of potential employment pathways, tended to believe more strongly in the future economic utility of education. Furthermore, provision of meaningful employment preparation, career education, and workforce readiness preparation (i.e. *Pathway Development*) was the most common source of motivation to attend school reported by students in the survey. In interviews also, students were more likely to express a belief in the importance of school, and an intention to complete school, where they perceived that they were receiving career education specific to their needs and goals, whether that involved practical job-seeking skills and work experience, or university visits and mentoring.

Previous studies have linked Indigenous school disengagement to a reduced knowledge of post-secondary pathways, reduced perception of educational utility, and lower career aspirations (Biddle, 2007; Brown &

Milgate, 2011; Epstein & Sheldon, 2002; Helme, 2010; Munns & Parente, 2003; Reid, 2008), yet in the current study, there was no significant statistical difference between the level of *Pathway Development* offered to Indigenous and non-Indigenous students. Many of the schools in the current study had instituted specific programs to assist Indigenous students with academic scholarships or career education, and this may explain the higher number of Indigenous students reporting pathway development experiences at some schools. While there is likely to have been some real improvement over the last decade in the level of career education Indigenous students receive due to programs such as Follow the Dream, AIME, and Clontarf Academies, the above findings may also reflect sampling and self-selection biases in the current study. The current study emphasised inclusion of schools with high numbers of Indigenous students (and therefore, greater likelihood of associated programs such as those mentioned here). It may be that Indigenous students who attend schools where they are in the minority, do still receive insufficient advice about post-secondary pathways, as found by Helme (2010).

*Self-Efficacy* was of consequence for both students' perceptions of the benefit of education, and their actual education choices. Irrespective of Indigenous status, students with higher levels of self-efficacy (or perceptions of their own capability) were also more likely to believe that school completion carried future economic benefit, and to intend to attend school regularly and complete Year 12. The construct of *Self-Efficacy* in this study included academic self-concept, which has previously been shown to be a predictive factor of school attendance, Year 12 retention, and aspirations for Indigenous students (Bodkin-Andrews et al., 2010; Lamb et al., 2004). Yet, this study constructed *Self-Efficacy* more broadly, examining students' sense of agency in non-academic areas of life as well. Hence, although most students in the study reported a positive sense of self-efficacy, this does not imply that they also had a positive academic self-concept, or that the links between *Self-Efficacy* and *Perception of the Benefit of School* or *School Importance* were a product of high-achieving students engaging more with school. Students with a greater degree of autonomy and self-belief may be better equipped to handle challenges during their secondary years, be intrinsically more capable of connecting present actions with future consequences, and thus more likely to comprehend the future economic benefit associated with education choices (Munns, Martin, & Craven, 2008; Sarra, 2007).

The other school strategies that positively correlated with student perceptions of the benefit of education were related to the level of respect, encouragement, and positivity in the school environment (*Positive School Culture*), and the level of respect for and understanding of Aboriginal and Torres Strait Islander culture (*Promotion of Indigenous Culture*). Both of these variables have been identified by numerous researchers using qualitative data (Armstrong & Buckley, 2011; Bourke, Rigby, & Burden, 2000; Commonwealth of Australia, 2011; Craven & Parente, 2003; Dinanthompson et al., 2008; Hones, 2005; Hughes & Hughes, 2010; Lamb et al., 2004; Munns & Parente, 2003; Rahman, 2010; Sarra, 2009; Whitinui, 2010). Students who felt that school was a place where they fit in and were valued, where they had

respectful and strong relationships with school staff, and where their culture was valued, were also those who were more likely to feel that school completion had future economic utility. Analysis of student interviews revealed that this connection arose because of the link between positive experiences at school and the student's sense of self. In interviews, students attributed genuine benefit to positive school environments because of their impact on students' self-esteem, sense of safety, and aspirations for a brighter future. Where students reported a lack of cultural acceptance and familiarity, this resulted in disengagement.

Importantly, sequential regression and bivariate analyses conducted to answer Research Questions 1 and 3 in Chapter 7, showed that student perceptions of the benefit of education are a powerful contributor to student attitudes towards attendance and Year 12 completion, more so even than gender, individual school engagement strategies, or family and peer attitudes towards education. Therefore, the current study has shown that those school engagement strategies that improve students' perception of the *benefit* of schooling, may also improve actual attendance and school completion by proxy.

#### RQ2b: Did the *same* variables impact perceived importance of school for Indigenous and non-Indigenous students?

Throughout this study, a distinction has been made between student *perceptions of the benefit* of education, and student *intentions to attend and complete* secondary school. The above discussion described the four school engagement strategies which correlated with student perceptions of the *benefit* of schooling, then demonstrated that these also correlated with student intentions to engage with school attendance and completion. The following discussion reports variables that were shown to impact intentions to attend and complete school, and compares the findings for Indigenous students with those for non-Indigenous students. Throughout this discussion it should be noted, however, that perceived importance of school, and even intention to engage with school, may not always translate into actual attendance behaviours.

It is not only school variables, but family, community and individual variables, which impact student education decisions. In Chapter 7, a multiple regression analysis assessed the summative and unique contributions of all constructs from the study on the dependent variable *School Importance*. This analysis was conducted separately by Indigenous status in order to identify differences between groups (refer results of *Table 23* and *Table 24* in Chapter 7).

Amongst non-Indigenous students, a total of four variables were found to affect student attitudes towards the importance of attending and completing secondary school, accounting for 40% of the variance in student perceptions. Two of these were part of the School domain (*Perception of the Benefit of School*, and *Student*



*Self-efficacy*). The other two, *Year Group* and *Family Support for Education*, were not. Note that *Perception of the Benefit of School* itself included the variable *Self-Efficacy*, in addition to the other variables mentioned above in response to Research Question 2a. That *Self-Efficacy* appeared again here, suggests that it contributes to student intentions to attend and complete school in ways that were additional to its contribution to the *Perceived Benefit of School*, whereas other school level variables did not.

Amongst Indigenous students, only three variables were found to affect attitudes towards the importance of school, accounting for 32% of variance in student attitudes. The same two School Domain variables were of importance (*Perception of the Benefit of School*, and *Student Self-efficacy*), as well as one variable from the Individual Domain, *Future Aspirations*.

The similarities and differences between the Indigenous and non-Indigenous groups are worth examining. Amongst both groups, decisions to engage with education were impacted by the students' own self-concept and sense of agency, as well as their perception that schooling could provide economic and employment benefit for their future. Yet, non-Indigenous students were found to have an increased sense of the importance of schooling as they entered higher years of schooling and were significantly affected by the attitudes of their family towards education. Among Indigenous students, age (as measured by *Year Group*) did not significantly correlate with perceptions of the importance of school, nor did family attitudes. That is, Indigenous students did not appear more engaged with schooling in later years of secondary school in the same manner that non-Indigenous students had. Thus, Indigenous students appeared to make their mind up at a younger age about their education goals, and to remain consistent in their intentions throughout secondary school. This finding is consistent with the earlier work of Zubrick et al. (2006) who identified that because academic achievement gaps, which begin in primary school, are known to link to student aspirations, early intervention was essential to improving Indigenous education outcomes.

Notably, *Future Aspirations* was only relevant for Indigenous students. That this variable was less important for non-Indigenous students is surprising, given that perception of the benefit of schooling (for employment purposes) was important. This finding that non-Indigenous students' belief in the importance of schooling is not as directly related to their future aspirations as was the case for Indigenous students, could be because they experience stronger family support for remaining in school regardless of their goals, or perhaps because there was more variability in non-Indigenous students' post-secondary aspirations. Nevertheless, the importance of *Future Aspirations* in affecting school engagement for Indigenous students in this study, as well as the larger unique contribution of *Self-Efficacy* (refer results of *Table 24* in Chapter 7) to Indigenous school engagement, suggests that these two areas might be well worth more research and policy focus.

Beyond the regression equations of Chapter 7, further analysis in Chapter 8 highlighted a critical difference between Indigenous and non-Indigenous students regarding school variables and student engagement. On

the variables *Staff Admiration* and *Staff Attendance*, Indigenous students were no more likely than non-Indigenous students to have reported the existence of a meaningful rapport with a teacher, but where they did report such rapport, Indigenous students were twice as likely to report that this would positively impact their school attendance decisions. This finding further highlights the critical nature of the school environment as a factor that can positively contribute towards Indigenous students' school attendance, and establishes a further distinction between the two ethnic groups in the current study, regarding the factors that are significant for school attendance.

Finally, for both groups, more than half of the variance in student attitudes towards the importance of school remained unaccounted for by variables measured in this study. Future research should aim to address this gap.

#### RQ2c: Did these school engagement strategies impact post-secondary aspirations?

The above section has discussed student engagement with education only at the secondary school level, yet the study also examined student aspirations towards completing post-secondary qualifications.

Analysis at the Factor level in Chapter 6 identified a critical difference between Indigenous and non-Indigenous students in the interaction between school experiences and student aspirations. Amongst Indigenous students, there was no apparent relationship between *Factor I – Perceived Current Benefit of School*, and *Factor V-Education Aspirations*, although the correlation for non-Indigenous students was moderate and positive (Indigenous:  $r = -.11$ ; non-Indigenous:  $r = .65$ ). Factor I measured current school experiences, but Factor V amalgamated current post-secondary aspirations with family education levels and pre-high school aspirations. For Indigenous students, previous aspirations were much more strongly correlated with present aspirations and family education, than was the case for non-Indigenous students. Yet, for Indigenous students, these variables did not correlate with current experiences at school. A possible explanation for this is that Indigenous students held less changeable education aspirations for their future, hence, current school experiences, whether positive or negative, did not impact on student post-secondary aspirations in the same manner as occurred for non-Indigenous students. If so, this finding further corroborates the evidence above that Indigenous students make their mind up earlier about post-secondary intentions, and that these decisions are less easily affected by current experiences within the secondary school environment. This should not be confused with lack of interest in future employment outcomes, but rather a particular perception amongst Indigenous students that they are better off aiming for employment rather than post-secondary education once they complete secondary school. That is, for Indigenous students, the negative social discourse, lower family education levels and lower aspirations prior to entering secondary school, may represent a sufficiently large barrier to self-concept and goals, that even positive

experiences in secondary school do not result in improved post-secondary aspirations. Alternatively, secondary schools in Western Australia may not currently be addressing Indigenous student expectations of success in the tertiary environment in a way that counters other negative experiences.

What then can be done to affect and increase post-secondary aspirations of the Indigenous students in the current study? The qualitative evidence of this study regarding academic self-concept, along with the quantitative evidence of *Closing the Gap* data, suggest that for many Indigenous secondary students, academic achievement and academic self-concept for Indigenous students precludes tertiary aspirations (DPMC, 2017). It may be that engagement strategies need to begin earlier, in primary and early childhood education as suggested by Zubrick et al., (2006), and that engagement strategies need to address family and community attitudes, as well as social discourse surrounding Indigenous capability in employment and higher education spheres. Schools and tertiary institutions may need to engage more with improving the discourse surrounding Indigenous youth, such that students develop an expectation of success in higher education and training, as suggested by Harwood et al. (2015). Developing a positive perception of Indigenous academic identity amongst Indigenous students requires a continued focus on improving social and health conditions, but can begin with an improvement to discourse experienced by students within the education system. Lastly, it appears clear that policy needs to address the academic achievement gap between Indigenous and non-Indigenous students at secondary level, in order to address post-secondary education engagement.

#### RQ2d: What is the applicability of behaviour theory in explaining the impact of significant school engagement strategies?

Currently, research into Indigenous education outcomes focuses on institutional, cultural and socioeconomic causes of education disparity, without consideration of the psychological processes involved in Indigenous students' education decision-making. Each day, students make behavioural choices that influence educational progress; choices which reflect their perceived utility of education, their perceived control over future educational success, and their perceived norm for their socio-cultural in-group. These themes that guided the current project, of perceived education utility, student capital and perceived competence, tie in strongly with the Theory of Planned Behaviour (TPB) (Ajzen, 2005, Armitage & Conner, 2001). TPB suggests that all behavioural intentions are linked to three factors: perceived norms, perceived locus of control, and perceived outcomes. Students who believe that a given behaviour is normative for their social group, that the behaviour will have a positive outcome, and that they are likely to be competent at that behaviour, will be more likely to choose that behaviour.

In this study, the variable *Importance of School Completion and Attendance* is a measure of intended behaviour. As such, it would be expected that those variables which affect perceived social norms, locus of control, or expected outcomes, would be those that most strongly impact student intentions to attend and complete school. The largest contributing variable to *Importance of School Completion and Attendance* was *Perception of the Benefit of School*, which itself was significantly explained by the variables *Positive School Culture*, *Promotion of Indigenous Culture*, *Pathway Development* and *Self-Efficacy*. Each of these address perceived norms, and expected outcomes for students. Schools which apply these strategies effectively, create an environment where students are expected to succeed at school, are encouraged to perceive engagement at school as normative, expect their Indigenous identity to be valued within the education system, and believe that engaging with employment or further education is an expected outcome for themselves as Indigenous students. *Student Self Efficacy* further addresses locus of control. Where students are supported to believe that they have agency within the education system, they are more likely to see successful school completion as an outcome over which they have control. It is no surprise, given these four identified strategies specifically address the three factors required to create behavioural change, that these engagement strategies significantly impact students' intentions to attend and complete school.

These ideas might then provide clues as to how institutions can create equity between Indigenous and non-Indigenous students' post-secondary education aspirations. In the present political environment, much funding and resources have been provided to improve Indigenous Year 12 retention, through programs to promote Indigenous cultural competency in secondary schools and targeted resources for Indigenous students to achieve graduation. Currently, these resources have focused on making Year 12 graduation a normative expectation for Indigenous students, and they are having success. Yet, it would be a mistake to presume that improved Indigenous Year 12 graduation rates would automatically result in improved Indigenous tertiary engagement. These are different behavioural tasks, which each come with their own perceived norms, locus of control, and expected outcomes. It may be that the success of programs such as AIME is best explained through application of TPB. Where Indigenous school students meet successful Indigenous tertiary students, they may begin to see Indigenous success in tertiary education as normative, an expected outcome, and within their locus of control. It is unlikely that non-Indigenous mentors, or Indigenous mentors who did not complete post-secondary education, could have this same impact, given the factors that affect behavioural change.

RQ2e: Which school engagement strategies were found to NOT be significant?

Equally important in this analysis of school engagement strategies, is a discussion around those variables which were *not* significantly correlated with student perceptions of the benefit of education, or with student intentions to attend and complete school, despite appearing frequently in the literature: *Exposure to Role Models* (Bourke, Rigby, & Burden, 2000; Hones, 2005), *Collaboration with Family* (Behrendt & McCausland 2008; Epstein & Sheldon, 2002; Lamb et al., 2004; Partington, 2004; Purdie & Buckley, 2010; Rahman, 2010; Schwab, 2006; Sims, O'Connor, & Forrest, 2003) and *Provision of Study Assistance* (Epstein & Sheldon, 2002; Lamb et al., 2004; Prout, 2009). If these constructs were measured accurately, then the fact that these variables did not explain student attitudes towards the economic benefit of education provides equally important information regarding 'what works' for increasing Indigenous students' perception of the utility of schooling. Each of these variables will be discussed in turn.

#### *Exposure to Indigenous Role Models*

Previous studies have shown that students make judgments about the benefit of education based on those within their ethnic and social networks (Biddle, 2007; Xu, Farver & Pauker, 2014). Anecdotal evidence has found that school trips and visiting speakers can also expose Indigenous students to educated and employed role models. According to the Theory of Planned Behaviour (TPB) (Ajzen, 2005), such endeavours might be expected to positively affect students' perception of normative Indigenous behaviour in a way that can create improved education outcomes. Previously, scholars have also suggested that the presence of Indigenous staff in the school should improve educational engagement of students (Bourke, Rigby & Burden, 2000; Hones, 2005) as it creates a model of success which Indigenous students can seek to emulate.

Whilst there were a number of schools, including some with scholarship programs, that did not employ any Indigenous staff to work with students, at schools which did have Indigenous staff, students reported these staff as having high expectations of them. Yet, the variable *Exposure to Indigenous Role Models* had no significant correlation with student perceptions of the benefit or importance of school. The current study is not the first to find that Indigenous role models in the school are not a sufficient condition for improved student engagement (Luke, 2013). During interviews, students were much more likely to mention people who had completed education successfully (e.g. AIME mentors) as role models for success, than they were to mention adults who were encouraging but did not themselves have educational qualifications. Hence, it would appear that for role models to provide a new perceived 'norm', these role models must be from the same social group, and have themselves completed the education experience successfully. According to TPB, students are more likely to expect a positive outcome if they meet others from their own reference group who have experienced that same positive outcome from education. Therefore, the findings of the current study suggest that schools could look to bring in Indigenous mentors, staff members and guest speakers who come from similar backgrounds to their students, but who have completed tertiary education, if they are to

improve Indigenous students' own post-secondary aspirations. This may explain why the AIME program has been so effective in raising Indigenous students' expectations of tertiary success (Harwood et al., 2015).

#### *Collaboration with Family*

It had also been expected that the level of communication between school and home (*Collaboration with Family*) might correlate with student intentions to engage with school, hence the finding that it did not significantly correlate, required further investigation. The construct asked students to report both frequency and depth of communication between the school and their family, yet had only moderate internal consistency (see *Table 7* in section 4.5) and was not included in the final Revised Factor Model as it did not behave consistently during analysis. The problems with this variable during quantitative analysis indicate that the failure of this variable to perform as expected was most likely due to problems with the way the construct was measured. Future research could develop a set of items with greater internal consistency to measure this variable, so that the effect on student engagement of collaboration between school and home can be quantitatively assessed.

#### *Provision of Study Assistance*

The third variable which had been expected to correlate with student perceptions of the benefit and importance of school, yet didn't, was *Provision of Study Assistance*. Whether through mentoring schemes, leadership programs or homework clubs, most schools in this study provided some form of regular assistance to students consisting of after-school homework help, access to computers and teacher or peer tuition. These provisions are intended to buffer the lower levels of family education and economic resourcing that can be found in some Indigenous homes and are negatively associated with education participation (Biddle, 2010; Lamb et al., 2004). Certainly, the current author supports the need for such environments, as univariate analysis revealed that Indigenous students are still much less likely than non-Indigenous students to have regular access to a computer with internet at home, and less likely to attend a school that provides such assistance. Of those students who did not have access to a suitable study environment at home, Indigenous students were significantly more likely to regularly attend, and to attribute benefit to, the homework club or tuition at school. It thus seems that while *Provision of Study Assistance* was necessary and useful for Indigenous students in the current study, its benefit may be limited to assisting students to achieve their goals, rather than actually affecting what those goals are. This may explain why the variable did not correlate either with perceived benefit of education, or intentions to attend and complete school.

### 10.3.2 Conclusion to Research Question 2

The analysis of this section indicates that schools in this study may positively affect Indigenous educational engagement through *Pathway Development*, *Positive School Culture*, *Promotion of Indigenous Culture*, and *Student Self-Efficacy*. Analysis for this question only examined correlations and does not demonstrate cause and effect, however, there would be a strong argument that student perceptions and actions are likely to respond to changes in the school environment in the above areas.

Perhaps the most important outcome of ANOVA, was the finding that the School Domain had a significant effect on a greater number of variables than did Indigenous status. This discovery reinforces the diversity of the Indigenous student cohort in Western Australia. Each student comes with an individual background, personality, and goal-set, and responds to their school environment in ways that reflect this individuality. This variance within the Indigenous student population is greater than the variation between Indigenous and non-Indigenous students, and requires an appropriately diverse policy response. Furthermore, even amongst schools of similar socioeconomic indexing, there were significant differences in students' reported experiences on those school engagement strategies that were identified above. Where Santoro et al. (2011) has reported that non-Indigenous teachers in Australia are likely to alter their expectations of students based on socioeconomic factors, the findings of the current study place the emphasis for improved outcomes firmly back on the school. Particularly in the areas of *Positive School Culture* and *Self-Efficacy*, teachers themselves can significantly impact students' self-concept, engagement and aspirations.

## 10.4 Discussion Question Three (DQ3): How do socioeconomic and cultural factors, as well as social discourse, affect Indigenous students' perceived benefit of education, and education aspirations?

### 10.4.1 Introduction

The literature review revealed a wealth of research highlighting the disproportionate effect of socioeconomic disadvantage and cultural dissonance on Indigenous students in Australia. Yet many Indigenous students in the current study were positively engaged with secondary education, and attended large, well-resourced secondary schools which attempted to address economic and cultural barriers through scholarships and cultural programs. It was therefore worthwhile to analyse the relationship between family education levels, family and peer support for education, community unemployment rates, and perceived cultural competency in schools, and education engagement. These analyses were based on Pearson's

correlations at both the individual item, and Factor level, and were supported by findings from the qualitative data.

This section discusses findings under the subsidiary questions:

DQ3a: What is the influence of family education, and community economic disadvantage and social issues, on education engagement?

DQ3b: What is the influence of racism and cultural discrimination on perceptions of the utility of education, and education choices?

DQ3c: What is the influence of social discourse on student self-perceptions of academic capability, and education aspirations?

#### *DQ3a: What is the influence of family education, economic disadvantage and social issues, on education engagement?*

##### *Influence of Family Education*

Biddle (2007) theorised that students who have social networks with higher levels of education and employment are more likely to consider the economic benefit of schooling when making educational choices. In this study, Indigenous students reported having family networks with much lower levels of education than the families of their non-Indigenous counterparts. In fact, more than one third of all Indigenous respondents reported they did not have a family member who had completed education beyond Year 12, compared with only one fifth of non-Indigenous students reporting the same. This indicates that even amongst those Indigenous students whose families were engaged with pursuing good education outcomes, actual family education levels were much lower than the overall sample. It might be the case that amongst the families of Indigenous students not attending private schools, this education gap is even greater.

Yet whereas family education levels were lower for Indigenous students in the current study, family support for education was not. The student sample in the current study included a disproportionate number of Indigenous students boarding at urban private schools, and the mean level of family support for education engagement was high. The decision to send children to boarding school carries significant social cost to parents, and amongst all students interviewed, family members played a key role in promoting school engagement in the face of homesickness or other school difficulties, and in role-modelling choices about the pursuit of further education. Although some Indigenous students reported at times they were expected to



stay home from school to fulfil family responsibilities, this variable was not correlated with the family's perception of the importance of education.

Factor analysis revealed a large and significant difference between Indigenous and non-Indigenous students in the effect of family and peer support for education on both student engagement (Factor VII and Factor I - Indigenous:  $r = .13$ ; non-Indigenous:  $r = .74$ ), and education choices (Factor VII and Factor IV - Indigenous:  $r = .33$ ; non-Indigenous:  $r = .99$ ), with Indigenous students' school engagement less likely to be correlated with reported family and peer attitudes.

In light of Biddle's research (2010; 2007), it is surprising that for Indigenous students, neither family education levels, nor family support for education, were significantly correlated with student perception of the economic benefit of education or with belief in the importance of school attendance and completion. Certainly this finding warrants further investigation, as understanding why it was that in this study, Indigenous students' education engagement and aspirations did not reflect those of their peer and family networks, may reveal previously unknown nuances in the factors affecting education outcomes for Indigenous Australians.

At this point, only post hoc explanations can be offered. In relation to the finding that family education levels did not significantly correlate with perceptions of educational benefit and importance, the results of the current study were likely skewed by the sample bias towards boarding schools, which provided scholarships to disadvantaged Indigenous students. These students often had families who were not tertiary educated themselves, but who were intent on obtaining high quality education for their children. However, Biddle's (2007) hypothesis mentioned above may explain Indigenous student perceptions of the importance of *tertiary* education. Although these students had families that recognised secondary education was an important pathway to better life opportunity, without many tertiary educated role models in the community, these students may have been less likely to consider the economic benefit, and more likely to consider social and economic cost, of *higher* education when making educational choices. Where families are unfamiliar with the requirements, and employment benefits, of tertiary education or training, they may be less likely to provide social support for this additional education endeavour, and extension of time away from the community. In this case, knowledge capital can consolidate a cycle of lower education outcomes even amongst families that believe in the benefit of Year 12 completion.

The finding that for Indigenous students only, was social support for education not significantly correlated with education engagement, may at first appear counterintuitive, but the answers may lie within Indigenous students' particular experiences, in contrast with the general population. The more diverse, and sometimes very challenging, social environments experienced by Indigenous students in their home community can mean they have witnessed a greater diversity in attitudes towards education engagement. In interviews,

many of the Indigenous students in this study revealed they had both family members who were completely unengaged with school or employment, as well as those who were sufficiently engaged as to have enrolled the student at boarding school far away from home, at great personal cost. Thus, whilst Indigenous students and non-Indigenous students reported similar mean levels of family support for schooling, Indigenous students may have developed a greater autonomy in their perception of the benefit of schooling due to exposure to a wider variety of attitudes and experiences in their community.

Another possible explanation for the difference in significance of family in determining student attitudes may arise from differences in cultural norms for Indigenous and non-Indigenous students. Whilst many non-Indigenous teenagers are raised to expect parental intervention in their schooling decisions, many Indigenous teenagers are raised to become more autonomous, and to make behavioural decisions with less direct guidance from family (Behrendt & McCausland, 2008; Schwab, 2001). Hence, Indigenous students may establish a perception of the importance of school at a younger age than non-Indigenous students, and be less susceptible to changing this perception over the course of their secondary schooling. This explanation should be investigated by future research obtaining longitudinal measures of student attitudes towards schooling throughout their secondary years, but if true, has ramifications for the age at which engagement strategies could be employed to increase school completion for disengaged Indigenous students.

The above findings do not negate the importance of family in affecting Indigenous student engagement. Rather, it may be that it is the influence of a key family member, which matters more than the attitudes of the wider family network. In interviews, it was evident that many Indigenous students attend private school and were strongly encouraged toward educational success by adults who held parental roles.

#### *Influence of Economic Disadvantage*

In light of the known relationship between poverty and education engagement for Indigenous students (Biddle, 2010), it was useful to investigate for the current sample, what effect home and community socioeconomic factors might have on the relationship between school engagement (Factor I) and student perceptions of the importance and benefit of secondary schooling (Factor IV), as a proxy for future education and employment outcomes.

A large-scale longitudinal study of 1633 Australians (Abbott-Chapman, Martin, Ollington, Dwyer & Gall, 2014) found that the long-term impact of school engagement on post-school education and employment outcomes was independent of socioeconomic status. Whilst Abbott-Chapman et al.'s (2014) study was able to measure post-secondary outcomes, the current study measured only student aspirations, or intentions, towards secondary and post-secondary outcomes.

Difference in means testing of Factors in Chapter 5 (refer *Table 13*) revealed that Indigenous secondary students in the current study were much more likely to come from a home that did not provide regular access to a suitable study environment, or to a computer with Internet for homework purposes. Furthermore, Indigenous students in the current study came from remote and regional areas with high unemployment rates and low tertiary education rates. That is to say, Indigenous students in the current study were significantly more likely to come from low SES homes. Yet, the study also showed (refer *Table 18* in Chapter 6) that the above measures of socioeconomic status were not significantly correlated with student perceptions of the future benefit of education, nor with intention to complete secondary school, thus supporting the findings of Abbott-Chapman et al. (2014). That is, community socioeconomic status differences between student groups were markedly large, yet this was not a relevant factor in students' perceptions and expectations of educational utility, nor was it a deciding factor in social networks' attitudes towards schooling.

If low socioeconomic status does not significantly correlate with perceptions of the benefit of education, this begs the question of why it is often assumed that low SES students are disinterested in education (Gore et al., 2015; McKay & Devlin, 2016)? Certainly, limited access to resources is known to affect educational achievement, involvement and aspirations (Gore, Holmes, Smith, Southgate & Albright, 2015), but these barriers can be overcome by appropriate resourcing within the education system. For example, within the present study, Indigenous students in boarding schools reported a level of access to Internet, homework assistance, and study environments equal to that of non-Indigenous respondents. (Notwithstanding this result, a large number of Indigenous respondents to this study attended schools where they did *not* have access to a suitable homework environment, either at school or in the boarding facility, and the results of the above analysis should be treated cautiously when extrapolating to 'all' residential school populations.)

In their large scale (N=3504) study of the intersection between student demographics and career aspirations, Gore et al. (2015) identified that low SES students were more likely to cite financial justifications for their career aspirations. Thus, where low SES students are aware of career pathways that are perceived to carry high economic benefit with low economic cost (e.g. less years of training or study), these students may be more likely to choose the non-tertiary pathway with its perceived lower economic cost. In and of itself, this is not problematic, but the *Closing the Gap Report* (DPMC, 2017) has identified that Indigenous university graduates may expect to find employment faster, and have higher starting incomes, than their non-Indigenous counterparts. Furthermore, the *Report* found that Indigenous peoples with bachelor degree qualifications of higher were more likely to be in full-time employment than those with Certificate II or lower qualifications. In terms of creating equality in higher education outcomes for Aboriginal and Torres Strait Islander Australians, it is apparent that reducing the perceived cost (financial and social) of tertiary education may have a significant impact on student aspirations toward, and completion of, higher degrees.

During interviews, both school leaders and students explained that negative social dynamics in home communities often contributed to the decision to attend boarding school. School leaders at these schools then felt tasked with creating opportunities for students to experience social safety, and to develop their knowledge of healthy nutrition, relationships, and self-image.

Where schools attempted to support large numbers of traumatised students, there was an evident decline in the school staff's ability to provide a supportive and positive school environment. At one remote school in the study where the number of students from negative social backgrounds reached a 'critical mass', the school environment itself contributed to education disengagement for students.

The current study did not incorporate any quantitative measures of these constructs, although in interviews, students in upper secondary years ascribed benefit to those schools which provided positive social environments. It is a recommendation of this study that future research empirically analyse the social impact of boarding school on students themselves, and on their home communities.

#### **DQ3b: What is the influence of racism and cultural discrimination on perceptions of the utility of education, and education choices?**

One item on the survey instrument asked Indigenous students to report the frequency with which they believed Indigenous culture was treated with respect at school. At every single school, the mean response categories were "Rarely" or "Sometimes", indicating that at no schools in the study did students feel that respect for Indigenous Culture was the 'norm'.

The interviews in Chapter 9 highlighted that the extent of epistemological and ontological differences between non-Indigenous teachers and Indigenous students created feelings of alienation and systemic discrimination for students. Discussion here is focused on whether such experiences of cultural discrimination affected student perceptions of the utility of education, or student's education choices at the quantitative level.

Regression analysis for the two variables, perception of the benefit of education (*PERECBEN*) and importance of school attendance and completion (*SCHOOLIMP*) presented in Chapter 7, found that promotion of Indigenous culture (*PRMINDCLT*) in schools was not a significant predictor of perceptions of the utility of education, or education choices, once *POSCULT* was considered. The benefit of promoting Indigenous culture may lie within the broader measure of positive experiences in the school environment, with which this

variable was moderately correlated,  $r(249) = .51, p < .001$ , and which was a significant predictor of education engagement for students. The zero-order correlation between PRMINDCLT and POSCULT indicated that there is an important link for Indigenous students between the perception that schools use a culturally appropriate approach, and the perception that school is a positive place to be. It is this broad experience of positive culture within the school that directly impacts on school attendance, Year 12 retention, and perceived utility of education. Hence, programs aimed at increasing perceptions of cultural respect appeared to affect Indigenous education engagement only so much as they impacted students' general wellbeing and perception that the school environment is welcoming.

Further to the analysis of whether students perceived that Indigenous culture was respected in the school, students were also asked whether they felt it was easy to 'fit in' as an Indigenous or non-Indigenous person in the school. This variable (*FITINCLT*), was found to have a significant and positive impact on student perceptions of the importance of school attendance, but *not* on perceptions of the future benefit of education. That is, experiences of cultural inclusion affect daily decision-making regarding school attendance, once students have already come to a decision about the general utility of their education experience. However, experiences of cultural inclusion in secondary school (regardless of the ethnic make-up of the school population) did not have any direct effect on student aspirations beyond secondary school. Anecdotal evidence has suggested that students are more likely to engage with education, and remain engaged, if they have a positive cultural experience. Yet the findings from the current study indicate that post-secondary employment and education aspirations may be more firmly based on decisions regarding social and economic cost/benefit analysis. If similar findings were obtained for Indigenous student populations across other parts of Australia, then it might similarly be concluded that programs aimed at improving perceptions of cultural inclusion in higher education may improve retention of students already enrolled, but are not likely to increase enrolments. That is, where schools are culturally supportive environments, this alone is not likely to impact on post-secondary pathway choices of Indigenous students unless the school also promotes a discourse of Indigenous academic success (Harwood et al., 2015). It is also possible that the low retention rate for Indigenous students in university is a product of the institutions themselves being perceived as culturally unsafe environments (Harwood et al., 2015; McKay & Devlin, 2016), although this possibility should be explored with further research.

The above findings suggest that improving Indigenous students' experiences of cultural competence should still be a goal of all education engagement policies. The interview chapter revealed discrepancies between Indigenous and non-Indigenous understandings of cultural competency that have important implications for future cultural competence training of non-Indigenous school staff. As Milner (2003) identifies, the level of cultural competence exhibited by non-Indigenous educators has implications not only for Indigenous students, but also for non-Indigenous students who themselves are learning what race relations should look

like, as modelled by school staff. Hence, teacher training needs to provide educators with the skills to critically, reflexively and authentically engage with ideas such as white privilege, hierarchical power structures, and other ideological tools which are used to reinforce non-Indigenous hegemony (Milner, 2003; Picower, 2009).

Where discrimination is so prevalent, creating an adequate level of competency is not a case of providing a one-off professional development. Scholars who have worked in this field identify the challenge of asking teachers to let go of layers of ignorance, apathy and indifference in all their forms (Aveling, 2013; Picower, 2009). Once educators have the capacity to reflexively engage in analysis of cultural norms, training providers need to provide two layers of basic cultural understanding: insight into systemic experiences both historical and present, and specifics at a local or individual level, for Indigenous students in their school.

### *DQ3c: What is the influence of social discourse on Indigenous students' self-perceptions of academic capability, and education aspirations?*

The author of this thesis acknowledges that there are real deficits in the education system's ability to create success for Indigenous, regional and low SES students, and that, as a result of historic injustices, many Indigenous families in Australia are excluded from an education system that rewards prior education and financial capital. Almost all variables found to differ significantly by Indigenous status in this study were linked to economic and educational resourcing in the home. Yet, on variables that measured individual students' attitudes such as Self Efficacy, or experience of social support for education, there was no significant difference between the responses of Indigenous and non-Indigenous students. Thus, whilst Indigenous students were more poorly resourced from a financial and education capital viewpoint, this resourcing did not impact on student resilience, or on student desire to engage with secondary education. The findings for Research Question 2, discussed in Chapter 7 and in the above section of this chapter, clearly delineate the most powerful factors affecting secondary education aspirations within the current study as being neither socioeconomic nor cultural. Hence, schools could look to address the disadvantages that come with low socioeconomic status (e.g., early exposure to reading, or knowledge of tertiary pathways) whilst simultaneously recognising that Indigenous low socioeconomic students have skillsets that are valuable to education engagement, and are motivated to achieve life success. Thus, future discourse should focus, as McKay and Devlin (2016) have done, on the interface between Indigenous students and schools, with a relativism that short-circuits the 'us-and-them' mentality of a blame game. This next section will address academic and cultural elements of the deficit discourse as experienced by students in this study.

#### *Academic Discourse*

The current study identified that Indigenous students were less likely to report an intention to go on to any form of post-secondary education or training. During interviews, Indigenous students attending urban private schools in particular, spoke of believing a discourse that Indigenous people are unlikely to graduate and unlikely to succeed at tertiary education. Previous research has similarly identified that Indigenous secondary students are more likely to report lower academic self-concept and school aspirations than non-Indigenous secondary students (Bodkin-Andrews, Dillon, & Craven, 2010).

Such a narrative may have begun in the lower academic achievement standards and reduced school engagement that tend to accompany remote and regional schooling, but were reinforced when students attended an urban school where they were achieving behind their new peers, and were often subjected to low expectations and racial discrimination from teachers. For these students, school completion was a plausible goal, but post-secondary educational success seemed unrealistic. Gore et al. (2015) thus argue that there is a need to raise achievement, in order to increase low SES student aspirations toward higher education. Whilst this is true, the achievement of Indigenous and low socioeconomic students is not a product of deficiencies within the student, but rather, of the education system's ability to create successful outcomes for these students. Current discourse frequently considers the achievement of non-Indigenous, and middle-class students, as normative, and 'others' students from ethnic minority and low SES backgrounds as being deficient. This approach protects educators from having to engage in self-reflection, and reinforces an internal discourse amongst Indigenous students that they do not belong within the education system (Harwood et al., 2015). McKay and Devlin (2016) avoid this circuitous blame game by acknowledging there is an incongruity, without apportioning blame or deficit to either students, or education institution. This relativity simply asks individual educators and education institutions, to consider ways to bring about the best performance for their own student demographic.

Those Indigenous students who accessed private school scholarships in the current study were often the more academically advanced of their peer network in remote schools, but still experienced a diminution of their self-concept and aspirations when they moved into the urban school system. These experiences often compounded homesickness and created a significant conceptual barrier even where students had access to additional tuition and pastoral support. It appears that even where students experienced a positive discourse about their capacity from some school staff and social influences, there was often a significant amount of negative 'noise' to prevent students from raising their aspirations.

Such students can be at risk when educator discourse focuses on their 'failure' to fit into a middle-class environment, rather than acknowledging the resilience, determination and autonomy required to study thousands of kilometres from home in a culturally unfamiliar environment (McKay & Devlin, 2016). Particularly, where low SES students present with lower academic achievement (as is very commonly the

case amongst Indigenous secondary students (Closing the Gap Report, 2017; Gore et al., 2015), these students are often counselled away from tertiary pathway aspirations. There certainly exists a proportion of students in Western Australian schools with extremely low levels of literacy and numeracy that preclude them from most forms of tertiary education. For these students, Year 12 completion and a transition directly into meaningful employment is a more appropriate goal in the immediate term. Even so, a discourse that Year 12 completion is a satisfactory generic goal for all Indigenous educational achievement, will ultimately limit Indigenous Australians' capacity for self-determination and social functioning, and is inherently racist in its lowering of expectations for this ethnic group. Where education sectors have programs and policies in place for supporting Indigenous students towards Year 12 completion, but not towards meaningful post-secondary qualifications, there will remain a significant gap in socioeconomic indicators for Indigenous Australians, and a self-fulfilling lack of aspiration to post-secondary success. McKay and Devlin (2016) found that at the tertiary level, discourse surrounding low SES students focuses on low socioeconomic status as a deficiency that might limit student achievement. Such discourse then allows tertiary educators to apportion blame for lower engagement and achievement on the student's background, rather than attempting to provide an environment where all students can engage.

#### *Cultural Discourse*

In the literature, discourse around deficiency has also identified factors in Indigenous cultural and social structures that can contribute to reduced education engagement (Munns & Parente, 2003; Prout, 2009; Santoro, 2009; Santoro et al., 2011). Yet, very little is said about the factors in Indigenous culture and society that might actually improve student engagement, and how these norms can be utilised by schools. Amongst educators, the rhetoric sometimes focuses on cultural 'weaknesses' and 'fixing' these gaps, rather than focusing on cultural strengths, and building upon these. For example, Indigenous teenagers have high degrees of autonomy, and this has been used to explain lower school attendance, because parents are less likely to force an unhappy child to attend school (Munns & Parente, 2003). Another way of looking at this would be to highlight the value of Indigenous teenager autonomy, that a student who believes in the value of school may pursue education regardless of negative family and peer influences, as was found in the current study. A second example would be that of Indigenous collectivist culture. Indigenous students may be more likely to act in ways that strengthen their community and family relationships. Hence, students who perceive education to be able to build better community outcomes, may experience a stronger motivation towards educational success than if they were to only consider personal potential benefits, as again identified in the Interview Chapter. This idea could be explored by further research, and if proved to have utility, implemented by Indigenous educators, mentors and family members.



### 10.4.2 Conclusion to Research Question 3

Educators, and education systems, need a discourse that recognises the sources of educational disadvantage and provides scaffolding where necessary, but which also recognises cultural and social strengths. Educator discourse, and policy approaches, should recognise and utilise these strengths to improve the academic self-concept and aspirations of Indigenous students.

Although this study did not canvas the opinions of general teaching staff within schools, the interview results with students and Indigenous Program Coordinators indicated that teaching staff working with Indigenous students did not often specifically redress the dominant deficit discourse surrounding their students.

Teachers at these schools may need to be coached to scaffold classwork for Indigenous students in a manner that addresses gaps in their prior learning whilst also setting an expectation of academic improvement and success. Teachers who are aware that Indigenous students may have a negative concept of the Indigenous academic self, can build a curriculum that privileges Indigenous knowledge, introduces students to successful Indigenous mentors, and addresses the undercurrent of racism in expectations that students have experienced in schools to date. Thus, it is a recommendation of the current study that all schools which provide scholarships to regional and remote Indigenous students, consider ensuring positive discourse around these students within the student, staff, and family networks of students.

Some economic and cultural indicators affect student ability to engage with education (e.g., access to educational resources and Internet, school absenteeism for cultural obligations), and others affect student perception of the utility of education (e.g., parental education levels, community norms of unemployment, cultural dissonance in school curriculum and routines). Therefore, successful engagement strategies would address both student capacity, as well as student intention, to engage with the Australian education system.

Within the present study, Indigenous students were significantly more likely to experience high levels of community unemployment and gaps in remote Internet infrastructure which negatively impact schooling. Yet, Indigenous students attending boarding schools experienced the same levels of homework support and Internet access as non-Indigenous students at boarding schools. This finding suggests that the provision of boarding school scholarships that has become a key education initiative in recent decades, is having a valuable impact in providing more equitable capital and resources to Indigenous students from remote areas. In addition to these provisions, it is the provision of safe environment free from social trauma, that appear to be a key reason for the uptake of boarding opportunities amongst remote Indigenous families.

## 10.5 Discussion of Research Question Four (DQ4): How do the findings from the factor analysis contribute to scholarly knowledge of factors affecting Indigenous school engagement?

### 10.5.1 Introduction

The objective of Factor Analysis was to determine whether correlated variables could be grouped into a smaller set of conceptually plausible latent factors, and if so, to identify the amount of variance explained by each of these factors (Sharma, 1996). Previous research has identified factors affecting student engagement with school, but for the most part, treated them as individual, mutually exclusive variables to be independently targeted. The motivation for developing an overarching Factor Model in this thesis was that it allows variables affecting education outcomes to be targeted according to their underlying causes. The Revised Factor Model identified latent constructs affecting education engagement decisions, and the size of the impact of each construct.

Secondly, factor analyses were used to explore variations in variables, and variations in student responses to variables, across Indigenous and non-Indigenous groups. These analyses were invaluable in highlighting those Factors for which Indigenous and non-Indigenous students had different experiences, and in differentiating between difference in experience, versus difference in attitude, between the two groups.

Further development of a comprehensive factor model can aid in policy development because it allows funding to be directed towards the domains that are most strongly linked to student outcomes.

### 10.5.2 The initial Factor Model

The Factor model initially proposed in this thesis was based on work first published by the Dusseldorp Skills Forum (2009b) and reiterated by Buckley (2011), who provided a theoretical taxonomy of Constructs affecting Indigenous education outcomes: Home/Family, Community, School and Individual. The current study added a fifth Construct to the proposed factor model, that of Perceived Future Benefit of School. This fifth Construct represented students' expectations of achieving the higher order outcomes of the DSF model (2009b).

The DSF factor model applied a place-based taxonomy – School, Home, Community, Individual, which implies that these categories might be expected to contain mutually exclusive populations and influences. In reality, for many students, and particularly for Indigenous students and regional students from communities with small populations, there might be a significant overlap of these categories. The school may exist within and contain important figures from the larger community. The home environment may be fluid, and represent

more than one set of guardians, and even vastly different locations each with different social descriptors and economic outlooks. The individual may not consider themselves or their home as being separate from the wider community. These considerations are particularly important when applied to Indigenous students, many of whom in this study attended residential schools a long way from 'home'. Hence, the initial factor taxonomy may not have been ontologically appropriate, as it reflected Western epistemologies of relationships between community and the Individual.

Regardless of the above, it should be acknowledged here that this study was not able to measure the DSF constructs in their entirety due to ethical and resource limitations. In this study, the Home/Family Construct was represented by educational and economic capital in the home; Community was represented only by socioeconomic influence of employment and income; School was measured for the atmosphere and positive relationships and pathway information provided; and Individual was considered to be the predictor variables of students' expectations for themselves.

### 10.5.3 The Revised Factor Model

Under Exploratory Factor Analysis, it became evident that the variables in this thesis were more appropriately grouped into seven Factors rather than five. The constructs, or Factors then became, in order of variance explained:

- Factor I – Perceived Current Benefit of Schooling
- Factor II – Education and Employment Engagement in the Community
- Factor III – Socioeconomic Capital in the School
- Factor IV – Perceived Future Benefit of School
- Factor V – Education Aspirations
- Factor VI – Socioeconomic Capital at Home
- Factor VII – Social Support for Education

Whilst five of these seven Factors are named for 'location' (School, Home or Community), Factor I and IV reflect student perceptions of schooling, and in fact conflate the School and Individual constructs. Even within these 'locations', economic and social variables were identified to explain unique portions of variance, and needed to be treated separately in the Factor model. Furthermore, it appeared that none of the Factors closely represented the original 'Individual' Construct.

The Exploratory Factor Analysis also added important new information to the model, regarding the *relative impact* of each Factor. Under the DSF model, School, Home, Community and Individual appeared to equally

contribute to student outcomes. Yet in the current thesis, student experiences at school, represented by Factor I, clearly explained greater variance (10% and 6% respectively) than any of the variables reflecting the Home or Community constructs. In conjunction with findings from the qualitative, bivariate and regression analyses, the findings of this thesis clearly delineate the critical value of the school environment in fostering education engagement and positive education expectations for students.

A structural equation model (SEM) was presented in Chapter 6 (*Figure 5*) that illustrated the above findings. The SEM confirmed earlier work by Biddle (2007) that perceived benefit of education was a unique and important factor in school engagement, and extended this knowledge by showing that the School Domain uniquely contributed both to student perception of the benefit of education, and to student intentions to attend school and complete Year 12, whereas the Home and Social Domains did not. The SEM also supported the assertion above that there was significant interaction between the Home and Social Domains for Indigenous students, and that these Domains did not interact in the same manner for Indigenous and non-Indigenous students in the current study.

In fact, the Revised Factor Model presented in Chapter 6 was a good fit only for Indigenous students. The differences between Indigenous and non-Indigenous respondents were not as strong at the Item-to-Factor level, as they were at the Factor-to-Factor level. That is, the variables measured in this study did not represent different constructs for Indigenous students than for non-Indigenous students, although some of the item-to-Factor correlations (i.e. importance of variables to the construct) differed significantly across the two ethnic groups, as did the interactions between Factors. This result strongly suggests that, at least for the population sampled within the current study, Indigenous and non-Indigenous students will not respond identically to all experiences within the school environment, hence, education policy and school strategies aimed at Closing the Gap will be most effective if they are based on empirical evidence for what works with Indigenous students. Furthermore, future quantitative research should continue to explore similarities and differences between the educational requirements, and motivating drivers, of Indigenous and non-Indigenous students, throughout Australia.

### Differences between Indigenous and non-Indigenous students highlighted by the Factor model

The most significant differences in the Factor model by Indigenous status, as identified in Chapter 6, were the correlations *between* latent Factors. That is, interactions between the socioeconomic, school and home experiences, and student aspirations and perceptions regarding education. In fact, only six of the fifteen Factor-to-Factor correlations did *not* differ significantly between Indigenous and non-Indigenous students. Whilst some of the differences in correlations between the Indigenous and non-Indigenous students may

reflect socioeconomic resourcing, other analysis in this study and in the literature would indicate that the diversity in cultural knowledge and student self-concept affects student perceptions and expectations of the benefit of education engagement.

Where differences in Item-to-Factor loadings existed, these inform the model of the constructions which Indigenous and non-Indigenous students in the current study, make of their experiences. For example, the Item-to-Factor Correlations for Factor IV (Perceived Future Benefit of School) revealed that perceptions of educational utility were more strongly linked to employment aspirations for Indigenous students than non-Indigenous students. That, Indigenous student decision-making about education engagement was more closely tied to perceived economic and employment utility than for non-Indigenous students, hence, this may be a more useful method of engaging these students in higher education. Whilst these differences were only significant at the 0.05 level, they are supported by the research of Harwood et al. (2015), who similarly found that linking education to career aspirations was a successful source of motivation for Indigenous students at the secondary level.

Importantly, Indigenous students in this study did *not* experience lower levels of social support (through family or peers) for education (*Factor VII*), nor did they experience lower levels of current benefit of education (*Factor I*) or socioeconomic status of the school (*Factor III*) in this study. Hence, Indigenous and non-Indigenous students *in this study* experienced similar levels of educational utility at the secondary school level, similar attitudes towards education amongst their social networks, and had the opportunity to attend schools of similar socioeconomic status. Comparing this with findings of other studies, would suggest that it may be only in the area of socioeconomic capital, and cultural competency and its associated discrimination and racism, that school experiences are more negative for Indigenous students than for non-Indigenous students (Bodkin-Andrews et al., 2010; Harwood et al., 2015). The word 'only' is not used here to minimise the impact of these factors, but to suggest that these two constructs are responsible for the majority of differences which still exist between the experiences and outcomes of Indigenous school students in Australia.

This finding might be explained by the fact that Indigenous students in this study were more likely to be attending school in a region outside their home community and social network, and hence had exposure to a wider variety of experiences of schooling, and of peer attitudes. Yet, this may also reflect the greater independence of decision-making promoted by Indigenous parenting styles (Hayes et al., 2009). Such an explanation would imply that the cultural wealth of Aboriginal and Torres Strait Islander youth is an asset to education engagement, even though it has previously been used to explain truancy and education *disengagement* (Hunter & Schwab, 2003; Munns & Parente, 2003). This further illustrates a key argument of this thesis, that education policy and discourse should identify ways to utilise Indigenous cultural wealth for

its ability to create strong education outcomes, rather than 'blaming' Indigeneity as a deficiency that creates education disengagement.

## 10.6 Conclusion

The current Chapter presented a synthesis of findings from the three stages of analysis in this thesis: factor modelling, quantitative analysis of latent variables, and qualitative analysis of interviews. The use of three analytical methods provided the opportunity to triangulate findings and served to ensure robust enquiry into the four Research and Discussion Questions presented in the Introduction section.

In response to Research Question 1, there was a positive, moderate correlation between perceived benefit of education, and intention to attend school and complete Year 12, for all students in the current study. There remained a positive, moderate correlation between secondary education engagement, and intention to attend higher education, for non-Indigenous students, but only a weak positive correlation between these factors for Indigenous students.

In response to Research Question 2, four school strategies were found to positively and uniquely contribute to student perception of the benefit of school. The differences between student-reported experiences on these variables between schools, was much greater and more frequent, than differences by gender or Indigenous status. Discussion highlighted the usefulness of psychological theory, particularly the Theory of Planned Behaviour, in explaining which variables impacted student perceptions that education engagement was a worthwhile choice.

The Chapter went on to examine the impact of socioeconomic and cultural factors on education engagement, and it was revealed that while economic factors still significantly and negatively affect Indigenous students' opportunity to engage in mainstream education, these did not affect students' desire to engage with education. Social factors, particularly racism, social discourse, and social trauma, are all drivers of education disengagement which disproportionately impact on Indigenous students in Australian schools, and are only minimally addressed by policy.

Finally, the new knowledge inherent in the Revised Factor Model was discussed. This Model has the potential to contribute substantially to future research as well as policy on Indigenous education, and can be developed further.

Having answered the guiding Research Questions for the current thesis, discussion now turns to the future. The final Chapter of this work presents a summary of the contributions this research has made to scholarly

knowledge, along with a reflection on the strengths and weaknesses of this project. Finally, recommendations and implications are presented to guide future work that may arise out of this thesis.

# Chapter 11 - Conclusion

## 11.1 Foreword

A main goal of this thesis was to provide new quantitative evidence for policymakers, funding providers and school leaders, regarding the degree to which certain school strategies and experiences contributed to Indigenous student perception of the benefit of education, as well as student intentions towards completing various post-secondary pathways. It had been expected that those school strategies and experiences which addressed student capital, and student perception of the economic benefit of secondary and higher education, might be closely linked to student education decisions. Although the findings of the current thesis cannot be extrapolated to other students in Australia without reserve, nevertheless, these findings should inform public discourse and future research.

Within the current study, a decision was made to distinguish between student *capacity* to achieve educational success, and student *desire to engage* with education. Indigenous students still are more likely than non-Indigenous to experience disadvantage economically, geographically, and socially in ways that affect access to quality education experiences. Yet, these factors did not show any significant correlation to Indigenous student beliefs in either the benefit of schooling, or the importance of school completion.

Programs and discussion often centre on how to improve Indigenous student achievement, or how to increase student attendance and retention (i.e. engagement). Yet the current study highlights a third variable, crucial to student performance and engagement, which is under-represented in scholarly and policy discourse: that of student perception of the utility of education. Certainly, academic achievement has been shown in other research to be a critical marker in student education decisions, yet the contribution of academic success to student outcomes is unlikely to be simple and linear. Students who perceive a lower benefit of education may be likely to have reduced education achievement, which then confirms a perception that further education engagement is unlikely to be beneficial. Therefore, student perceptions of educational utility are likely to be a key factor in improving Indigenous academic achievement as well as academic engagement.

The finding of this study, that there is no statistically significant difference between Indigenous and non-Indigenous students on perception of the benefit of secondary school, but there are clear differences in perception of benefit of tertiary education, indicates a potential need for a shift in policy focus in order to improve long-term education and employment outcomes for Indigenous Australians. The implications of these findings are explored in the next section, followed by discussion of the limitations and recommendations arising from this thesis.



## 11.2 Implications

The findings of the current study have broad implications for public discourse on Indigenous Australians, for education policy at the tertiary and school levels, and for teacher pedagogy. Discussion here begins with the wider social discourse surrounding Indigenous Australia, followed by the more finely pointed implications for Indigenous education at the secondary and tertiary levels. Finally, the implications for public policy and future research are discussed.

### *Implications for Social Discourse on Aboriginality*

The current study found that Aboriginal and Torres Strait Islander Australians still face negative social discourse, low expectations and discrimination. However, these findings of direct and indirect racism are not a peculiar product of the education system. Teachers, policies and institutions reflect the wider social environment that informs interracial relations in Australia. On the whole, Australia is not a culturally reflexive society (Szoke, 2012). Systemic experiences of racism are still repeatedly sidelined by hegemonic constructions of history, and of present reality. Indigenous epistemology is rarely understood and valued. The findings of the current study suggest that a sizeable increase in education engagement might be possible for the next generation of Indigenous Australians, should they perceive that non-Indigenous educators both understood, and valued, Aboriginal and Torres Strait Islander histories and cultures. Such a society would more consistently enshrine Aboriginality as a source of strength, rather than as a barrier to success.

### *Implications for Schools, and Teacher Educators*

A starting point for such social change is undoubtedly, education policy, curriculum and structures. The current study found that Indigenous students perceived respect, and hence greater benefit of education, when they attended schools which validated Aboriginality as a positive identity, and recognised the wealth in Aboriginal cultural and social life. In such schools, staff move beyond white ethnocentricity and the deficit concept of Aboriginal Australians, and embrace cultural relativism by walking in two worlds. Such staff acknowledge that the onus is on educators, and non-Indigenous society, to learn Aboriginal ways, and to develop pathways to Close the Gap in education outcomes.

The current study reinforced findings of other recent studies on factors affecting education engagement of minority ethnicities. That is, socioeconomic and geographic indicators are not as important as individual student experiences in the school environment; that racism and indirect discrimination are still very prevalent; and that the role of the teacher is crucial. These findings provide an argument against one of the enduring resistances to cultural competency training, which is the argument where the school/government/funding bodies are already supporting Aboriginal students, the teachers themselves are not accountable to engage with Critical Race Theory (Picower, 2009).

In the current study, fifteen of the twenty-five variables measured by quantitative analysis differed significantly between schools. This was a greater number than even those variables that differed by Indigenous status. Thus, it can be said that educators, and the school environment, have a more significant effect on student experiences, and student perceptions of the benefit of education, than does an individual's status as an Indigenous Australian. Furthermore, three quarters of Indigenous respondents in the current study stated that they would be more likely to attend school if this enabled them to maintain the respect of a staff member who they valued. The weight of this finding cannot be overstated; educators are responsible for creating an environment that engages Indigenous students.

In practice, teachers are often unaware of the impact of racial hierarchies in creating indirect discrimination, prejudice and racism in the classroom (Picower, 2009; Santoro, 2011). Hence, there is a strong case for Indigenous education mentors in schools, more Indigenous teachers, and more cultural competence training for non-Indigenous teachers. The findings of the current study indicate that such practices are likely to increase Indigenous student perceptions of the benefit of education, and contribute to equity in school attendance and Year 12 completion rates for Indigenous students.

There was an evident connection during interviews between students' desire to engage with school, and their perceptions that teachers held high expectations for their success. That is, teacher expectations affect student perception that educational success is achievable, and hence, actual education choices. For this reason it is crucial that teachers ascribe the same aspirations for life success, and educational achievement, to Indigenous students as to non-Indigenous students.

The implication regarding those school engagement strategies which positively impact student perception of the benefit of school (*Positive School Culture, Promotion of Indigenous Culture, Staff Admiration, Pathway Development and Student Self Efficacy*) is clear: Schools that utilise these strategies may see an increase in student engagement, regardless of socioeconomic status of students or the school. Further, it may be possible to utilise these variables to improve tertiary engagement, where the equity Gap has proved intransigent. This will be discussed in more detail below.

#### *Implications for Tertiary Education Engagement*

It is possible that policymakers, in focusing on Year 12 completion rates of Indigenous students, may have expected that improvements on this marker would automatically convert to improved tertiary enrolment and completion rates. Yet, using the Theory of Planned Behaviour (TPB) as a theoretical basis, it could be argued that tertiary education is a different task to Year 12 completion, therefore engagement strategies need to address Indigenous students' perceptions of locus of control, norms and expected outcomes for this task specifically.

The variables that were found to affect student perception of the benefit of school directly addressed the key themes of this thesis: student perception of the utility of education, and student agency. The five strategies mentioned in the above section address student perception that school is a positive place to be, that school can create positive future life outcomes, and that school can make them a better person. In the language of TPB, they address norms, locus of control, and expected outcomes. In the language of social discourse, these variables construct a positive discourse about what it is to be an Indigenous person. Those variables that measured school engagement strategies addressing financial or social deficit in students' lives (*Family Collaboration, Study Environment, Computer with Internet*, etc.) were not significantly correlated with student perceptions of the importance or benefit of education, but rather, address student access to meaningful schooling.

The implication for tertiary education then is that strategies to build Indigenous enrolment and completion rates in higher education should not focus only on ways to overcome financial barriers, but also on ways to reinforce a positive social discourse around what it means to be Indigenous at university, or Indigenous with a tertiary qualification. These concepts support the findings of Kinnane et al. (2014) on strategies that appear to most successfully engage Aboriginal and Torres Strait Islander students in higher education. The finding that student perceptions of the benefit of schooling have a greater impact on student engagement than do family and peer attitudes or socioeconomic status, implies student resilience, amongst the students in the current study. Where such students are persuaded that there is sufficient benefit of education, they may be likely to remain engaged in the face of domestic challenges. That is, funding may not need to address every financial barrier, for to do so can feed into a deficit discourse that Indigenous students are incapable of overcoming hurdles. This is not to say that government and philanthropic funding should not address these hurdles at all. Rather, funding may also be usefully directed towards programs that demonstrate to students in real terms that they can still achieve educational success despite financial and social barriers, and that education engagement and Indigenous identity are not mutually exclusive.

The factor model revealed that Indigenous students placed greater importance on economic factors when considering the *benefit* of education, than did non-Indigenous students, in the current thesis. Harwood et al. (2015) also found that employment aspirations were an important aspect of secondary engagement in the AIME program. The implication is that employment aspirations may be an effective motivator for Indigenous school engagement and can be utilised by schools to improve attendance and engagement. As Indigenous tertiary students often do not have large networks of peers or family whose life pathways reflect the economic benefit of higher education, programs that emphasise a clear and demonstrable link between higher education and future employment outcomes using Indigenous role models, may reinforce the benefit of tertiary completion.

### *Implications for Public Policy*

The Closing the Gap campaign has placed Indigenous education outcomes at the forefront of public policy in recent years. While the target of halving the gap in Year 12 completion rates by 2020 is on track, tertiary entry and completion rates are still behind (DPMC, 2017). It is likely that lower Indigenous enrolments in higher education reflect both academic achievement rates in secondary school, and also the degree to which students believe that tertiary education is likely to be a valuable and successful pathway choice. The finding of the current study that Indigenous students make their mind up earlier about the benefit of education has implications for public policy, although further research is recommended to understand the mechanics of this relationship. Quite possibly, government funding and policies aimed at closing the tertiary education gap need to begin during early childhood and primary years. Such programs could increase the likelihood that Indigenous students experience positive engagement at school, achieve at equitable academic levels, and develop a positive perception of the economic benefit of secondary school and tertiary education, from a very young age. Funding may also need to address both Indigenous and non-Indigenous discourses, so that young Indigenous students consider themselves socially supported to engage with higher education, even where it means being geographically removed from their community for a period of time. Such funding should aim to ensure that success in post-secondary education is seen as a typical part of Indigenous identity, not just 'whitefella' identity.

For some Indigenous students, believing in the value of post-secondary education and training does not translate to enrolment due to the difficulty of geographic distance. In the current study, few boarding schools had been able to establish effective transition strategies for students returning to remote areas upon completion of Year 12. A future focus of funding and policy may do well to address this area to ensure that the intended economic benefits of Year 12 completion are not lost for those students who return home to communities in remote geographic locations (Demerath, 1999; Dusseldorp Skills Forum, 2009).

### *Implications for Future Research*

The correlations between school engagement strategies and student engagement identified in the current study do not indicate a cause and effect relationship. Future policy decisions will be more strongly supported if research is able to determine the directional impact of *Pathway Development*, *Positive School Culture*, *Promotion of Indigenous Culture*, and *Student Self-Efficacy*, on student education outcomes.

Finally, the current study progressed the development of a quantitative model of the factors affecting student education engagement, however, this model requires further refinement. The Revised Factor Model identified significant differences in the way variables impacted Indigenous and non-Indigenous education engagement, but this model is not complete. Perception of the economic benefit of education explained less than a quarter of the variance in student perceptions of the importance of school attendance and

completion. If further research is able to uncover other quantitatively important drivers of student education decisions, this could further improve the quality of public policy, and teacher training. Such research can aim to fill the national gap in quantitative evidence for Indigenous education policy identified by the Productivity Commission (2016) and Lloyd, Lewthwaite, Osbourne, and Boon (2015). The section below presents a proposal for refinements that can be made to the Revised Factor Model as part of future research.

### 11.3 Proposed Refinements to the Revised Factor Model

In its Revised form, the Factor Model developed in the current thesis explained 46% of the total variance amongst variables measured in the study. Further revisions should attempt to include the seven variables from the quantitative stage of the current study that did not fit into the identified Factors during Confirmatory Factor Analysis: *Provision of Study Assistance*, *Family Responsibilities*, *Home Study Environment*, *Staff Admiration*, *Staff Attendance*, *Indigenous Academic Role Models*, and *Collaboration with Family*. Additionally, the qualitative analysis highlighted *Racism and Cultural Competence*, as well as *Social Trauma* as critical experiences impacting student education decisions.

In addition to the variables mentioned above, there were further variables, highlighted in previous literature but outside of the scope of this current study, for which contribution to variance could be investigated.

These include:

- Mental and physical health of students
- Parental employment and income
- Curriculum and infrastructure aspects of the school environment
- Academic aptitude, behaviour and achievement of the student
- Career interests and life goals of the student
- Degree of cultural connection and pride, held by Indigenous students.

It may be that some of these variables explain less variance in student attitudes than might be expected by the weight they are given in scholarly argument, as was found for the socioeconomic variables examined in this thesis. Alternatively, some of the above variables might prove to be critical determinants of Indigenous education outcomes. It has been shown that Indigenous and non-Indigenous students with equal levels of academic achievement have equitable outcomes in Year 12 and in higher education (Mahuteau, Karmel,

Mayromaras, & Zhu, 2015). Hence, it is likely that academic achievement will itself be found to contribute significantly to education aspirations amongst Indigenous students. The last variable above, cultural affinity and pride, has not been given detailed consideration in Indigenous education literature. Yet it might reasonably be expected that since Indigenous ethnic status holds a variety of meanings across the population of Indigenous Australians, it may also have varying degrees of impact on students' sense of self. In this regard, cultural connectedness might be an important future measure, along with that of Indigenous status.

Future refinements need to address the interactions between Constructs of Home and Community, as well as Home and Individual. Thus, it may be suggested that a new model would not separate Constructs by *location* as was done by Buckley (2011) and Dusseldorp Skills Forum (2009b), but rather, by *affect*. Such a model might try to place variables along the lines of:

- Education Capital (*expectation of educational utility, knowledge of educational pathways, experiences of academic success, academic self-concept, family education levels, quality of staff-student relationships, collaboration between school and home*)
- Social Capital (*benefit and cost to social status of engagement with educational structures*)
- Economic Capital (*economic resourcing and employment engagement within social networks at home, in the community, and in the school, incorporating expected economic utility of education, as well as projected economic cost of education engagement*).
- Cultural Capital (*incorporating cultural wealth, Aboriginal pride, expected cultural safety of the education environment, experiences of institutionalised and direct racism, and exposure to Indigenous academic role models*).
- Individual Capital (*incorporating self-esteem, self-efficacy, resilience, motivation, and career interests, cultural affinity*)
- Health Capital

It is beyond the scope of the current thesis to create the model proposed above. A future, Final Factor Model explaining Indigenous student education outcomes may look somewhat different from that presented in this thesis. Nevertheless, the Revised Factor Model developed and refined in the current study presents a unique contribution to scholarly knowledge, precisely because it provides the first quantitative evidence of the complex relationships between variables known to affect student education decisions.

## 11.4 Strengths and Weaknesses

Although the current research has powerful implications, there are, nevertheless, limitations to these findings, mostly methodological in nature. They are enumerated here, in order to inform future research.

### *Strengths and weaknesses of etic research*

An important question in ethnological research is that of voice. The current research has been entirely conducted by an etic researcher without lived experience of being Indigenous in Western Australia. Nado Aveling (2013), in writing “*Don’t talk about what you don’t know: On (not) conducting research with/in Indigenous contexts*” argued that non-Indigenous researchers have not lived the Indigenous experience and therefore should not attempt to represent Indigenous knowledge in academic discourse. Much of the theoretical foundations of the current study were developed from the work of Indigenous researchers in Australia, and the author of the current study has engaged continually in reflexive conversations with Aboriginal educators and academics. Notwithstanding, there may be conceptual limitations created by the researcher’s Eurocentric understandings of identity, of aspirations, of success, and of knowledge. However, the researcher is also a teacher, experienced with the workings of the Western Australian school system. This brings an emic understanding to the present discussion regarding the *intended* efficacy and utility of secondary education for Western Australian Indigenous students. The researcher’s lens is different to that of the students whose voices are presented, both in a professional and cultural sense, yet it is authentic and valuable in its contribution to knowledge. It is hoped that this research will be examined by Indigenous academics around Australia for its accuracy and depth, and that it may be found a worthwhile contribution to discourse on education policy.

### *The scope of the study*

The current study examined student perceptions of the *benefit* of education, without explicitly examining student perceptions of educational *cost*. It is possible that such an examination might create a richer understanding of some of the more surprising findings of the current study, for example, why there was a sharp divergence between Indigenous and non-Indigenous students’ attitudes towards the benefit and importance of *post-secondary* education. Harwood et al. (2015) argue that Indigenous students do not need engagement strategies to assist them in developing aspirations to education success, but rather, they are in need of engagement strategies which demonstrate that their current aspirations can be achieved successfully. That is, Indigenous students may not perceive a lower benefit of education, but a higher cost (socially, personally and financially). Given that perceived economic benefit of education accounted for less than a quarter of the variance in student perceptions of the importance of school attendance and completion, future research aimed at improving Indigenous student retention might need to also consider

the particular social, financial and cultural cost experienced by Indigenous students when engaging with the education system.

Finally, the scope of the current study was limited to students' self-reported education intentions, rather than actual behaviour. Relationships identified in this study could be further investigated by future research measuring actual education outcomes (e.g. school attendance rates, completion rates, and post-secondary pathways) rather than relying on perceptions of the importance of school, as in the current study.

### *The quantitative method*

In the last ten years, many researchers have begun responding to calls for a greater depth of literature in the field of Indigenous education (Auditor General Western Australia, 2009; Behrendt & McCausland, 2008; MCEEDYA 2010; Purdie & Buckley, 2010). Scholarly approaches have changed in recent years as researchers in the field began to appreciate the value of approaches that allow sociological relationships to be quantified and measured (Bodkin-Andrews et al., 2015). Yet, the quantitative approach to Indigenous education research is at an early stage, and limitations exist which hamper the generalizability and completeness of findings. These limitations include access to large as well as unbiased samples, and lack of theoretical bases for the creation of models.

As a result, prior to the current study, there was not available any survey instrument specifically developed to measure the perceptions of Indigenous Australians on the variables of interest. Although every attempt was made to create a valid measurement tool for each antecedent variable, some had to be eliminated from final analysis. Had it been possible to measure these variables reliably, this would likely have increased the total variance explained in the final model.

Although the sample in the current study was sufficient in size, there existed an inherent self-selection bias in schools which participated in the study (De Vaus, 2002). Although participating schools were identified by the researcher as being valuable to approach due to their location, curriculum, and population of Indigenous students, the final sample of schools created an imbalance between the geographic background of Indigenous and non-Indigenous respondents to the study. More than half of the non-Indigenous students were from the Mid-West, whereas the majority of Indigenous participants hailed from the Pilbara and Kimberley. The significance of these differences lies in remoteness, cultural connectedness, economic and education opportunity, and socioeconomic experiences. Furthermore, school leaders, by self-selecting to participate, demonstrated an interest in the outcomes of the study that may have also reflected a positive bias towards Indigenous students within their schools. Further studies might address these geographic and self-selection biases. If the above findings could then be generalised to the broader student population in Australia, this would provide a strong argument for the continuation of scholarship and tuition programs that



provide Aboriginal and Torres Strait Islander students with access to financial and educational support in secondary and post-secondary education.

It would have been ideal that the respondent sample had been randomly chosen from the existing population of Indigenous secondary students in order to allow generalizability, however, this was not possible due to constraints placed on research by available funds, gatekeeper organisations and individual consent choices. Whilst it might be argued that students attending Independent and Catholic schools are more likely to come from families that place a higher economic value on education, evidence provided by school leaders indicated that many of the Indigenous respondents from these schools had received partial or full scholarships, and were not from economically advantaged families. A greater possible source of bias was that of social support for education. Those families which have made the decision to send students to a private school, and particularly to a residential private school, may be presumed to place a high value on the pursuit of education.

Finally, the scope of the present study, as a doctoral thesis, limited the sample size and geographic location that could be incorporated. This, and the limitations above, resulted in the choice to pursue a correlational research design, rather than a statistically more robust experimental study. As such, the findings of the present study are limited to relationships between variables, rather than causality.

## 11.5 Recommendations Emanating from Results

### *Recommendations for Public Policy*

1. **Government bodies may need to develop policy and practice to further the cultural competence of all Australians.**

National levels of cultural competence can be improved through education practice that creates a better understanding of Indigenous experiences within Australian history, and Indigenous cultural paradigms. Such practice would forefront Indigenous experiences as a critical and authentic aspect of our national history, promote the teaching of culturally reflective thinking, highlight the strengths of Indigenous cultural practices, and develop better understanding amongst non-Indigenous Australians of the complex causes of social disadvantage for our First Peoples.

2. **National programs aimed at improving Indigenous secondary and tertiary education outcomes could address community expectations of Indigenous education engagement at the family, early childhood and primary education levels.**

Indigenous students' opinions of the benefit of secondary and higher education are formed well before the end of the high school years. Programs might aim to build academic success in the early years, as well as building a positive association of higher education with Indigenous identity. Such programs could be developed primarily by Indigenous Australians.

**3. Teacher Training courses could involve cultural reflexivity as a core expectation of skilled education practice.**

The AITSL teacher standards provide an adequate rubric for this purpose (AITSL, 2014). Educator discourse should recognise Indigenous students' aspirations towards success, and create within students an expectation that they can achieve that success within the education system. Such discourse would utilise cultural wealth to promote a positive self-concept, and utilise successful Indigenous mentors. Teacher training would ideally include:

- a. Cultural reflexivity training based in Critical Race Theory to allow non-Indigenous educators to recognise the divide in understandings of Indigenous culture.
- b. Specific understandings of Indigenous culture: kinship relations and obligations e.g. to Elders, connection to country, social structures, cultural protocols, understandings of dialects, gender roles, differences between Indigenous language groups, and Indigenous experiences in Australian history.
- c. Socioeconomic competency v. cultural competency. Recognition of how socioeconomic and geographic issues impact accessibility of education, recognising effects of remote infrastructure, distance, and poverty, and separating these from understandings of Aboriginality.

**4. Funding bodies provide greater levels of resourcing to programs aimed at improving social, physical and mental health of students.**

Many schools were aware of the high needs of Indigenous students who have experienced violence, social dysfunction and substance abuse in remote communities. Such experiences significantly impact student health and school engagement. Schools need to be appropriately supported to address these needs through health programs, career education, cultural pride experiences and strategies that focus on student resilience and self-efficacy.

**5. Boarding school scholarships utilise a funding model that provides sufficient resourcing to post-secondary transitions.**

Indigenous boarding students often attend school a significant distance away from their home community, and sometimes have trouble effectively transitioning into employment, training or education pathways in their home community or region. Funding models should recognise the importance of the transition period, and resource staffing and industry visits, which allow students to connect into employment and training providers in their home regions before they leave the boarding environment.

#### *Recommendations for Schools*

**6. Schools could focus on improving aspirations towards post-secondary training or tertiary education for Indigenous students.**

Such a strategy acknowledges that long-term employment and income benefits are associated with higher levels of training or education. This study suggests that these programs need to be tailored towards employment opportunities that allow students from remote areas to develop a skillset appropriate to the opportunities available in their home region. Programs should aim to address the lower proportions of Indigenous Australians achieving post-secondary qualifications by providing Indigenous role models of education success, and demonstrate consistent and high staff expectations of Aboriginal and non-Indigenous students' academic capabilities.

**7. Schools may increase student engagement through effective programs in the areas of *Pathway Development, Positive School Culture, Promotion of Indigenous Culture, Staff Admiration, and Student Self Efficacy*.**

These five variables show significant correlation with student attitudes towards the value of school, and the importance of school attendance and completion. Career pathway development opportunities could be tailored towards the needs of the student body, provide real links to industry and further education institutions, and focus on increasing student self-efficacy. Positive, respectful relationships between students and staff seem crucial to Indigenous school attendance in particular.

**8. Schools provide cultural competency training to all staff to reduce ongoing cultural discrimination in schools.**

Perceptions of cultural discrimination are still prevalent across most schools, and create school disengagement for Indigenous students, despite schools believing that they are promoting cultural awareness effectively. The current study suggests that educators should examine whether they demonstrate appropriate awareness of and respect for Aboriginal culture, as perceived by Indigenous members of the school body, rather than relying on non-Indigenous perspectives of culture.

9. **Boarding school staff receive training in socioeconomic competency.**

School leaders and staff need to be aware of the impact of social issues and poverty on student wellbeing and academic engagement, and display a clear understanding of the relationships between poverty, social disadvantage and future life outcomes.

Students who are experiencing cognitive dissonance in their new school environment may need the opportunity to discuss this openly in a safe environment, where they can be assisted to identify the cultural, geographic and socio-economic factors leading to differences between schools in a way that does not confirm a negative self-concept.

*Recommendations for Future Research*

10. **Future research investigate whether the findings of the current study can be applied to improving higher education engagement amongst Indigenous students.**

Factors impacting student perceptions of the benefit of secondary education were overwhelmingly focused on building a positive discourse, clear connection to future employment, and an expectation of success. Discussion at the tertiary level may need to address these factors in addition to the current focus on financial, geographic and social barriers to education engagement.

11. **Future research develop a more complete quantitative model of factors affecting student education decisions.**

Such a model might in particular identify the effect size of academic achievement in determining student intentions to enter post-secondary education. The Closing the Gap Report (DPMC, 2017) found that on average, Indigenous 15 year-olds are more than two years behind non-Indigenous of the same age in literacy and numeracy. Qualitative evidence suggests that this is a key factor in student education aspirations. The effect of experiences of social trauma on mental health could also be explored in such a model.

12. **Further research examine the short- and long-term impact on remote Indigenous communities of sending students to boarding school.**

Currently, many Indigenous families utilise boarding school scholarships to ensure a high quality education and a safe living and learning environment for their teenagers. It remains to be seen whether provision of boarding school scholarships to the most capable students creates 'brain drain' and reduced educational utility for students who remain in remote areas for their secondary schooling, creating a further social and economic gap between sections of Indigenous communities (Mander, Cohen, & Pooley, 2015). Such research was outside the scope of the current study.



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# APPENDICES

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## Appendix A - Antecedents for Survey Constructs

### Domain - School

Sub-Variables	Rationale for Inclusion in Study	Relevant Literature	Measurement Method Options
Positive and respectful school culture	Positive relationships between staff and students, evidenced by praise and encouragement have been linked to better school engagement. A positive culture celebrates all levels of student achievement and aims to reduce shame.	Craven & Parente, 2003; Lamb et al., 2004; Prout, 2009; Hughes & Hughes, 2010; Sarra, 2007	Survey of student perceptions
Promotion of Indigenous Culture	The level of cultural familiarity which a student feels at school may greatly impact on engagement and outcomes. A positive school atmosphere which builds cultural pride and legitimises cultural identity will engender positive attitudes in students (Whitinui, 2010; Hones, 2005, Dinanthompson et al., 2008; Rahman, 2010; Munns & Parente; 2003). The Works Program found that successful engagement programs undertake to limit cultural misunderstandings (Commonwealth of Australia, 2011).	Armstrong & Buckley, 2011; Whitinui, 2010; Hones, 2005; Dinanthompson et al., 2008; Rahman, 2010; Munns & Parente, 2003; Commonwealth of Australia, 2011; Sarra, 2007; Bourke, Rigby & Burden, 2000.	Survey of student perceptions
Student Academic Self-Concept	Identified by Lamb et al. (2004) to be significant at the 0.01 level in determining Year 12 retention.	Lamb et al., 2004.	i) Survey student perceptions
Student Self-Efficacy	Munns, Martin and Craven (2008) ask schools to audit the ways in which they develop Indigenous students' efficacy, self-belief, mastery orientation and educational autonomy, as well as the manner in which they assist students to comprehend the relevance and utility of the schooling they receive. Students with a stronger sense of agency will be better able to respond proactively to individual and community challenges.	Munns, Martin & Craven, 2008; Sarra, 2007.	i) Survey student perceptions



High Academic Expectations of Students	Attendance, engagement and retention have been linked to high academic expectations of students, consistently applied across ethnicities within the school.	Biddle, 2007; Craven & Parente, 2003; Pearson, 2009, Sarra, 2007.	Survey student perceptions
Awareness of available employment pathways	In their study, Munns and Parente (2003) reported that schools do not provide Indigenous students sufficient advice about the range of education and career pathways available. Helme (2010) found that Indigenous Australians had lower career aspirations, and were less likely to know about education and employment opportunities available post-school. This may lead students to evaluate education as irrelevant, leading to disengagement and poor school retention (Reid, 2008; Epstein & Sheldon, 2002). A report by Dusseldorp Skills Forum (2009) stated that employment opportunities should be available in the individual's local (particularly when remote) context. Educated people who do not find real and local employment opportunities may distrust the utility of schooling (Demerath, 1999).	Munns and Parente, 2003; Helme, 2010; Reid, 2008; Epstein & Sheldon, 2002.	Survey students perceptions
Exposure to Role Models	Students make judgments about the benefit of education based on those within their social network (Biddle, 2007). School trips and visiting speakers can also expose students to educated and employed role models. Presence of Indigenous adults in the school improves educational outcomes (Bourke, Rigby & Burden, 2000; Hones, 2005) as it creates a model of success which Indigenous students can seek to emulate.	Bourke, Rigby & Burden, 2000; Hones, 2005; Biddle, 2007.	Survey student perceptions
Provision of Study Assistance	Many Indigenous students are without the educational resources and support networks which would typically be available to students with tertiary educated and employed parents. Effective programs would provide this support through provision of a study environment, homework assistance, etc.	Prout, 2009; Lamb et al., 2004.	i) Interview school staff ii) Survey student perceptions
Respectful relationships with staff	Anecdotal evidence that those students who have sufficient respect for any particular staff member may be more likely to attend school.	(Interview with Gary Downsborough, 8 <sup>th</sup> November 2013).	Survey student perceptions
Focused transition between education and employment	A focused transition to employment may support students who find the employment world to be unfamiliar.	Dusseldorp Skills Forum, 2009.	Survey student perceptions

Mean student attendance	Used as a proxy for student attendance in the school		<a href="http://www.myschool.edu.au">www.myschool.edu.au</a>
Median Household Income in school locality	As proxy for community SES	Biddle, 2007; Helme, 2010.	Census data State Suburb Code (SSC)

Sub-Variables	Rationale for Inclusion in Study	Relevant Literature	Measurement Method Options
Post-school Aspirations	Base level data from which improvements can be measured.		Survey student perceptions
Future Plans	Intended post-secondary employment or education pathway (or other)		Survey student perceptions
Importance of School	Perceived importance of attending school, and achieving Year 12 completion		Survey student perceptions
Indigenous Status	Identified by as Lamb et al. (2004) as significant at the 0.01 level in determining Yr 12 retention.	Lamb et al. (2004).	Survey student perceptions
Gender	Identified by as Lamb et al. (2004) as significant at the 0.01 level in determining Yr 12 retention.	Lamb et al. (2004).	Survey student perceptions
Age	It is expected that student age may be positively or negatively correlated with other variables due to older adolescents having more defined concepts of education relevance and post-school goals.		Survey student perceptions

Domain

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Individual

## Domain - Home

Sub-Variables	Rationale for Inclusion in Study	Relevant Literature	Measurement Method Options
Access to Home Study Environment	Overcrowded housing and low family SES have been found to impact on school engagement and Year 12 retention (Biddle, Hunter & Schwab, 2004; Lamb et al., 2004). These factors may in part reflect students' lack of access to a well-resourced and quiet study environment at home.	Biddle, Hunter & Schwab, 2004; Lamb et al., 2004.	Survey student perceptions
Parent Education Level	Identified by Lamb et al. (2004) as significant at the 0.01 level in determining Yr 12 retention.	Lamb et al., 2004.	Survey student perceptions
Collaboration with Family and community	Family involvement and in-principle support is a key factor in improving engagement, motivation and retention (Epstein & Sheldon, 2002; Partington, 2004; Lamb et al., 2004; Behrendt & McCausland 2008; Schwab, 2006; Purdie & Buckley, 2010; Munns & Parente, 2003). School efforts to positively collaborate can increase the engagement of the family with the school (Epstein & Sheldon, 2002; Sims, O'Connor and Forrest, 2003).	Epstein & Sheldon, 2002; Partington, 2004; Lamb et al., 2004; Behrendt & McCausland 2008; Schwab, 2006; Purdie & Buckley, 2010; Rahman, 2010; Sims, O'Connor & Forrest, 2003.	Survey student perceptions

## Domain –Community

Sub-Variables	Rationale for Inclusion in Study	Relevant Literature	Measurement Method Options
% Unemployed	Biddle (2007) found that Indigenous Australians, who are likely to live in areas of low socio-economic status, tend to under-estimate the economic benefits of education because they do not have role models in their social circle demonstrating the link between high education levels and employment income.	Biddle, 2007; Helme, 2010.	Census data State Suburb Code (SSC)
% with post-secondary qualifications	Identified as any form of recognised post-secondary qualification on ABS website.		Census data State Suburb Code (SSC)
Social Support	Students who perceive that their social network and family support employment and educational aspirations may be more likely to pursue them, irrespective of interventions applied (Munns and Parente, 2003).	Munns and Parente, 2003.	Survey student perceptions

## Domain – Perceived Benefit of Education

Sub-Variables	Rationale for Inclusion in Study	Relevant Literature	Measurement Method Options
Student Perception of Benefit of Schooling	Lamb et al. (2004) cite studies in the UK and Australia which found that career reasons are the overwhelmingly largest motivator for staying at school. Indigenous Australians appear to give less consideration to future employment and economic benefits when making education decisions than do their non-Indigenous counterparts (Biddle, 2007). Additionally, students must perceive genuine employment opportunities if they are to engage in education (Dusseldorp Skills Forum, 2009). Educational aspirations and post-school goals were identified by Lamb et al. (2004) as significant at the 0.01 level in determining Yr 12 retention.	Lamb et al., 2004; Biddle, 2007; Hunter & Schwab, 2004.	i) Survey student perceptions

## Appendix B - Common Methods Bias Analysis for Pilot Phase

### Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.335	17.121	17.121	6.335	17.121	17.121
2	3.041	8.220	25.340			
3	2.461	6.653	31.993			
4	2.022	5.465	37.458			
5	1.708	4.616	42.074			
6	1.533	4.143	46.217			
7	1.491	4.030	50.247			
8	1.391	3.758	54.005			
9	1.230	3.325	57.330			
10	1.174	3.173	60.503			
11	1.121	3.030	63.534			
12	1.041	2.813	66.347			
13	.974	2.633	68.980			
14	.953	2.577	71.557			
15	.899	2.429	73.986			
16	.780	2.109	76.095			
17	.762	2.059	78.154			
18	.721	1.950	80.104			
19	.687	1.857	81.960			
20	.627	1.693	83.654			
21	.576	1.557	85.210			
22	.542	1.466	86.676			
23	.505	1.364	88.040			
24	.488	1.320	89.361			

25	.466	1.259	90.619			
26	.444	1.201	91.820			
27	.440	1.188	93.009			
28	.391	1.057	94.065			
29	.356	.962	95.027			
30	.329	.889	95.916			
31	.303	.818	96.734			
32	.276	.746	97.480			
33	.234	.633	98.112			
34	.209	.565	98.678			
35	.193	.522	99.199			
36	.152	.410	99.609			
37	.145	.391	100.000			

Extraction Method: Principal Component Analysis.

## Appendix C – Information, Consent and FAQ forms for schools

### FAQs (for school staff in communication with parents/students)

#### **What is this research about?**

A PhD researcher from Edith Cowan University in Perth will be inviting students at our school to fill out questionnaires. The questions are about what students think of different things at school, and also about whether students think attending school will help them later in life.

#### **Why is this research happening?**

Lots of kids find it difficult to decide to attend school every day. Some students think there is no connection between school and their future life. This research is trying to figure out what schools can do to help students appreciate the value of attending school. The research also aims to find out what schools can do to help students find good career options.

#### **What's the benefit to my community?**

This project aims to find out what your school can do to improve student outcomes, and also how your school can help students to get a good job when they are older. When the research is finished, the researcher will give information to the school about what the students had to say. The information students provide will help future students from your community.

#### **Who will be asked to do this survey?**

The researcher will be asking students from across Western Australia. Only students in Year 9, 10, 11 and 12 will be involved. Aboriginal and non-Indigenous students will be involved.

#### **Do we have to take part?**

You are free to say yes or no. You do not have to explain your decision. Participating in this research will not affect the student's grades, or relationship with the teachers at your school.

#### **What would the student be asked to do?**

Each student who agrees to take part will be asked to answer questions in an online survey. They will do this at school and it will take about 20 minutes. The researcher will keep this information very private and will not tell anyone what you said, and will not write the student's name in any of the research. The researcher will also look at the attendance data for every student, to see whether what students think about school affects how often they go to school.

All students who participate will be placed in the draw for a voucher to (local music store or movie cinema to value of \$20) as a thank you for your help. Parents of participants will go in the draw to win a \$100 supermarket voucher as a thank you for participating.

#### **What if I change my mind?**



If you say yes, but then want to stop participating, that's OK. Just let the school or the researcher know and you can withdraw any time, until three months after you complete the survey

**What will happen to the information the student gives - is it private and confidential?**

Yes. The student's name will be removed from the data collected, and will never be published. The school will not know what each student said. The data is stored securely at the University and will be destroyed after 5 years. It can not be used again without your permission.

**Is this research approved?**

The research has been approved by Edith Cowan University and also the Catholic Education Office.

**OK – so how do I become involved?**

If you do want to be a part of the project, make sure both the parent and the student consent forms are signed and returned to the school by [TIMELINE]

**Can I meet the researcher or find out more about the project?**

Yes, the researcher will be at the school on [TIMELINE] or can be emailed on [mmacdon2@our.ecu.edu](mailto:mmacdon2@our.ecu.edu)

# Cover letter to Principal

Ms Maryanne Macdonald

*PhD Candidate*

*Faculty of Education*

*Edith Cowan University*

*270 Joondalup Drive*

*JOONDALUP*

*WA 6027*

Dear *[Insert Title and Surname of Site Manager]*

## **Do students in the Northwest think attending school will help their future?**

My name is Mary-anne Macdonald and I am conducting a research project that aims to identify whether schools in the Pilbara and Kimberley can improve attendance and Year 12 retention by improving students' understanding of the link between education and future possibilities. The project is being conducted as part of Doctor of Philosophy in Education at Edith Cowan University.

I would like to invite *[insert Catholic Education site]* to take part in the project. This is because Catholic Education site has a significant population of secondary students and is located in the Pilbara or Kimberley. *[Insert Catholic Education site]* is one of thirteen schools in Western Australia approached for their participation.

## **How will this project help my school?**

This project aims to find out what schools can do so that students, particularly Aboriginal students, improve their attendance and Year 12 completion rates, and see the benefit of school for their future. As part of your school's participation, you will receive an analysis of what students at *[insert school name]* think about different aspects of school. This analysis will include recommendations about how you can most effectively improve attendance, retention, and student perceptions about how school can benefit them.

## **What does participation in the research project involve?**

I seek access to all students in Year 9 to 12 for the completion of a short online survey during school time, expected to take no more than 25 minutes. The survey can be conducted in hard copy

form if that is more convenient to the school. Note that whilst Indigenous students are the focus, non-Indigenous students will also be invited to participate in the survey in order to provide depth and breadth to the findings.

I will keep the school's involvement in the administration of the research procedures to a minimum. However, it will be necessary for the school to send home with students the information letters and consent forms for students and their parents, postage paid by the researcher. In addition, I am requesting access to the attendance data (number of days attended for the previous term), for each student consenting to participate in the survey. I would further request notification of the particular programs (e.g. Follow the Dream, Football Academy) applicable to each of the survey participants.

### **What are the benefits of this research for the school?**

There is currently a perceived disconnect between school and future employment in the eyes of many Indigenous students. This study will aim to identify the strategies most effective at increasing student attendance and retention through increasing students' perception of the usefulness of education.

By examining the impact of current interventions on students' perceptions, schools will be able to develop programs which will be more effective in improving the educational engagement of remote Indigenous students.

All schools participating in the research will receive specific feedback on the perceptions of students in their school, as well as across the Pilbara and Kimberley as a whole. Schools will be able to use this information to direct resources towards the areas most likely to positively impact on attendance and retention.

### **To what extent is participation voluntary, and what are the implications of withdrawing that participation?**

Participation in this research project is entirely voluntary.

If any student decides to participate and then later changes their mind, they are able to withdraw their participation at any time, up until 3 months after the survey is conducted.

There will be no consequences relating to any decision by an individual or the school regarding participation, other than those already described in this letter. Decisions made will not affect the relationship with the research team or Edith Cowan University.

### **What will happen to the information collected, and is privacy and confidentiality assured?**

Information that identifies anyone will be removed from the data collected as soon as the survey responses have been recorded. The data is then stored securely on a password protected file and

can only be accessed by the researcher. The data will be stored for a minimum period of 5 years, after which the hard drive storing the data will be destroyed.

The identity of participants and the school will not be disclosed at any time.

Participant privacy, and the confidentiality of information disclosed by participants, is assured at all other times. The data will be used only for this project, and will not be used in any extended or future research without first obtaining explicit written consent from participants.

Consistent with Catholic Education policy, a summary of the research findings will be made available to your school and the Catholic Education Office. You can expect this to be available by December 2015.

### **Is this research approved?**

The research has been approved by the Edith Cowan University Human Research Ethics Committee, and has met the policy requirements of the Catholic Education Office as indicated in the attached letter.

### **Does the researcher have their Working with Children Check?"**

Yes. A copy of this evidence is attached for your records.

### **Who do I contact if I wish to discuss the project further?**

If you would like to discuss any aspect of this study with the researcher, please contact me on the email provided below. If you wish to speak with an independent person about the conduct of the project, please contact Ms Kim Gifkins the Research Ethics Officer on 6304 2170.

### **How do I indicate my willingness for the *Catholic Education site* to be involved?**

If you have had all questions about the project answered to your satisfaction, and are willing for the *school* to participate, please complete the **Consent Form** on the following page.

This information letter is for you to keep.

*Maryanne Macdonald, BSc, MEd*

[mmacdon2@our.ecu.edu.au](mailto:mmacdon2@our.ecu.edu.au)

## Consent Form for Site Managers

- I have read this document and understand the aims, procedures, and risks of this project, as described within it.
- For any questions I may have had, I have taken up the invitation to ask those questions, and I am satisfied with the answers I received.
- I am willing for this *[insert name of Catholic Education site]* to become involved in the research project, as described.
- I understand that participation in the project is entirely voluntarily.
- I understand that the *[insert name of Catholic Education site]* is free to withdraw its participation at any time, without affecting the relationship with the research team or *Edith Cowan University*.
- I understand that consent to participate in the project can be withdrawn at any time, up until analysis of the data has been completed (expected to be 3 months after the survey is conducted).
- I understand that this research may be published in a journal, provided that the participants or the school are not identified in any way.
- I understand that the *[insert name of Catholic Education site]* will be provided with a copy of the findings from this research upon its completion.

Name of Site Manager (printed):

Signature:

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Date:    /    /

# Information Letter Template for Parents – Child Participation

Dear Parent/Carer

## **Do students in the Northwest think attending school will help their future?**

My name is Mary-anne Macdonald and I am conducting a research project that aims to find out whether students in [name Pilbara or Kimberley] think attending school can help them later in life. The project is being conducted as part of a Doctor of Philosophy at Edith Cowan University.

## **What will my child be asked to do?**

I would like to invite your child to take part in the project. This is because I want to find out what students who live in the Pilbara and Kimberley think about school, and about how school can affect their future. All students in Year 9 to 12 from [school name] have been invited to participate in this project. [Insert Catholic Education site] is one of thirteen schools in Western Australia that I am asking to participate.

Participation in the project will involve your child completing a short online survey at school. Your child's responses will be analysed in connection with their attendance data. I will not publish your child's name, or the school's name, and I will not tell anyone in the school what your child wrote. Your child has also been provided with a letter from us that we encourage you to discuss with him/her.

## **How will this project help my community?**

This project aims to find out what your school can do to improve attendance, and also how your school can help students to get a good job when they are older. The information your child can provide will help the school to be a more useful place for future students from your community.

All families who participate will go in to the draw to win a \$100 fuel voucher.

## **Does my child have to participate?**

Participation is voluntary. Your decision will not affect your family's relationship with your child's teacher or the school. If a decision is made to participate, you need to return the signed consent form to the school by [insert timeframe].

If you decide to participate and then change your mind, you can withdraw your participation until 3 months after the survey is conducted.

**Will my child's responses be private?**

Your child's name will be removed from the data. The data is stored securely for at least 5 years in a password-protected file and can only be accessed by the researcher. After this time the hard drive storing the data will be destroyed. The data will never be used again without first obtaining written consent from both you and your child.

It is intended that the findings of this project will be published in a professional journal. A summary of the research findings will be presented to the school in 2015 and you may request this from the Principal.

The research has been approved by the Edith Cowan University Human Research Ethics Committee, and has met the policy requirements of the Department of Education.

The researcher has completed a Confidential Declaration so that your child's information remains private. The researcher also has undergone a Working with Children Check.

If you would like to discuss this project please contact me on the email provided below. If you wish to speak with an independent person about how the project is conducted please contact Ms Kim Gifkins the Research Ethics Officer on 6304 2170.

If you and your child are both willing for him/her to be involved, please complete the **Consent Form** on the following page. All received consent forms go in to the draw for the \$100 fuel voucher.

Your child is also asked to complete the Consent Form attached to his/her letter.

This letter is for you to keep.

Thank you,

*Maryanne Macdonald, BSc, MEd*

*PhD Candidate*

*Faculty of Education*

*Edith Cowan University*  
*mmacdon2@our.ecu.edu.au*



## Consent Form for Parents

- I have read and understood the information letter about the project, or have had it explained to me in language I understand.
- I have taken up the invitation to ask any questions I may have had and am satisfied with the answers I received.
- I understand that participation in the project is entirely voluntary.
- I am willing for my child to become involved in the project, as described.
- I have discussed with my child what it means to participate in this project. He/she has agreed to participate and signed the child consent form.
- I understand that both my child and I are free to withdraw that participation at any time without affecting the family's relationship with my child's teacher or my child's school.
- I understand that consent to participate in the project can be withdrawn at any time, up until 3 months after the survey is conducted.
- I understand that this consent form will be placed in the draw to win a \$100 fuel voucher.
- I give permission for the contribution that my child makes to this research to be published in a journal, provided that my child or the school is not identified in any way.
- I understand that I can request a summary of findings after the research has been completed.

Name of Child (printed):

Name of Parent/Carer (printed):

Signature of Parent:

Date:    /    /

# Information Letter for Students

Dear Student

My name is Maryanne Macdonald and I am from Edith Cowan University. I would like to invite you to take part in a research project that I am doing. It is about whether students think attending school can help them later in life.

I am asking for your help with the project because I would like to know what you think about school and your future. I will be asking students in thirteen schools in the Pilbara and Kimberley to be involved.

## **What would I be asked to do?**

If you agree to take part, you will be asked to answer questions in an online survey. You will do this at school and it will take you about 20 minutes. All students who participate will be placed in the draw for a voucher to (local music store or movie cinema to value of \$20) as a thank you for your help.

I will also look at your attendance data so I can see whether what students think about school affects how often they go to school. I will not tell anyone what you said, and I will not write your name in any of my research.

## **How will this project help my community?**

This project aims to find out what your school can do to improve school attendance, and also how your school can help students to get a good job when they are older. The information you provide will help the school to be a more useful place for future students from your community.

## **Do I have to take part?**

You are free to say yes or no. I will respect your decision whichever choice you make, and I will not question it. Participating in this research will not affect your grades, or your relationship with your teachers or your school.

## **What if I change my mind?**

If you say yes, but then want to stop participating, that's OK. Just let your teacher or me know and you can withdraw any time, until three months after you complete the survey

## **What will happen to the information I give - is it private and confidential?**

Your name will be removed from the data collected. The data is stored securely at the University for at least 5 years, and can only be accessed by the researcher. Records are destroyed

immediately after this period. The information you provide for this project will be used only for this project, and will not be used in any future research without first asking you and your parents/carers if I can use it again.

After I have collected all the information for the project and analysed all of it, I intend to write about what students think, and how this affects their decision to go to school. I will publish this information so that schools can improve the ways in which they help students to get good jobs when they leave school. When I do this, I won't write or tell anyone your name, or the names of any other students or your school.

A summary of the project will be made available to your school when it is completed. You can ask the Principal for a copy of the work I published.

### **Is this research approved?**

The research has been approved by Edith Cowan University and also the Catholic Education Office.

### **Who do I contact if I wish to talk about the project further?**

Please talk about the project with your parents first. Then, if you would like to talk with me more, please contact me on the email provided below. If, at any time, you wish to speak with a person who is not involved in the project about how something was handled, please contact Ms Kim Gifkins the Research Ethics Officer on 6304 2170.

### **OK – so how do I become involved?**

You have already discussed the project and what it means to take part with at least one of your parents. Now you can say for yourself.

If you **do** want to be a part of the project, then please read the next page and write your name in the space provided. Remember that you can change your mind. If you do decide to help me with this project, you will go in the draw to receive a [voucher name].

This letter is for you to keep.

*Maryanne Macdonald, BSc, MEd*

*PhD Candidate*

*Faculty of Education*

*Edith Cowan University*

*mmacdon2@our.ecu.edu.au*

## Consent Form for Students

- I know that I don't have to be involved in this project, but I would like to be.
- I know that I will be doing a survey that will take about 25 minutes, and that the researcher will also collect data about my attendance from the school.
- I understand I am free to stop and withdraw from the project at any time.
- I understand I can change my mind about being in the project for up to 3 months after I do the survey.
- I understand that participating in this project will not affect my grades, my relationship with my teacher(s) or with my school.
- I understand that if I am part of this project, my name will go in to the draw for a [\$20 voucher name]
- I understand that I need to sign my name in the space below, before I can be a part of the project.

Name of Participant (printed):

Signature of Participant:

\_\_\_\_\_  
\_\_\_\_\_

Date:    /    /

# Appendix D – Interview Schedule for Pilot and Second Phase

## Student Interview Schedule

Edith Cowan University



How do student perceptions of education affect their attendance and aspirations?

PhD project by Maryanne Macdonald

**NB: A maximum of five students to be interviewed per school. Each interview is not to exceed 15 minutes in length.**

**This is a list of possible questions. Only a selection of interview questions will be asked in each interview.**

### Section A Questions – Verify Survey

[Interviewer says “First I would like to ask some questions that will help me understand what you were thinking about as you answered the survey.”]

- Consider the ‘family’ questions. Who did you think of as family? Were you thinking of particular people or experiences?
- Consider the ‘friend’ questions. How did you decide what your friends thought about school? Were you thinking of particular people or experiences?
- Consider the question about the highest level of education obtained by a family member. Are they a sibling, parent, grandparent, etc?
- What level of education do most other people in your family have?
- Consider the ‘teacher’ questions. How did you decide what your teachers think? Were you thinking of particular people or experiences?



## Section B Questions – Elaboration of ideas

[Interviewer states “Now I am going to ask you some questions similar to those in the survey. You can explain your thoughts in your own words.]

- What makes a good school?
- What difference do you feel that attending school can make to your future? Why do you feel this way?
- Do you feel that attending school every day is necessary to achieve Year 12 graduation?
- Can you tell me about any experiences you have had at school, which have changed whether you think you will be able to succeed?
- Can you tell me about any experiences you have had at school, which have been important for the decisions you make about your future?
- What would you like to do after you leave Year 12? Where did you hear about that (job/training) option? Did you ever have other plans?
- Do you know how to apply for a job? Where did you learn this information? What types of career advice have you received from staff?
- Can you tell me about what you plan on doing after you have left school? Where did you hear about these options?
- [For students involved in a specified Engagement program] Where do you think you would be right now if you had not become involved with [Engagement program]
- What are the most common reasons you have to stay home from school? If you miss school, is it usually your choice, or is this decision made by someone/something else?
- [For Indigenous students only] Do you think school is a place that respects Indigenous culture? Can you give some examples to explain your thoughts?
- In your family, how important is it to finish Year 12? Why is that?
- Do you think you will be able to finish Year 12/complete TAFE or uni/get a good job? Why do you feel this way?
- What do you see as the most important reasons for attending school?
- [For boarding students only] What difference has it made for you, to live in the boarding house?
- What is the most important thing to get out of a job?
- Does school give you the skills you need for later work or study? Can you tell me why you feel that way?
- [for kids boarding/on scholarship] How did you end up at this school?
- Where would you be if you hadn't joined this school/program?





## Staff Interview Schedule

How do student perceptions of education affect their attendance and aspirations?

PhD project by Maryanne Macdonald

**This is a list of possible questions. Not all interview questions will be asked in each interview.**

### Section A Questions – Key ideas

- 1) What are the key needs of Indigenous and non-Indigenous students in your school?
- 2) What programs and strategies do you have in place to address attendance, retention and school engagement, for students in your school?
- 3) What post-secondary choices are typically made by students from your school?
- 4) Where [geographically and language group] are your Indigenous students from?
- 5) How well do teachers in your school understand Indigenous culture and students?
- 6) What are the greatest obstacles facing education engagement for Indigenous and non-Indigenous students in your school?

### Section B Questions – Elaboration of ideas

- What makes a good school?
- What difference do you feel that your school can make to your students' future? Why do you feel this way?
- Do you feel that attending school every day is necessary to achieve Year 12 graduation?
- Can you tell me about any experiences your school provides, which aim to improve students' aspirations?
- What would most of your students aim to do after they (if they) leave Year 12?
- Do your students know how to apply for a job? Where do they learn this information? What types of career advice does your school provide?
- How much contact do you have with students' families?
- What are the biggest issues facing your students in their home lives? At school?
- What types of support is your school able to offer to students?
- Do you think this school is a place that respects Indigenous culture? Can you give some examples to explain your thoughts?
- What do you see as the most important reasons for your students to attend school?
- What provisions is your school able to provide in terms of homework assistance?
- What are the routines and provisions of your boarding house?
- What is the most important thing to get out of a job?
- Do teachers at this school understand the needs of Indigenous students?

## Appendix E - Missing Value Analysis and Univariate Statistics for the Pilot Phase

### Indigenous Respondents ( $n = 80$ )

	N	Mean	Std. Deviation	Missing		No. of Extremes <sup>a</sup>	
				Count	Percent	Low	High
PREVASP	79	2.34	.904	1	1.3	0	0
Q82FamSuppAtt	79	4.63	.603	1	1.3	0	0
Q84FamSuppYr12	79	4.62	.606	1	1.3	1	0
Q85FamSuppJob	79	4.68	.544	1	1.3	0	0
Q86FriendSuppAtt	79	3.77	.891	1	1.3	1	0
Q88FriendSuppYr12	78	3.78	.907	2	2.5	0	0
Q89FriendSuppJob	77	3.90	.852	3	3.8	0	0
Q95FamHighEd	76	3.38	.966	4	5.0	4	0
HomStEnv1	79	4.11	.987	1	1.3	0	0
HomStEnv2	79	4.14	.858	1	1.3	3	0
HomStEnv3	78	4.50	.752	2	2.5	1	0
PROGIMPCAR	73	2.27	1.336	7	8.8	0	0
Q55CommAtt	79	1.75	2.244	1	1.3	0	0
Q56CommBehav	79	2.44	2.263	1	1.3	0	0
Q130HworkClub	77	2.60	1.648	3	3.8	0	0
Q1JobReloc	77	3.03	1.076	3	3.8	0	0
Q8SchlIncJbOptns	77	4.55	.717	3	3.8	0	0
JOBPREP	44	1.30	1.173	36	45.0	0	0
TRANEMP1	77	1.83	1.342	3	3.8	0	0
Q14AbStaffExpct	77	4.34	1.465	3	3.8	7	0
Q15AbStaffJbModel	77	3.25	1.425	3	3.8	11	0
Q103LikeSchool	78	3.26	1.012	2	2.5	5	0

Q105DomestDuty	77	2.10	1.059	3	3.8	0	0
Q110Yr12Intent	78	4.69	.565	2	2.5	0	0
Q111IncomeValue	78	4.36	1.269	2	2.5	5	0
Q112RespectValue	78	4.19	1.359	2	2.5	6	0
Q116IncomeEdRlt n	78	3.64	1.329	2	2.5	7	0
Q64SchPrpJob	78	3.46	.907	2	2.5	1	0
Q66SchLrnLocJob	78	2.76	.956	2	2.5	0	0
Q69SchLocWkExp	45	3.60	1.268	35	43.8	2	0
Q17TchPosCom	78	2.95	1.705	2	2.5	18	0
Q19SchFeelGd	78	3.08	1.297	2	2.5	13	0
Q22TchPosRltn	78	2.94	1.166	2	2.5	0	0
Q26SchIndPosClt	78	4.95	10.610	2	2.5	0	1
Q27TchRspClt	78	4.45	10.775	2	2.5	16	1
Q28TchUndAbStd	78	3.92	10.809	2	2.5	0	1
PROGPOSCULT	74	1.80	1.182	6	7.5	0	0
Q33AcadSlfBlfSch	78	3.72	.820	2	2.5	1	0
Q35AcadSlfBlfFthr	78	3.91	.776	2	2.5	0	0
Q39UndWrkEff	78	4.32	.693	2	2.5	1	0
Q43JobBlf	78	3.95	.643	2	2.5	.	.
Q44PplSame	77	3.79	.937	3	3.8	1	4
Q45Efficacy	77	4.57	.594	3	3.8	0	0
Q50TchTrtIndigSm e	77	2.74	2.111	3	3.8	0	0
Q53TchAcadExp	77	2.38	1.590	3	3.8	0	0
Q54TchTrblEffrt	76	2.79	1.062	4	5.0	0	0
Q97IndigStatus	79			1	1.3		
Q98Gender	79			1	1.3		
Q100Yeargrp	79			1	1.3		
Q122ProgParticip	79			1	1.3		
Q58CommOther	79			1	1.3		
Q117StaffAdmire	78			2	2.5		
Q119StaffAtt	45			35	43.8		

Q134MotAtt	76			4	5.0		
Q106FutAspCurrent	78			2	2.5		
Q29IndigStatFit	76			4	5.0		
Q40EffSmrt	78			2	2.5		
Q40EffEasy	78			2	2.5		
Q40EffWrk	78			2	2.5		
Q40EffLck	78			2	2.5		
Q40EffSame	78			2	2.5		
Q40EffLrn	78			2	2.5		

- a. Little's MCAR test: Chi-Square = 640.389, DF = 617, Sig. = .249
- b. The EM algorithm failed to converge in 25 iterations.

## University respondents (*n* = 144)

	N	Mean	Std. Deviation	Missing		No. of Extremes <sup>a</sup>	
				Count	Percent	Low	High
PREVASP	144	2.53	.852	1	.7	4	0
Q82FamSuppAtt	144	4.51	.811	1	.7	8	0
Q84FamSuppYr12	144	4.19	1.077	1	.7	14	0
Q85FamSuppJob	144	4.60	.742	1	.7	4	0
Q86FriendSuppAtt	144	3.71	.860	1	.7	2	0
Q88FriendSuppYr12	143	3.67	.886	2	1.4	2	0
Q89FriendSuppJob	144	4.33	.708	1	.7	2	0
Q95FamHighEd	144	3.38	.996	1	.7	11	0
HOMSTENV1	144	3.80	.958	1	.7	3	0
HOMSTENV2	144	3.08	1.156	1	.7	0	0
HOMSTENV3	142	4.26	1.177	3	2.1	16	0
Q55CommAtt	144	3.97	1.358	1	.7	0	0
Q56CommBehav	144	3.51	1.240	1	.7	0	0
Q58aUniComm	139	2.50	1.003	6	4.1	0	7
Q130HworkClub	142	1.43	.918	3	2.1	.	.
Q1JobReloc	144	2.32	1.210	1	.7	0	0
Q8SchlIncJbOptns	144	3.99	.784	1	.7	0	0
JOBPREP	144	1.24	1.202	1	.7	0	0
TRANEMP1	127	2.43	1.124	18	12.4	0	0
Q103LikeSchool	144	3.37	.906	1	.7	7	0
Q105DomestDuty	144	11.60	.768	1	.7	0	3
Q111IncomeValue	144	4.18	.781	1	.7	1	0
Q112RespectValue	144	3.82	.906	1	.7	2	0
Q116IncomeEdRlt n	144	3.61	.670	1	.7	1	0
Q64SchPrpJob	144	2.49	1.038	1	.7	0	3
Q66SchLrnLocJob	144	1.95	.919	1	.7	0	0

Q69SchLocWkExp	138	3.22	1.220	7	4.8	22	0
Q17TchPosCom	143	3.78	.865	2	1.4	1	0
Q19SchFeelGd	143	3.11	1.022	2	1.4	14	0
Q22TchPosRltn	143	2.57	1.154	2	1.4	0	8
Q33AcadSlfBlfSch	144	4.05	.934	1	.7	0	0
Q39UndWrkEff	143	4.51	.740	2	1.4	6	0
Q43JobBlf	144	3.78	.761	1	.7	2	0
Q44PplSame	144	3.48	.793	1	.7	2	0
Q45Efficacy	144	4.60	.606	1	.7	0	0
Q50TchTrtIndigSme	140	3.33	1.049	5	3.4	4	0
Q53TchAcadExp	144	2.88	1.061	1	.7	0	0
Q54TchTrblEffrt	144	2.90	1.036	1	.7	0	9
EDUCHOME	144	2.04	1.134	1	.7	0	0
Q57AdKnHap	144	3.75	1.087	1	.7	0	0
Q5JobReq	144	3.89	.730	1	.7	.	.
Q10SchIncEarn	144	3.76	.692	1	.7	0	0
Q105WantGdJb	144	4.77	.576	1	.7	.	.
Q97IndigStatus	141			4	2.8		
Q98Gender	144			1	.7		
Q117StaffAdmire	142			3	2.1		
Q119StaffAtt	113			32	22.1		
Q134MotAtt	144			1	.7		
Q106FutAspCurrent	143			2	1.4		
Q29IndigStatFit	144			1	.7		
Q40EffSmrt	144			1	.7		
Q40EffEasy	144			1	.7		
Q40EffWrk	144			1	.7		
Q40EffLck	144			1	.7		
Q40EffSame	144			1	.7		
Q40EffLrn	144			1	.7		

- a. Little's MCAR test: Chi-Square = 500.669, DF = 495, Sig. = .420
- b. The EM algorithm failed to converge in 25 iterations.



## Appendix F - Second Phase Survey

*NB: Each horizontal line represents a page break on the online version of the survey.  
Questions marked with an asterisk (\*) relied on skip logic, that is, they were only presented if a student's prior response indicated the question was relevant.*

This study will look at how schools can improve attendance, Year 12 completion and student knowledge about career options after Year 12. You will be asked questions about school, work, and home.

Try to answer each question honestly. When you finish, your name will go in the draw for a prize voucher.

If you agree to participate, please select **Yes**.

- 1      ☐      Yes
  - 2      ☐      No
- 

This first question is about what you thought about your future when you were younger.  
Tick all that are true. When I was in Year 8, I planned to:

- ☐      Finish Year 12
  - ☐      Get a job straight after high school
  - ☐      Go to a university or TAFE after high school
  - ☐      None of these are true
- 

These next questions are about your family and friends. 'Family' means all the people who are related to you, even if they do not live with you.

My family think it is important that I attend school every day.

- 3      ☐      None of my family
- 4      ☐      A few of my family
- 5      ☐      Some of my family
- 6      ☐      Most of my family
- 7      ☐      All of my family

My family think it is important that I finish Year 12.

- 8      ☐      None of my family
- 9      ☐      A few of my family

- 10            ☐      Some of my family
- 11            ☐      Most of my family
- 12            ☐      All of my family

My family think it is important for me to get a good job when I am older.

- 13            ☐      None of my family
- 14            ☐      A few of my family
- 15            ☐      Some of my family
- 16            ☐      Most of my family
- 17            ☐      All of my family

My friends think it is important to attend school every day.

- 18            ☐      None of my friends
- 19            ☐      A few of my friends
- 20            ☐      Some of my friends
- 21            ☐      Most of my friends
- 22            ☐      All of my friends

My friends think it is important to finish Year 12.

- 23            ☐      None of my friends
- 24            ☐      A few of my friends
- 25            ☐      Some of my friends
- 26            ☐      Most of my friends
- 27            ☐      All of my friends

My friends want to get good jobs when they are older.

- 28            ☐      None of my friends
- 29            ☐      A few of my friends
- 30            ☐      Some of my friends
- 31            ☐      Most of my friends
- 32            ☐      All of my friends

In my family, the **highest** level of education someone has is:

- ☐      Left school before finishing Year 12
- ☐      Year 12
- ☐      TAFE
- ☐      University
- ☐      Other

---

I live in the boarding house:

- ☐      Yes

•      ☐      No

---

\*In the boarding house/At home I have somewhere quiet to do my homework.

- |    |                       |                  |
|----|-----------------------|------------------|
| 33 | <input type="radio"/> | Never            |
| 34 | <input type="radio"/> | Rarely           |
| 35 | <input type="radio"/> | Sometimes        |
| 36 | <input type="radio"/> | Most of the time |
| 37 | <input type="radio"/> | Always           |

\*In the boarding house/ At home there is someone who can help me with my homework.

- |    |                       |                  |
|----|-----------------------|------------------|
| 38 | <input type="radio"/> | Never            |
| 39 | <input type="radio"/> | Rarely           |
| 40 | <input type="radio"/> | Sometimes        |
| 41 | <input type="radio"/> | Most of the time |
| 42 | <input type="radio"/> | Always           |
| 43 |                       |                  |

\*In the boarding house/ At home, I have a computer with Internet to use for my homework.

- |    |                       |                  |
|----|-----------------------|------------------|
| 44 | <input type="radio"/> | Never            |
| 45 | <input type="radio"/> | Rarely           |
| 46 | <input type="radio"/> | Sometimes        |
| 47 | <input type="radio"/> | Most of the time |
| 48 | <input type="radio"/> | Always           |
-



Look at the map above. Which region are you from?

- 49            ☐      Kimberley
- 50            ☐      Pilbara
- 51            ☐      Goldfields
- 52            ☐      Midwest
- 53            ☐      Wheatbelt
- 54            ☐      Great Southern
- 55            ☐      South West
- 56            ☐      Perth
- 57            ☐      I am not from WA

I am:

- ☐      Aboriginal or Torres Strait Islander
- ☐      neither Aboriginal nor Torres Strait Islander

I am:

- ☐      Male
- ☐      Female

I am in:

- 58            ☐      Year 8
- 59            ☐      Year 9
- 60            ☐      Year 10
- 61            ☐      Year 11
- 62            ☐      Year 12

I am part of [program name].

- ☐      Yes                      ☐      No

\*Tick all answers that are true.    Because of [program name]:

- 63            ☐      I have a better chance of completing Year 12
- 64            ☐      I have bigger plans for my life
- 65            ☐      I know more about career options available to me
- 66            ☐      I have a better chance of getting a good job
- ☐      None of these are true.

For these questions, you can think about all the people who look after you as family. This could be parents, grandparents, or others.

The school contacts my family when I am absent.

- 67            ☐      Never
- 68            ☐      Rarely
- 69            ☐      Sometimes
- 70            ☐      Most of the time
- 71            ☐      Always

If I act up, the school will contact my family to talk about my behaviour.

- 72            ☐      Never
- 73            ☐      Rarely
- 74            ☐      Sometimes
- 75            ☐      Most of the time
- 76            ☐      Always

My family know what's happening with me at school.

- 77            ☐      Never
- 78            ☐      Rarely
- 79            ☐      Sometimes
- 80            ☐      Most of the time

81                    ☐       Always

How often do your family talk to the staff at school about you?

- ☐       Never
  - ☐       Less than once a term
  - ☐       1 - 2 times a term
  - ☐       Once every few weeks
  - ☐       At least once a week
- 

My school provides a place where I can get help with my homework.

- 82                    ☐       Yes
- 83                    ☐       No
- ☐       Don't know
- 

\*How often do you use the homework club at school?

- ☐       Never
- ☐       Less than once a term
- ☐       1 - 2 times a term
- ☐       Once every few weeks
- ☐       At least once a week

\*When I go to the homework club, it is very useful for me.

- 84                    ☐       Never
- 85                    ☐       Rarely
- 86                    ☐       Sometimes
- 87                    ☐       Most of the time
- 88                    ☐       Always
- 

Can you think of any staff member at school who you really look up to?

- 89                    ☐       Yes                                    ☐       No
- 

\*This question is about the staff member you really look up to.

\*Do you ever come to school just to keep the respect of that person?

- 90            ☐        Yes  
91            ☐        No
- 

92

These questions are about getting a job. Select the answer which is most true.

Completing Year 12 helps you have more job options.

- 93            ☐        Never  
94            ☐        Rarely  
95            ☐        Sometimes  
96            ☐        Most of the time  
97            ☐        Always

At school we learn about many different types of jobs.

- 98            ☐        Never  
99            ☐        Rarely  
100           ☐        Sometimes  
101           ☐        Most of the time  
102           ☐        Always

If I do more study after I leave school, I will have better job options.

- ☐        Definitely not
- ☐        Probably not
- ☐        Don't know
- ☐        Probably yes
- ☐        Definitely yes

\*Tick all the statements that are true.

\*At school I have learnt how to:

- ☐        Do a job interview
- ☐        Write a resume or CV
- ☐        Apply for a job or apprenticeship
- ☐        None of these

\*Tick all the statements that are true.

\*Because of school:

- ☐        I know how to get in to a university course
- ☐        I know how to get in to a TAFE course
- ☐        I know how to get the job I want to have

- ☐ I have learnt about different jobs that I could do
- ☐ None of these are true

---

Think about why you go to school each day. Tick the statement that is MOST important for why you come to school.

- 103 ☐ Because I have to.
- 104 ☐ Because I learn new things.
- 105 ☐ Because it will help me to get a good job.
- ☐ Because everyone my age goes to school.

\*The Aboriginal staff at my school think it is important for me to do well.

- 106 ☐ Never
- 107 ☐ Rarely
- 108 ☐ Sometimes
- 109 ☐ Most of the time
- 110 ☐ Always

\*Through school, I meet Aboriginal or Torres Strait Islander adults who have really interesting jobs.

- 111 ☐ Never
- 112 ☐ Rarely
- 113 ☐ Sometimes
- 114 ☐ Most of the time
- 115 ☐ Always

---

These questions are about your reasons for going to school.

People who stay at school can get a higher paying job.

- ☐ Definitely not
- ☐ Probably not
- ☐ Don't know
- ☐ Probably yes
- ☐ Definitely yes

At school I learn things that I will need in life.



- ☐ Definitely not
- ☐ Probably not
- ☐ Don't know
- ☐ Probably yes
- ☐ Definitely yes

Through school, I meet people who help me to make good choices in my life.

- 116 ☐ Never
- 117 ☐ Rarely
- 118 ☐ Sometimes
- 119 ☐ Most of the time
- 120 ☐ Always

I like school.

- 121 ☐ Never
- 122 ☐ Rarely
- 123 ☐ Sometimes
- 124 ☐ Most of the time
- 125 ☐ Always

At school, I have met adults who I want to be like.

- ☐ Definitely not
- ☐ Probably not
- ☐ Don't know
- ☐ Probably yes
- ☐ Definitely yes

Do you ever have to stay home from school to help out your family?

- 126 ☐ Never
  - 127 ☐ Rarely
  - 128 ☐ Sometimes
  - 129 ☐ Most of the time
  - 130 ☐ Always
- 

\*When you stay home from school to help your family, what sorts of things do you have

to do?

--

Tick the best answer. After I finish high school, I plan to:

- 131            ☐       Find a job  
132            ☐       Study at TAFE or University  
133            ☐       Do an apprenticeship, internship or traineeship  
134            ☐       Don't know  
              ☐       Other
- 

These questions are about work.

It is important to earn a good income.

- 135            ☐       Never  
136            ☐       Rarely  
137            ☐       Sometimes  
138            ☐       Most of the time  
139            ☐       Always  
140

It is important to have a respected job.

- 141            ☐       Never  
142            ☐       Rarely  
143            ☐       Sometimes  
144            ☐       Most of the time  
145            ☐       Always

Will you stay at school until you finish Year 12?

- ☐       Definitely not
- ☐       Probably not
- ☐       Don't know
- ☐       Probably yes
- ☐       Definitely yes

Is it important to finish Year 12?

- ☐       Definitely not
- ☐       Probably not
- ☐       Don't know
- ☐       Probably yes

- ☐ Definitely yes
- 

\*Why do you think it is important to finish Year 12?

Is it important to attend school every day?

- ☐ Definitely not
  - ☐ Probably not
  - ☐ Don't know
  - ☐ Probably yes
  - ☐ Definitely yes
- 

\*Why do you think it is important to attend school every day?

---

People who complete Year 12 can get better paying jobs.

- 146 ☐ Never
  - 147 ☐ Rarely
  - 148 ☐ Sometimes
  - 149 ☐ Most of the time
  - 150 ☐ Always
  - ☐ Don't know
- 

These questions are about everything you learn at school.

Does school prepare you for getting a job?

- 151 ☐ Never
- 152 ☐ Rarely
- 153 ☐ Sometimes
- 154 ☐ Most of the time
- 155 ☐ Always

At school, do you learn about jobs you can get with companies in this town?

- 156            ☐        Never
- 157            ☐        Rarely
- 158            ☐        Sometimes
- 159            ☐        Most of the time
- 160            ☐        Always

\*School gives us work experience with local employers.

- 161            ☐        Never
  - 162            ☐        Rarely
  - 163            ☐        Sometimes
  - 164            ☐        Most of the time
  - 165            ☐        Always
- 

These questions are about school.

School makes me feel good about myself.

- 166            ☐        Never
- 167            ☐        Rarely
- 168            ☐        Sometimes
- 169            ☐        Most of the time
- 170            ☐        Always

I feel like I fit in at school.

- 171            ☐        Never
  - 172            ☐        Rarely
  - 173            ☐        Sometimes
  - 174            ☐        Most of the time
  - 175            ☐        Always
- 

\*At school, we do things that make me proud of Aboriginal culture.

- 176            ☐        Never
- 177            ☐        Rarely

- |     |                       |                  |
|-----|-----------------------|------------------|
| 178 | <input type="radio"/> | Sometimes        |
| 179 | <input type="radio"/> | Most of the time |
| 180 | <input type="radio"/> | Always           |

\*My teachers understand Aboriginal students.

- |     |                       |                  |
|-----|-----------------------|------------------|
| 181 | <input type="radio"/> | Never            |
| 182 | <input type="radio"/> | Rarely           |
| 183 | <input type="radio"/> | Sometimes        |
| 184 | <input type="radio"/> | Most of the time |
| 185 | <input type="radio"/> | Always           |

If you want to fit in at school, it is best to be:

- |     |                       |                                      |
|-----|-----------------------|--------------------------------------|
| 186 | <input type="radio"/> | Aboriginal or Torres Strait Islander |
| 187 | <input type="radio"/> | Non-Indigenous                       |
| 188 | <input type="radio"/> | Doesn't matter                       |

My teachers push me to do well in school.

- |     |                       |                  |
|-----|-----------------------|------------------|
| 189 | <input type="radio"/> | Never            |
| 190 | <input type="radio"/> | Rarely           |
| 191 | <input type="radio"/> | Sometimes        |
| 192 | <input type="radio"/> | Most of the time |
| 193 | <input type="radio"/> | Always           |

Tick all the statements that are true about how [program name] makes you feel.

Because of [program name]:

- ☐ ☐ I feel happier about school
- ☐ ☐ I feel like I fit in at school
- ☐ ☐ I want to come to school every day
- ☐ ☐ None of these are true.

---

These questions are about how you feel.

I am smart enough to do well at school.

- ☐ ☐ Definitely not
- ☐ ☐ Probably not
- ☐ ☐ Don't know
- ☐ ☐ Probably yes
- ☐ ☐ Definitely yes

My teachers expect me to get good marks.

- 194            ☐        Never
- 195            ☐        Rarely
- 196            ☐        Sometimes
- 197            ☐        Most of the time
- 198            ☐        Always

I am smart enough to keep studying beyond Year 12, if I want to.

- ☐        Definitely not
  - ☐        Probably not
  - ☐        Don't know
  - ☐        Probably yes
  - ☐        Definitely yes
- 

I will have a good job when I am older.

- ☐        Definitely not
- ☐        Probably not
- ☐        Don't know
- ☐        Probably yes
- ☐        Definitely yes

It is important to have a job that makes me feel good about myself.

- ☐        Definitely not
- ☐        Probably not
- ☐        Don't know
- ☐        Probably yes
- ☐        Definitely yes

I want to have a job that I really enjoy, even if I don't make much money.

- ☐        Definitely not
  - ☐        Probably not
  - ☐        Don't know
  - ☐        Probably yes
  - ☐        Definitely yes
- 

When I see other people do well, I think I can do the same.

- 199            ☐        Never  
200            ☐        Rarely  
201            ☐        Sometimes  
202            ☐        Most of the time  
203            ☐        Always

If I work hard, I can make my goals come true.

- ☐        Definitely not
- ☐        Probably not
- ☐        Don't know
- ☐        Probably yes
- ☐        Definitely yes

I can change my future with the choices I make.

- ☐        Definitely not
- ☐        Probably not
- ☐        Don't know
- ☐        Probably yes
- ☐        Definitely yes

---

When I have problems, I can find a way to fix them.

- 204            ☐        Never  
205            ☐        Rarely  
206            ☐        Sometimes  
207            ☐        Most of the time  
208            ☐        Always

Teachers talk to me about things I should study after I finish Year 12.

- 209            ☐        Never  
210            ☐        Rarely  
211            ☐        Sometimes  
212            ☐        Most of the time  
213            ☐        Always

Is there any other comment you would like to add?

---



## Appendix G – Missing Value Percentages by variable for Second Phase.

### Univariate Statistics

	N	Mean	Std. Deviation	Missing		No. of Extremes <sup>a</sup>	
				Count	Percent	Low	High
SchoolName	449	10.77	3.827	0	.0	0	0
FinishedSurvey	449	1.00	.000	0	.0	.	.
Q101Consent	444	4.98	19.348	5	1.1	.	.
Q71PrvAspYr12	421	1.33	.472	28	6.2	0	0
Q71PrvAspJb	421	1.70	.460	28	6.2	0	0
Q71PrvAspStudy	421	1.50	.501	28	6.2	0	0
Q71PrvAspNone	421	1.95	.218	28	6.2	.	.
PREVASP	418	2.15	.956	31	6.9	0	0
Q82FamSupAtt	448	4.63	.660	1	.2	8	0
Q84FamSupYr12	437	4.37	.926	12	2.7	23	0
Q85FamSupJob	444	4.65	.628	5	1.1	6	0
Q86FriendSupAtt	430	3.63	.963	19	4.2	13	0
Q88FriendSupYr12	418	3.65	1.040	31	6.9	14	0
Q89FriendSupJob	426	4.09	.890	23	5.1	26	0
Q95FamHighEd	412	3.16	1.127	37	8.2	0	0
Q125Boarding	414	1.66	.474	35	7.8	0	0
Q92HomeQtHwork	272	3.74	1.000	177	39.4	9	0
Q127BoardQtHwork	136	3.09	1.226	313	69.7	0	0
HOMSTENV1	408	3.51	1.128	41	9.1	30	0
Q93HomeHpHwork	280	3.48	1.158	169	37.6	14	0
Q128BoardHpHwork	137	3.19	1.315	312	69.5	0	0
HOMSTENV2	417	3.38	1.217	32	7.1	33	0
Q94HomeIntHwork	279	4.21	1.233	170	37.9	35	0
Q129BoardIntHwork	135	2.71	1.564	314	69.9	0	0
HOMSTENV3	414	3.72	1.521	35	7.8	0	0
GEOGHOME	417	3.71	2.378	32	7.1	0	0

Q97IndigStatus	431	1.60	.491	18	4.0	0	0
Q98Gender	436	1.57	.495	13	2.9	0	0
Q100Yeargrp	423	3.07	1.167	26	5.8	0	0
Q122ProgParticip	382	1.01	.102	67	14.9	.	.
Q79PrgBettYr12	449	1.38	.486	0	.0	0	0
Q79PrgBigPlan	449	1.50	.501	0	.0	0	0
Q79PrgCarKnow	449	1.50	.501	0	.0	0	0
Q79PrgGdJb	449	1.45	.498	0	.0	0	0
Q79PrgNone	449	1.92	.279	0	.0	.	.
PROGIMPCAR	438	2.18	1.362	11	2.4	0	0
Q55CommAtt	433	4.04	1.228	16	3.6	0	0
Q56CommBehav	432	3.69	1.285	17	3.8	0	0
Q79CommQual	433	3.74	1.016	16	3.6	9	0
Q58aUniComm	445	2.80	1.099	4	.9	0	38
Q68HworkClubExist	399	1.39	.749	50	11.1	.	.
Q130HworkClub	305	2.91	1.730	144	32.1	0	0
Q69HworkClubUseful	280	3.07	1.387	169	37.6	0	0
Q117StaffAdmire	427	1.29	.454	22	4.9	0	0
Q119StaffAtt	296	1.44	.497	153	34.1	0	0
Q8Yr12JbOptns	423	4.31	.695	26	5.8	6	0
Q70SchLrnJbs	446	3.50	1.053	3	.7	15	0
Q84StdYJbOptns	447	4.06	.797	2	.4	15	0
Q131SchLrnInt	276	1.59	.493	173	38.5	0	0
Q131SchLrnCV	276	1.41	.493	173	38.5	0	0
Q131SchLrnJbApp	276	1.55	.498	173	38.5	0	0
Q131SchLrnNone	276	1.75	.436	173	38.5	0	0
JOBPREP	276	1.43	1.118	173	38.5	0	0
Q132SchLrnUniEnt	395	1.58	.495	54	12.0	0	0
Q132SchLrnTAFEEnt	395	1.59	.492	54	12.0	0	0
Q132SchLrnJbreq	395	1.52	.500	54	12.0	0	0
Q132SchLrnJbOptns	395	1.39	.488	54	12.0	0	0
Q132SchLrnJbNone	395	1.83	.376	54	12.0	.	.

TRANEMP1	390	1.90	1.368	59	13.1	0	0
Q134MotAtt	440	2.47	.842	9	2.0	0	0
Q14AbStaffExpct	164	3.96	1.755	285	63.5	29	0
Q15AbStaffjbModel	163	3.11	1.139	286	63.7	0	0
Q71SchIncPay	429	3.72	.947	20	4.5	16	0
Q72SchLrnNeed	428	4.05	.956	21	4.7	42	0
Q73StaffGdChcs	428	3.82	.927	21	4.7	7	0
Q103LikeSchool	449	3.43	.989	0	.0	21	0
Q74AdltsBeLike	439	3.30	1.182	10	2.2	43	0
Q105DomestDuty	446	2.16	1.030	3	.7	0	0
Q106FutAspCurrent	447	2.33	1.050	2	.4	0	15
Q110Yr12Intent	419	4.45	.833	30	6.7	15	0
Q111IncomeValue	424	4.42	.755	25	5.6	6	0
Q112RespectValue	427	4.30	.889	22	4.9	17	0
Q116IncomeEdRltn	414	3.50	1.439	35	7.8	48	0
Q76ImpFinYr12	414	4.45	.844	35	7.8	20	0
Q75ImpAttSch	428	4.47	.699	21	4.7	11	0
Q64SchPrpJob	446	3.63	1.111	3	.7	0	0
Q66SchLrnJobTwn	437	2.95	1.143	12	2.7	0	0
Q69SchLocWkExp	278	3.78	1.208	171	38.1	0	0
Q19SchFeelGd	443	3.29	1.060	6	1.3	29	0
Q77FitIn	431	3.68	1.082	18	4.0	20	0
Q26SchIndPosClt	163	3.90	1.040	286	63.7	0	0
Q28TchUndAbStd	173	3.67	1.147	276	61.5	0	0
Q29IndigStatFit	419	2.71	.670	30	6.7	.	.
Q78TchPrmAch	418	4.02	.892	31	6.9	0	0
Q21PrgIncHap	397	1.49	.501	52	11.6	0	0
Q21PrgIncFitIn	397	1.57	.496	52	11.6	0	0
Q21PrgIncAtt	397	1.69	.464	52	11.6	0	0
Q21PrgNone	397	1.68	.467	52	11.6	0	0
PROGPOSCULT	396	1.23	1.081	53	11.8	0	0
Q33AcadSlfBlfSch	445	3.82	.910	4	.9	12	0

Q79TchExpGdMrk	433	4.09	.835	16	3.6	17	0
Q35AcadSlfBlfFthr	404	3.82	.991	45	10.0	0	0
Q43JobBlf	431	3.96	.767	18	4.0	0	0
Q80ImpJbFlGd	427	4.46	.735	22	4.9	7	0
Q81ImpJbEnjoy	413	4.03	1.039	36	8.0	37	0
Q44PplSame	397	3.71	.938	52	11.6	6	0
Q82WrkHrdGls	406	4.31	.748	43	9.6	7	0
Q45Efficacy	425	4.44	.678	24	5.3	5	0
Q83FixPrblms	430	3.81	.802	19	4.2	1	0
Q53TchAcadExp	339	3.05	1.159	110	24.5	0	0

a. Number of cases outside the range (Q1 - 1.5\*IQR, Q3 + 1.5\*IQR).

Figure 1 – Little's MCAR test for all 109 variables, n = 449.

## EM Estimated Statistics

Q71PnvAspYr12	Q71PnvAspJb	Q71PnvAspStudy	Q71PnvAspNone	PREVASP	Q82FamSupAtt	Q84FamSuppYr12	Q85FamSuppJob	Q86FriendSupp <sup>a++</sup>
1.34	1.68	1.52	1.95	2.14	4.62	4.36	4.65	3

a. Little's MCAR test: Chi-Square = 15951.278, DF = 13398, Sig. = .000

b. The EM algorithm failed to converge in 25 iterations.

## Appendix H - Common Methods Bias Analysis for Second Phase

### Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.637	24.508	24.508	5.637	24.508	24.508
2	2.654	11.540	36.048			
3	1.960	8.520	44.568			
4	1.560	6.783	51.350			
5	1.522	6.620	57.970			
6	1.218	5.294	63.263			
7	1.052	4.573	67.837			
8	.983	4.274	72.111			
9	.870	3.780	75.891			
10	.770	3.346	79.237			
11	.667	2.899	82.136			
12	.618	2.685	84.821			
13	.568	2.468	87.290			
14	.550	2.389	89.679			
15	.466	2.026	91.705			
16	.411	1.785	93.490			
17	.329	1.430	94.920			
18	.314	1.366	96.286			
19	.249	1.081	97.367			
20	.208	.906	98.273			
21	.170	.739	99.012			
22	.133	.580	99.592			
23	.094	.408	100.000			

Extraction Method: Principal Component Analysis.



Appendix I - Exploratory Factor Analysis to inform construction of Latent Variables

Rotated Component Matrix<sup>a</sup>

	Component														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PosSchClt2 School makes me feel good about myself	.693														
PosSchClt4 I like school	.708														
PosSchClt5 I feel like I fit in at school	.559	.409													
ProgPosCult Composite of improvements the program has made to positive school culture	.577														
PrmIndClt1 At school, we do things that make me proud of Aboriginal culture									.656						
PrmIndClt3 My teachers understand Aboriginal students									.463	.309					-.372
SAcSCon1 I am smart enough to do well at school		.537													
SASCon2 I am smart enough to study beyond Year 12, if I want to.		.509		.345			.337								
SSEff2 I will have a good job when I am older		.546												.331	
SSEff3 When I see other people do well, I think I can do the same	.329	.514													
SSEff4 I can change my future with the choices I make		.677													
SSEff10 If I work hard, I can make my goals come true		.692													
SSEff11 When I have problems, I can find a way to fix them		.654													
HAcExp2 Teachers talk to me about things I should study after I finish Year 12	.307		.414												
HAcExp4 My teachers push me to do well in school	.529														
HAcExp5 My teachers expect me to get good marks								.404							
AwEmpPth2a At school, do you learn about jobs you can get with companies in this town?			.542				-.343								
AwEmpPth4 At school we learn about many different types of jobs			.327		.518										
RoIMod6 Through school, I meet people who help me to make good choices in my life	.485				.436										

RolMod7 At school, I have met adults who I want to be like	.633																		
RolMod1 The Aboriginal staff at my school think it is important for me to do well										.616									
RolMod2 Through school, I meet Aboriginal or Torres Strait Islander adults who have really interesting jobs										.652									
FamCom1 The school contacts my family when I am absent												.711							
FamCom2 If I act up, the school will contact my family to talk about my behaviour												.783							
FamCom5 How often do your family talk to the staff at school about you?																.666			
FamCom7 My family know what's happening with me at school							.326					.413							
StuHelp1 How often do you use the homework club at school?																.838			
StuHelp3 When I go to the homework club, it is very useful for me																.825			
TranEmp1 Composite of Q132 pathways				.631					.331										
TranEmp2 School gives us work experience with local employers				.668															
TranEmp3 Does school prepare you for getting a job?	.350			.517			.334												
TranEmp4 Combination of Q131 skills				.697															
FamSup1 My family think it is important that I attend school every day										.746									
FamSup2 My family think that it is important that I finish Year 12						.492				.560									
FamSup3 My family think it is important that I get a good job when I am older										.570									
PeerSup1 My friends think it is important to attend school every day									.762										
PeerSup2 My friends think it is important to finish Year 12									.746										
PeerSup3 My friends want to get a good job when they are older									.723										
FamSup4 Do you ever have to stay home from school to help out your family?																			
HomStEnv1 Combined Q92 and Q127 Somewhere quiet to work																.754			
HomStEnv2 Combined Q93 and Q128 Someone to help with homework																.831			



HomStEnv3 Combined Q94 and Q129 Access to computer and internet							.554				.356			
FamEd1 In my family, the highest level of education someone has is:														.872
FutAsp3 It is important to have a respected career											.756			
FutAsp4 It is important to earn a good income											.785			
RoIMod4 If there is a staff member whom you really look up to, do you ever come to school just to keep the respect of that person?							.582							
PerEcBen4 Completing Year 12 helps you have more job options				.451	.382									
PerEcBen5 If I do more study after I leave school, I will have better job options					.569									
PerEcBen6 People who stay at school can get a higher paying job					.628									
PerEcBen7 At school I learn things that I will need in life	.382				.414									
PerEcBen8 Is it important to finish Year 12?				.735										
PerEcBen9 Is it important to attend school every day?		.313		.340										
FutAsp5 Will you stay at school until you finish Year 12?				.707										

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 16 iterations.

## Appendix J – Normality, skewness and kurtosis of interval latent variables.

Variable	Skewness		Kurtosis		<i>Distribution</i>
	<i>score</i>	<i>SE</i>	<i>Score</i>	<i>SE</i>	
Positive School Culture	-.66	.11	.50	.21	Non-normal
Promotion of Indigenous Culture	-.39	.15	-.12	.31	Non-normal
Student Self-Efficacy	-.71	.11	1.00	.21	Non-normal
Pathway Development	-.11	.11	-.56	.21	Non-normal
Indigenous Academic Role Models					Non-normal
Collaboration with Family	-1.25	.11	1.63	.21	Non-normal
Provision of Study Assistance	.06	.13	-1.31	.25	Non-normal
Previous Aspirations (1 – 3)	-.65	.11	-.98	.22	Non-normal
Family Support	-1.73	.11	4.12	.21	Non-normal
Peer Support	-.70	.11	.33	.22	Non-normal
Family Responsibilities	.66	.11	-.08	.21	Non-normal
Study Environment	-.51	.11	-.28	.22	Non-normal
Computer Access	-.99	.11	-.49	.22	Non-normal
Perception of Economic Benefit	-.94	.11	2.14	.21	Non-normal

Appendix K – Zero-order correlations between interval latent variables.

Variable	Positive School Culture	Promotion of Indigenous Culture	Exposure to Role Models	Student Self-Efficacy	Pathway Development	Collaboration with Family	Provision of Study Assistance	Previous Aspirations	Family Support	Peer Support	Family Responsibilities	Home Study Environment	Computer and Internet Access	Family Education	Future Aspirations	Staff Admiration	Staff Attendance	Future Plans	Motivation for Attendance	Perception of Economic Benefit	School Importance
Positive School Culture	1.00	.51***	.13*	.52***	.51***	.18***	.02	.03	.21***	.17***	.06	.08	-.09*	-.07	.25***	-.29***	-.16**	.10*	.32***	.43***	.41***
Promotion of Indigenous Culture	.51***	1.00	.24***	.30***	.45***	.23***	-.03	-.06	.09	.08	.05	-.01	-.20**	-.17**	.27***	-.24***	.23**	-.02	.20**	.28***	.23**
Exposure to Role Models	.13*	.24***	1.00	.12	.12	-.08	.01	.05	.08	-.01	.07	.03	-.12*	.01	.02	-.15*	-.07	-.04	.04	.12	.04
Student Self-Efficacy	.52***	.30***	.12	1.00	.35***	.17***	.05	.22***	.27***	.24***	-.05	.17***	.12**	.08*	.23***	-.18***	-.04	.20***	.29***	.42***	.45***
Pathway Development	.51***	.45***	.12	.35***	1.00	.24***	-.00	.01	.15***	.13**	.08	.06	-.15***	-.07	.15***	-.18***	-.15**	.05	.25***	.47***	.28***
Collaboration with Family	.18***	.23***	-.08	.17***	.24***	1.00	.02	.02	.03	.05	-.06	.05	.05	.02	.09*	-.08*	.14**	.12*	.09*	.16**	.15**
Provision of Study Assistance	.02	-.03	.01	.05	-.00	.02	1.00	.09	.09	.14**	-.13**	.07	.04	.13**	.02	.05	-.04	.02	.02	.04	.18**
Previous Aspirations (1 – 3)	.03	-.06	.05	.22***	.01	.02	.09	1.00	.19***	.12*	-.08	.17***	.15***	.21***	.03	-.06	.16**	.29***	.17***	.15**	.06
Family Support	.21***	.09	.08	.27***	.15***	.03	.09	.19***	1.00	.38***	.07*	.13**	.12**	.25***	.17***	-.05	-.02	.21***	.08	.30***	.35***
Peer Support	.17***	.08	-.01	.23***	.13**	.05	.14**	.12*	.38***	1.00	-.10*	.11*	.23***	.15***	.12**	.03	.03	.13**	.04	.07	.19***
Family Responsibilities	.06	.05	.07	-.05	.08	-.06	-.13**	-.08	.07*	-.10*	1.00	-.16***	-.26***	-.14**	-.02	.06	-.28***	-.17***	.04	-.03	-.12*
Study Environment	.08	-.01	.03	.17***	.06	.05	.07	.17***	.13**	.11*	-.16***	1.00	.30***	.10*	.13**	-.02	.04	.16***	.12**	.15**	.08
Computer Access	-.09*	-.20**	-.12*	.12**	-.15***	.05	.04	.15***	.12**	.23***	-.26***	.30***	1.00	.28***	-.08	.00	.29***	.23***	.04	-.06	-.04
Family Education	-.07	-.17**	.01	.08*	-.07	.02	.13**	.21***	.25***	.15***	-.14**	.10*	.28***	1.00	-.01	.05	.18***	.22***	.04	.10*	.10*
Future Aspirations	.25***	.27***	.02	.23***	.15***	.09*	.02	.03	.17***	.12**	-.02	.13**	-.08	-.01	1.00	-.03	-.14**	.06	.15***	.15**	.24***
Staff Admiration	-.29***	-.24***	-.15*	-.18***	-.18***	-.08*	.05	-.06	-.05	.03	.06	-.02	.00	.05	-.03	1.00	N/A	-.06	-.08	-.23***	-.17***
Staff Attendance	.16**	-.23**	-.07	-.04	-.15**	.14**	-.04	.16**	-.02	.03	-.28***	.04	.29***	.18***	-.14**	N/A	1.00	.16**	-.08	-.03	-.02
Future Plans	.100*	-.02	-.04	.26***	.05	.11*	.02	.29***	.21***	.13**	-.17***	.16***	.23***	.22***	.06	-.06	.16**	1.00	.21***	.17***	.16***
Motivation for Attendance	.32***	.20**	.04	.29***	.25***	.09*	.02	.17***	.08	.04	.04	.12**	.04	.04	.15***	-.08	-.08	.21***	1.00	.30***	.22***
Perception of Economic Benefit	.46***	.28***	.12	.42***	.47***	.16**	.04	.15**	.30***	.07	-.03	.15**	-.06	.10*	.15**	-.23***	-.03	.17***	.30***	1.00	.48***
School Importance	.41***	.23**	.04	.45***	.28***	.15**	.18**	.06	.35***	.19***	-.12*	.08	-.04	.10*	.24***	-.17***	-.02	.16***	.22***	.48***	1.00
*Significant at the 0.05 level **Significant at the 0.01 level. ***Significant at the 0.001 level.																					

## Appendix L – Confirmatory Factor Analysis of six factor model



\*in diagram above, Factor V – Education Aspirations is named “Family Education Capital”.