Using an Extended Theory of Planned Behaviour Model to Investigate Students’ Intentions to Enrol in University

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy (Education)

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Declaration

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

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Abstract

The purpose of this thesis is to further understanding of the factors that predict students’ intentions to enrol at university. There is evidence to suggest that behavioural intention, as it is defined in this study, is an effective proxy measure of future behaviour. 323 Year 12 students from Victoria, Australia participated in 3 distinct, but related, research phases. From these data, two models were formed, the University Proximal Intention Framework (UPIF) and the University Distal Intention Framework (UDIF). Attitude and positive behavioural beliefs were both identified as the most significant predictors of intention in their respective models. This study found mixed results on the predictive capacity of subjective norm, general academic self-concept and ethnicity. Socioeconomic status was a significant predictor of students’ university intentions in both models although its predictive capacity was relatively weak. Perceived behaviour control, mathematic and verbal academic self concepts were not significant predictors of students’ higher education intentions. Collectively, these results have both practical implications for how stakeholders discuss university pathways and theoretical consequences for how researchers explore students’ study-related intentions. The information obtained can guide adoption of policies or interventions designed to foster and promote students’ university intentions.
Acknowledgments

He had begun his journey from Babylon on the first day of the first month, and he arrived in Jerusalem on the first day of the fifth month, for the gracious hand of his God was on him (Ezra, 7:9).

Thanks to Mum and Dad for everything.

My dearest Zahra, man asheghetam

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Tass - For being not only a great mathematician but also a great writer.

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Publications & Reports Arising from the Writing of this Thesis


Chapter 1. Introduction

The origin of the word intention can be traced to the Latin word intendere—meaning to have a direction towards a goal or outcome (Oxford University Press, 2010)

1.1. Introduction

Unable to compete with less-developed countries with cheaper labour, Australia has been eager to boost participation rates in higher education against the backdrop of company outsourcing, the diminution of manufacturing industries and steady decline of the mining boom (Academy of the Social Sciences in Australia [ASSA], 2014). In order to maintain economic growth, sustain levels of employment and improve education outcomes, successive Australian governments have acknowledged the importance of becoming a knowledge-based economy (Davis, Evans & Hickey, 2006). The essential element of a knowledge-based economy is a greater reliance on intellectual capabilities than on physical inputs or natural resources (Powell & Snellman, 2004). Hence, well-educated individuals who exemplify graduate attributes such as critical thinking, creativity, problem solving and communication skills are fundamental to developing a knowledge-based economy (De la Paz-Marin, Gutiérrez & Hervás-Martínez, 2015). Increasing and widening participation in higher education has been a particularly important focus of recent Australian governments including, for instance, the Bradley Review (Commonwealth of Australia, 2008). At an individual level, the benefits of higher education include increased employment rates, higher average salaries; increased social status and overall economic security (Jones, 2013). Consequently, increasing university attendance has been viewed by successive Australian governments as a way to advance education, social justice and economic policy.
A major hurdle, however, preventing the further transformation of Australia into a knowledge-based economy is the relatively low university participation of students from non-traditional or diverse backgrounds (Universities Australia, 2013). Within the context of this thesis, students classified as non-traditional or from diverse backgrounds are those under-represented based on characteristics such as ethnicity, educational background and/or social background. For example, non-traditional students from low socioeconomic status (low SES) backgrounds are one-third as likely to attend university as their peers from high SES backgrounds (Phillimore & Koshy, 2010). Despite years of Commonwealth funding and initiatives, 16.07% of the Australian domestic student cohort are classified as low SES (compared with a population reference point of 25%) (Department of Education, 2014). While the latest results suggest a modest upward trend, the percentage of relative participation of low SES students in university study has remained remarkably stable over a period of nearly two decades (Department of Education, 2014). A crucial component of addressing a problem is to firstly identify the underlying contributory factors. It could be argued that the failure of stakeholders to address relatively low university participation of non-traditional students is in part, due to a gap in the research examining the factors that impact students’ intentions to enrol in university. While the shortcomings of relevant literature will be discussed in the upcoming chapters that follow; the important point to make here is that there is a gap in the literature investigating the salience of constructs that predict students’ university intentions. Behaviour, and the beliefs that drive it, can be explained a number of ways depending on the paradigm. Therefore, it is useful to firstly discuss the perspective in which the present study is positioned.
1.2. Model used in this Thesis to Explain Behavioural Intention

A psychosocial model is used to investigate the predictors of students’ intentions to enrol in university. Psychosocial behavioural models have been used in different fields (e.g. Psychology and medical research) to predict and explain human behaviour (Ajzen, 2005). Psychosocial models relate one's behaviour in, and interaction with, their societal milieu (Hogg & Cooper, 2003). An individual may not be fully aware of this relationship with their environment and how thoughts and behaviours may be influenced by the actual, imagined, or implied presence of others (Allport, 1986; Aronson, Wilson & Akert, 1994). One of the most prominent models in the psychosocial field is the Theory of Planned Behaviour (TPB, Ajzen, 1991). The theory posits that one’s intention is a direct antecedent of behaviour. Intentions are assumed to “…capture the motivational factors that influence a behaviour, they are indicators of how hard people are willing to try, of how much effort they are planning to exert, in order to perform the behaviour” (Ajzen, 1991, p. 181). One’s behavioural intention is accepted as a salient variable determining how one behaves. The author is unaware of any studies that have used the TPB to examine students’ intentions to enrol in university and this study is expected to increase current understanding of this phenomena.

Behavioural intention (used interchangeably with the term ‘intention’ herein) is formed by a number of beliefs representing the perceptions that people have about a behaviour including its likely consequences, the normative expectations of others, and the likely barriers of performing a particular behaviour (Ajzen, 1991; Ajzen, 2005; Fishbein & Cappella, 2006; Kautonen, Gelderen & Tornikoski, 2013). The author of the theory, Icek Ajzen posits that behaviour is influenced by a range of other factors (e.g. Social, cultural, and personality factors), but argues that the effects of such distal factors are largely mediated by the proximal factors specified by the TPB model (Ajzen, 2005). Compared to the distal
factors, the proximal factors are more amenable to change (Ajzen, 1991). Eliciting the proximal determinants of intention/behaviour has the potential to predict typically salient beliefs that may ultimately be used to change future behaviours (Ajzen, 2005). In the context of the present study, if one can identify the salient beliefs predicting students’ intentions to enrol in university, it serves to reason that the application of the TPB model may be of value to stakeholders interested in increasing participation. Before further discussion of this idea however, it may be useful to examine the research that the TPB is built upon in order to get a better sense of this association between intention and behaviour.

Research examining the link between intention and behaviour has its origins in Expectancy-Value Theory (EVT) (Porter & Lawler, 1968; Vroom, 1970). The EVT model has primarily been used to examine the beliefs of why individuals chose a particular behaviour over another (Vroom, 1970). The strength of these beliefs was impacted by self-efficacy, an individual's past experience and the perceived difficulty of the goal (Porter & Lawler, 1968). In the mid-1970s, Fishbein and Ajzen used the ideas of the EVT to create a model that explained human behaviour called the Theory of Reasoned Action (TRA, Fishbein & Ajzen, 1975). The TRA hypothesized that behaviour is predicted by an individual’s intention to perform a particular behaviour. Intention, in turn, was hypothesised to be formed by two factors, the individual’s attitude towards the outcome of the behaviour and by the social norms of significant others, which Fishbein and Ajzen (1975) called subjective norm. In the mid 80’s, Ajzen proposed a revised model of the TRA, adding the concept of perceived behavioural control, which originates from Bandura’s research concerning self-efficacy (Bandura, 1977). The revised model was called the Theory of Planned Behaviour (TPB, Ajzen, 1991). Using the TPB to elicit one’s intentions is potentially of great value because it may explain or predict the salient factors influencing one’s behaviour in the future. Eliciting
intention has the potential to identify the reasons why someone has decided to, or will decide to, act in a particular way. As discussed, the potential to change students’ future behaviour could be of considerable interest to a number of stakeholders in a number of areas (e.g. stakeholders involved in political, education, social justice policy).

Despite extensive use of the TPB, the model has been criticised for ignoring emotional determinants of behaviour (Gibbons, Gerrard, Blanton & Russell, 1998; Pligt & De Vries, 1998). “Beliefs are largely cognitive in nature, and are developed over a relatively long period of time. Emotions, on the other hand, may involve little cognitive appraisal and may appear and disappear rather quickly” (McLeod, 1992, p.579). Compared to affective processing models, the TPB discounts emotional variables such as anxiety, fear and mood as proximal determinants on behaviour (Conner & Armitage, 1998). Ajzen (2002) responded to such criticism by stating emotions are considered background variables in the TPB, and emotions would be expected to influence intentions and behaviour through their impact on attitudes and perceived control of behaviour.

Others have critiqued the TPB because they claim that it is underpinned by an assumption of too much rationality in people’s behaviour (Sniehotta, 2009). In reply, Ajzen (2011) stated that...“there is no assumption in the theory that people carefully and systematically review all their beliefs each time they are about to perform a particular behaviour. On the contrary, the theory recognises that most behaviour in everyday life is performed without much cognitive effort” (p.66). Readers with a more nuanced understanding of the TPB will understand that the model does not imply that individuals always deliberate carefully and always make optimal decisions. Individuals may make rapid decisions based on a few salient considerations. Having made a decision, people do not necessarily weigh up the pros and cons again unless circumstances change; they may simply retrieve their previously formed intention from long-term memory and act on it (Ajzen,
It could therefore be argued that the TPB model implies a more limited rationality than is sometimes suggested by critiques of the model (Francis, 2004). While there have been perhaps unwarranted criticisms of the TPB, this is not to say that the model cannot be improved. In addition to weakness of the TPB, which will be discussed later in the thesis, extensions to the TPB may improve the efficacy of the model to predict behavioural intention.

1.3. Extensions to the TPB Model in this Study

As with any framework there are limitations and it is accepted that the TPB model is not likely to capture all the beliefs or factors that predict intention and behaviour. Considering the complexity associated in explaining intention and behaviour, some have argued that the addition of other behavioural determinates may improve the efficacy of the model to explain and predict behaviour (Armitage & Connor, 1999; Booth, Norman, Harris & Goyder, 2014; Cristea, Paran & Delhomme, 2013; Heath & Gifford, 2002; Rise, Kovac, Kraft & Moan, 2008). In order to increase the efficacy of the TPB model to explain intention and behaviour, extensions have been made to the original model in the present study. According to Ajzen (1991), the TPB is open to additional variables. He argues that in specific contexts and for certain behaviours, an extension of the TPB model may increase the predictive efficacy of the model. In light of the former, this study extends the TPB model by adding academic self-concept to the study framework.

Academic self-concept may have a considerable effect on students’ educational pathways including post school transitions to further education (Marsh, Byrne & Yeung, 1999). Others researchers state similar findings, suggesting that students with low academic self-concept are less likely to choose more difficult coursework in schools, engage in additional educational opportunities and apply for more competitive courses (Marsh, 2007;
Nagy, Trautwein, Baumert, Koller & Garrett, 2006). Academic self-concept is an important element of one’s broader self-concept (Marsh, 2002). Considering that self-concept has been used to improve the efficacy of the TPB model in explaining intentions regarding other behaviours (Armitage & Connor, 1998; Booth, Norman, Harris & Goyder, 2014), this thesis advances the field by integrating academic self-concepts within an extended TPB model. A major theoretical contribution of the present study will be to consider academic self-concept as a salient predictor of student’s intentions to enrol in university.

This thesis is divided into three distinct phases. Phase 1 involves the collection of behavioural, normative and control beliefs of five participants in order to inform the design and structure of the survey instrument in subsequent phases. Phase 2 of this study examines the internal consistency of the survey instrument with a pilot sample of 66. Finally in Phase 3, 252 participants completed the final version of the survey instrument. Following collection of these data, structural equation modelling was used to examine possible relationships between variables. In total 323 Victorian year 12 students participated in this study.

1.4. Purpose of this Study

The purpose of this thesis is to further understanding of the factors that predict students’ intentions to enrol at university. The research has the potential to inform the design of interventions aiming to increase university participation. The three following research questions guided this study:
1.5. Research Questions

1.5.1. Question 1: What are the reported behavioural, normative and control beliefs that underpin students’ intentions to enrol at university?

1.5.2. Question 2: Using an extended Theory of Planned Behaviour model, what are the predictors of students’ intentions to enrol at university?

1.5.3. Question 3: What theoretical and pedagogical recommendations can be made regarding the design of programs targeting greater participation in higher education and future research underpinned by an extended TPB model?

1.6. Overview of this study

Following this brief introduction, Chapter 2 reports the difficulty commonly experienced by stakeholders in raising the higher education participation rates amongst students from non-traditional backgrounds. A significant gap in the literature related to 1) shortcomings concerning the explanations by previous research regarding students’ participation in higher education and 2) a significant gap in the literature measuring students’ intentions to enrol in university using an extended TPB model is reported in Chapter 3. Discussed in Chapter 4, a 3-phase study is designed to examine the salient factors that predict students’ intentions to enrol in university. Phase 1 of this study is discussed in Chapter 5, involved eliciting salient beliefs in order to design the survey instrument. Phase 2 of this examined internal consistency of the survey instrument with a pilot sample in Chapter 6. Examining the psychosocial determinants of students’ intentions to enrol in university-Phase 3 of this study is reported in Chapter 7. In Chapter 8, Research Questions 1, 2 and 3 are answered. Chapter 9 draws the thesis to a close by recapping its purpose and overview, the
contribution that it has made to the field, limitations of this research and identified future study opportunities.
Chapter 2. Students from low SES backgrounds and explaining students’ participation in higher education: The rationale for an intention-based model

2.1 Introduction

Successive Australian governments have long been frustrated by the difficulty in raising the higher education participation rates amongst students from low SES backgrounds. The links between educational outcome and SES background are extensively researched and many studies report a strong association between the two. This chapter advances the thesis by positioning the research within contemporary debates about university participation. To do this, the chapter adopts the forms of capital approach advanced by Coleman and others to describe competing explanations of under represented groups in higher education. The goal of this research is not to test these competing explanations, but rather to add to our understanding by offering a further, as yet untested, intention-based model.

2.2. Students from Low SES Backgrounds and University Participation

Low SES students are one-third as likely to attend university as their peers from high SES backgrounds (Phillimore & Koshy, 2010). According to the government’s definition of low and high SES, both groups consist of 25% of the population. Students from low SES backgrounds, however, comprise of approximately 15% of Australia’s total domestic university cohort while high SES comprise of over 37% (Phillimore & Koshy, 2010) and this trend has stayed more or less the same for over 15 years (Gale & Parker, 2013). The latest statistics released by the government indicate that approximately 16.07% of all domestic university students were from low SES backgrounds (Department of Education, 2015). Based on such data, university participation of students from low SES backgrounds shows modest increases; however, 16.07% is far below the 25% share of the population they
represent. Following the Bradley Review (Commonwealth of Australia, 2008), the most recent policy target for greater participation rates of low SES students in Australia were announced by the Rudd Government in 2009. Rudd announced that 20% of students participating in university should be from low SES backgrounds by 2020 (Commonwealth of Australia, 2008).

2.3. What is Socio-Economic Status (SES)?

SES is an abstract, multi-dimensional and relative concept. While full consensus may never be reached in the literature, there is general agreement that students in high SES environments have greater access to resources compared to their low SES peers (McGee, 2014). The present study adopts the idea of McGee’s definition of SES, broadly defining the construct of student’s SES as access to resources including, but not limited to, ‘educational resources’ consisting of ‘economic’, ‘human’ and ‘social resources’. An ‘educational resource’, in this context, is defined as any action or resource that promotes or fosters the development of students’ higher educational achievement. Examples of economic resources may include family income and household wealth, human resources (e.g. education and occupation of parents) and/or social resources (e.g. family’s social networks). Early experiences either enhance or diminish one’s innate potential, providing either a strong or a fragile platform on which all future development and learning follows (Wasserman & Zambo, 2013). The link between educational outcomes and SES background is extensively researched and many studies report a link (for example, Commonwealth of Australia, 2014; Gale & Parker, 2013; Jones, 2013). Although the factors that influence students’ university participation are heavily researched, it may be argued that other explanations may advance the field. Below, explanations of key theories discussing students’ university participation are examined in order to discuss strengths and weaknesses of respective explanations and
situate this study within a broader research discourse.

2.4. Economic Capital

Research has been conducted on students’ under representation in higher education and their access to material resources within their environment. While school infrastructure may be important, particular emphasis in the literature has been placed on students’ access to economic capital, particularly via their families. From this viewpoint, access to material resources, such as the student’s access to educational resources at home (e.g. desk, large room, literature and technology) and the quality of the school infrastructure are important factors that predict educational achievement (Orr, 2003). There is research to suggest that the greater a family’s household wealth and income, the more likely their children will study at university (Jones, 2013). While differences in family’s economic capital are related to higher levels of school achievement, it is the associated non-economic capitals that accumulate as a result of greater economic wealth that may be more important (Wildhagen, 2010). One non-economic form of capital discussed at length in the literature is cultural capital.

2.5. Cultural Capital

As families possess more economic capital, it is more likely for their children to obtain more cultural capital; the two capitals are in direct proportion (Bourdieu, 1977). For instance, parents with economic capital have the means to pay for ballet and language classes. Extracurricular activities such as ballet and foreign language classes have “an easy familiarity with prestigious forms of culture” (DiMaggio & Mukhtar, 2004, p.170) and participation in these activities enhance students’ accumulation of cultural capital. Consequently, teachers and other gatekeepers interpret cultural capital as a sign of grace, indicating that the child is gifted and worthy of attention and cultivation (DiMaggio & Mukhtar, 2004). Students from
low SES backgrounds who do not possess valued cultural capital find it much more difficult to adapt to the schooling culture, perform worse, are rewarded less by teachers and are more likely to eventually select themselves out of the education system (Bourdieu, 1977). Children with high levels of valued cultural capital help know and help form ‘the rules of the game’ (Bourdieu, 1977). Blunden (2004) described ‘good players of the game’ as students who…

...recognise the allusions made in a novel, what is being “quoted” or refused in a work of art, to know what and how to approve and disapprove, how to avoid the question if necessary, to have internalised appropriate manners and acquired a taste for appropriate art, to know the directors (or actors) of films, be they popular or avant garde, to know how to make dinner conversation, how to wear clothes, how to occupy space, how to look down your nose, and give or not give someone your time, and so forth — all those manners which infallibly identify you to others as a person of a culture, popular, avant garde or legitimate, with a likely trajectory in life (declining or rising), likely to have access to certain circles or not, and with more or less right to have an opinion on political matters or whatever... (para. 21).

Blunden’s statement exemplifies how students with valued cultural capital know how to succeed in the ‘field’ of their school. The field can be thought of as the… “zone of social activity in which there are "creators" who are intent on creating a certain kind of cultural product. The product is defined, in part, by the expectations and values of the audience -not simply the creator” (Little, 2011, para. 15). The former alludes to the notion that it is not only teachers or cultural gatekeepers that may perpetuate such a cycle, but children may also self-select themselves out of education because the field promotes the impression that those with less valued cultural capital don’t belong or as Tranter (2003) described, “fish out of water” (p.1).

Although cultural capital may be a useful sociological lens to examine the relationship between SES and educational outcomes, the quantitative evidence supporting such a link is mixed. For example, Jæger (2010) found that cultural participation (measured by indicators of participation in cultural activities, reading climate, and extracurricular activities) had a positive effect on children’s reading and maths test scores, although the effect of cultural
capital in his study was smaller than previously reported (e.g. DiMaggio, 1982). More pessimistic about the concept is Tzanakis (2011), who stated that… “in large-scale longitudinal studies, these effects [effects being parents’ and an offspring’s cultural capital on student grades and educational aspirations] are generally weak or modest and their significance is more due to cohort-size samples. In cross-sectional studies, statistically significant effects of cultural capital measures on young people’s educational aspirations are not easily generalisable as they are based on rather small, non-representative samples” (p. 78). 

More recently, Davis et al. (2014) stated that cultural capital only provides a partial account of the relationship between social class and university participation. While cultural capital may be impossible to measure with the current research tools available (Paulsen, 2014), this does not negate the fact that there is little quantitative evidence to support the link between cultural capital and educational outcomes.

Other criticisms of cultural capital include its emphasis, at least by some writers, on parents as the only influence of socialisation (Dika & Singh, 2002; Goldthorpe, 2007). Halsey, Heath & Ridge (1980) stated that… “schools and other educational institutions can function as important agencies of re-socialisation – that is, can not only underwrite but also in various respects complement, compensate for or indeed counter family influences in the creation and transmission of cultural capital” (p. 77). The argument in this thesis is aligned with Goldthorpe’s (2007) claims that cultural capital may place too much emphasis on parents (e.g. resources, beliefs) at the expense of the students’ individual beliefs and other social influences (e.g. teachers/peers/others) to affect outcomes. This study is underpinned by the view that behaviour is the result of a variety of social influences (e.g. parents, teachers, peers, others) plus other salient determinants of behaviour (e.g. attitudes, self-efficacy).
2.6. Social Capital

Like economic and cultural forms, social capital has been an area of interest for writers trying to explain differences in students’ participation in higher education and a short summary of the concept is warranted in order to advance the argument. Social capital lends itself to multiple definitions, interpretations and uses. Therefore, the scope of this chapter does not allow for an exhaustive discussion on this topic but rather as further context to position the current study. Broadly speaking, definitions of social capital typically discuss three ideas including (1) Bonds, which may be described as links to people based on a sense of common identity (‘people like us’) – such as family, close friends and people who share culture or ethnicity (Organisation for Economic Co-operation and Development [OECD], 2013). (2) Bridges, links that stretch beyond a shared sense of identity, for example to distant friends, colleagues and associates (OECD, 2013). (3) Linkages: Links to people or groups further up or lower down the social ladder (OECD, 2013).

Bourdieu (1986) argued that social capital can be thought of as the networks and connections which allow continued and future access to privilege. For the dominant class, social capital is seen as an investment to maintain group solidarity and preserve dominance (Bourdieu, 1986). For example, an individual may enrol in an elite private school which may give this person access to groups or networks that otherwise they would not have access to. An already resource rich individual, this individual continues to build their social capital and make broader networks in surrounding groups which can later be converted into cultural capital at exclusive parties (e.g. discussions about lavish holiday destinations/ wine/art) and later on, economic capital (e.g. internships /jobs).

Unlike Bourdieu, Coleman’s description of social capital allows for individual agency to facilitate social mobility (Coleman, 1988). Coleman’s social capital allows an individual,
regardless of their place in life, to create social ties, acquire social capital, and transform it into and convert it into human (e.g. higher level of education) or economic capital (e.g. jobs). Coleman’s study reported that Catholic and other religious based schools tended to have higher retention rates, lower absenteeism and less drop outs (Coleman, 1988). Coleman viewed family and the church as the primary sites for social capital accumulation. His argument was that developing social capital is crucial in helping students convert it to human capital, mainly in the form of higher education. Beyond criticisms of social capital including its perceived vagueness and difficulty to measure (Halpern, 2005; Haynes, 2009), others question if networks alone explain why some students continue their education and others choose different pathways (Haslam, Khine, & Saleh, 2013). While social capital may be one concept used to help explain students’ participation in higher education, it is only a partial explanation of how SES impacts students’ educational achievement.

### 2.7. Students’ Aspirations

Like the various forms of capital, students from various SES backgrounds and their aspirations regarding higher education have also received a great deal of attention in the literature. Policy makers, in particular, have placed great importance on them when designing interventions aiming to increase university participation (Clair, Kintrea & Houston, 2013). Students’ educational aspirations have become an important discussion point in policy documents related to university participation, both locally and internationally. For example, the Review of Australian Higher Education (Bradley, Noonan, Nugent & Scales, 2008), identified three key precursors to increased tertiary participation including: “1) awareness of higher education, 2) educational attainment to allow participation and 3) aspiration to participate” (p. 40). Similar trends in government policy have been observed elsewhere; including counties such the US and UK (Irvin, Byun, Meece, Reed & Farmer,
2016; Zipin, Sellar, Brennan & Gale, 2013). These policies are underpinned by the assumption that raising aspirations will “increase educational achievement, contributing both to greater equity and to economic competitiveness, and, perhaps more contentiously, that public policy has a central role in aspiration management” (St. Clair, Kintrea & Houston, 2013, p.720).

Even amongst popularly cited definitions, there are important subtle differences in the various definitions of students’ educational aspirations. For instance, to Quaglia and Cobb (1996), education aspirations are defined as the “ability to identify and set goals for the future, while being inspired in the present to work towards those goals” (p. 130). While the former is conceptually closer to defining and achieving future goals, others conceptualise it as a relatively broad notion. Appadurai (2004), for example, states that students’ educational aspirations can be thought of as the individual’s wants, preferences, choices and calculations for their future learning. Another popular definition in the literature is that offered by Stern and Eichorn’s (2013) who argue aspirations are a cognitive state that motivates or drives young people to strive for academic success. To Sellar and Gale (2011), aspirations are “the capacity to imagine futures” (p.11), whereby students imagine a pathway into higher education for themselves and this in turn motivates them to progress into HE.

These definitions should suffice to demonstrate a conceptual ambiguity in the literature. This point has been noted by others who have urged for greater consistency amongst scholars who research this area (St. Clair, Kintrea & Houston, 2013; Quaglia & Cobb, 1996). This ambiguity also makes it difficult to conduct meta-analysis type research to examine the capacity of students’ aspirations to predict academic outcomes. In turn, this weakens our ability to develop and assess the efficacy of interventions designed to improve student aspirations. This brings us to a further limitation in the way aspiration is deployed in the literature: the reliability of the construct.
There is continuing disagreement in the literature regarding the strength of the relationship between students’ educational aspirations and their educational outcomes. While there is literature that suggests young people with higher educational aspirations have greater motivation and higher educational attainment than their peers (Flouri, 2006; Irvin, Byun, Meece, Reed & Farmer, 2016), other research recommends caution before making an immediate association between the two (Calder & Cope, 2005; McKendrick, Scott & Sinclair, 2007; Turok et al., 2008). For instance, aspirations may well be a predictor and/or an outcome of higher education participation, possibly influenced by self-efficacy, mediating family factors and/or ability related measures (Phillipson & Phillipson, 2007; Strand & Winston 2008). Even in studies advocating for the efficacy of education aspirations, it is acknowledged that its impact on outcomes is likely to be overstated. For instance, research based on the Longitudinal Surveys of Australian Youth (LSAY) dataset reported that individuals with aspirations for future university study were between 15-20 per cent more likely to do so, compared with those who do not have post-school university plans (Homel & Ryan, 2014). The research concluded that while aspirations do have a “large positive impact on educational outcomes” (p.24), the real effect of aspirations on outcomes may have been overemphasised (Homel & Ryan, 2014). Gale & Parker (2013), themselves supporters of researching students’ aspirations, acknowledge that their research could be impacted by social desirability bias. Social desirability bias describes the tendency of survey respondents to answer questions in a manner that will be viewed favourably by others (Creswell, 2003). It can take the form of over-reporting what may be perceived as ‘good behaviour’ or under-reporting of undesirable behaviour (Creswell, 2008). Compared to the model used in this study, there is research to indicate that the impact of social desirability on the TPB model is minimal, and that this model is robust predictor of actual intention and behaviour (Azjen, 2014; Armitage & Connor, 1999). The possible overestimation of students’ aspirations,
together with the minimal impact of social desirability on the TPB model, further support the importance and justification to conduct the present study.

2.8. The Rationale for an Intention-based Model

The use of behavioural models has the potential to advance our understanding of salient psychosocial factors that may predict students’ intentions to enrol in university. The value of using behavioural models is that one can examine the underlying beliefs that motivate behaviour. Consequently, such research can elicit important beliefs that theoretically motivate students’ behaviours. One prominent behavioural model used across many fields in Ajzen’s (1991) Theory of Planned Behaviour (TPB). The Author is unaware of any research that has used Ajzen’s conceptualisation of intention to explain students’ intentions to enrol in university. As discussed below, Ajzen’s conceptualisation of intention is highly predictive of future behaviour (Ajzen, 2011) and therefore this perspective may offer new insights as to why students intend to enrol in university. Of particular interest in the present study is how the use of an intention-based model may be used to capture the beliefs that form intent.

2.9. Student’s Intentions to enrol in University

A construct that has received much attention in the field of social psychology is that of intention. Intention is formed by a number of beliefs representing the perceptions that people have about a behaviour including its likely consequences, the normative expectations of others, and the likely barriers of performing a particular behaviour (Ajzen, 1991; Ajzen, 2005; Fishbein & Cappella, 2006; Kautonen, Gelderen & Tornikoski, 2013). Intention is considered a highly significant predictor of future behaviour (Ajzen, 2005) and this study aims to extend understanding of students’ participation at university by measuring intention
and its predictors. The TPB has been utilised successfully to explain the determinants of a range of behaviours (Armitage & Conner 2002). While Ajzen’s conceptualisation of intention has been used across different fields of research, the field of education research has not been as eager to embrace a psychosocial explanation of intention and/or behaviour (Taylor, 2014).

2.10. The Theory of Planned Behaviour

The TPB (Ajzen, 1991, Figure 1) is used to structure this study. The TPB has been used as a framework in studies examining intention and entrepreneurial behaviour (Kautonen, Gelderen & Tornikoski, 2013), environmental conservation intent (Wauters, Bielders, Poesen, Govers & Mathijs, 2010), safe sex practices (Fisher, Fisher, Bryan & Misovich, 2002; Sutton, McVey & Glanz, 1999), exercise behaviours (Ickes & Sharma, 2011), sleeping patterns and intentions (Knowlden, Sharma & Bernard, 2012), dangerous driving behaviours (Elliott, Armitage & Baughan, 2003) and drug use (Hu & Lanese 1998; Norman, Conner &...
Researchers have used the TPB in a number of ways to predict and explore reasons for different human intentions and behaviour.

2.11. Use of the TPB in Education Research

The TPB has also been used in a number of ways within the domain of education research. It was used considerably during the 1990’s to explain and predict teachers’ pedagogical behaviour and intention including studies examining teaching methods (Crawley, 1990), collaborating with colleagues (Desouza, 1993) and the intention to teach Science (Zint, 2002). These studies reported that the TPB was an effective model for eliciting salient teacher beliefs in relation to their intentions about a range of issues (Crawley, 1990; Zint, 2002). More recent examples of its use include studies that have investigated the intentions of primary pre-service teachers to teach science. The TPB highlighted the linkage between the intentions of the pre-service teachers to teach science, and their awareness of and experiences of science during their education studies (Cooper, Kenny & Fraser, 2012).

Cooper (2011) found that the TPB was effective in eliciting beliefs, seeking motivations and exploring participants’ underpinning attitudes, subjective norms and belief of control in relation to behaviour within an educational context. Other noteworthy research includes the use of the TPB to examine and teachers’ intentions regarding use of educational technology (Lee, Cerreto & Lee, 2010) and adoption of new technology (Sugar, Crawley & Fine, 2004).

With particular relevance to this study, there is already existing evidence to suggest that the TPB may be effective in its capacity to predict students’ participation in education. For example, in 2012, Freeney and O’Connell elicited a sample of more than 1300 Irish high school students on their intention to leave school early. Elements of the TPB towards school completion, students’ academic attainment, ability to defer gratification, along with SES
measures were collected. Analysis indicated that attitude in addition to parents’ and teachers’ subjective norm were crucial to students’ intention to remain in school (Freeney & O’Connell, 2012). Other studies have used the TPB in a similar fashion. For instance, Taylor (2015) conducted a study of over 550 students using the TPB to understand students’ subject choices in senior high school. Taylor found that the TPB measures were able to explain 68% of the variance in intentions to study Media Studies and 66% of the variance in intentions to study Physics. She argued that nature of the consequences involved in making a poor decision about subject choice is relatively serious for a student and hence the behaviour may be highly planned (Taylor, 2015). The stakes are perhaps even higher when students consider university participation considering the resulting consequences of a poor decision may result in substantial loss of money, time and effort. It’s precisely because of the high stakes nature of this behaviour (enrolling in university) that the TPB factors may be particularly effective in understanding students’ intentions to enrol in university. The former are examples of studies using the TPB to explore students’ participation in school-related behaviours and informs part of the rationale for using these predictors in the present study.

The author is unaware of any research that has used the TPB to examine students’ intentions, or its predictors, to enrol in university. There is also a limited amount of research using the TPB to explain and predict students’ pathways at different levels of education (e.g. high school). The studies discussed above indicate that use of the model may be of significant value if applied to students’ intentions to enrol at university. Supported in-part by the studies discussed, the thesis advances the argument by aiming to improve current understanding of students’ intentions to attend university and its salient predictors.
2.12. Summary

In summary, this chapter discussed the difficulty in raising the higher education participation rates amongst students from low SES backgrounds. Explanations of key theories discussing students’ university participation were examined in order to discuss strengths and weaknesses of respective explanations and to situate this study within a broader research discourse. A significant gap in the literature was identified, predicting students’ intentions to enrol in university. Eliciting the salient beliefs that drive intention may be of considerable value by helping inform why students enrol in university and how stakeholders can design interventions that aim to increase students’ participation in higher education. The next chapter progresses the thesis by discussing how the gap in the literature can be addressed, specifically discussing how the psychometric constructs of the TPB can be used to examine students’ higher education intentions.
Chapter 3. Using an Extended Theory of Planned Behaviour Model to Examine Students’ Intentions to enrol in University

3.1. Introduction

The previous chapter highlighted a gap in the literature predicting students’ higher education intentions using Ajzen’s conceptualisation of this construct. Different studies highlight the TPB’s effectiveness in addition to its limitations. The purpose of this chapter is to discuss the application of an extended TPB model to examine students’ intentions to enrol in university. As a response to the limitations of the TPB, academic self-concept is proposed as a construct that may improve the efficacy of the models used in the present study.

3.2. The Structure of the TPB

Intention is theoretically an antecedent of behaviour in the TPB model. While the last chapter discussed the importance of intention and its potential to explain past and future behaviour, this chapter expands on the discussion of the model by explaining the individual elements that form intention. The TPB is not designed to elicit every belief underpinning a particular behaviour but is designed to measure what Ajzen (2005) terms as “salient beliefs” (p.191). Salient beliefs are the most important beliefs that motivate an individual to perform a particular behaviour. According to the theory, one’s attitudes, subjective norm and perceived behavioural control are proximal determinants of a person’s intention to perform a particular behaviour (Ajzen, 2014). The TPB comprises of both direct and indirect measures (Ajzen, 1991). Direct and indirect measurement approaches make different assumptions about an individual’s underlying cognitive processes. For instance, direct measurement assumes that people can accurately report their beliefs that may actually consist of a range of positive and negative beliefs. Conversely, indirect measures are underpinned by the
supposition that individuals cannot give a summary estimate of their beliefs about behaviour. However, it assumes that people can report the relative weightings of their beliefs. Measuring the indirect and direct measures of the TPB is likely to improve the validity of this study’s results as recommended in previous research (Armitage & Christian, 2004; Sutton et al, 2003). Therefore two models are investigated in the present study, one using the direct measures and the other using indirect measures. In order to understand these measures further, it may be useful to define such constructs below.

3.3. Attitudes and Behavioural Beliefs

Attitude is defined in the TPB model as the perceived positive or negative evaluation of the behaviour in question (Fishbein & Ajzen, 1975). For example, a person who strongly believes that a particular behaviour is likely to produce a favourable outcome is more likely to perform that behaviour. Likewise, if a person strongly believed that a particular behaviour would result in a negative outcome, they would have negative attitudes towards that behaviour and therefore be less likely to perform the particular behaviour. Attitudes can be categorised as cognitive and affective. For example, one’s perception of enrolling at university may include cognitive beliefs about the act, such as whether they believe that studying for a degree is beneficial as well as affective evaluations, such as whether they feel that studying for a degree is advantageous.

\[
A \approx \sum b_i e_i
\]

According to the TPB, attitude (A) is assumed to be approximate to (\(\approx\)) to the indirect measure of attitude. First, the indirect measure of attitude consists of the expected
consequences of performing the behaviour, (also described as behavioural beliefs) and second, the evaluation of consequences. Where $b_i$ is the perceived probability that the behaviour will lead to a positive or negative consequence, $e_i$ represents the individual’s evaluation of that consequence. For example, a student might perceive that enrolling at university (the behaviour) will lead to a better job after graduation (consequence of behaviour) and the evaluation of this consequence is positive (evaluation of consequence). $b_i$ and $e_i$ are multiplied as shown in the algorithm above. For any particular behaviour, an individual is believed to draw on between 4 and 10 salient behavioural beliefs (Ajzen, 2005; Hughes, Weiler & Curtis, 2012). Although an individual is likely to have more than 4 to 10 beliefs regarding a particular behaviour, it is reported that between 6 to 10 behavioural beliefs is the maximum number of behavioural beliefs an individual draws on before executing a particular behaviour (Ajzen, 2005). One’s attitude, and the beliefs that underpin it, is salient in determining the behaviour, and therefore the intention, of an individual.

3.4. Subjective Norm and Normative Beliefs

The second construct underpinning intention is subjective norm. Subjective norm is determined by the person’s beliefs about how important others think about the specific behaviour and whether important others would approve or disapprove of a given behaviour (Ajzen, 2005; Fishbein & Ajzen, 1976). There is a strong body of research that suggests behaviours are shaped strongly by the social context in which one lives (Ajzen, 2005; Fishbein & Cappella, 2006; Gale, Parker, Rodd, Stratton & Moore, 2013; Norman, Conner & Bell, 1999). Research indicates that social influences vary according to the behaviour being examined (Ajzen, 2005). Depending on the behaviour in question, important others may include family, friends or spouse (Ajzen, 1991). In professional fields, important others may include job supervisors (Renzi & Klobas, 2008) or lecturers in a university environment
(Cooper, Kenny & Fraser, 2012). Of particular relevance to this study, Taylor (2015) reported that the two main normative influences on students’ subject choices were parents and teachers.

\[ SN \approx \sum n_i m_i \]

According to the TPB, subjective norm (SN) is assumed to be approximate to \((\approx)\) to its indirect measure. The indirect measure is comprised of two elements. First, the individual’s beliefs of how significant others like or dislike the individual performing this behaviour (also referred to as normative beliefs), and second, to what extent is the individual motivated to comply with significant others (motivation to comply). For example, a high school child may feel pressure to attend university because of his parents. While the child’s perception of this pressure from his parents (normative beliefs) may be high, if s/he has little motivation to comply with the referent (parents), theoretically s/he will be less likely to enrol at a university. Conversely, if he has a high motivation to comply, it is likely that such normative beliefs would have an impact on the child’s intention and behaviour. Where \(n_i\) is the belief that behavioural performance will be approved by a specific referent, \(m_i\) reflects the motivation to comply with that referent. The two elements \(n_i\) and \(m_i\) are multiplied for every referent, and the sum of the products determines the indirect measure of subjective norm (normative beliefs). Normative beliefs can also be categorised into two different forms including what important people think a person should do (injunctive norms) or what important people actually do (descriptive norms).
3.5. Perceived Behavioural Control and Control Beliefs

The third construct of the TPB is Perceived Behavioural Control (PBC). PBC is defined as the person’s own perception of how easy or difficult it is to perform a particular behaviour (Ajzen, 1991). In other words, PBC measures an individuals’ perception that they are sufficiently knowledgeable, skilful, disciplined, and able to perform a particular behaviour (Ajzen, 2005; Kraft, Rise, Sutton, & Roysamb, 2005). Ajzen (1991) stated that the framing of perceived behavioural control stemmed from the concept of self-efficacy.

Likewise, Fishbein and Cappella (2006) stated that PBC and self-efficacy are the same concept. PBC is underpinned by control beliefs that represent the individual’s perception of how different facilitating or inhibiting factors may appear when they perform the behaviour (Ajzen, 2005), multiplied by the perception of the strength of each facilitating/inhibiting factor. The indirect measure of PBC can be described as:

\[ PBC \approx \sum c_i s_i \]

where \( c_i \) is the perception of how many different facilitating or inhibiting factors (control beliefs) there may be, \( s_i \) is the perceived strength of these factors. For instance, students’ perceived access to enough money (control belief) and the strength of this factor (e.g. is it likely to facilitate or inhibit enrolling at university) is how PBC is indirectly measured. With the addition of PBC, intention in the TPB can be represented as:

\[ I = A + SN + PBC \approx \sum b_i e_i + \sum n_i m_i + \sum c_i s_i \]
3.6. Direct and Indirect Measurements

The TPB comprises of both direct and indirect measures (Ajzen, 1991). The direct measures are attitudes, subjective norms and PBC. The indirect measures are the behavioural beliefs summed by the individual’s evaluation of that consequence, normative beliefs summed by their motivation to comply with the referent and control beliefs summed by the strength of the particular belief. Measuring the indirect and direct measures of the TPB is likely to improve the validity of this study’s results as recommended in previous research (Armitage & Christian, 2004; Sutton et al, 2003). Considering the former, an essential first step in achieving the aim of this study is to elicit the salient behavioural, normative and control beliefs that underpin students’ intentions to study at university. Therefore, Research Question 1 of the present study is:

3.7. Research Question 1:

What are the reported behavioural, normative and control beliefs that underpin students’ intentions to enrol at university?

This study is designed to produce two separate, but inter-related, models. These models are not necessarily being compared but may show differences and similarities that may contribute to greater understanding of the predictors of students’ higher education intentions. The first model will comprise of the proximal predictors of intention (attitudes, subjective norm and perceived behavioural norm). Considering that this model is measuring the proximal predictors of intention, this will be referred to herein as the University Proximal Intention Framework (UPIF). The second model will be referred to as the University Distal Intention Framework (UDIF). The UDIF measures all the same variables except that the indirect (aggregated behavioural, norm and control beliefs) measures are substituted for the
direct predictors of behavioural intention. Theoretically, they approximately equal the same (e.g. Subjective norm=normative beliefs x motivation to comply with significant other) but make different assumptions, as discussed above, about how people evaluate and report their beliefs. Both the UPIF and the UDIF models will be revealed at the conclusion of this chapter, however, before examining the models further, it is necessary to discuss the limitations of the TPB and the subsequent implications for this study.

3.8. Limitations of the TPB

It is important to consider the limitations of the TPB because of its significant to this study. Considering the prevalent use of this model, it is perhaps unsurprising that researchers have extensively critiqued the TPB, and identified ways that the model can be improved. A meta-analysis of 185 studies investigating the predictive power of the TPB for a variety of health-related behaviours, reported that the model accounted for an average of between 27% and 39% of the variance in behaviour and intention respectively (Armitage & Conners, 2002). However, Bogers, Brug, Van Assema and Dagnelie’s (2004) analysis suggest the predictive power is much higher. These authors dispute the results of Armitage and Conners’ meta-analysis arguing some of the studies included in the meta-analysis were poorly designed and not aligned with the guidelines suggested by Ajzen. Well designed studies describe the behaviour and intention in great detail, describing where, when, and how the intention and/or behaviour will be carried out (Gollwitzer, 1999). While this will be explored later on in the thesis, it is important to acknowledge here that some researchers using the TPB have not used it in their research with the necessary rigor. Nevertheless, Ajzen, Czasch and Flood (2009) conceded that the model does not fully predict intentions and behaviours.

As with any framework there are limitations and it is accepted that the TPB model is not likely to capture all the beliefs or factors underpinning intent and behaviour. Considering
the complexity associated in predicting intention and behaviour, it is generally accepted there are other determinants that may improve the efficacy of the model to predict behaviour. Attempts have been made to address the perceived weaknesses of the TPB by extending the original model (Conner, 2015; Cristea, Paran & Delhomme, 2013; Heath & Gifford, 2002; Rise, Kovac, Kraft & Moan, 2008). Similarly, the original TPB model has been extended in the present study. Before discussing these extensions further, it is important to first discuss other criticisms of the TPB.

Others have questioned the supposed assumptions of the model relating to rational reasoning to explain behaviour. For example, Sniehotta, Presseau, Araú and Soares’ (2014) criticised the TPB for its “exclusive focus on rational reasoning, excluding unconscious influences on behaviour” (p.2). In response, Ajzen (2014) stated that “nothing could be further from the truth…. beliefs may rely on invalid or selective information; they may be irrational, reflecting unconscious biases, paranoid tendencies, wishful thinking or other self-serving motives; and they may fail to correspond to reality in many other ways” (p.3). In other words, the TPB makes no assumptions about the objectivity of the behavioural, normative and control beliefs that form intention to perform a particular behaviour. Readers with a more nuanced understanding of the TPB will note that the model does not imply that individuals always deliberate carefully and always make optimal decisions. Individuals may hold incorrect beliefs about the outcomes and may make rapid decisions based on a few salient considerations. Having made a decision, people do not necessarily weigh up the pros and cons again unless circumstances change; they may simply retrieve their previously formed intention from long-term memory and act on it. Thus, the TPB model is underpinned by a more limited rationality than is sometimes suggested by its detractors (Francis, 2004).
3.9. Broader Influences on Behaviour

Broader societal level influences such as cultural attitudes and ideologies, mass media, technology, government policy and legislation are not considered in the original TPB model and these factors may have an effect on behaviour (Sroufe, Cooper, DeHart & Bronfenbrenner, 1992). While Ajzen (2005) acknowledges the likelihood of broader societal level influences on beliefs/behaviours, he emphasised that salience of influence on intention/behaviour is the key idea to keep to mind. While broader societal level influences are likely to have an indirect effect on beliefs, intention and behaviour, the factors in the TPB model are the most salient predictors of intention and behaviour execution (Ajzen, 2013).

While it is important to acknowledge that these influences may be influential on behaviour, the present study does not have the capacity to measure the effects of such constructs. Even if there were questions in this study probing such influences on behaviour, it is likely that agents are not typically aware of the influence, or its salience, on their beliefs and/or behaviours from broader societal level influences (Ajzen, 2014; Bargh & Morsella, 2008). Although this may be considered a possible limitation of the present study, it also could be considered a potential strength. For example, stakeholders designing interventions aiming to increase university participation and may be constrained by limited time to implement programs in schools, especially when one considers the time demands placed on school (e.g. overcrowded curriculum, limited time to focus on non-subject area learning) (Cooper, Kenny & Fraser, 2012; Mockler & Groundwater-Smith, 2015). Therefore, interventions designed to help students explore beliefs regarding the most salient influences on students’ university intentions may be the most effective and efficient way to deliver such programs.
3.10. Extensions to the TPB Model

All things considered, arguably the biggest limitation of the TPB is the relatively limited number of variables used to predict intention (Armitage & Connor, 2002). Adding additional variables to predict participants’ intentions may improve the efficacy of the model. The construct of self-concept has commonly been used to improve the efficacy of the TPB model in explaining participants’ intentions (Armitage & Connor, 1998; Booth, Norman, Harris & Goyder, 2014). An important element of a person’s self-concepts is one’s academic self-concept (Marsh, 2002). A major contribution of the present study will be to investigate academic self-concept, net of other variables, as a predictor of student’s intent to study at university. Below a definition of self-concept and academic self-concept are provided, along with an explanation of how these add value to the current study.

3.11. Self-Concept

Identity theory accepts that individuals assign different labels to themselves depending on their interaction with surrounding milieu and the ‘role’ they are playing in society (Mead, 1934). These labels, herein referred to as self-concepts, may include various categories regarding demographic aspects (e.g. Asian, teenager, bloke), social and occupational roles (e.g. husband, lawyer, teacher), consumers (e.g. drinker, gym junkie) and personality traits (e.g. trustworthy, funny, geek) that vary across environments (Booth, 2014). Internal labels have a considerable impact on one’s behaviour and individuals may adopt a number of self-concepts during the day (Stryker, 1968). For example, a man might make his daughter breakfast (father, carer), get on the train to work (commuter, worker, serious), go for a beer with his mates after work (laid back bloke, joker) and take his wife out for dinner afterwards (romantic, devoted lover). In all these social situations, this man is behaving in a number of different ways that are both specific to, and shaped by his environment. Terry et
al. (1999) described self-concept as… “a collection of identities that reflect the roles that a person occupies in the social structure… to understand and predict behaviour, it is necessary to conceive of the self and the wider social structure as being inextricably linked” (p.226). Considering that some have criticised the TPB model for its potentially limited acknowledgement of broader social influences on behaviour (Conner & Armitage, 1998), extensions regarding notions of self-concept have the potential to add considerable value to the TPB model in the present study.

Discussions of self-concept as a possible addition to the prediction of intention dates back to the late 1980’s (Biddle, Bank, & Slavings, 1987). Of particular relevance to this study, self-concept has been found to be an independent predictor of intentions and has been suggested as an additional construct to the TPB (Campbell & Sheeran, 2001; Charng et al., 1988; Conner & Armitage, 1998). While it is possible that different kinds of self-concepts may impact individuals’ intent to study, academic self-concept may be particularly significant (Marsh, 2002). Therefore, it is necessary to delve deeper into the concept of academic self-concept and its position in this study.

3.12. Academic Self-Concept

Academic self-concept, broadly defined, can be thought of as a student’s self-perception of academic ability formed through individual experiences and interactions with their environment (Andrew, 2011; O’Mara et al., 2006; Valentine et al., 2004). It is how one feels about themselves as learners (Waugh, 2000). Guay (2003) defined academic self-concept as an individual’s personal beliefs about their academic abilities or skills. Academic self-concept can be defined as descriptive (e.g. I like school, I like English) as well as evaluative (e.g. I am good at school, I am good at English) (Preckel, Franzis; Brüll & Matthias, 2010) and is quite distinct from self-efficacy or perceived behavioural control (e.g.
I feel good about my English skills). As people age, academic self-concepts tend to become more differentiated, complex and better organised (Byrne & Shavelson, 1996; Marsh, 1989). Linked to the idea of a developing academic self-concept with age, there is evidence to suggest that academic self-concept develops from as early as three years of age with key influences being parents and early educators (Rubie-Davies, 2000). Other studies indicate that by the age of 10, children continuously assess their academic ability relative to their peers (Rubie-Davies, 2006).

Like self-concept, students’ academic self-concept is multi-dimensional (Marsh, 1990). In other words, students’ general academic self-concept consists of an overall evaluation of their perceived self-concept generally about their academic capacity (e.g. I am good at school) and domain specific constructs (e.g. I am good at English or I am good at Science) (Harter, 1999). Domain specific constructs of academic self-concept include verbal, mathematics, science and history (Marsh, 1990). It is generally accepted that students have different levels of academic self-concept across domains. For example, students may have high levels of verbal academic self-concept (e.g. I am good at English) but at the same time, have low levels of mathematical academic self-concept (e.g. I am not very good at Maths).

Within the context of this study, it is important to measure multiple domains of academic concepts and this point is discussed in greater detail in subsequent chapters. To highlight the possible salience of academic self-concept and its potential to impact students’ beliefs, intention and behaviour, it is now necessary to discuss its reported links to student achievement.

3.13. Academic Self-Concept and Academic Achievement

There is research to suggest that there is a relationship between academic self-concept and academic achievement (Guay, Marsh & Boivin, 2003; Marsh, 2007; Parker, Marsh,
Ciarrochi, Marshall & Abduljabbar, 2014). Although there is general agreement about a relationship between the two, there are different ways that researchers describe the directional causality of this association. The three schools of thought regarding the direction of the causality between academic self-concept and academic performance are as follows. First, the skill development model accepts that academic self-concept is a direct consequence of prior academic achievement (Marsh, 2007). In other words, academically strong students develop their academic self-concept with positive feedback from significant others (e.g. parents, teachers). The second school of thought is the self-enhancement model, which assumes that prior self-concept is a strong predictor of academic performance (Marsh, 1997). In other words, students with a strong self-concept achieve higher educational outcomes. The third school of thought is generally the most accepted in the literature and is referred to as the reciprocal model (Marsh & Craven, 2006). The reciprocal model posits that prior academic self-concept has a positive effect on subsequent achievement and likewise, subsequent achievement has a positive effect on academic self-concept (Marsh, 2007). Debates regarding the direction of the causality between academic self-concept and academic performance are beyond the scope of this thesis, however, the capacity of academic self-concept to predict students’ higher education intentions is worthy of further discussion.

3.14. Academic Self-Concept and Education Pathways

Academic self-concept may have a considerable effect on students’ educational pathways including post school transitions to further education (Marsh, Byrne & Yeung, 1999). Others state similar findings, suggesting that students with low academic self-concept are less likely to choose more difficult coursework in schools, engage in additional educational opportunities and apply for more competitive courses (Craven & Marsh, 1991; Nagy, Trautwein, Baumert, Koller & Garrett, 2006). There is a body of evidence to suggest
that students’ academic self-concept in a particular course has influenced their choices for the subsequent year in course selection (Koumi, 2000; Nagy, Trautwein, Baumert, Köller & Garrett, 2006). Considering the former, adding academic self-concept to the TPB may improve the ability of the model to explain students’ intentions to study at university. Several researchers have addressed the extent to which self-identity might be a useful addition to the TPB (Charng, Piliavin, & Callero, 1988; Cook et al., 2002; Terry, Hogg, & White, 1999), however, to date and to the best of the Author’s knowledge, there is no published research that has done this. In order to do this, a discussion regarding the constructs of the TPB and academic self-concept is necessary in order to conceptually describe the proposed model for this study.

3.15. Contextualising the TPB

Ajzen (1991) has discussed the potential for researchers to contextualise the TPB to the specific behaviour being measured in different studies. Ajzen (2005) acknowledges that ‘background factors’ may influence participants’ behaviours and intentions. These so-called background factors are contextual to each study that uses the TPB and may improve understanding of participants’ behavioural determinants. Considering background factors may imply a less important influence on beliefs than other constructs, this term is replaced by demographic factors in this study. The relevant demographic factors are discussed below along with research and a corresponding rationale explaining their inclusion or exclusion in this study’s theoretical framework.
3.16. Consideration of demographic factors

3.16.1. Age & Gender

Age affects behaviour, intention and its underlying determinants (Ajzen, 2005). All kinds of behaviour will be considerably different if one compared the same behaviour but changed the participant’s age. For example, one’s exercising habits as an undergraduate student in their early 20’s could be considerably different to a professor in their late 60’s. The undergrad may have a positive attitude to playing football compared to the professor who may have a positive attitude to a late evening stroll. The subjective norms of the undergraduate may be the individual’s football team peers compared to the professors’ who may be their cardiologist and partner. The PBC may be considerably different considering the under graduate may be fit and healthy (and thus, a perception of high control over the behaviour of exercising) compared to the professor who complains of too much pain and discomfort when exercising and thus, a perception of low control over the behaviour of exercising. From this example, one may see how age is likely to be an important consideration when one measures intention and behaviour. Within the context of this research however, age is not likely to be a consideration because this study’s participation criteria required all individuals to be in year 12 and under the age of 21. Therefore, age is not an important demographic factor to consider in this study.

Gender may be an important consideration when examining intention, behaviour and possible reasons for variance. Females have higher participation rates in university education when compared to males in 88% of all OECD countries (OECD, 2012). The gender ratio for domestic graduates in Australian universities is approximately 6:4 in favour of females (Martin, 2015). This gender imbalance may be largely explained by primary education and nursing- two highly feminised professions, being moved into the universities (Maslen, 2013).
In the context of the present study, the primary purpose of collecting these data is to report the male/female proportion in the sample. Additional exploratory analysis examining gender, outside the scope of the research questions, is shown in Appendix M.

3.16.2. Indicators of Ethnicity.

There is evidence to suggest that ethnic background impacts students’ education outcomes. Research originating from the US reported that some first-generation immigrant parents come to see education as a key means of upward mobility for their children, despite their own low levels of education and income (Kim & Díaz, 2013). Similarly, more recent Australian-based research suggested that subjective norm may be a more salient influence on behaviour in different countries, especially in Asia, considering individuals are more likely to follow their parent’s wishes in regards to education (Yeung, McInerney & Ali, 2014). Given the hegemony of individualistic culture in Australia (Dever, 2013), one’s motivation to comply with their parents’ wishes to study at university may be lower than an individual immigrating from another country or with parents who have done so. Moreover, there is evidence to suggest that students in Australia who have parents born overseas typically have greater motivation to participate in higher education compared to other Australian students whose parents were both born in Australia (Yeung, McInerney & Ali, 2014).

Conversely, other studies examining immigrant’s education pathways found that first-generation immigrant students tend to perform worse than students without an immigrant background, and second-generation immigrant students perform somewhere between the two (OECD, 2015). Compared to domestic students, immigrants to Australia may face additional barriers to higher education because of lower SES status, not speaking the local language at home, lower reading proficiency, and the adjustment of recently arriving (Martin, Liem, Mok, & Xu, 2012; Museus et al., 2011).
Within the context of this study, ethnicity may be an important predictor of students’ intentions to attend university. This study defines ‘Indicators of Ethnicity’ as students who report being either: 1) First generation Australians who were born overseas or 2) Second generation Australians who were Australian-born, with at least one overseas-born parent. Indicators of Ethnicity, as it is operationalised in this research, may have a considerable influence on the intentions of students to attend university and therefore is an important variable to consider in the present study.

3.16.3. Indicators of Socio-Economic Status (SES)-Individual level.

Examining how SES status may impact students’ intentions to participate in university is an important component of the present study. Different dimensions of SES can be linked to educational outcomes in different ways (NCVER, 2011) and therefore, it is desirable to use several single measures when investigating the process by which SES background influences educational outcomes. The final years of high school may be viewed as somewhat of a transitional period whereby students are establishing their own SES characteristics (e.g. Entering tertiary education/ labour market, some moving out of home, building wealth etc.) and it is likely that a student’s SES position has been considerably influenced, to varying degrees, by their caregivers or guardians (Marks, 2015). Therefore, measures of SES used in the current study predominately seek information from students about their parents’ or guardians’ occupations, education and wealth. This study uses three separate, but related measures of SES including parents’ occupation, parents’ education and indicators of family wealth. Each of these three measurements is well established in the literature and each is discussed further below.

The first measure of SES in this study is parental occupation. Parents’ occupations were categorised using the Australian and New Zealand Standard Classification of
Occupations (ANZSCO) (Commonwealth of Australia, 2013). Subsequently, the ANZSCO codes were then converted into the Australian Socioeconomic Index 2006 (AUSEI06) (McMillan et al. 2009), which is an occupational status scale ranging from 0 (the lowest status) to 100 (the highest status). Popular occupations with an AUSEI06 index score of 40 or below include Mechanics (24.6), Hairdressers (25.2) and Chefs (26.6). At the other end of the scale, occupations classified with an AUSEI06 of 70 or above include Barristers (90.7), University Lecturers (92.3) and General Practitioners (100).

The second measure of SES is parental education. Children from low SES families are less likely to have caregivers or people around them who have attained a degree and the relevance of education may be implicitly or explicitly questioned (Jones, 2013). As discussed, parents with a degree are able to discuss their own university experiences, more likely to offer encouragement and typically have higher expectations that their own children go university compared to parents with a high school or vocational qualifications (Centre for the Study of Higher Education [CSHE], 2008). Considering that a key SES difference between parents are those that have a degree and those that do not (Dubow, Boxer & Huesmann, 2009; Marks, McMillan, Jones & Ainley, 2000; Peck, 2001), students are asked to report if either of their parents/guardians have a university degree.

The third measure of SES is the number of books at home. Parents from low-SES communities are less likely to be able to afford resources such as books, computers and study-based furniture that fosters a learning environment at home (Martin & Loomis, 2013). Furthermore, families categorised as low-SES are less likely to provide children with academic support and these factors are likely to impact language and speech development in the child’s formative years (Aikens & Barbarin, 2008). Likewise, other research has found that children’s initial reading competence is correlated with the home literacy environment.
and number of books owned (Cowan et al., 2012). The International Association for the Evaluation of Educational Achievement (IEA), an independent organisation that conducts large scale research regarding education asks students: *About how many books are there in your parents’ or caretakers’ home?* (National Center for Education Statistics, 2012). In response to this measure of SES, the general consensus is that this item is a reasonable proxy for educational and economic resources, respectively, and the answers are sufficient to subdivide children by SES, even though this measure may be inexact (Cowan et al., 2012; Lim & Gemici, 2012; Sherrod, Torney-Purta & Flanagan, 2010).

### 3.16.4. Indicators of Socio-Economic Status (SES) - (Community level).

Aligned with Marks’ (2000) description, students’ SES can be measured at an individual level (e.g. parents’ occupation and education) or community level (e.g. school type). Schools are considered a community level SES measure because the range of disadvantage or advantage experienced by students is likely to impact on students’ learning, social and cultural experiences via peer interactions. School climate may be influenced by the degree of social cohesion within an area and the climate can exacerbate the effects of disadvantageous conditions at the individual level (Jones, 2013). Despite general agreement in the literature stating that individual level measures of SES are the most effective indicators of SES (Lim & Gemici, 2012), there is research to suggest that community level measures of SES, such as school type, are useful compliments and may offer further insights (Piovesan, Pádua, Ardenghi, Mendes & Bonini, 2011). Furthermore, community level measures of SES may not be as sensitive to social desirability bias as individual measures because the researcher’s motivation behind asking community level questions is likely to be more difficult to identify by the participant (Sherrod, Torney-Purta & Flanagan, 2010). Hence, there is a clear rationale for asking participants to report community level SES measures.
Studies eliciting such information have reported differences by school type in the preferences of prospective university students from regional Victoria, even when controlling for other SES differences between students…

*Applicants from independent schools were much more likely than government school applicants to move to Melbourne to study. These pronounced differences by school type were not explicable by SES. High SES students were only slightly more likely to move than low SES students, yet students at independent schools were overwhelmingly more likely to move* (Harvey & Burnheim, 2013, p. 34).

Partly supported by the former, students were asked to write down the school they currently are enrolled in. Two pieces of information are taken from these answers: 1) students are classified into government or catholic/independent school type and 2) the Index of Community Socio-Educational Advantage (ICSEA) score is recorded in order to examine possible trends based on students’ ICSEA scores. The ICSEA is a measure of school socio-educational advantage created by the Australian Curriculum, Assessment and Reporting Authority (ACARA) and numerically represents the relative magnitude of advantage or disadvantage at the school level (ACARA, 2009). The development of ICSEA involves collecting student family background data and identifying, through the use of regression models, the combination of variables that have the strongest association with student performance, and within that combined grouping, how much each of those variables contribute to performance in National Assessment Program-Literacy and Numeracy (NAPLAN) tests (ACARA, 2009). Each school in Australia is assigned an ICSEA score, with 1000 being average. Higher scores indicate a greater level of advantage (>1000) and conversely the opposite is true (<1000). Community level measures of SES, as defined in this research, may have an effect on the intentions of students to attend university and therefore are an important consideration in the present study.
3.17. Research Question 2

The literature above indicates that students’ intentions to study at university are formed by a complex synthesis of behavioural and environmental factors. Eliciting the salient beliefs that form intention may be of considerable value by advancing current understanding explaining and predicting students’ intentions to attend university with the potential to change student behaviour for those in pre-tertiary education. Therefore, Research Question 2 of the present study is:

*Using an extended Theory of Planned Behaviour model, what are the predictors of students’ intentions to enrol at university?*
3.18. Extended TPB models

![Diagram of the University Proximal Intention Framework (UPIF)]

**Figure 2.** University Proximal Intention Framework (UPIF)

Figure 2 and 3 are extended TPB models used in this study. Both models are approximately the same, except that the proximal measures of intention are measured in the UPIF and the distal measures of intention are elicited via the UDIF. The three arrows pointing to each predictor variable in both figures is a schematic representation of how independent variables in both the UPIF and UDIF are theorised to co-vary with each other in
the models. As discussed, theoretically, the aggregated measures of the distal measures of intention are approximately the same as the proximal variables (Ajzen, 2014). Using two models to elicit the proximal and distal measures of intention will add an additional layer of validity to the findings in the present study. Moreover, the use of two models allows the researcher to investigate the justification of approximate equivalence of the direct and indirect measures of the TPB. Furthermore, use of two analytical models adheres to an assumption of no multicollinearity amongst the independent variables. Multicollinearity is defined as the extent to which a variable can be explained by other variables in the analysis (Hair, Black, Babin & Anderson, 2014). Multicollinearity has the potential be a problem because it can cause type II errors (not rejecting a null hypothesis that is false) when theory testing (Grewal, Cote & Baumgartner, 2004). Considering the former, the rationale to use two models has the potential to add additional validity to the findings discussed in this study and adhere to an assumption of no multicollinearity amongst the exogenous variables.

In order to answer Research Question 2, it is necessary to examine the impact of, and relationships between constructs in each model. To explore each possible association, hypotheses have been generated. The first eight hypotheses are associated with the UPIF model and are stated below. It is hypothesised that:

- **H1.** *Attitude will have a significant positive effect on students’ intentions to enrol at university as a component of the UPIF model.*

- **H2.** *Subjective norm will have a significant positive effect on students’ intentions to enrol at university as a component of the UPIF model.*

- **H3.** *Perceived Behavioural Control (PBC) will have a significant positive effect on students’ intentions to enrol at university as a component of the UPIF model.*
• H4. General academic self-concept will have a significant positive effect on students’ intention to enrol at university as a component of the UPIF model.

• H5. Verbal academic self-concept will have a significant positive effect on students’ intention to enrol at university as a component of the UPIF model.

• H6. Mathematical academic self-concept will have a significant positive effect on students’ intention to enrol at university as a component of the UPIF model.

• H7. SES will have a significant positive effect on students’ intention to enrol at university as a component of the UPIF model.

• H8. Indicators of ethnicity will have a positive effect on students’ intention to enrol at university as a component of the UPIF model.
Hypotheses 9-16 are associated with the UDIF model. It is hypothesised that:

- **H9.** Aggregated positive behavioural beliefs will have a significant positive effect on students’ intentions to study at university as a component of the UDIF.

- **H10.** Aggregated normative beliefs will have a significant positive effect on students’ intentions to study at university as a component of the UDIF.
H11. Aggregated control beliefs will have a significant positive effect on students’ intentions to study at university as a component of the UDIF.

- H12. General academic self-concept will have a significant positive effect on students’ intentions to study at university as a component of the UDIF.

- H13. Verbal academic self-concept will have a significant positive effect on students’ intentions to study at university as a component of the UDIF.

- H14. Mathematical academic self-concept will have a significant positive effect on students’ intentions to study at university as a component of the UDIF.

- H15. SES will have a significant positive effect on students’ intention to study at university as a component of the UDIF.

- H16. Indicators of ethnicity will have a significant positive effect on students’ intention to study at university as a component of the UDIF.

The use of UPIF and UDIF models may have important theoretical and practical implications. It is anticipated that both models will inform the design of education interventions and contribute to political, education and social justice policy. Distinct from its practical applications, these models have the potential to advance understandings of how the TPB is used to explain student’s intended university participation. Therefore, Research Question 3 of the present study is:
3.19. Research Question 3:

What theoretical and pedagogical recommendations can be made regarding the
design of programs targeting greater participation in higher education and future
research underpinned by an extended TPB model?

3.20. Summary

This chapter elaborated on the discussion of the TPB as the theoretical foundation for
the present study. The direct and indirect predictors that form intention were described in
some detail. Background factors were discussed and included in this study’s frameworks.
Different studies including meta-analysis were reported, highlighting the TPB’s efficacy in
addition to its limitations. As a response to the limitations of the TPB, academic self-concept
was proposed as a construct that may improve its efficacy to predict students’ study-related
intentions. The author is unaware of any research that has synthesised the constructs of the
TPB and academic self-concepts, highlighting an important theoretical contribution of this
study to the field. Finally, this study’s model was presented along with a corresponding
rationale for extension of the original TPB model. The next chapter progresses the thesis by
examining the methodological perspectives underpinning this research along with the
methods used in each research phase.
Chapter 4. Methodology

4.1. Introduction

This chapter advances the thesis by discussing the procedures and scope of this study. It begins by explaining the ontological, epistemological and methodological positions adopted in this study. This chapter discusses the three distinct phases of this study. Phase 1 involves the collection of behavioural, normative and control beliefs of participants in order to inform the design and structure of the survey instrument. Phase 2 of this study examines the reliability of the survey instrument with a pilot sample. Administration of the final survey occurs in Phase 3. Finally, ethical considerations of the present study are addressed.

4.2. Philosophical Perspectives

Table 1

<table>
<thead>
<tr>
<th>Philosophy</th>
<th>Dominant approach underpinning study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontology</td>
<td>Realist ontology</td>
</tr>
<tr>
<td>Epistemology</td>
<td>Empirical epistemology</td>
</tr>
<tr>
<td>Methodology</td>
<td>Pragmatist</td>
</tr>
</tbody>
</table>

The philosophical perspectives describe the research paradigm within which a researcher operates. One’s research paradigm can be thought of as a belief system which guides the investigator’s decisions during the research (Creswell, 2005). Regardless of whether a researcher is aware or not, they will make decisions about their study within a set of beliefs and assumptions about reality and/or how the world operates (Preston & Kuhn,
There is no escape from the biases and assumptions that underpin all research (Guba & Lincoln, 1994). Discussing similar thoughts, Creswell (2005) stated that research paradigms are a complex synthesis of ontology, epistemology and methodology. O’Leary (2012) urges researchers to critically examine the ontologies, epistemologies and methodological biases that underpin their research because these biases have a considerable effect on the design, results and recommendations of research. Following such recommendations, it is necessary to explore the different and dominant ontologies, epistemologies and methodological biases that underpin this study. Table 1 reports the dominant philosophies underpinning the present research. Below is a more detailed explanation of the philosophies underpinning this research and examples which exemplify the dominant approach.

Ontology is the perception of what constitutes reality and how is existence understood. Phase 1 was supported by a discursive ontology with an acknowledgement of, and willingness to embrace, the existence of multiple realities of human behaviour, beliefs and intentions. A discursive ontology is defined as the view that reality is fluid and exists only in the individual’s mind (Creswell, 2005). Broadly speaking, the dominant ontological position of this study is a realist perspective. A realist ontology can be defined as an acceptance that a set of numbers can be representative, while also accounting for statistical error, of capturing some kind of typical reality of participants’ experience and beliefs (Hirsch, 2011). In Phase 2 and 3 of this study, realist ontology underpinned the methods expected to capture ‘a typical reality’ of participants’ experience and beliefs. On the whole, the large-scale surveying and hypothesis-driven nature of this research demonstrates that realist ontology is the dominant approach underpinning the present study.
Epistemology is concerned with perceptions of what constitutes valid knowledge and how it is obtained (Creswell, 2003). Burrell and Morgan (1994) stated the following:

It is possible to identify and communicate the nature of knowledge as being hard, real and capable of being transmitted in tangible form, or whether knowledge is of a softer, more subjective, spiritual or even transcendental kind, based on experience and insight of a unique and essentially personal nature. The epistemological assumptions in these instances determine extreme positions on the issues of whether knowledge is something which can be acquired on the one hand, or is something which has to be personally experienced on the other (p.1).

Burrell and Morgan’s statement is representative of the tension between empiricist and constructivist epistemologies. Researchers need to question what they deem is credible evidence to answer their investigations and particular epistemologies will be more suited to different research questions and methods (O’Leary, 2012). Considering O’Leary’s comments in the context of this study, a blend of constructivist and empiricist epistemologies underpinned this research, depending on the phase of the research. For example, the interviews conducted in the present research comprised of various events where, for example, variation in prosody, hesitations and fillers contributed to the meaning and understanding of the experience. Such ‘events’ assisted the researcher’s understanding of participants’ experience. The co-construction of meaning that emerged from the interviews aligns strongly with a constructivist epistemology. Conversely, the design of Phases 2 and 3 were guided by the empirical epistemology where evidence from large-scale surveys were used to deduce, generalise and quantify factors. Considering the goal of this research was to produce models that described the most salient factors predicting students’ intentions to enrol in university, a relatively large sample (>200) is needed in order to look for trends and to possibly generalise findings. The importance placed on examining trends and generalising the results
exemplifies that an empirical epistemology is the dominant perspective underpinning this research.

In the domain of methodology, traditionally, the two main perspectives have been positivist and interpretivist approaches (Creswell, 2008). The positivist approach places value on quantitative measurements, correlations, statistical logic and verification (O’Leary, 2012). The interpretivist approach places greater importance on the subjective experience of individuals and typically employs the use of qualitative methods such as interviews or focus groups (Creswell, 2008). Both positivist and interpretivist approaches have strengths and weaknesses and dichotomising these approaches limits the potential of researchers to build their methodological designs from their questions (Onwuegbuzie & Johnson, 2004). Accordingly, a pragmatist paradigm underpins the methodological approach used in this study. Pragmatists believe that research methods should be mixed in ways that offer the best opportunities for answering the research questions (Onwuegbuzie & Johnson, 2004; Tashakkori & Teddlie, 2010). In the context of this study, qualitative data methods were most appropriate in order to elicit the beliefs required for construction of the survey instrument and answering Research Question 1. Quantitative data methods were most appropriate for Research Question 2 because the aim was to examine how factors predicted students’ study-related intentions. A synthesis of qualitative and quantitative data to was used to answer Question 3 of this study. All things considered, a pragmatist methodology motivated the researcher to choose methods that most suited the particular phase of the research with the overall aim of collecting data that offered the best opportunity for answering the research questions.
4.3. Overall Study Design

A schematic representation of this study’s design is shown in Figure 4. Phase 1 involved the elicitation of salient behavioural, normative and control beliefs (modal beliefs) underpinning the students’ \((n=5)\) intentions. These beliefs were then incorporated into the survey instrument. This survey instrument was subsequently piloted with a sample of 66.
participants for internal consistency during Phase 2. Administration of the final version of
the survey instrument occurred in Phase 3 with a sample size of 252. Data analysis involved
a two-step approach using Structural Equation Modelling (SEM). In the first step,
Confirmatory Factor Analysis (CFA) was undertaken during the measurement stage of SEM.
In the second step, the structural model stage of SEM allowed the examination of the factors
to predict students’ intentions. Finally the interview data from phase 1 were synthesised with
the SEM analysis to examine findings, discuss implications and the answer research
questions.

4.4. Defining the Behaviour of interest

Defining the behaviour of interest carefully with consistency across constructs is
crucial element of research validity when using the TPB (Ajzen, 1991). Failure to define the
behaviour of interest carefully and with consistency across elements is likely to substantial
impact, or void, the validity of the results (Ajzen, 2005). The behaviour of interest is defined
in terms of its Target, Action, Context, and Time (TACT) elements.
Table 2

*Target, Action, Context, and Time (TACT) elements*

<table>
<thead>
<tr>
<th>Primary Target:</th>
<th>The award of a degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action:</td>
<td>Enrolling in a university degree course</td>
</tr>
<tr>
<td>Context:</td>
<td>University institution</td>
</tr>
<tr>
<td>Timeframe:</td>
<td>Next three years (chosen as the timeframe because students may delay university enrolment until some point after year 12 (e.g. Working holiday)).</td>
</tr>
</tbody>
</table>

The application of the (TACT) elements is shown in Table 2. During the interviews (Appendix B) and survey responses (Appendix E) students were given the following definition of: *A genuine intent to study at university is signified by the act of enrolling in a degree course.* Students were asked to think about their intention to enrol in a degree course within the next three years. Although the participant may be intending to go to university, a shorter timeframe may change how they respond to the questions asked of them because of the break from study. At the same time, the researcher did not want the time span to be too long as question validity can be negatively affected (Ajzen, 2005) and thus, the three year timeframe was selected.

4.5. Method

4.5.1. Phase 1.

In Phase 1 there were a total of five interviews. Each interview lasted for approximately 45 minutes, who self-reported an intention to enrol at university in a degree
course within the next three years. The rationale for using interviews was Ajzen’s (1991) recommendation that beliefs should be elicited prior to surveying in order to design the indirect measures of the survey instrument. The primary goal of the interviews was to elicit the behavioural, normative and control beliefs that underlie high school students’ intentions to study a degree course in order to construct the survey instrument.

Following Francis’ (2004) design guidelines, Appendix B shows the interview schedule. The semi-structured configuration gave the researcher the freedom to digress should participants wish to discuss points further or recount stories of their experience. Questions 1 and 2 of the interview schedule were designed to elicit demographic information about the participant (e.g. school type, family background and education). Question 3 asks the sample directly if they intend to go to university to confirm the information participants reported on the consent form. The participant’s behavioural beliefs were elicited by asking them the perceived advantages and disadvantages associated with studying at university in questions 4 and 5 of the interview schedule. Normative beliefs were probed in questions 6 and 7 and control beliefs were covered in question 8 of the interview schedule. The elicitation of the most frequently reported behavioural, normative and control beliefs informed the design of the survey.

4.5.2. Participation criteria and sample rationale for interviews.

Purposeful sampling (Creswell, 2005) was used to select participants for the interviews. The requirement was that all participants in the research were completing year 12 in a Victorian high school. The sooner one can measure the intention of behaviour closer to the possible execution of that behaviour; the more accurate it is likely to be (Ajzen, 2005). This group was chosen because they are close to performing the behaviour of interest
(enrolling in university). Based on this rationale, purposeful sampling was identified as the most appropriate method of recruitment for this phase.

**4.5.3. Recruitment of Interview Participants.**

Following an invitation letter to principals seeking permission to conduct research at the school, students watched a short presentation by the researcher discussing the aims and possible benefits of participating, consent; confidentiality and privacy. Participants who participated were given a web site to enter their email address and go in the draw to win an iPad worth $298. Following the conclusion of the interviews, the most frequently reported beliefs were incorporated into the survey instrument.

**4.6. Phase 2**

**4.6.1. Survey Instrument Design.**

Section 1 of this survey collects demographic data about the participants and their family. This information is important in order to analyse possible trends and to account for these variables when statistical analysis is conducted. Section 1 is categorised into four distinct parts including (1.1) Gender, (1.2) SES indicators-community, (1.3) SES indicators-individual (1.4) Indicators of ethnicity. Rationales for eliciting these four measures have been provided previously in the Literature Review Chapter (see 3.16.1.-3.16.4.) and to prevent repetition, this section is focused primarily on explaining the design of the survey instrument.

(1.1) **Gender** is collected in Question 1 of this survey. Question 2 asks students if they attend a government or catholic/independent school. (1.2) **SES indicators-community** is indicated in Question 3 by asking students to report the high school they attend.
Subsequently, students’ high school was substituted in the study’s data file by the school’s corresponding ICSEA number.

(1.3) *SES indicators-individual* measures are elicited using a number of survey questions asking students to report their parents’/guardians’ employment, education and proxy indicator of family wealth. For example, Question 4 and 7 asked participants to state their parents’ most recent job title. The question terminology used in the survey is *Parent 1/2* as opposed to mother or father because it caters for students who have same-sexed parents and/or guardians. The design of questions does not make assumptions about participants’ backgrounds and adheres to best practice measures as modelled by the Australian Bureau of Statistics (Commonwealth of Australia, 2015). Parents’ occupations were categorised using the Australian and New Zealand Standard Classification of Occupations (ANZSCO) and subsequently, a continuous measure was derived using the Australian Socioeconomic Index 2006 ([AUSEI06] McMillan, Jones & Beavis, 2008).

Participants were asked to report their parents’/guardians’ education in questions 5 and 8. While studies have commonly asked students to report their parents’ highest education level (NCVER, 2011), students’ lack of knowledge about their parent’s level of education has led some to question the integrity of such data (Dwyer, 2013). The key SES difference in this measurement is distinguishing which parents have a degree and those that don’t (Dwyer, 2013). Hence a single, dichotomous question asking if parents had a degree of higher was adapted from Weis and Dolby’s (2012) research in this area.

The third interrelated individual measure of SES in the survey is a proxy measure of family wealth. While family wealth is commonly associated with parents’ income, questions about income may be considered intrusive and additionally, adolescents may not know their parents’ income or may be unwilling to disclose such information (Jones, 2013).
International studies of educational achievement have often made use of student reports on household items as measures of family wealth such as possession of books (Lim & Gemici, 2011). It is simple to collect estimates of the number of books at home and does not attract high levels of missing of data (Marks, 2000). Books at home are an acceptable proxy for educational and economic resources available to children and can be used to subdivide participants by SES, even though this measure may be inexact (Cowan et al., 2012; Lim & Gemici, 2012; Sherrod, Torney-Purta & Flanagan, 2010). Thus, Question 13 of the survey asks students to estimate the number of books in their home.

(1.4) *Indicators of ethnicity* are formed by three questions. Questions 6, 9 and 10 are designed to be representative of the migration status of participants and their parents in the present study.

Section 2 of the survey is devoted to eliciting participants’ intentions to enrol in university. As emphasised by Ajzen (1991) it is important to elicit the intentions of the sample over a number of questions and use a statistical validity measure to ensure that there is high correlation between responses. Questions 14 to 18 are devoted to eliciting students’ behavioural intention to study at university.

Section 3 (Questions 19 to 22) of this survey probes participants’ direct attitudes towards university study. A combination of *experiential items* (how it feels to perform the behaviour: *Studying a degree at university will be: Unpleasant/Pleasant*) and *instrumental items* (whether the behaviour achieves something: *I believe studying a degree at university will be: Useless/Worthwhile*) are included as advised by Ajzen (2005).

Section 4 measures the indirect attitudes of participants’ intention to study at university and the individual’s perception of that consequence. The formula for measuring
indirect attitude is the following: \[ A \approx \sum b_i e_i. \] Where \( b_i \) is the perceived probability that the behaviour will lead to a consequence, \( e_i \) represents the individual’s evaluation of that consequence. These two elements are multiplied for every consequence and the sum of the products is approximately equal to attitude (\( A \)). Questions 23 to 32 are designed to elicit participants’ indirect attitudes.

Section 5 (Questions 33 to 35) measures participants’ subjective norm to study at university. This section investigated participants’ perception of the social pressure to enrol at university. Section 6 measures the sample’s normative beliefs and motivation to comply as an indirect indicator of subjective norm of studying at university. Groups or people that are influential on the participants’ behaviour are referred to as referent groups. As discussed previously, the formula for indirectly measuring subjective norm is the following: \[ SN \approx \sum n_i m_i \] where \( n_i \), is the belief that behavioural performance will be approved of by a specific referent, \( m_i \) reflects the motivation to comply with that referent \( n_i \). The two elements \( n_i \) and \( m_i \) are multiplied for every referent, and the sum of the products determines the indirect measure of subjective norm (normative beliefs). Questions 36 to 41 are designed to elicit students’ indirect normative score.

Section 7 (Questions 42 to 44) seeks participants’ Perceived Behavioural Control (PBC) to study at university. As discussed, self-efficacy and locus of control form PBC. This is achieved by assessing the participant’s self-efficacy and their beliefs regarding their perceived controllability of the behaviour. Section 8 (Questions 45 to 50) indirectly measures PBC by assessing control beliefs and their perceived power to influence behaviour. As discussed previously, the formula for indirectly measuring perceived behavioural control is the following: \[ PBC \approx \sum c_i s_i, \] where \( c_i \) is the perception of how many different facilitating or inhibiting factors (control beliefs) there may be, \( s_i \) is the perceived strength of these.
Section 9 (Questions 51 to 59) is the final section of the survey. All questions in section 9 are directly taken from three subscales of the Self-Description Questionnaire II ([SDQ-II], Marsh, 1990). The three subscales copied from the SDQ-II with relevance to answering this study’s research questions include the General School Scale subsection, the Verbal Scale subsection and the Math Scale subsection (1990). As discussed earlier, these three subscales represent Shavelson’s conceptualisation of academic self-concept into general academic-self-concept (measured in the SDQ-II and in this study using the General School Scale), and seminal subjects areas such as English (measured in the SDQ-II and in this study using the Verbal Scale) and Mathematics (measured in the SDQ-II and in this study using the Math Scale). The SDQ-II has been tested and validated on a sample of over 5,450 students ranging from years 7-12. The survey is comprised of 59 questions broken into 9 sections (Appendix E).

### 4.6.2. Survey Internal Consistency.

Reliability can be estimated by measuring the internal consistency of an instrument (Leech, Barrett & Morgan, 2011). In order to achieve the former, invitation letters were sent to principals seeking permission to conduct research at their school via postage and/or email across Victoria. An inner city Melbourne high school was willing to participate and the survey was administered to 66 students. Following the piloting process in Phase 2 and subsequent analysis of internal consistency, the final version of the instrument was ready for administration (Appendix E).
4.7. Phase 3

4.7.1. Sample Size

Recommendations in the literature on the size of the sample for using SEM analysis are mixed. There is, however, general consensus that the minimum recommended samples for SEM analysis should be (>120) in order to test multiple hypotheses in a model of interacting variables (Byrne, 2013; Jöreskog & Sörbom, 1997; Kline, 1998). SEM analysis with a sample of fewer than 100 subjects may be flawed and may encounter technical problem unless a simple model is evaluated (Kline, 2011). Hoelter (1983) and Hair et al (2014) recommended that a sample size of ≥200 is typically sufficient to yield an adequate model fit for the chi-square (χ²) test. Hence, a sample size ≥200 was considered appropriate for the present study.

4.7.2. Recruitment Strategy and Participation Criteria

The original recruitment strategy was to sample ≥200 participants from a variety of schools across Victoria in order to run the SEM analysis and increase the generalisability of data. Invitation letters were sent to over 70 principals seeking permission to conduct research at their school via postage and/or email. Students were eligible to participate in this study if they were enrolled in year 12 in Victoria and under the age of 21. Unfortunately there was a very low response (only two schools expressed interest following the invitation). Many schools expressed reluctance, especially because the target sample was Year 12 students, in their final year of high school. It was clear that solutions to this problem had to be considered because schools were largely unwilling to let the investigator conduct this research in their school. As an alternative, the VCE and Careers Expo was considered an opportunity to recruit the large sample of students needed to run the SEM analysis. This expo claims to be Australia’s largest careers expo, with over 32,000 (approximately 15,000
high students from metro, regional and rural Victoria) attendees over four days (7th–10th May) in 2015 (VCE and Careers Expo, 2015). The VCE and Careers Expo was an ideal environment to recruit the target demographic for this research (e.g. students intending to attend university within the next three years).

4.8. Analysis of Qualitative Data

NVivo version 10 (QSR International, 2012) was used to thematically code the interview data in Phase 1. Data were coded into behavioural, normative and control beliefs categories. Frequency counts were used to order the most reported behavioural, normative and control beliefs.

4.9. Analysis of Quantitative Data and SEM Analysis

A range of multivariate analyses were used in the present study. In Phase 2 of this study, Cronbach’s alpha was used to measure internal consistency of the survey instrument. In Phase 3 of this research, Structural Equation Modelling (SEM) was used. SEM is commonly used in the Social Sciences to represent associations between unobserved constructs (latent variables) from observable variables. In terms of its value in the study, the capacity of SEM to examine possibly quite complex associations between constructs means it is particularly suitable for answering Research Question 2 and 3 in this research. SEM allows researchers to examine both the measurement and structural components of a model by testing the relationships among multiple independent and dependent constructs simultaneously (Gefen et al., 2000; Tabachnick & Fidell, 2007). In the context of this study, the constructs of the TPB are theorised to have causal links (e.g. Attitudes → Intention) and the value of this research is partially attributed to evaluating the validity of such claims. The
author is unaware of any education-based research that has used SEM analysis to measure both direct and indirect measures of the TPB.

Analysis of Moment Structures (AMOS) version 22, an add-on software component of SPSS was used to conduct the SEM analysis. Maximum likelihood (ML) was the estimation technique used in AMOS (Hair et al., 2014; Tabachnick & Fidell, 2007). ML was the most suitable estimation technique for this study because (1) ML estimation technique can withstand moderate violations of normality and is recommended when the number of Likert scales are 4 or greater (Bollen, 1989; Byrne, 2001; Kline, 2005). Accordingly, there are moderate violations of normality in this study’s results as shown in the kurtosis and skewness scores, as discussed later on, and the Likert scales were >4 (7 point scales). (2) ML is suitable for models that mostly have <5 items for each latent construct (Hair et. al., 2014). In this study, the only construct to use 5 items was intention and all other constructs had <5 items. Considering the former, ML was an appropriate estimation technique for this study.

4.10. Measurement Model

Anderson and Gerbing (1988) proposed a two-step model-building approach for SEM that emphasized the analysis of two conceptually distinct models: a measurement model followed by the structural model. This section specifically focuses on the measurement model. The measurement model, or factor model, specifies the relationships among measured (observed) variables underlying the latent constructs. In order to specify the relationships among observed variables, this stage examines the unidimensionality, validity and reliability of latent constructs using Confirmatory Factor Analysis (CFA). For instance, (1) Initially factor loadings may be modified as per the process described below (2) Validity and reliability is measured and (3) Goodness of fit (GOF) indices are calculated as
recommended by Hair et al (2014). Procedures and conventions related to factor loadings, validity and reliability and GOF indices are discussed below.

4.10.1 Standardised Factor Loadings

Factor loadings are the means of interpreting the role of each item in defining a factor (Hair et al., 2014). “Although factor loadings of ±.30 to ±.40 are minimally acceptable, values greater than ±.50 are generally considered necessary for practical significance” (Hair et al., 2014, p.116). Further to Hair’s general advice on acceptable thresholds, composite measures of SES typically have low factor loadings. For instance, Marks (2014) stated that…) …the intercorrelations among indicators of socioeconomic background are not particularly strong. Of the socioeconomic background variables, mother’s and father’s education are the most highly correlated (at around 0.5), indicating substantial educational homogamy. Across industrialized countries, father’s and mother’s education and occupation status, books in the home, and cultural aspects have only moderate intercorrelations at around 0.4, often lower. (p.40)

Considering the former, in the context of this study, the minimally acceptable standardised factor loading in the present study is .3.

4.10.2 Validity and Reliability

Validity and reliability are measured in this SEM component of this study using convergent validity, discriminant validity and composite reliability. Validity and reliability in this context is defined as the extent to which a construct and its corresponding measurement indicators are related, and the extent to which these set of items actually reflect the construct they were designed to measure (Hair et al., 2014). Specific tests used include 1) Composite Reliability, 2) Convergent Validity and 3) Discriminant Validity.

Composite reliability (CR) is a measure of the overall reliability of a collection of items forming the latent variable (Fornell & Larcker, 1981). According to Hair et al. (2014),
CR should be >.7 and this minimum threshold was used in this study. Equation 1 in Appendix O shows how CR was calculated.

Convergent validity is the measure of how much an observed variable shares variance in common with different observed variables on a different latent variable (Hair et al., 2014). Convergent validity is indicated by calculating the CR score and the Average Variance Extracted (AVE, Equation 2 Appendix O). The AVE measures the amount of variance that is captured by the construct in relation to the amount of variance due to measurement error (Hu & Bentler, 1999). As discussed in Hair et al. (2014), AVE estimation should be greater than ≥.5, and CR estimates ≥ .7 to show adequate convergent validity. Hair et al. recommendations were adhered to in the present study.

Discriminant validity assumes that items claimed to measure the same construct correlate higher than items from different constructs that are theoretically supposed not to correlate (Hair et al., 2014). To test the discriminant validity of the model, 1) the Maximum Shared Variance (MSV) should be less than the AVE (MSV<AVE) and 2) all standard regression weights values ≥.3 (Hair et al., 2014).
4.10.3 Goodness-of-Fit (GOF)

Table 3

Goodness-of-Fit Measures

<table>
<thead>
<tr>
<th>GOF Measure</th>
<th>Abbreviation</th>
<th>Acceptable thresholds (&gt;250) (Hair et al., 2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Absolute fit indices</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chi-square</td>
<td>$\chi^2$</td>
<td>$(p&gt;.05)$</td>
</tr>
<tr>
<td>Chi-square/df</td>
<td>$\chi^2$/df</td>
<td>$\leq3$</td>
</tr>
<tr>
<td>Root Mean Square Error of Approximation</td>
<td>RMSEA</td>
<td>$\leq.08$</td>
</tr>
<tr>
<td>Adjusted Goodness-of-Fit Index</td>
<td>AGFI</td>
<td>$\geq.80$</td>
</tr>
<tr>
<td><strong>Incremental fit indices</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standardized Root Mean Square Residual</td>
<td>SRMR</td>
<td>$\leq.09$</td>
</tr>
<tr>
<td>Comparative Fit Index</td>
<td>CFI</td>
<td>$\geq.95$</td>
</tr>
<tr>
<td>NNFI</td>
<td>TLI</td>
<td>$\geq.95$</td>
</tr>
<tr>
<td>Parsimony Goodness-of-Fit Index</td>
<td>PGFI</td>
<td>^</td>
</tr>
<tr>
<td>Parsimony Normed Fit Index</td>
<td>PNFI</td>
<td>^</td>
</tr>
</tbody>
</table>

^=No specific recommendations: Score ranges between: 0=poor fit-1=very good fit (Mulaik et al 1989)

GOF indices indicate the degree to which the sample variance–covariance data fit the structural equation model (Hair et al, 2014). There are three different kinds of GOF measures used in the present study including absolute fit indices ($\chi^2$, $\chi^2$/df, RMSEA, AGFI), incremental fit indices (SRMR, CFI, TLI) and parsimony measures (PGFI, PNFI).

Absolute measure of fit presumes that the best fitting model has a fit of zero and the associated GOFs ($\chi^2$, $\chi^2$/df, RMSEA, AGFI) determine how far the model is from perfect fit (Kenny, 2016). Absolute fit indices determine how well an *a-priori* model fits the sample data (McDonald & Ho, 2002). Incremental fit indices are a group of indices that do not use the chi-square in its raw form but compare the chi square value to a baseline model (Hair et al, 2014). For these models the null hypothesis is that all variables are uncorrelated (McDonald & Ho, 2002). Parsimony indices refer to the number of estimated parameters required to achieve a specific level of model fit. Essentially, an over-identified model is compared with a restricted model. Collectively, the GOF measures will summarise the
discrepancy between observed values and values expected.

4.10.4 Modification Indices

For all constrained parameters in the model, AMOS calculates a modification index. Modification indices offer suggested remedies to discrepancies between the proposed and estimated model. Modification indices indicate how much the chi-square value of a model would drop if the parameter were free instead of constrained. Examination of the modification indices suggests that the fit of the model can be improved substantially by allowing the error terms to be correlated. Following conventions by Kenny (2016), error terms were only considered eligible for co-variance only if they were on the same factor. In Phase 3, tables are provided showing error terms with modification indices >10 and if subsequent co-variance ensued.

4.11. Structural Model (Path Analysis)

As discussed, Anderson and Gerbing (1988) categorised SEM analysis into a two-step model-building approach. The first step is analysing the previously discussed measurement model. The second step is analysing a structural model, whereby the causal and correlational links between variables are examined. A range of calculations are conducted including 1) coefficient of determination ($R^2$). 2) GOF indices-calculated using the same thresholds discussed in 4.10.3. 3) Hypothesised relationships between the latent constructs in the models are measured using critical ratios ($t$-value). Estimates of $t \geq 1.96$ suggest significance ($p < .05$) of the causal path between latent constructs. Standardised beta values ($\beta$) are used to indicate the magnitude of the hypothesised causal connections between variables. A summary of calculations used in each stage of this study are stated below in Table 4:
### Table 4

**Summary of Statistical Tests Used**

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Software used</th>
<th>Purpose</th>
<th>Use and thresholds</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s Alpha</td>
<td>SPSS Version 22</td>
<td>to examine the internal consistency of each measure</td>
<td>Minimum cut off of .7 for Cronbach’s alpha</td>
<td>Nunnaly (1978); Hair et al. (2014)</td>
</tr>
<tr>
<td>Little’s chi-square statistics ($\chi^2$)</td>
<td>SPSS Version 22</td>
<td>to diagnose the randomness of missing data</td>
<td>($p &gt; .05$)= data may be assumed to be missing completely at random (MCAR)</td>
<td>Little (1988)</td>
</tr>
<tr>
<td>Mahalanobis Distance (D2)</td>
<td>SPSS Version 22</td>
<td>to investigate the multivariate outliers</td>
<td>Significance test at $p &lt; .001$</td>
<td>Kline (2005); Hair et al., (2014)</td>
</tr>
<tr>
<td>Kurtosis and Skewness</td>
<td>SPSS Version 22</td>
<td>to investigate data normality</td>
<td>maximum acceptable limits values up to $\pm 1$ for skewness and up to $\pm 3$ for the kurtosis</td>
<td>Hair et al (2014)</td>
</tr>
<tr>
<td>Descriptive statistics (e.g. frequencies, means, standard deviations)</td>
<td>SPSS Version 22</td>
<td>to summarize demographic information and items analysis</td>
<td>these analyses were performed for each variable separately and to summarise the demographic profile of the respondents in order to conduct a preliminary examination of the data</td>
<td>Sekaran (2000)</td>
</tr>
<tr>
<td>SEM (Measurement) Confirmatory Factor Analysis (CFA)</td>
<td>AMOS Version 21</td>
<td>Assesses goodness of fit, unidimensionality, reliability and validity of constructs used in the model</td>
<td>hair et al. (2014)</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>χ²</strong> ( (p &gt; 0.05) )</td>
<td><strong>χ² /df ≤3</strong></td>
<td><strong>RMSEA ≤.08</strong></td>
<td><strong>AGFI ≥.80</strong></td>
<td></td>
</tr>
<tr>
<td><strong>χ² /df ≤3</strong></td>
<td><strong>RMSEA ≤.08</strong></td>
<td><strong>PCLOSE &gt; .05</strong></td>
<td><strong>SRMR ≤.09</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CFI ≥.95</strong></td>
<td><strong>TLI ≥.95</strong></td>
<td><strong>PGFI^</strong></td>
<td><strong>PNFI^</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CR &gt; .7</strong></td>
<td><strong>AVE &gt; .5</strong></td>
<td><strong>MSV &lt; AVE</strong></td>
<td><strong>X_i &lt; √AVE</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Standardised Factor loadings ≥ .3 meet minimum threshold</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEM (Structural) Path analysis</th>
<th>AMOS Version 21</th>
<th>Total variation of DV explained by the model by IVs. Examine the hypothesised relationships between the latent constructs in the proposed models</th>
<th>hair et al. (2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>χ²</strong> ( (p &gt; .05) )</td>
<td><strong>χ² /df ≤3</strong></td>
<td><strong>RMSEA ≤.08</strong></td>
<td><strong>PCLOSE &gt; .05</strong></td>
</tr>
<tr>
<td><strong>RMSEA ≤.08</strong></td>
<td><strong>AGFI ≥.80</strong></td>
<td><strong>SRMR ≤.09</strong></td>
<td><strong>CFI ≥.95</strong></td>
</tr>
<tr>
<td><strong>TLI ≥.95</strong></td>
<td><strong>PGFI^</strong></td>
<td><strong>PNFI^</strong></td>
<td><strong>R^2</strong></td>
</tr>
<tr>
<td><strong>CR = t value ≥ 1.96 (p &lt; .05)</strong></td>
<td><strong>Beta coefficients (β)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

^No specific recommendations: Score ranges between: 0=poor fit-1=very good fit (Mulaik et al 1989)

\( X_i \) = one absolute value of the correlations with another factor

### 4.13 Summary of Statistics Used in this Research

Table 4 shows a summary of the statistics used in Phases 1 and 2 of this study. As discussed, in Phase 2, a minimum cut off of .7 of Cronbach’s alpha is applied. In Phase 3, Little’s chi-square is used to diagnose the randomness of missing data. Mahalanobis
Distance, skewness and kurtosis measures are used to analyse the variance and normality of these data. Descriptive statistics (e.g. percentages) are used to summarise demographic information and item analysis. Subsequently, SEM is used to the measurement component of analysis using CFA. Subsequently, SEM is used to examine the hypothesised relationships between the latent constructs in the proposed models.

4.14. Ethical Considerations

This research was approved by the RMIT Human Research Ethics Committee on 23rd of March 2015 (Reference: CHEAN A 0000019185-01/15 (Appendix H). Data relating to the research have been securely stored to protect the privacy and confidentiality of participants. Retention and destruction of all research material complies with the Australian Code for the Responsible Conduct of Research (Australian Government, 2007). The interviews collected re-identifiable data. Although identifiers have been removed from the data and replaced by a code, it remains possible to re-identify a specific individual by, for example, using the code or linking different data sets. The survey data are non-identifiable at all times, including piloting and administration of the finished instrument. Care was taken to comply with all requirements outlined in the National Statement on Ethical Conduct in Human Research (Australian Government, 2007). Moreover, the Victorian Department of Education and Early Childhood Development approved this research project on the 31st of March 2015 (reference number: 2015_002618/Appendix J) and the Catholic Education Office approved this research project on the 4th of March 2015 (reference number: #2068/Appendix K).
4.14. Summary

This chapter advanced the thesis by discussing the underpinning philosophical positions, study design, procedures and scope of this research. As discussed, realist ontology, empirical epistemology and pragmatist methodology are the dominant research paradigms which have guided the investigator’s decisions, methods and analysis during this study. The procedure of this study was explained including the interviews in Phase 1, the design and internal consistency of the survey instrument in Phase 2 and administration of the final survey instrument in Phase 3. Finally, ethical considerations of the present study were addressed. In the upcoming chapter this thesis progresses to the elicitation of the salient modal beliefs of participants in Phase 1 of this research.
Chapter 5. Phase 1-Elicitation of Salient Modal Beliefs

5.1. Introduction

Collectively, behavioural, normative and control beliefs are referred to as modal beliefs (Ajzen, 2005). While there a body of research to indicate that the elicitation of modal beliefs improves the likely efficacy of the TPB to explain intention and behaviour (Ajzen, 2014; Curtis, Ham & Weiler, 2010; Sutton et al., 2003), it is common to see studies with direct measures only (Francis, 2004). Failure to conduct an elicitation study may compromise the TPB’s utility for understanding and explaining intent and behaviour (Ajzen, 2014). Therefore, it is important to identify students’ salient modal beliefs underpinning their intentions to enrol in university. Modal beliefs are elicited in Phase 1 with a sample of five students. Eliciting modal beliefs in the present chapter advances this thesis by allowing the researcher to construct the survey instruments for in Phases 2 and 3 of this study.

5.2. Target Population and Demographics of Participants

Table 5

Demographics of Interview Participants

<table>
<thead>
<tr>
<th>Participant code</th>
<th>Gender</th>
<th>Reported Intention to enrol in university</th>
<th>School Type (Government/Independent)</th>
<th>Has any parent/guardian completed a degree (0-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S01</td>
<td>Male</td>
<td>Yes</td>
<td>Independent</td>
<td>0</td>
</tr>
<tr>
<td>S02</td>
<td>Male</td>
<td>Yes</td>
<td>Government</td>
<td>2</td>
</tr>
<tr>
<td>S03</td>
<td>Female</td>
<td>Yes</td>
<td>Government</td>
<td>0</td>
</tr>
<tr>
<td>S04</td>
<td>Female</td>
<td>Yes</td>
<td>Government</td>
<td>1</td>
</tr>
<tr>
<td>S05</td>
<td>Female</td>
<td>Yes</td>
<td>Independent</td>
<td>2</td>
</tr>
</tbody>
</table>
Students were eligible to participate provided they were 1) currently studying Year 12
2) were under the age of 21 and 3) had an intention to attend university. As shown in Table
5, three females and two males participated. Three students attended a government school
while two were enrolled in an independent high school for year 12. All students reported
their current enrolment in VCE subjects. VCE subjects typically result in the student
receiving an Australian Tertiary Admission Rank (ATAR) score, the primary criterion for
entry into most undergraduate university programs in Australia. As discussed below, all
participants reported a positive intention to attend university, albeit to vary levels.
Consequently, all the beliefs that may negatively impact on intention to attend university may
not have been elicited in Phase 1. The reader is encouraged to keep this in mind when
interpreting these data.

5.3. Measures, Procedure and Quality Assurance

Using questions recommended by Ajzen (2002) and Francis et al, (2004), each
interview lasted between 25- 45 minutes. Interviews were recorded digitally using the inbuilt
microphone on a laptop computer together with version Audacity 2.1.1 software (Audacity,
2015). As recommended by Ajzen (2014), respondents were given a description of the
behaviour in terms of target, action, context, and time (TACT) and were asked a series of
open-ended questions to elicit beliefs. The following preamble was communicated to
students:
“Welcome to this interview and thank you for participating in this study. This research aims to explore what beliefs are behind students intending to go to university and those who don’t. Within the context of this survey, a genuine intent to study at university is indicated by enrolling in a degree course. When questions in this survey ask you about studying at university, I want you to think about your intention to enrol in a university course in the next 3 years. It is important to point out that there are no right or wrong answers; I’m interested in your beliefs about your future pathway.”

Students were then asked a series of 14 questions broken into distinct categories. The procedure for the interviews were as follows: (1) participants were asked open-ended questions with the intention of eliciting demographic information such as age, self-reported ancestry and year 12 course choices (Let’s start with you telling me a little bit about yourself/ What subjects are you currently studying at the moment?). (2) Following these questions, participants’ were explicitly asked about their intentions to study at university (Answering yes or no to the following question, do you intend to study at university for a degree? Why?). (3) Students were questioned about their behaviour beliefs about studying at university (What do you think might be some advantages to study for a degree at university?/ What do you think might be some disadvantages to study for a degree at university?). (4) Students were then asked about their normative beliefs (Considering other people’s opinion who you value, is there anyone who may have had an influence on you to study for a degree at university? Why do think this is the case?/ Considering other people’s opinion who you value, is there anyone who may have had an influence on you to not study for a degree at university? Why do think this is the case?) (5) Participants were asked about their control beliefs (What factors or circumstances make it difficult for you to study for a degree at university? Why? What factors or circumstances would assist you to study at university?).
5.4. Data Analysis

Thematic analysis as suggested by Francis (2004) was used to analyse the data from the elicitation study. The purpose of the thematic analysis was to identify categories of beliefs that were most frequently discussed by participants. As previously discussed, these beliefs informed the creation of the survey instrument. During the analysis, content categories were identified, data were systematically coded. A frequency count was conducted using Nvivo 10 based on the number of times a particular belief appeared in these data. These beliefs were then arranged in a descending order of frequency.

5.5. Intention to go to University

All students in this phase expressed intention to attend university on their consent forms prior to the interviews. However, when asked in the interviews, their responses could be described as ranging from ‘confident intent’ to what might be described as ‘hesitant intent’. All but one of the participants may be categorised as the former. The latter could be indicated by the following:

I: So let’s think about the next 3 years...do you intend to go to uni?

S02: ummm...yes...the idea is that I will go for a degree in Early Childhood...I haven’t looked up the ATAR score for entry so if I don’t get into it I was thinking TAFE...

I: So TAFE as a pathway into uni?

S02: TAFE, for a year or two and then go back into uni as an adult...

I: So just to rephrase it...so you intend to go to uni? But go to TAFE first?

S02: ...ummm...yeah...I think it will end up like that...if I could I would go to uni first...but I probably won’t get the score...[required for university entrance]...because I am absolutely shocking at English...it’s just this subject that pulls me down quite a fair bit...
5.6. Behavioural Beliefs

Table 6

*Positive Behavioural Beliefs to enrol in University*

<table>
<thead>
<tr>
<th>Belief</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career aspirations</td>
<td>5</td>
</tr>
<tr>
<td>Students’ interest in learning about specific field</td>
<td>4</td>
</tr>
<tr>
<td>Graduate premium</td>
<td>4</td>
</tr>
<tr>
<td>University lifestyle</td>
<td>2</td>
</tr>
</tbody>
</table>

5.6.1. Career Aspirations.

Table 6 shows the positive behavioural beliefs elicited and the frequency of these beliefs discussed as perceived advantages of going to university. Career aspirations were equally the most popular advantage mentioned as a consequence of studying at university.

For example:

**S03:** *I want to be a photographer when I finish [high school] and uni will give me the skills to go and do that afterwards.*

**S02:** *I wanna help people you know so I looked at community services and I did some work experience in that in year 10 and 11...didn’t like that so I went into childcare and that’s really where I want to fit in and I fit in there...and I want to help out with the kids is really fun and I want to do that.*

**S05:** *I think if you want to do well in life you have to go to uni....all my friends are going to uni....I don’t even think of it as an option...everyone just expects you to go...you need a degree to do any decent job that will be a good career....Nearly most...actually...everyone I would say that I know that’s done well in their career and life have mostly gone to university.*

5.6.2. Students’ Interest in Learning about Specific Field.

Students’ interest in learning about specific field were equally the second most popular positive behavioural belief reported as a result of studying at university (4 out of 5).

Interviews that highlight this theme include the following:
S03- ummm...you’re in an atmosphere where you are with a lot of new people exploring new and interesting ideas and creations.... Um...there’s a lot more sorta skill level than there would be at TAFE....

S01- .... at uni I’ll be able to learn new things I am interested in ...not like high school at all where you are made to do subjects like Science when I’m not really that interested in it....

5.6.3. Graduate Premium.

Four out of five students mentioned the expected graduate premium as a result of attending university. For example:

S02: ummm...probably if I was going to go to TAFE...you would be looking at..you know..$30 max an hour pay....but if you know you go to uni...you know you can always go higher in the workforce and get better jobs...with the better education that you have...which means better pay and better hours...you know...it’s just better for my standing in life...so I can retire....and not work until I’m 114! [laughter]

I: So getting a job with better pay is an important goal?

S02: I wanted to be in the Army but I couldn’t because I was colour-blind...I thought I was going to the education in the army you know...then I thought about the police force and then they wouldn’t accept me and then I’m like...okay...so I wanna help people you know so I looked at community services and I did some work experience in that in year 10 and 11...didn’t like that so I went into childcare and that’s really where I want to fit in...and I fit in there....and I want to help out with the kids is really fun and I want to do that.

S05: …You need a degree these days if you want a job that will pay enough to be able to buy a house one day and own a nice car...

5.6.4. University Lifestyle.

Two of the students in the interviews reported that the social aspect of the university lifestyle such as meeting new people, attending parties and making friends was a salient positive behavioural belief underpinning their intention to attend university:
S02: Yeah..meeting new friends and things like that...you know..all that uni stuff...you see it on TV....in the American movies and everyone talks about the parties..I still don’t think it’s a hundred percent there...but you know, I wanna go there..

I: So what do you see on TV?

S02: You know like the parties and the drinking and all that...you know and they’re actually underage over there [in America]...when they go to uni and they have to be 21 to drink and I’m like far out...what are we doing here? [in Australia] [laughter]....

I: Its interesting [laughter]...im not sure it’s the way the American’s portray it....[laughter] So it’s the parties?

S02: More the social thing behind it...getting to meet new people...new friends and stuff..as a kid I didn’t think to myself I’d want to finish year 12 and then do four years of uni..but then you’ll be 18, you’ll have opportunities to meet new people....That’s probably one of the bigger reasons...

5.7. Disadvantages

5.7.1. Study debt.

All students reported that a study debt was a disadvantage to studying at university. At the time, the proposed move by the former Abbott Government to deregulate student fees at Australian universities received significant media coverage, commentary and community discussion from a number of stakeholders. The only behavioural belief in relation to the possible disadvantages of attending university was study debt. The examples below highlighted a high level of confusion along with a sense of frustration with the realisation of the possibility that university fees may be uncapped in the near future:
S02: Ahhhhh...the cost! [laughter] it’s going up as well...isn’t it?

I: There’s discussion about it...

S02: They talk about it going up and stuff and I’m like nooooo [groan]...I know I can take out loans and stuff like that. You hear on the news and stuff they talk about cutting courses and raising costs you know and ya friends talk about it. Wait six years and then it can go up! [Laughter].

S05: I’m doing an Arts degree in Sociology at Melbourne [University] if I get in and its complete rubbish that the cost of a degree is going up. My parents are paying for it so it’s not that big of a deal for me...but if they weren’t, I couldn’t see myself racking up a massive debt for something that doesn’t even guarantee me a job!

5.8. Normative Beliefs

Table 7

<table>
<thead>
<tr>
<th>Normative Beliefs to enrol in University</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>5</td>
</tr>
<tr>
<td>Teachers</td>
<td>3</td>
</tr>
<tr>
<td>Peers</td>
<td>1</td>
</tr>
</tbody>
</table>

5.8.1. Parents.

As shown in Table 7, all interview participants stated that parents had a substantial effect on their intention to attend university. For example:

S04: Mum I guess really had a big impact...we looked online at the uni websites.... see what my options are...

S03: I suppose my family, especially my parents, have had a big influence.....

S02: ummm...it would probably be..the [my] parents...because they always talk about uni..they say when we were at uni you know...talkin it up and all that...
5.8.2. Teachers

As reported in Table 7, three students stated that teachers had a substantial effect on their intention to attend university. From the interviews, students recalled examples from their schooling experience about a range of teachers. Participants talked about teachers who they perceived as exceeding their expectations versus other teachers who did not meet the students’ expectations. Students recalled episodic memories of when a teacher encouraged them to study at university level. This suggests that students value these events and remember them vividly long after the statements are made. For example:

S05: I remember this teacher, Mrs [name withheld] in year 9 at my old school; she was my home room teacher. She always talked about seeing yourself in 10 years and making a plan to get there. She talked to everyone about if university was part of ‘the plan’ just before the end of the year. I remember this chat one day encouraging me to do psychology or sociology at university because that’s what I’m really interested in and I was probably getting the best mark, or close to anyways, in the class for those subjects. I think that chat really gave me some confidence; it was like yeah, if I work really hard I can study at university.

S02: uhhhh...most of them don’t like me...I don’t think they really care about me....I had one teacher last year who I did a VET course with....she was lovely...you know she wanted me to go to university...she thought I could do that. I was in a Community Services class and I was only the boy in it, the rest were girls so it was pretty awkward and because of that I think I grew a strong connection with the teacher because if I had a question in a class of 25 girls you would always ask the teacher and you know I think we grew a really strong connection and she thinks I can do anything, she spent a lot of time working with me trying to work on things, extra work. Trying to make me better at what I was doing, trying to make me better. If I didn’t hand something in on my course she would be following me up and saying okay, your handwriting is horrible, just say it to me orally and I’ll mark you done as it’s done. You know that extra half an hour a week meant heaps; no other teachers have offered to do that, an extra half an hour. I also had my English teacher last year...she was lovely...she was great...she taught great... We have an assignment due and we all hand them in and she is like...I’ll all give you feedback and it was personal feedback, most of my teachers this year will send me an email and be like if you want to see me, come up...there’re not doing the extra hard yards. I think they are like well
its year 12, you know you have to push yourself, I think well they're the teacher you should put the hard yards in as well.

5.8.3. Peers

One student reported that a peer student was a salient normative influence to attend university:

S02: ummmm....I've got a mate ...I went to school with him and used to work with him at Bunnings...him and his misses are doing uni and he sorta influenced me to put uni up there...you can do more stuff with a degree ..... 

5.9. Control Beliefs

Control beliefs are the perceived presence of factors that may facilitate or impede performance of behaviour. As discussed, control beliefs are aligned closely to the concept of self-efficacy and an individual’s perceived control over the behaviours.

Table 8

<table>
<thead>
<tr>
<th>Control Beliefs to enrol in University</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to financial resources</td>
<td>3</td>
</tr>
<tr>
<td>Successfully passing university studies</td>
<td>3</td>
</tr>
<tr>
<td>ATAR score for intended university course</td>
<td>3</td>
</tr>
</tbody>
</table>

5.9.1. Access to Financial Resources.

Shown in Table 8, three students also reported that access to financial resources as a potential control factor on their future behaviour. Below are poignant examples of what students stated in relation to financial concerns:
I: Can you think of any reasons why it might be difficult to study for a degree?

S05: It’s not just the money to pay the uni fees….you also need to money for text books and stuff for your course….then there is transport, depending on what uni I go to, I should be okay with that…and food as well…and you have to have a life as well…my parents earn too much for Centrelink…I’m only 18 and I think you have to be 21 or older to get Centrelink I think…I work at KFC casually but keeping a car going and buying things like clothes and going out every now and again takes all the money…I end up always asking my Mum for more money [laughter]...

S02: It costs a lot of money…I suppose you can always get the loans and all that…even if I can’t get the loans, I’d be like Mum Dad can I have some money and I will pay you back eventually. They probably will hopefully…you can always work around that you know...

Although S05 and S02 expressed a similar concern regarding access to fiscal resources while studying at university, both responses imply a subtle reassurance that whatever financial concerns they may have in the future, their parents are a ‘fiscal safety net’ if they experience financial difficulty. It may be that this perceived behavioural control to handle possible future hardship may mean that the individual has higher self-efficacy to overcome this perceived possible difficulty associated with studying at university. These comments indicate the importance of financial support of parents when students are considering their future pathway.

5.9.2. Successfully passing university studies.

Shown in Table 8, three students expressed a sense of apprehension in relation to successfully passing university coursework in the future. For instance:
**S03:** I haven’t experienced university so…it’s kind of a scary thing….I need the confidence to overcome my fears…

**I:** Are you worried about anything in particular?

**S03:** Yes, I’m scared that I’ll fail a subject or the degree…that I’m not clever enough

[embarrassed laughter]…

**S02:** ummm….probably the workload!…even though you are only during one course...you know you have to see the lectures...See the tutors you know...3 times a week...5 times a week max...you still got heaps of time to do the homework and stuff...just a little bit of pressure…

5.9.3. ATAR Score for intended university course.

Three students also reported a sense of anxiety over getting the necessary ATAR score for their intended university course (Table 8). For instance:

**S02:** Steady my grades, or bump them up more...you always want to bump them up more but just keep the line going you know...don’t go down any wrong paths...I have to at least try....once I turn 18...you know, don’t go out every weekend...drink every second day of the week you know [laughter]....you know...don’t cruise. Work and have a balance...my best friends dropped out of school and I couldn’t do that because he just wanted to play...I want to actually work...I can do both, I can still go to parties and work...I’ve got sport...I’ve got a girlfriend...I’ve got parties....and I’m still managing to get the homework in every Monday and Tuesday so ...yeah you can do it....we get all these people come and talk about time management...and I think that’s probably the one thing no one cares about you can do it...everyone does their own thing...just keeping my scores alright...getting the ATAR....

**S05:** .... My Maths teacher keeps talking about the importance of getting a high ATAR score...the last year of high school is such a big year...it can all get too stressful if you don’t have good friends and family to have down time with...
5.10. Implications of interview data on structure of survey instrument

The purpose of the interviews was to determine the salient modal beliefs underlying students’ intentions to study at university. It is essential that these salient beliefs be elicited for new behaviours and for each new population of interest (Ajzen, 2005). In line with recommendations (Ajzen & Fishbein, 1980; Francis, 2004), an elicitation study was conducted in order to obtain the appropriate the behavioural, normative and control beliefs underpinning students’ intentions to study at university. From the interview data, career aspirations, students’ interest in learning about specific field, the graduate premium and university lifestyle were the positive behavioural beliefs reported to be most salient in forming the behavioural intention to attend university. Conversely, all students discussed their beliefs regarding the cost of the degree and some made reference to recent attempts by the former Abbott Government to deregulate the Australian university sector. Moreover, students listed their parents, teachers and peers as the most salient normative influences on their intentions to study at university. Last, participants expressed apprehension regarding possible control beliefs regarding university study including their ability to pass university studies in the future, achieving their ATAR score for their intended university course and access to financial resources.

5.10.1. Behavioural Beliefs and Individual’s Evaluation of those Consequences.

1) Students’ career aspirations to work in a field which was personally satisfying was reported as a salient behavioural belief in the elicitation phase of this study. Accordingly, Question 23 (behavioural belief) in phase 2 is: If I study a degree at university, I will find it easier to get a job I like (Very unlikely [1]-Very likely [7]) and Question 28 (evaluation): Finding a job I like is: (Extremely undesirable [-3]- Extremely desirable [3]). 2) Students’ Interest in learning about a specific field was also reported as a salient behavioural belief in
this study. As a result, Question 24: *If I study a degree at university, I will get the opportunity to learn things I am interested in* (Very unlikely [1]-Very likely [7]) is multiplied by Question 29: *Learning things I am interested in is:* (Extremely undesirable [-3]- Extremely desirable [3]). The midpoint of the scale is zero, and therefore the score of each behavioural belief multiplied by the outcome evaluation (e.g. Undesirable-desirable) represents an influence for or against enacting the behaviour. For example, if someone answered 6 to Question 24 and 2 for Question 29, the individual’s score would be (6*2=12). A score of 12 indicates a positive belief evaluation of the behaviour. In contrast, if an individual answered 5 to Question 24 and -3 for Question 29, this individual’s score would be (5*-3=-15), indicating a negative belief evaluation to performing the behaviour. 3) The likelihood of earning more money in the future as a result of studying at university appeared to be a strong behavioural belief. Question 25: *If I study a degree at university, I will have more money in the future* (Very unlikely [1]-Very likely [7]) is multiplied by Question 30: *Having money is:* (Extremely undesirable [-3]- Extremely desirable [3]). 4) University lifestyle may be a salient behavioural belief influencing students’ intentions to attend university. Consequently, Question 26: *If I study a degree at university, I will attend social events* (e.g. Parties/ social and special interest clubs) (Very unlikely [1]-Very likely [7]) is multiplied by Question 31: *Attending social events (e.g. Parties/ social and special interest clubs) is:* (Extremely undesirable [-3]- Extremely desirable [3]). 5) Study debt was the only reported disadvantage to studying at university. Therefore, question 27 of the final survey is *If I study a degree at university, I will have a study debt* (Very unlikely [1]-Very likely [7]) times Question 32: *Having a study debt is:* (Extremely undesirable [-3]- Extremely desirable [3]).
5.10.2. Normative Beliefs and Motivation to Comply with Referent

1) Parents were reported to be the most salient reference group for participates. Hence, Question 36 of the final survey is My parents/guardians generally think I: (Should not study a degree course at university [-3] - Should study a degree course at university [3] multiplied by Question 39: My parent's/guardian’s approval is important to me: (Not at all [1] – Very much [7]). 2) Teachers were reported to be a salient reference group on participates to study at university. Therefore, Question 37 of the final survey is My teachers generally think I: (Should not study a degree course at university [-3] - Should study a degree course at university [3] times Question 40: What teachers think I should do matters to me: (Not at all [1] – Very much [7]). 3) The interview data indicated that a salient reference group on participates’ intention to study at university are their peers. Consequently, Question 38 of the final survey My friends generally would: (Should not study a degree course at university [-3] - Should study a degree course at university [3] is times by Question 41: What friends think I should do matters to me: (Not at all [1] – Very much [7]).

5.10.3. Control Beliefs and Corresponding Control Belief Strength

1) The interview data suggest that access to financial resources is a salient control belief regarding students’ intentions to study at university. Therefore, Question 45: Having access to enough money (e.g. savings/parent’s help) is important in order to study a degree at university (Very unlikely [1] - Very likely [7]) is multiplied by Question 48: My access to money (e.g. savings/parent’s help) means that I am: (Less likely to study a degree [-3] More likely to study a degree [3]. 2) A salient control belief regarded their perceived ability to pass their future university coursework. Thus, Question 46 of the final survey is: My confidence in successfully passing university in the future is important in order to study a degree (Very unlikely [1] - Very likely [7]) multiplied by Question 49: My confidence in
successfully passing university in the future means I am: (Less likely to study a degree [-3]
More likely to study a degree [3]. 3) A salient control belief was students’ beliefs regarding
their ability to get the ATAR score for their intended course. Hence, Question 47: Getting
the final high school results needed for university entry is important in order to study a
degree (Very unlikely [1]-Very likely [7]) times by Question 50: The final high school results
I expect to receive overall mean I am: (Less likely to study a degree [-3] More likely to study
a degree [3].

5.11. Summary

The design and placement of questions into this study’s survey instrument signals the
end of Phase 1 of this study. The most salient reported behavioural, control and normative
beliefs have been added to the survey instrument ready for testing in Phase 2 of this research.
Measures reported in Phase 2 of this study estimate the survey instrument’s internal
consistency.
Chapter 6. Phase 2- Internal Consistency of Survey Instrument

6.1. Introduction

Following the completion of Phase 1, Phase 2 of this study examines the internal consistency of survey measures before administering the questionnaire in Phase 3. Estimates were produced for the endogenous variable (*behavioural intention*) and exogenous variables (*attitudes, subjective norm, perceived behavioural control, general academic self-concept, verbal academic self-concept and mathematical academic self-concept, ethnicity and ses measures*). Following testing, implications for Phase 3 are discussed before progressing to this phase of the study.

6.2. Internal Consistency

Internal consistency is a form of construct reliability associated with how similar or different items are answered (Hair et al., 2014). Minimum thresholds for direct TPB items ≥.7 and corrected item-total correlation of ≥.3 aligned with Ajzen’s (2005) and Francis’ (2004) recommendations. Important in the context of this study, people can quite logically hold both positive and negative beliefs about the same behaviour and hence it is not appropriate to assess the internal consistency of indirect measures (e.g. *behavioural / normative/ control*) (Francis, 2004). For example, someone may believe that studying at university will result in a higher chance of getting a satisfying job and therefore report a positive behavioural belief (e.g. perceived advantages to performing the behaviour) about performing the behaviour. At the same time, this individual may believe that studying at university will accrue a large study debt and therefore report a negative behavioural belief (e.g. perceived disadvantages to performing the behaviour). Operational limitations of the school meant that test-retest methods were not possible for indirect measures. Consequently,
it was not possible to measure indirect beliefs in Phase 2. Indirect measures will still undergo reliability testing (composite reliability, maximum shared variance) in Phase 3 as part of the SEM analysis. Internal consistency reliability estimates were produced for the dependent variable (*Behavioural Intention*) and independent variables (*Attitudes, Subjective norm, perceived behavioural control, general academic self-concept, verbal academic self-concept and mathematical academic self-concept, ethnicity and SES measures*).

### 6.3. Sample Size for Measuring Internal Consistency of Instrument

There are a range of perspectives regarding minimum sample sizes for pilot studies (Hertzog, 2008). While Lackey and Wingate (1998) made a rather arbitrary recommendation of 10% of the final study size, they concluded that the final decision should be guided by cost and time constraints as well as by size and variability of the population. The sample in Phase 2 consisted of 66 students, all in Year 12 and attending the same school. Compared to the sample size in Phase 3 (*n*=252), the sample size in Phase 2 was approximately 26.2% of the final study size, far exceeding Lackey and Wingate’s recommendations.

Table 9

*Internal Consistency of Behavioural Intention Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected Item-total Correlation</th>
<th>α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int1</td>
<td>.85</td>
<td>.95</td>
</tr>
<tr>
<td>Int2</td>
<td>.81</td>
<td>.96</td>
</tr>
<tr>
<td>Int3</td>
<td>.93</td>
<td>.94</td>
</tr>
<tr>
<td>Int4</td>
<td>.91</td>
<td>.94</td>
</tr>
<tr>
<td>Int5</td>
<td>.89</td>
<td>.94</td>
</tr>
</tbody>
</table>

Total Items’ α = .96

*Mean /V= Variance*
As shown in Table 9, $\alpha = .96 \geq .70$ for the intention items. The Corrected Item-total Correlation (CIC) as shown in ranged between .81 and .91. All items were >.3 and were therefore retained for Phase 3 of the study.

Table 10

*Internal Consistency of Attitude Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected Item-Total Correlation</th>
<th>$\alpha$ if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Att1</td>
<td>.76</td>
<td>.87</td>
</tr>
<tr>
<td>Att2</td>
<td>.77</td>
<td>.87</td>
</tr>
<tr>
<td>Att3</td>
<td>.77</td>
<td>.87</td>
</tr>
<tr>
<td>Att4</td>
<td>.80</td>
<td>.86</td>
</tr>
</tbody>
</table>

Total Items’ $\alpha = .90$

M= Mean /V= Variance

Table 10 shows $\alpha = .90 \geq .70$ for the attitude items. The corrected item-total correlation ranged between .76 and .80. All items met the minimum cut-off of >.3.

Table 11

*Internal Consistency of Subjective Norm Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected Item-Total Correlation</th>
<th>$\alpha$ if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sn1</td>
<td>.72</td>
<td>.74</td>
</tr>
<tr>
<td>Sn2</td>
<td>.67</td>
<td>.87</td>
</tr>
<tr>
<td>Sn3</td>
<td>.77</td>
<td>.70</td>
</tr>
</tbody>
</table>

Total Items’ $\alpha = .82$

M= Mean /V= Variance

As shown in Table 11, $\alpha = .82 \geq .70$ for the attitude items. The corrected item-total ranged between .5 and .6. All items were >.3 and were therefore retained for Phase 3 of the study.
Table 12

*Internal Consistency of Perceived Behavioural Control Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected Item-Total Correlation</th>
<th>α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pbc1</td>
<td>.47</td>
<td>.70</td>
</tr>
<tr>
<td>Pbc2</td>
<td>.45</td>
<td>.72</td>
</tr>
<tr>
<td>Pbc3</td>
<td>.69</td>
<td>.41</td>
</tr>
</tbody>
</table>

Total Items’ α = .71
M= Mean /V= Variance

Table 12 shows α= .71 (≥.70) for the PBC items. The corrected item-total correlation as ranged between .47 and .70. All items met the minimum cut-off of >.3.

Table 13

*Internal Consistency of General Academic Self-Concept Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected Item-Total Correlation</th>
<th>α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>GenAc1</td>
<td>.63</td>
<td>.58</td>
</tr>
<tr>
<td>GenAc2</td>
<td>.65</td>
<td>.56</td>
</tr>
<tr>
<td>GenAc3</td>
<td>.44</td>
<td>.80</td>
</tr>
</tbody>
</table>

Total Items’ α = .74
M= Mean /V= Variance

Table 13 shows the reliability scores using 3 items for general academic self-concept α= .74. The corrected item-total correlation ranged between .44 and .63. All items met the minimum cut-off of >.3.
Table 14

**Internal Consistency of Verbal Academic Self-Concept Items**

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected Item-Total Correlation</th>
<th>α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>VerAc1</td>
<td>.90</td>
<td>.91</td>
</tr>
<tr>
<td>VerAc2</td>
<td>.88</td>
<td>.93</td>
</tr>
<tr>
<td>VerAc3</td>
<td>.88</td>
<td>.92</td>
</tr>
</tbody>
</table>

Total Items’ α = .94
M= Mean /V= Variance

Table 14 shows α = .94 (≥ .70) for the verbal academic self-concept items. The corrected item-total correlation ranged between .88 and .9. All items were >.3 and were therefore retained for Phase 3 of the study.

Table 15

**Internal Consistency of Mathematical Academic Self-Concept Items**

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected Item-Total Correlation</th>
<th>α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mamasc1</td>
<td>.70</td>
<td>.93</td>
</tr>
<tr>
<td>Mamasc2</td>
<td>.89</td>
<td>.77</td>
</tr>
<tr>
<td>Mamasc3</td>
<td>.80</td>
<td>.83</td>
</tr>
</tbody>
</table>

Total Items’ α = .89
M= Mean /V= Variance

Table 15 shows the reliability scores using 3 items for mathematical self-concept α=.89 (≥.70). The corrected item-total correlation ranged between .70 and .89. All items were >.3 and were therefore retained for Phase 3 of the study.
Table 16

*Internal Consistency of Indicators of Ethnicity*

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected Item–Total Correlation</th>
<th>α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobp</td>
<td>0.49</td>
<td>0.62</td>
</tr>
<tr>
<td>Fabp</td>
<td>0.53</td>
<td>0.55</td>
</tr>
<tr>
<td>Sbp</td>
<td>0.50</td>
<td>0.60</td>
</tr>
</tbody>
</table>

Total Items’ α = 0.70

M= Mean /V= Variance

Table 16 shows the reliability scores using 3 items for indicators of ethnicity α=0.70 (≥0.70) and all item-total correlation was above >0.3 for all measures. Hence, all measures were retained for Phase 3 of the study.

Table 17

*Internal Consistency of SES items*

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected Item–Total Correlation</th>
<th>α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movo</td>
<td>0.50</td>
<td>0.22</td>
</tr>
<tr>
<td>Favo</td>
<td>0.57</td>
<td>0.19</td>
</tr>
<tr>
<td>MoEd</td>
<td>-0.34</td>
<td>0.39</td>
</tr>
<tr>
<td>FaEd</td>
<td>-0.46</td>
<td>0.40</td>
</tr>
<tr>
<td>School</td>
<td>0</td>
<td>0.39</td>
</tr>
<tr>
<td>Books</td>
<td>0.45</td>
<td>0.51</td>
</tr>
</tbody>
</table>

Total Items’ α = 0.38

M= Mean /V= Variance

Table 17 shows the reliability scores using 6 items for SES measures α=0.38 (<0.70). This result is well below the minimum 0.7 acceptable threshold. This result perhaps is perhaps indicative of the multi-dimensional nature of SES. For instance, it is not uncommon to get inter-correlations of SES measures <0.4 (Marks, 2014). Performing factor loading measurements as part of the CFA in Phase 3 is likely to provide a clearer idea of the possible relationship between these SES variables and students’ intentions to attend university. For
instance, validity and reliability measures such as composite reliability are a more
sophisticated measure than Cronbach's $\alpha$ and together with the much larger sample size
($>250$), Phase 3 will estimate the possible influence of SES on students’ intentions to study at
university with greater reliability. Considering the importance of SES measurement in this
study, all items were kept in this study before more sophisticated analysis and validity tests
are conducted in Phase 3.

6.4. Summary of results in Phase 2 and Implications for Phase 3

Internal consistency measures reported in Phase 2 estimate the reliability of the survey
measures used in this study. Estimates were produced for the dependent variable
(Behavioural Intention) and independent variables (attitudes, subjective norm, perceived
behavioural control, general academic self-concept, verbal academic self-concept and
mathematical academic self-concept, ethnicity and SES measures). Most measures exceeded
or met the Ajzen’s (2005) and Pallant’s (2010) recommendations of retaining items on the
survey instrument if the alpha was $\geq .7$ in addition to corrected item-total correlations of $\geq .3$.
The notable exception to the former is the SES measure, with the Phase 2 result highlighting
the complexity and multi-dimensionality of the construct. The Phase 2 results form a strong
rationale for conducting SEM analysis in Phase 3, where more sophisticated measures and a
much larger sample size than ($n=250$ compared to $n=66$) is more likely to indicate the
potential influence of SES, and other constructs, on students’ intentions to study at university.
Following the reliability testing in Phase 2, the design of the survey instrument is considered
complete and ready to be administered in Phase 3 to participants.
Chapter 7. Phase 3- Examining the Psychosocial Predictors of Students’ Intentions to Enrol in University

7.1. Introduction

This chapter is the culmination of the preparatory investigations conducted in Phases 1 and 2 of this study. These two previous phases have laid the foundation to examine the psychosocial predictors of students’ intentions to enrol at university in Phase 3. This chapter advances the thesis by examining the predictors of 252 high school students’ intentions to attend university. Phase 3 involved analysis of two separate models, the University Proximal Intention Framework (UPIF) and the University Distal Intention Framework (UDIF). The testing of two models allows (1) further insight into the specific beliefs underpinning students’ intentions (2) Examination of the theoretical validity of the TPB direct and indirect constructs in Education research and (3) direct and indirect measures make different assumptions about how people evaluate and report their beliefs and therefore using both measures may increase the validity and reliability of data. These models are not necessarily being compared but may show differences and similarities that may contribute to greater understanding of the salient predictors that form students’ intentions to enrol at university. The first model to be evaluated is the UPIF which measures the salient proximal variables that form intention including attitude, subjective norm and PBC in addition to academic self-concept variables, SES and demographic variables. The UDIF measures all the same variables except that the indirect (summed behavioural, norm and control beliefs) measures are substituted for the direct predictors of behavioural intention.
7.2. SEM Analysis Begins

SEM was used to analyse the hypothesised relationships between behavioural intention and variables in the UPIF and the UDIF. As discussed in Chapter 4, relationships among constructs and indicators are validated by using CFA. The CFA involves a series of tests to confirm the factor structure. It is referred to as the measurement model.

Subsequently, the structural model shows constructs that may be associated with, or predictors, of other constructs (Bentler, 1995; Hoyle, 1995; Hair et al., 2014). Before the measurement and structural components of a model can be tested, handling missing data, examining potential outliers, investigating the normality of data and discussing multicollinearity are essential before confirming that SEM is a suitable analysis method for this data (Hair et al., 2014).

7.3. Missing Data

Table 18

Little’s (1988) Chi-Square Statistic

<table>
<thead>
<tr>
<th>Chi Square ($\chi^2$)</th>
<th>Df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>671.86</td>
<td>696</td>
<td>.73</td>
</tr>
</tbody>
</table>

SEM analysis is sensitive to missing values and must be addressed before inferential analysis commences (Hair et al., 2014). Accordingly, a listwise deletion approach was used meaning that cases were dropped from the analysis if it had a missing value in at least one of the specified variables. Listwise deletion is one of the most common techniques to handling missing data in SEM analysis (Peugh & Enders, 2004); however, use of this technique is underpinned by the assumption that the data is missing completely at random (Hair et al., 2014). Hence, Little’s (1988) chi-square statistic was used for diagnosing the randomness of
missing data. Little (1988) stated that if the \( p \) value for the Missing Completely At Random (MCAR) test is \( >.05 \), then the data might be assumed to MCAR. The statistical results of the Little’s MCAR test are shown in Table 18, which indicates that the test is not significant \( (p>-.05) \) and therefore safe to conclude that the missing data in this study was MCAR. From a total of 277 returned surveys, 25 were removed from the analysis because of a missing value in at least one of the specified variables. Therefore, 252 surveys (91\%) met this study’s criterion for further analysis.
7.4. Participants

Table 19

Demographic Characteristics of the Phase 3 Sample

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>109</td>
<td>43.3</td>
</tr>
<tr>
<td>Female</td>
<td>143</td>
<td>56.7</td>
</tr>
<tr>
<td><strong>High School type</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Government school</td>
<td>163</td>
<td>64.7</td>
</tr>
<tr>
<td>Catholic/Independent school</td>
<td>89</td>
<td>35.3</td>
</tr>
<tr>
<td><strong>Student birthplace</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Australia</td>
<td>220</td>
<td>87.3</td>
</tr>
<tr>
<td>Outside Australia</td>
<td>32</td>
<td>12.7</td>
</tr>
<tr>
<td><strong>Mother birthplace</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Australia</td>
<td>190</td>
<td>75.4</td>
</tr>
<tr>
<td>Outside Australia</td>
<td>62</td>
<td>24.6</td>
</tr>
<tr>
<td><strong>Father birth place</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Australia</td>
<td>187</td>
<td>74.3</td>
</tr>
<tr>
<td>Outside Australia</td>
<td>65</td>
<td>25.7</td>
</tr>
<tr>
<td><strong>English main language spoken at home</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>216</td>
<td>85.7</td>
</tr>
<tr>
<td>No</td>
<td>36</td>
<td>14.3</td>
</tr>
<tr>
<td><strong>Participants’ religious affiliation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td>71</td>
<td>28.2</td>
</tr>
<tr>
<td>Buddhism</td>
<td>7</td>
<td>2.8</td>
</tr>
<tr>
<td>Islam</td>
<td>19</td>
<td>7.5</td>
</tr>
<tr>
<td>No religion</td>
<td>152</td>
<td>60.3</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>252</td>
<td></td>
</tr>
</tbody>
</table>

As shown in Table 19, 252 individuals participated in Phase 3 of this study. Age was not a consideration in this study because all participants were in Year 12 and hence, all of similar ages. The gender breakdown of the sample is 43.3% (n=109) male while 56.7% (n=143) reported female. There was 64.7% (n=163) of the sample who attend a government school while 35.3% (n=89) indicated that they attend a catholic or independent school. 87.3% (n=220) of students were born in Australia while 12.7% (n=32) reported being born overseas. 85.7% (n=216) of the sample use English as their main language at home. 60.3%
(n=152) of the sample reported no religious affiliation while over a quarter (28.2%, n=71) stated a religious affiliation with Christianity.
Figure 5. Geographical scope of sample (Made with Google Maps: Google, 2015)
### 7.5. Sample Distribution

**Table 20**

**Distribution of Sample**

<table>
<thead>
<tr>
<th>ASGC-RA Classification</th>
<th>Number of Participants (%)</th>
<th>Victorian Population %</th>
</tr>
</thead>
<tbody>
<tr>
<td>RA1 - Major Cities of Australia</td>
<td>185 (73.7%)</td>
<td>77.8%</td>
</tr>
<tr>
<td>RA2 - Inner Regional Australia</td>
<td>49 (19.5%)</td>
<td>18.3%</td>
</tr>
<tr>
<td>RA3 - Outer Regional Australia</td>
<td>17 (6.8%)</td>
<td>3.8%</td>
</tr>
<tr>
<td>RA4 - Remote Australia</td>
<td>0 (0%)</td>
<td>.01%</td>
</tr>
<tr>
<td>RA5 - Very Remote Australia</td>
<td>N/A* (0%)</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>252 (100%)</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Note: There are no RA5 areas in the state of Victoria*

Shown in Figure 5, the red markers indicate the high schools that students reported being enrolled in. The Australian Standard Geographical Classification - Remoteness Area (ASGC-RA) is a geographic classification system by the Australian Bureau of Statistics (ABS), as a statistical geography structure which allows quantitative comparisons between 'city' and 'country' Australia (Australian Government, 2015). Categorised according to the ASGC-RA classification, the distribution of students’ high schools and their ASGC-RA rank in Table 20. From the ASGC-RA ranking, approximately 73% of students reported their enrolment in a school located in a Major Cities of Australia area (e.g. Footscray, Toorak and Broadmeadows). 19.5% of students reported their enrolment in a school located in the Inner Regional Australia zone (e.g. Ballarat, Echuca and Sale). There were 6.8% of students who reported their enrolment in a school located in Outer Regional Australia. The percentages of students from each RA area in this study are comparable to the state average. These data illustrate the sample’s geographical distribution across Victoria and indicate that the results may be most applicable to students residing in RA1 and RA2 areas. As stated in the introduction, the analysis will now focus separately on the UPIF followed by the UDIF analysis.
7.6. Identifying Outliers

Table 21

Multivariate Outliers of UPIF variables

<table>
<thead>
<tr>
<th>Observation</th>
<th>$D^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>87.85</td>
<td>.001</td>
</tr>
<tr>
<td>163</td>
<td>67.67</td>
<td>.001</td>
</tr>
<tr>
<td>149</td>
<td>66.73</td>
<td>.001</td>
</tr>
<tr>
<td>224</td>
<td>63.95</td>
<td>.001</td>
</tr>
<tr>
<td>37</td>
<td>60.65</td>
<td>.001</td>
</tr>
<tr>
<td>19</td>
<td>55.82</td>
<td>.001</td>
</tr>
<tr>
<td>215</td>
<td>54.26</td>
<td>.001</td>
</tr>
<tr>
<td>106</td>
<td>51.95</td>
<td>.001</td>
</tr>
</tbody>
</table>

Note: $p$-value < .001 threshold recommended by Kline (2005)

Outliers have the potential to violate the assumptions of normality underpinning SEM analysis conducted. As shown in Table 21, Mahalanobis distance ($D^2$) is a multidimensional version of a Z-score, measuring the distance of a case from the centroid (multidimensional mean) of a distribution, given the covariance (multidimensional variance) of the distribution (Tabachnick & Fidell, 2007). Tests measuring multivariate normality, such as Mahalanobis distance cannot be computed unless all variables are metric (Byrne, 2001) and therefore the Ethnicity items was not included in this analysis because it measured on a nominal scale. The $p$-value reflects the probability of seeing a Mahalanobis distance equal to, or greater than the actual Mahalanobis value, assuming the vector of predictor values that produced that Mahalanobis value was sampled from a population with an ideal mean (Hair et al., 2014). Ideal mean in this context is equal to the vector of mean predictor variable values used to generate Mahalanobis distance. $P$-values close to 0 reflect high Mahalanobis distance values and are therefore very dissimilar to the ideal combination of predictor variables. $P$-values close to 1 reflect low Mahalanobis distances and are therefore very similar to the ideal combination of predictor variables. The closer the $p$-value is to 1, the more similar that combination of
predictor values is to the ideal combination. Statistical significance at $p<.001$ is recommended to be used with $D^2$ measure (Kline, 2005; Hair et al., 2014). Analysis of the UPIF model variables indicated eight observations ($\approx 3\%$) were at or below $p<.001$ level. Hair et al. (2014) suggested that the deletion of outliers might improve the multivariate analysis but at the risk of limiting generalisability. All things considered, the researcher decided to retain all observations.
7.7. Normality of Data

Table 22

*Mean, Standard Deviations, Skewness and Kurtosis of UPIF variables*

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICSEA NUMBER</td>
<td>1027.21</td>
<td>61.28</td>
<td>.57</td>
<td>-.29</td>
</tr>
<tr>
<td>Mother’s AUSEI06 score</td>
<td>50.50</td>
<td>22.40</td>
<td>.55</td>
<td>-1.32</td>
</tr>
<tr>
<td>Father’s AUSEI06 score</td>
<td>52.26</td>
<td>22.77</td>
<td>.27</td>
<td>-1.39</td>
</tr>
<tr>
<td>Books</td>
<td>113.29</td>
<td>74.88</td>
<td>.01</td>
<td>-1.61</td>
</tr>
<tr>
<td>Intent1</td>
<td>5.9</td>
<td>1.58</td>
<td>-1.50</td>
<td>1.46</td>
</tr>
<tr>
<td>Intent2</td>
<td>5.91</td>
<td>1.60</td>
<td>-1.52</td>
<td>1.45</td>
</tr>
<tr>
<td>Intent3</td>
<td>5.87</td>
<td>1.61</td>
<td>-1.47</td>
<td>1.36</td>
</tr>
<tr>
<td>Intent4</td>
<td>5.9</td>
<td>1.56</td>
<td>-1.46</td>
<td>1.35</td>
</tr>
<tr>
<td>Intent5</td>
<td>6</td>
<td>1.59</td>
<td>-1.70</td>
<td>2.04</td>
</tr>
<tr>
<td>Att1</td>
<td>6.24</td>
<td>1.27</td>
<td>-1.85</td>
<td>3.01</td>
</tr>
<tr>
<td>Att2</td>
<td>6.23</td>
<td>1.24</td>
<td>-1.90</td>
<td>3.41</td>
</tr>
<tr>
<td>Att3</td>
<td>5.96</td>
<td>1.35</td>
<td>-1.35</td>
<td>1.35</td>
</tr>
<tr>
<td>Att4</td>
<td>5.98</td>
<td>1.34</td>
<td>-1.53</td>
<td>2.27</td>
</tr>
<tr>
<td>subnorm1</td>
<td>5.89</td>
<td>1.40</td>
<td>-1.47</td>
<td>1.86</td>
</tr>
<tr>
<td>subnorm2</td>
<td>5.6</td>
<td>1.58</td>
<td>-1.24</td>
<td>.96</td>
</tr>
<tr>
<td>subnorm3</td>
<td>5.6</td>
<td>1.54</td>
<td>-1.03</td>
<td>.38</td>
</tr>
<tr>
<td>Pbc1</td>
<td>5.94</td>
<td>1.43</td>
<td>-1.46</td>
<td>1.75</td>
</tr>
<tr>
<td>Pbc2</td>
<td>5.56</td>
<td>1.44</td>
<td>-0.96</td>
<td>.48</td>
</tr>
<tr>
<td>Pbc3</td>
<td>5.73</td>
<td>1.48</td>
<td>-1.19</td>
<td>.84</td>
</tr>
<tr>
<td>genac1</td>
<td>5.52</td>
<td>1.26</td>
<td>-.81</td>
<td>.29</td>
</tr>
<tr>
<td>genac2</td>
<td>5.11</td>
<td>1.52</td>
<td>-0.66</td>
<td>-.18</td>
</tr>
<tr>
<td>genac3</td>
<td>5.27</td>
<td>1.40</td>
<td>-.75</td>
<td>.29</td>
</tr>
<tr>
<td>Verac1</td>
<td>4.91</td>
<td>1.62</td>
<td>-.64</td>
<td>-.25</td>
</tr>
<tr>
<td>Verac2</td>
<td>4.81</td>
<td>1.68</td>
<td>-.53</td>
<td>-.48</td>
</tr>
<tr>
<td>Verac3</td>
<td>4.94</td>
<td>1.62</td>
<td>-.66</td>
<td>-.29</td>
</tr>
<tr>
<td>Mamac1</td>
<td>4.91</td>
<td>1.77</td>
<td>-.53</td>
<td>-.69</td>
</tr>
<tr>
<td>Mamac2</td>
<td>4.68</td>
<td>1.95</td>
<td>-.49</td>
<td>-.87</td>
</tr>
<tr>
<td>Mamac3</td>
<td>4.8</td>
<td>1.77</td>
<td>-.55</td>
<td>-.60</td>
</tr>
</tbody>
</table>

Normality can be defined as the shape of the data distribution and its correspondence to the normal distribution, which is often assumed in statistic testing (Hair et al., 2014).

Violations of normality have the potential to affect the estimation process or the interpretation of results (Blunch, 2008). Normality can be examined by measuring skewness and kurtosis of
the dataset. The skewness portrays the symmetry of distribution whereas the kurtosis refers to the measure of the heaviness of the tails in a distribution (peakedness or flatness of the distribution) compared with the normal distribution. In normal distribution, the scores of skewness and kurtosis are zero. Hair et al. (2014) stated that skewness scores outside ±1 demonstrate substantially skewed distribution while kurtosis values ±0 denote departures from normality. However, SEM is fairly robust to violations of normality; even with skewness results as high as 3 and kurtosis measures equal to 10 as acceptable (Kline, 2005; West et al., 1995). Inspecting Table 22, various items departure from normality, although all measures fit well within the recommended guidelines by Kline and West et al.

7.8. Measurement Model Specification and Confirmatory Factor Analysis Results

In this research confirmatory factor analysis (CFA) was performed on the measurement model to assess the unidimensionality, reliability, and validity of measures. Two broad approaches were used in the CFA to assess the measurement model. 1) Consideration of the goodness of fit (GOF) index and 2) Evaluating the validity and reliability of the measurement model.
7.9. University Proximal Intention Model (UPIF)

7.9.1. GOF Index.

Table 23

<table>
<thead>
<tr>
<th>GOF Measure</th>
<th>Result</th>
<th>Recommended thresholds (Hu &amp; Bentler, 1999)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2 \ [df ] (sig)$</td>
<td>955.61 [455] ($p&lt;.001$)</td>
<td>($p&gt;.05$)</td>
</tr>
<tr>
<td>$\chi^2 \ /df$</td>
<td>2.12</td>
<td>$\leq3$</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.06 PCLOSE ($p&lt;.001$)</td>
<td>$\leq.08$ (PCLOSE $&gt;.05$)</td>
</tr>
<tr>
<td>AGFI</td>
<td>.77</td>
<td>$\geq.80$</td>
</tr>
<tr>
<td>SRMR</td>
<td>.06</td>
<td>$\leq.09$</td>
</tr>
<tr>
<td>CFI</td>
<td>.92</td>
<td>$\geq.95$</td>
</tr>
<tr>
<td>TLI</td>
<td>.91</td>
<td>$\geq.95$</td>
</tr>
<tr>
<td>PGFI</td>
<td>.80</td>
<td>$^\wedge$</td>
</tr>
<tr>
<td>PNFI</td>
<td>.76</td>
<td>$^\wedge$</td>
</tr>
</tbody>
</table>

$^\wedge$=No specific recommendations: Score ranges between: 0=poor fit-1=very good fit (Mulaik et al 1989)

The initial run of the CFA, as shown in Table 23, showed that the following indices indicated poor fit ($\chi^2$, RMSEA, AGFI, CFI and TLI). Digressing for one moment, $\chi^2$ is sensitive to sample size with many researchers disregarding this index if both the sample size $>200$ and other indices indicate the model is acceptable (Schumacker & Lomax, 2004). Researchers are advised to pay more attention to $\chi^2 \ /df$ as a suitable alternative because this index might be less sensitive to sample size (Byrne, 1998; Hair et al., 2014). The criterion for acceptance of $\chi^2 \ /df$ varies across researchers, ranging from $<2$ (Ullman, 2001) to $<5$ (Schumacker & Lomax, 2004). Hu and Bentler’s (1999) recommendations of $<3$ is adopted in this study and 2.12 is acceptable. However, the other GOF measures (RMSEA, AGFI, CFI, TLI) did not meet acceptable thresholds.

Detailed evaluation was conducted to refine and re-specify the model, in order to improve better fit of the model (Kline, 2005). Standardised residuals were evaluated to
examine if they were within an acceptable range (lie between -2.58 and 2.58) as recommended by Hair et al (2014). The items which shared a high degree of residual variance included the AUSEI06 scores of parent’s employment Movo and Favo (>9.5). This was having a considerable effect on the fit of the model and therefore a composite measure maxvo was created. Accepting that the adult with the higher-status occupation is likely to determine the family’s overall socioeconomic position (NCVER, 2011), the present study adopts NCVER’s recommendation to use the highest AUSEI06 score of both parents. Maxvo equalled the maximum AUSEI06 score of both parents. For example, if the mother’s AUSEI06 was 90 and the father’s AUSEI06 score was 60, Maxvo=90. Conversely, if the mother’s AUSEI06 was 55 and the father’s AUSEI06 score was 70, Maxvo=70. Following this modifications, the measurement model was re-run, as recommended (Hair et al., 2014; Kline, 2005).

Table 24

<table>
<thead>
<tr>
<th>GOF Measure</th>
<th>Result</th>
<th>Acceptable thresholds (Hu &amp; Bentler, 1999)</th>
</tr>
</thead>
<tbody>
<tr>
<td>χ² <a href="sig">df </a></td>
<td>654.55 [424] (p&lt;.001)</td>
<td>(p&gt;.05)</td>
</tr>
<tr>
<td>χ² /df</td>
<td>1.68</td>
<td>≤3</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.05 PCLOSE (.277)</td>
<td>≤.08 (PCLOSE &gt;.05)</td>
</tr>
<tr>
<td>AGFI</td>
<td>.82</td>
<td>≥.80</td>
</tr>
<tr>
<td>SRMR</td>
<td>.05</td>
<td>≤.09</td>
</tr>
<tr>
<td>CFI</td>
<td>.96</td>
<td>≥.95</td>
</tr>
<tr>
<td>TLI</td>
<td>.95</td>
<td>≥.95</td>
</tr>
<tr>
<td>PGFI</td>
<td>.70</td>
<td>^</td>
</tr>
<tr>
<td>PNFI</td>
<td>.78</td>
<td>^</td>
</tr>
</tbody>
</table>

^=No specific recommendations: Score ranges between: 0=poor fit-1=very good fit (Mulaik et al 1989)

Following the previous adjustments, Table 24 results showed that the absolute fit measures χ² /df=1.63 (0-3 ≤), RMSEA measured=.05, PCLOSE (.277) and AGFI=.82 (> .80) and incremental measures CFI=.96 (> .95), TFI=.954 (> .95). In relation to the parsimony
measures, the PGFI=.70 and .78 for the PNFI respectively. Despite the $\chi^2$ [df ] being significant, for reasons discussed previously (i.e. $\chi^2$ is sensitive to sample size, $\chi^2$/df better indicator when $n>200$), goodness of fit statistics confirmed that the model was an adequate fit of the data.
### 7.10. Validity and Reliability

Table 25

*Validity and Reliability measures UPIF model*

|      | CR  | AVE | MSV  | ASV  | BI   | Att  | SN   | PBC  | GenAC | VerbA | MamA | SES  | Eth  |
|------|-----|-----|------|------|------|------|------|------|-------|-------|------|------|------|------|
| BI   | .984| .924| .717 | .323 | .961 |      |      |      |       |       |      |      |      |      |
| Att  | .950| .827| .796 | .341 | .847 | .909 |      |      |       |       |      |      |      |      |
| SN   | .880| .711| .663 | .304 | .742 | .735 | .843 |      |       |       |      |      |      |      |
| PBC  | .850| .655| .796 | .383 | .826 | .892 | .814 | .809 |       |       |      |      |      |      |
| GenA | .871| .692| .471 | .266 | .538 | .576 | .557 | .686 | .832  |       |      |      |      |      |
| VerbA| .927| .810| .396 | .116 | .277 | .355 | .272 | .424 | .629  | .900  |      |      |      |      |
| MamA | .919| .792| .278 | .098 | .290 | .279 | .382 | .347 | .527  | .227  | .890 |      |      |      |
| SES  | .754| .413| .142 | .067 | .351 | .315 | .264 | .377 | .224  | .158  | .157 | .643 |      |      |
| Eth  | .763| .450| .080 | .024 | .244 | .191 | .282 | .117 | -.025 | .027  | -.019| .043 | .671 |      |

BI= Behavioural Intention, Att=Attitude, SN=Subjective norm, PBC=Perceived Behavioural Control, GenAC=General Academic Self Concept, VerbA=Verbal Academic Self Concept, MamA=Mathematical Academic Self Concept, SES=Socio-economic Status, Eth=Ethnicity
7.10.1. Convergent Validity.

Convergent validity is indicated by the values of CR > .7 and AVE > .5 (Hair et al., 2014). As shown in Table 25, all variables meet the minimum acceptable CR. Most variables exceeded the more conservative measure AVE except SES (.413) and ethnicity (.450) as indicated by the bold highlighting in the table. Considering that SES and ethnicity are both conceptually multi-dimensional in nature and notoriously difficult to measure (Jones, 2013, Marks 2000), the satisfaction of the CR criteria was deemed to indicate acceptable levels of convergent validity.

7.10.2. Discriminant Validity.

As discussed previously, discriminant validity was measured using two criteria including 1) the Maximum Shared Variance (MSV) is less than the AVE (MSV < AVE) and 2) all standard regression weights values ≥ .3 (Hair et al., 2014). Table 25 indicates that all constructs exceeded MSV < AVE except PBC (MSV = .796/ AVE = .655). These data indicate relatively high levels of shared variance with the Attitude construct and this potential limitation should be kept in mind when interpreting results.
### 7.11. Measurement Model Estimates (UPIF Model)

Table 26

*Standardised Factor Loadings and Critical Ratios (t)*

<table>
<thead>
<tr>
<th>Factor</th>
<th>Loading</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioural intention → intent5</td>
<td>.94</td>
<td>33.79</td>
</tr>
<tr>
<td>Behavioural intention → intent4</td>
<td>.97</td>
<td>33.23</td>
</tr>
<tr>
<td>Behavioural intention → intent3</td>
<td>.97</td>
<td>40.39</td>
</tr>
<tr>
<td>Behavioural intention → intent2</td>
<td>.96</td>
<td>37.29</td>
</tr>
<tr>
<td>Behavioural intention → intent1</td>
<td>.95</td>
<td>RW</td>
</tr>
<tr>
<td>Attitude → att1</td>
<td>.89</td>
<td>18.24</td>
</tr>
<tr>
<td>Attitude → att2</td>
<td>.93</td>
<td>19.71</td>
</tr>
<tr>
<td>Attitude → att3</td>
<td>.94</td>
<td>19.79</td>
</tr>
<tr>
<td>Attitude → att4</td>
<td>.85</td>
<td>16.93</td>
</tr>
<tr>
<td>Subjective Norm → sbn1</td>
<td>.91</td>
<td>17.89</td>
</tr>
<tr>
<td>Subjective Norm → sbn2</td>
<td>.81</td>
<td>15.06</td>
</tr>
<tr>
<td>Subjective Norm → sbn3</td>
<td>.74</td>
<td>13.22</td>
</tr>
<tr>
<td>PBC → pbc1</td>
<td>.89</td>
<td>17.46</td>
</tr>
<tr>
<td>PBC → pbc2</td>
<td>.76</td>
<td>14.06</td>
</tr>
<tr>
<td>PBC → pbc3</td>
<td>.74</td>
<td>12.95</td>
</tr>
<tr>
<td>GenACSC → genac1</td>
<td>.87</td>
<td>16.76</td>
</tr>
<tr>
<td>GenACSC → genac2</td>
<td>.77</td>
<td>14.15</td>
</tr>
<tr>
<td>GenACSC → genac3</td>
<td>.84</td>
<td>16.00</td>
</tr>
<tr>
<td>VerbASC → verac1</td>
<td>.88</td>
<td>17.61</td>
</tr>
<tr>
<td>VerbASC → verac2</td>
<td>.92</td>
<td>18.86</td>
</tr>
<tr>
<td>VerbASC → verac3</td>
<td>.88</td>
<td>17.66</td>
</tr>
<tr>
<td>MamASC → mamac1</td>
<td>.78</td>
<td>14.58</td>
</tr>
<tr>
<td>MamASC → mamac2</td>
<td>.92</td>
<td>18.70</td>
</tr>
<tr>
<td>MamASC → mamac3</td>
<td>.95</td>
<td>19.92</td>
</tr>
<tr>
<td>Ethnicity → fabp</td>
<td>.74</td>
<td>11.07</td>
</tr>
<tr>
<td>Ethnicity → mobp</td>
<td>.78</td>
<td>11.71</td>
</tr>
<tr>
<td>SES → faed</td>
<td>.74</td>
<td>12.73</td>
</tr>
<tr>
<td>SES → moed</td>
<td>.63</td>
<td>10.52</td>
</tr>
<tr>
<td>SES → maxvo</td>
<td>.93</td>
<td>17.22</td>
</tr>
<tr>
<td>SES → ICSEA</td>
<td>.54</td>
<td>8.13</td>
</tr>
<tr>
<td>SES → books</td>
<td>.35</td>
<td>5.49</td>
</tr>
<tr>
<td>Ethnicity → sbp</td>
<td>.33</td>
<td>5.24</td>
</tr>
</tbody>
</table>

RW = Regression Weight  \[ t \geq 1.96 = p < .001 \]
As shown in Table 26, Criteria 2 was satisfied with all constructs. In sum, the validity and reliability measures on the whole indicate that it is suitable to progress to examining the modification indices before concluding the measurement component of the CFA.

7.12. Modification Indices

Table 27

<table>
<thead>
<tr>
<th>Error term/Construct</th>
<th>M.I.</th>
<th>Par Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>e2 ↔ e5</td>
<td>21.32</td>
<td>-.06</td>
</tr>
<tr>
<td>e2 ↔ e3</td>
<td>20.08</td>
<td>.04</td>
</tr>
<tr>
<td>e16 ↔ e23</td>
<td>19.41</td>
<td>-.18</td>
</tr>
<tr>
<td>e22 ↔ GenAcSc</td>
<td>16.19</td>
<td>.17</td>
</tr>
<tr>
<td>e1 ↔ e5</td>
<td>15.9</td>
<td>.07</td>
</tr>
<tr>
<td>e9 ↔ e10</td>
<td>12.74</td>
<td>.21</td>
</tr>
<tr>
<td>e8 ↔ e11</td>
<td>11.59</td>
<td>.13</td>
</tr>
<tr>
<td>e1 ↔ e3</td>
<td>11.02</td>
<td>-.04</td>
</tr>
<tr>
<td>e18 ↔ e24</td>
<td>10.65</td>
<td>-.17</td>
</tr>
</tbody>
</table>

As shown in Table 27, Modification Indices >10 in the UPIF measurement model are shown. Modification indices were examined and co-varied to adjust for word similarity on the same factor as recommended by Kenny (2012). Consequently, e2↔e5, e2↔e3, e1↔e5, e9↔e10 were co-varied.
Figure 6. UPIF Final CFA model
7.13. Structural Model Evaluation

Table 28

*Structural Model GOF of UPIF*

<table>
<thead>
<tr>
<th>GOF Measure</th>
<th>Result</th>
<th>Acceptable thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2 \ [df ] (sig)$</td>
<td>664.6 [430] ($p&lt;.001$)</td>
<td>($p&gt;.05$)</td>
</tr>
<tr>
<td>$\chi^2 /df$</td>
<td>1.68</td>
<td>$\leq 0.3$</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.05 (PCLOSE= .277)</td>
<td>$\leq 0.08$ (PCLOSE &gt;.05)</td>
</tr>
<tr>
<td>AGFI</td>
<td>.82</td>
<td>$\geq 0.80$</td>
</tr>
<tr>
<td>SRMR</td>
<td>.05</td>
<td>$\leq 0.09$</td>
</tr>
<tr>
<td>CFI</td>
<td>.96</td>
<td>$\geq 0.95$</td>
</tr>
<tr>
<td>TLI</td>
<td>.96</td>
<td>$\geq 0.95$</td>
</tr>
<tr>
<td>PGFI</td>
<td>.70</td>
<td>$^\wedge$</td>
</tr>
<tr>
<td>PNFI</td>
<td>.78</td>
<td>$^\wedge$</td>
</tr>
</tbody>
</table>

$^\wedge$=No specific recommendations: Score ranges between: 0=poor fit-1=very good fit (Mulaik et al 1989)

The fit indices shown in Table 28 indicate that the hypothesised structural model provided is a suitable fit to the data. The $\chi^2 /df$ ratio ($\chi^2 /df = 1.68$) indicates suitable fit ($0-3 \leq$). The other fit measures showed that model adequately fits the observed data (AGFI=.82; SRMR=.05; RMSEA=.05 PCLOSE (.277). The incremental fit measure CFI = .96 ($\geq .95$) and the TLI = .96 ($\geq .95$) were also acceptable. The PGFI = .7 and the PNFI= .78. These results indicate suitable fit according to Hu and Bentler’s (1999) recommendations.

Table 29

**Hypotheses Testing (H1-H8)**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Code</th>
<th>Hypotheses</th>
<th>Hypothesised relationship (positive) in the UPIF model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>Att</td>
<td>H1</td>
<td>Att →BI</td>
</tr>
<tr>
<td>Subjective Norm</td>
<td>SN</td>
<td>H2</td>
<td>SN→BI</td>
</tr>
<tr>
<td>Perceived behavioural control (PBC)</td>
<td>PBC</td>
<td>H3</td>
<td>PBC→BI</td>
</tr>
<tr>
<td>General Academic Self-Concept</td>
<td>GenAsc</td>
<td>H4</td>
<td>GenAsc→BI</td>
</tr>
<tr>
<td>Verbal Academic Self-Concept</td>
<td>VbAsC</td>
<td>H5</td>
<td>VbAsC→BI</td>
</tr>
<tr>
<td>Mathematical Academic Self-Concept</td>
<td>MaMASc</td>
<td>H6</td>
<td>MaMASc→BI</td>
</tr>
<tr>
<td>SES</td>
<td>SES</td>
<td>H7</td>
<td>SES→BI</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Eth</td>
<td>H8</td>
<td>Eth→BI</td>
</tr>
</tbody>
</table>

This section presents results of hypotheses testing. Table 29 shows 8 hypotheses represented by causal paths (H1, H2, H3, H4, H5, H6, H7, H8). The latent constructs used in the proposed theoretical model were classified in two main categories: exogenous and endogenous constructs. Exogenous constructs were *Attitude*, *Subjective norm* (SN), *Perceived Behavioural Control* (PBC), *General Academic Self-Concept*, *Verbal Academic Self-Concept*, *Mathematical Academic Self-Concept* SES and *Ethnicity* while endogenous construct was *Behavioural intention*. Parameters estimates were examined to evaluate the hypothesized structural model.
### Table 30

*Parameter Estimates*

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Relationship (positive)</th>
<th>Beta coefficients ($\beta$)</th>
<th>$t$</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Att $\rightarrow$ BI</td>
<td>.50</td>
<td>4.60</td>
<td><strong>YES</strong>*</td>
</tr>
<tr>
<td>H2</td>
<td>SN $\rightarrow$ BI</td>
<td>.13</td>
<td>2.22</td>
<td><strong>YES</strong></td>
</tr>
<tr>
<td>H3</td>
<td>PBC $\rightarrow$ BI</td>
<td>.23</td>
<td>1.43</td>
<td><strong>NO</strong></td>
</tr>
<tr>
<td>H4</td>
<td>GenAsc $\rightarrow$ BI</td>
<td>.03</td>
<td>.727</td>
<td><strong>NO</strong></td>
</tr>
<tr>
<td>H5</td>
<td>VbAsC $\rightarrow$ BI</td>
<td>-.09</td>
<td>-2.16</td>
<td><strong>NO</strong></td>
</tr>
<tr>
<td>H6</td>
<td>MamASC $\rightarrow$ BI</td>
<td>.01</td>
<td>.016</td>
<td><strong>NO</strong></td>
</tr>
<tr>
<td>H7</td>
<td>SES $\rightarrow$ BI</td>
<td>.08</td>
<td>2.05</td>
<td><strong>YES</strong></td>
</tr>
<tr>
<td>H8</td>
<td>Eth $\rightarrow$ BI</td>
<td>.08</td>
<td>1.65</td>
<td><strong>NO</strong></td>
</tr>
</tbody>
</table>

Notes: ***$p<.001$** $p<.01$ *$p<.05$

Results presented in Table 30 indicate that the 3 of 8 hypothesised exogenous variables had a positive and significant effect on the endogenous variable-behavioural intention. In other words, the probability of getting a critical ratio score as large as 4.60 for Att $\rightarrow$ BI, if there really were no relationship, is $p=<.001$. Likewise, the probability of getting a critical ratio score as large as 2.22, if there really were no relationship, for SN $\rightarrow$ BI and 2.05 for SES $\rightarrow$ BI is less than .05. For the remaining 5 hypotheses (H3, H4, H5, H6, H8), the probability of getting their critical ratio score as large as reported was >.05. In other words, the regression weights PBC, GenAsc, VbAsC, MamASC and Eth in the prediction of Behavioural Intention is not significantly different from zero. Although the implications of these results will be discussed in much greater detail in upcoming chapters, a brief summary is provided for each hypothesis below.
7.15. Hypothesis 1

*Attitude will have a significant positive effect on students’ intentions to study at university as a component of the UPIF model.*

Hypothesis 1 was supported by the data. As shown in Table 30, the path coefficient ($\beta$) and critical ratio ($t$) for Attitude to Behavioural Intention (BI) is .50 and 4.6 respectively, suggesting that this path is statistically significant at $p<.001$. This finding suggests that students’ attitudes regarding university study is a significant predictor of their intention to do so as a component of the UPIF model.

7.16. Hypothesis 2

*Subjective norm will have a significant positive effect on students’ intentions to study at university as a component of the UPIF model.*

Hypothesis 2 was supported by the data. The parameter estimates shown in Table 30 report that subjective norm has a significant ($p<.05$) positive effect on students’ intentions to study at university ($\beta=.13$, $t=2.22$). This finding suggests that students’ subjective norms about university study are a significant predictor of their intention to do so as a component of the UPIF model.
7.17. Hypothesis 3

Perceived Behavioural Control (PBC) will have a significant positive effect on students’ intentions to study at university as a component of the UPIF model.

Hypothesis 3 was not supported by the data. The parameter estimates shown in Table 30 report that the path from PBC to BI ($\beta=.23, t=1.43$) is not statistically significant different from zero. Therefore, this result suggests that PBC is not a significant predictor of students’ intentions to study at university as a component of the UPIF model.

7.18. Hypothesis 4

General academic self-concept will have a significant positive effect on students’ intention to study at university as a component of the UPIF model.

Hypothesis 4 was not supported by the data. The parameter estimates shown in Table 30 report that the path from GenAsc to BI ($\beta=.03$ and $t=.72$) is not statistically significant different from zero. This result suggests that general academic self-concept is not a significant predictor of students’ intentions to study at university as a component of the UPIF model.
7.19. Hypothesis 5

Verbal academic self-concept will have a significant positive effect on students’ intention to study at university as a component of the UPIF model.

Hypothesis 5 was not supported by the data. The parameter estimates shown in Table 30 report that the path from VerbAsC in the prediction of BI ($\beta=-.09$ and $t=-2.16$) is not significantly different from zero. This result suggests that verbal academic self-concept is not a significant predictor of students’ intentions to study at university as a component of the UPIF model.

7.20. Hypothesis 6

Mathematical academic self-concept will have a significant positive effect on students’ intention to study at university as a component of the UPIF model.

Hypothesis 6 was not supported by the data. Table 30 reported that the $\beta=.01$ and the $t=.01$ for MamASC→BI is not statistically significant. Hence MamASC in the prediction of BI is not significantly different from zero. This result indicated that mathematical academic self-concept is not a significant predictor of students’ intentions to study at university as a component of the UPIF model.
7.21. Hypothesis 7

*SES will have a significant positive effect on students’ intention to study at university as a component of the UPIF model.*

Hypothesis 7 was supported by the data. The parameter estimates shown in Table 30 report that SES has a significant ($p<.05$) positive effect on students’ BI to study at university ($\beta=.08, t=2.05$). These results indicate that students’ SES is a significant predictor of their intention to study at university as a component of the UPIF model.

7.22. Hypothesis 8

*Indicators of ethnicity will have a positive effect on students’ intention to study at university as a component of the UPIF model.*

Hypothesis 8 was not supported by the data. Results presented in Table 30 indicate that the path from Eth to BI is not statistically significant ($\beta=.08, t=1.65$). This result indicates that ethnicity is not a significant predictor of students’ intentions to study at university as a component of the UPIF model.

7.23. Covariance Parameter Estimates

Following analysis of the parameter estimates, it is now necessary to examine the covariance parameter estimates in order to examine bi-directional relationships between exogenous variables for significant relationships. While factors may not have a direct effect on behavioural intention, they can possibly still have an indirect effect on it via other factors and the following analysis may partly indicate if this is the case.
Table 31

**Covariance Parameter Estimates**

<table>
<thead>
<tr>
<th>Covariance</th>
<th>Estimate</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBC↔SES</td>
<td>.36</td>
<td>5.82</td>
</tr>
<tr>
<td>SN↔PBC</td>
<td>.82</td>
<td>25.63</td>
</tr>
<tr>
<td>Attitude↔SN</td>
<td>.74</td>
<td>21.85</td>
</tr>
<tr>
<td>Attitude↔SES</td>
<td>.30</td>
<td>4.77</td>
</tr>
<tr>
<td>Attitude↔PBC</td>
<td>.90</td>
<td>39.47</td>
</tr>
<tr>
<td>SubjectiveNorm↔SES</td>
<td>.26</td>
<td>3.93</td>
</tr>
<tr>
<td>PBC↔MamAsC</td>
<td>.33</td>
<td>5.41</td>
</tr>
<tr>
<td>SubjectiveNorm↔MamAsC</td>
<td>.38</td>
<td>6.44</td>
</tr>
<tr>
<td>Attitude↔MamAsC</td>
<td>.28</td>
<td>4.57</td>
</tr>
<tr>
<td>Attitude↔VerASc</td>
<td>.35</td>
<td>5.97</td>
</tr>
<tr>
<td>PBC↔VerASc</td>
<td>.42</td>
<td>7.14</td>
</tr>
<tr>
<td>SubjectiveNorm↔VerASc</td>
<td>.27</td>
<td>4.14</td>
</tr>
<tr>
<td>SES↔MamAsC</td>
<td>.17</td>
<td>2.66</td>
</tr>
<tr>
<td>MamAsC↔GenASc</td>
<td>.57</td>
<td>7.91</td>
</tr>
<tr>
<td>VerASc↔GenASc</td>
<td>.69</td>
<td>9.53</td>
</tr>
<tr>
<td>SES↔GenASc</td>
<td>.25</td>
<td>3.22</td>
</tr>
<tr>
<td>PBC↔GenASc</td>
<td>.74</td>
<td>10.11</td>
</tr>
<tr>
<td>SubjectiveNorm↔GenASc</td>
<td>.61</td>
<td>8.23</td>
</tr>
<tr>
<td>Attitude↔GenASc</td>
<td>.63</td>
<td>8.80</td>
</tr>
<tr>
<td>Attitude↔Ethnicity</td>
<td>.10</td>
<td>1.74</td>
</tr>
<tr>
<td>MamAsC↔VerASc</td>
<td>.22</td>
<td>3.53</td>
</tr>
<tr>
<td>SES↔VerASc</td>
<td>.15</td>
<td>2.25</td>
</tr>
<tr>
<td>SubjectiveNorm↔Ethnicity</td>
<td>.17</td>
<td>2.50</td>
</tr>
<tr>
<td>Ethnicity↔MamAsC</td>
<td>-.06</td>
<td>-1.14</td>
</tr>
<tr>
<td>Ethnicity↔GenASc</td>
<td>-.07</td>
<td>-1.14</td>
</tr>
<tr>
<td>Ethnicity↔VerASc</td>
<td>-.02</td>
<td>-.42</td>
</tr>
<tr>
<td>Ethnicity↔SES</td>
<td>.10</td>
<td>1.63</td>
</tr>
<tr>
<td>PBC↔Ethnicity</td>
<td>.05</td>
<td>.96</td>
</tr>
</tbody>
</table>

$t \geq 1.96 \Rightarrow p < .05$

As shown in the Covariance Parameter Estimates (Table 31), 23 paths out of 28 were significant at ($p < .05$). 19 out of these 22 paths were significant at $p < .001$. This result indicates significant correlation between many of the variables, especially between the direct measurements of behavioural intention (Att, SN, PBC). Perhaps this is not surprising considering that theoretically they should co-vary. Particularly strong covariance is indicated
by Attitude ↔ PBC ($t=39.74, p<.001$), SN↔PBC ($t=25.63, p<.001$) and Attitude↔SN ($t=21.85, p<.001$).

### 7.24. Modifying Structural Model by Removing Non-significant Paths

As discussed in the previous section, 5 hypotheses were statistically not significant and hence were rejected. Consequently, the structural model was re-specified by removing non-significant paths to the endogenous variable and between exogenous variables. This process would possibly provide a better fit to the data and improve its parsimony. Below are the results of the revised structural model.

**Table 32**

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Relationship (positive)</th>
<th>Path Coefficient ($\beta$)</th>
<th>C.R . ($t$)</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Att $\rightarrow$ BI</td>
<td>.64</td>
<td>9.67</td>
<td>YES***</td>
</tr>
<tr>
<td>H2</td>
<td>SN $\rightarrow$ BI</td>
<td>.25</td>
<td>4.84</td>
<td>YES***</td>
</tr>
<tr>
<td>H7</td>
<td>SES $\rightarrow$ BI</td>
<td>.08</td>
<td>2.25</td>
<td>YES*</td>
</tr>
</tbody>
</table>

Note: ***$p<.001$ (two tailed) **$p<.01$ (two tailed) *$p<.05$ (two tailed)

In testing the revised structural model, results shown in Table 32 indicated that H1, H2 and H7 were statistically significant. The standardised estimates and critical ratio values for these hypotheses (Att $\rightarrow$ BI: $\beta=.64, t=9.67, p<.001$; SN$\rightarrow$ BI: $\beta=.25, t=4.84, p<.001$; SES$\rightarrow$ BI: $\beta=.08, t=2.25, p<.05$) indicated statistical significance and hence support for these three factors. Removal of the non-significant paths had the most effect on SN$\rightarrow$ BI, changing its initial $t$ value from 2.22 to 4.841 and its $\beta$ from .13 to .25. Consequently, these results indicate that subjective norm has a significant positive effect on students’ intentions to study at university at the lower value of $p<.001$. 

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Table 33

**GOF Results of Revised Structural Model**

<table>
<thead>
<tr>
<th>GOF Measure</th>
<th>Result</th>
<th>Acceptable thresholds (Hu &amp; Bentler, 1999)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2 \ <a href="sig">df \ </a>$</td>
<td>667.55 [434] ($p&lt;.001$)</td>
<td>($p&gt;.05$)</td>
</tr>
<tr>
<td>$\chi^2 /df$</td>
<td>1.53</td>
<td>$\leq 3$</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.05 (PCLOSE=.80)</td>
<td>$\leq .08$ (PCLOSE&gt;.05)</td>
</tr>
<tr>
<td>AGFI</td>
<td>.83</td>
<td>$\geq .80$</td>
</tr>
<tr>
<td>SRMR</td>
<td>.05</td>
<td>$\leq .09$</td>
</tr>
<tr>
<td>CFI</td>
<td>.97</td>
<td>$\geq .95$</td>
</tr>
<tr>
<td>PGFI</td>
<td>.71</td>
<td>^</td>
</tr>
<tr>
<td>PNFI</td>
<td>.81</td>
<td>^</td>
</tr>
</tbody>
</table>

^=No specific recommendations: Score ranges between: 0=poor fit-1=very good fit (Mulaik et al 1989)

The final measures shown Table 33 indicated adequate goodness of fit ($\chi^2 = 667.55; df =434$; is significant ($p<.001$). Other GOF indices include $\chi^2 /df =1.53$; RMSEA=.05, PCLOSE=.80; AGFI=.83; SRMR=.05; CFI=.97; PGFI=.71; PNFI=.81, all within acceptable values (Hu & Bentler, 1999).
Figure 7. Final UPIF structural model as shown in AMOS
7.25. UPIF Structural correlations and Confidence Interval

The coefficient of determination ($R^2$) indicates the proportion of the variance in the dependent variable that is predictable from the independent variables (Hair et al., 2014). $R^2$ is the squared coefficient of the multiple correlation and it ranges from 0 to 1. A value of 0 indicates that the model explains none of the variability of the response data around its mean (Hair et al., 2014). Conversely, a value of 1 indicates that the model explains all the variability of the response data around its mean (Hair et al., 2014). As shown in Figure 7, the $R^2 = .76$. In other words, the exogenous variables explain 76% of the variance in students’ intention to study at university. Using Equation 3 in Appendix O, an $R^2$ confidence interval was calculated. With 95% confidence, $R^2 = \geq .71 \leq .80$.

7.26. University Distal Intention Model (UDIF)

While the proximal measurements of intention measured in the UPIF indicate encouraging results, it is the University Distal Intention Model (UDIF) that will probe further into students’ intentions and the salient drivers of these. Analysis of the UDIF measurements is the second crucial element to Phase 3 of this study. Analysis of the UDIF followed the same process as the UPIF. The rationales for conducting such tests have already been discussed above and to prevent unnecessary repetition the results will be provided as succinctly as possible, in table format wherever possible.
7.27. Outliers and Normality

Table 34

*Multivariate Outliers of UDIF variables*

<table>
<thead>
<tr>
<th>Observation</th>
<th>$D^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>123</td>
<td>77.01</td>
<td>.001</td>
</tr>
<tr>
<td>163</td>
<td>66.34</td>
<td>.001</td>
</tr>
<tr>
<td>37</td>
<td>64.03</td>
<td>.001</td>
</tr>
<tr>
<td>106</td>
<td>59.17</td>
<td>.001</td>
</tr>
<tr>
<td>61</td>
<td>58.22</td>
<td>.001</td>
</tr>
<tr>
<td>94</td>
<td>55.01</td>
<td>.001</td>
</tr>
<tr>
<td>227</td>
<td>52.30</td>
<td>.001</td>
</tr>
<tr>
<td>174</td>
<td>49.50</td>
<td>.001</td>
</tr>
<tr>
<td>222</td>
<td>48.52</td>
<td>.001</td>
</tr>
</tbody>
</table>

Note: $p$-value <.001 threshold recommended by Kline (2005)

Shown in Table 34, analysis of the UDIF model variables indicated nine observations ($\approx3\%$) were at or below $p<.001$ level threshold. As discussed, the deletion of outliers might improve the multivariate analysis but at the risk of limiting generalisability (Hair et al., 2014). Therefore, the researcher decided to retain all observations.
Examination of Table 35 indicates that various items departure from normality, although all measures fit well within the recommended levels previously discussed.

Digressing for one moment, Kline et al. (2005) stated that a practical minimum number of indicators in a CFA should be three to five measured variables otherwise models may be
prone to specification error, especially when two or fewer indicators are used. In the context of the present study, there were not enough negative beliefs elicited in Phase 1 to warrant a latent construct in the modelling that may be conceptualised as negative behavioural beliefs. As shown in Table 35, students indicated a typically negative evaluation about the debt they will incur as indicated by item Study debt and its negative score ($\mu=-7.35$, $SD=11.85$). A Pearson product-moment correlation coefficient was computed to assess the relationship between the students’ behavioural intention to study at university and their level of negativity regarding their expected study debt. There was a negative correlation between the two variables $[r = -.17, n = 252, p < .01]$, indicating a significant relationship between increased student negativity about future study debt and decreasing intent $\mu$ to study at university. However, according to Dancey and Reidy's (2004) classification of correlation coefficients, the strength of the relationship between these variables is ‘weak’. This result suggests that although participants typically felt negative about a future study debt, it did not typically have a strong adverse impact on their intention to study at university. Considering the former and the point that Study debt is one item and thus can’t be used as a latent factor in the SEM analysis, the choice was made to not include this indicator further in the UDIF. It is important to note here that the UPIF model measures attitude, which theoretically encompasses an overall evaluation of the perceived positives and negatives associated with an intention to perform a particular behaviour. Hence, students’ attitudes should reflect both their positive and negative behavioural beliefs (e.g. study debt). Behavioural beliefs are therefore substituted with positive behavioural beliefs for the rest of the study to reflect such changes to the latent construct. Readers are encouraged to be aware of this subtle, but important, difference between the UPIF and UDIF models.
7.28. Measurement model specification and confirmatory factor analysis results

In this research confirmatory factor analysis (CFA) was performed on this measurement model to assess the unidimensionality, reliability, and validity of measures. Two broad approaches were used in the CFA to assess the measurement model. 1) Consideration of the goodness of fit (GOF) criteria indices and 2) Evaluating the validity and reliability of the measurement model.

7.28.1. GOF measures.

Table 36

<table>
<thead>
<tr>
<th>Initial GOF Measures of UDIFF</th>
<th>Result</th>
<th>Acceptable thresholds (Hu &amp; Bentler, 1999)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2$ [df] (sig)</td>
<td>670.47 [426] ($p&lt;.001$)</td>
<td>($p&gt;.05$)</td>
</tr>
<tr>
<td>$\chi^2$/df</td>
<td>1.64</td>
<td>$\leq 3$</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.05 PCLOSE .428</td>
<td>$\leq .08$ (PCLOSE&gt;.05)</td>
</tr>
<tr>
<td>AGFI</td>
<td>.82</td>
<td>$\geq .80$</td>
</tr>
<tr>
<td>SRMR</td>
<td>.05</td>
<td>$\leq .09$</td>
</tr>
<tr>
<td>CFI</td>
<td>.95</td>
<td>$\geq .95$</td>
</tr>
<tr>
<td>TLI</td>
<td>.95</td>
<td>$\geq .95$</td>
</tr>
<tr>
<td>PGFI</td>
<td>.70</td>
<td>$^\wedge$</td>
</tr>
<tr>
<td>PNFI</td>
<td>.78</td>
<td>$^\wedge$</td>
</tr>
</tbody>
</table>

$^\wedge$=No specific recommendations: Score ranges between: 0=poor fit-1=very good fit (Mulaik et al 1989)

As shown in Table 36, the GOF measures all meet acceptable thresholds. Considering such results, the validity and reliability of the model was examined.
7.29. Validity and Reliability

Table 37

*Validity and Reliability Measures UDIF model*

<table>
<thead>
<tr>
<th></th>
<th>CR</th>
<th>AVE</th>
<th>MSV</th>
<th>ASV</th>
<th>MamA</th>
<th>BI</th>
<th>PosB</th>
<th>NomB</th>
<th>ConB</th>
<th>SES</th>
<th>GenA</th>
<th>VerbA</th>
<th>Eth</th>
</tr>
</thead>
<tbody>
<tr>
<td>MamA</td>
<td>.932</td>
<td>.774</td>
<td>.271</td>
<td>.090</td>
<td>.880</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>BI</td>
<td>.985</td>
<td>.929</td>
<td>.618</td>
<td>.287</td>
<td>.292</td>
<td>.964</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PosB</td>
<td>.846</td>
<td>.587</td>
<td>.679</td>
<td>.293</td>
<td>.233</td>
<td>.786</td>
<td>.766</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NomB</td>
<td>.885</td>
<td>.720</td>
<td>.634</td>
<td>.284</td>
<td>.320</td>
<td>.689</td>
<td>.735</td>
<td>.849</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ConB</td>
<td>.789</td>
<td>.567</td>
<td>.679</td>
<td>.325</td>
<td>.347</td>
<td>.746</td>
<td>.824</td>
<td>.796</td>
<td>.753</td>
<td></td>
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<tr>
<td>SES</td>
<td>.754</td>
<td>.413</td>
<td>.125</td>
<td>.054</td>
<td>.152</td>
<td>.353</td>
<td>.233</td>
<td>.270</td>
<td>.258</td>
<td>.643</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GenA</td>
<td>.871</td>
<td>.693</td>
<td>.416</td>
<td>.246</td>
<td>.521</td>
<td>.540</td>
<td>.523</td>
<td>.540</td>
<td>.607</td>
<td>.223</td>
<td>.833</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VerbA</td>
<td>.905</td>
<td>.761</td>
<td>.416</td>
<td>.118</td>
<td>.241</td>
<td>.292</td>
<td>.323</td>
<td>.333</td>
<td>.373</td>
<td>.179</td>
<td>.645</td>
<td>.872</td>
<td></td>
</tr>
<tr>
<td>Eth</td>
<td>.726</td>
<td>.478</td>
<td>.058</td>
<td>.022</td>
<td>-.047</td>
<td>.240</td>
<td>.150</td>
<td>.211</td>
<td>.192</td>
<td>.086</td>
<td>-.047</td>
<td>.009</td>
<td>.692</td>
</tr>
</tbody>
</table>

BI= Behavioural Intention, Att=Attitude, SN=Subjective norm, PBC=Perceived Behavioural Control, PosB=Aggregated Positive Behavioural Beliefs, NomB=Aggregated Normative Behavioural Beliefs, ConB=Aggregated Control Behavioural Beliefs, GenAC=General Academic Self Concept, VerbA=Verbal Academic Self Concept, MamA=Mathematical Academic Self Concept, SES=Socio-economic Status, Eth=Ethnicity
7.29.1. Convergent Validity.

As shown in Table 37, each construct of the UDIF meets the acceptable threshold of CR≥.7, indicating acceptable convergent validity. AVE, the more conservative measure of convergent reliability, met the minimum acceptable threshold (≥.5) for all constructs except SES (.413) and ethnicity (.478). As discussed earlier, SES and ethnicity are multi-dimensional and rather challenging constructs to capture. All things considered, it is common for researchers to accept measures when the CR score ≥.7 on occasions when the AVE <.5 (Hu & Bentler, 1999).

7.29.2. Discriminant Validity

As discussed, discriminant validity was measured against the following two criteria 1) the Maximum Shared Variance (MSV) should be less than the AVE (MSV<AVE) and 2) all standard regression weights values ≥.3 (Hair et al., 2014). Table 37 indicates that all constructs aligned with the MSV<AVE benchmark except Positive Behavioural Beliefs (AVE=.587<MSV=.679) and Control Beliefs (AVE=.567<MSV=.679). These results closely resemble the direct measures of Behavioural Beliefs (Attitude) and Control Beliefs (PBC) discussed earlier in the UPIF model. The indirect measures mirror the results of the direct validity and reliability tests. As discussed previously, a key tenet of the TPB is that the Behavioural, Normative and Control beliefs co-vary to differing degrees depending on the behaviour. Like before, one may interpret these results as support of the TPB in general, and particularly its use in this study while others may regard this as a problematic sign of unidimensionality in these data. It is also worth remembering that the discriminant validity results pertaining to behavioural and control beliefs may be a limitation of these data.
### 7.30. Measurement Model Estimates (UDIF model)

Table 38

<table>
<thead>
<tr>
<th>Item</th>
<th>Loading</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioural intention → intent5</td>
<td>.95</td>
<td>34.14</td>
</tr>
<tr>
<td>Behavioural intention → intent4</td>
<td>.97</td>
<td>33.25</td>
</tr>
<tr>
<td>Behavioural intention → intent3</td>
<td>.97</td>
<td>40.59</td>
</tr>
<tr>
<td>Behavioural intention → intent2</td>
<td>.96</td>
<td>36.81</td>
</tr>
<tr>
<td>Behavioural intention → intent1</td>
<td>.95</td>
<td>RW</td>
</tr>
<tr>
<td>Positive Behavioural beliefs → unilifestyle</td>
<td>.53</td>
<td>8.80</td>
</tr>
<tr>
<td>Positive Behavioural beliefs → Career Aspirations</td>
<td>.90</td>
<td>18.13</td>
</tr>
<tr>
<td>Positive Behavioural beliefs → Grad Prem</td>
<td>.70</td>
<td>12.53</td>
</tr>
<tr>
<td>Positive Behavioural beliefs → Student interest</td>
<td>.86</td>
<td>16.67</td>
</tr>
<tr>
<td>Nomative Beliefs → Peers</td>
<td>.86</td>
<td>16.65</td>
</tr>
<tr>
<td>Nomative Beliefs → Teachers</td>
<td>.87</td>
<td>16.97</td>
</tr>
<tr>
<td>Nomative Beliefs → Parents</td>
<td>.80</td>
<td>14.92</td>
</tr>
<tr>
<td>Control Beliefs → Fiscal Resources</td>
<td>.50</td>
<td>8.09</td>
</tr>
<tr>
<td>Control Beliefs → Passuni</td>
<td>.84</td>
<td>15.95</td>
</tr>
<tr>
<td>Control Beliefs → Expc. ATAR</td>
<td>.85</td>
<td>16.24</td>
</tr>
<tr>
<td>SES → faed</td>
<td>.73</td>
<td>12.69</td>
</tr>
<tr>
<td>SES → moed</td>
<td>.63</td>
<td>10.55</td>
</tr>
<tr>
<td>GenACSC → genac1</td>
<td>.87</td>
<td>16.87</td>
</tr>
<tr>
<td>GenACSC → genac2</td>
<td>.78</td>
<td>14.32</td>
</tr>
<tr>
<td>GenACSC → genac3</td>
<td>.83</td>
<td>15.71</td>
</tr>
<tr>
<td>VerbASC → verac1</td>
<td>.89</td>
<td>17.53</td>
</tr>
<tr>
<td>VerbASC → verac2</td>
<td>.91</td>
<td>18.25</td>
</tr>
<tr>
<td>VerbASC → verac3</td>
<td>.80</td>
<td>15.08</td>
</tr>
<tr>
<td>MamASC → mamac1</td>
<td>.78</td>
<td>14.60</td>
</tr>
<tr>
<td>MamASC → mamac2</td>
<td>.92</td>
<td>18.74</td>
</tr>
<tr>
<td>MamASC → mamac3</td>
<td>.95</td>
<td>19.85</td>
</tr>
<tr>
<td>Ethnicity → sbp</td>
<td>.50</td>
<td>6.04</td>
</tr>
<tr>
<td>Ethnicity → fabp</td>
<td>.70</td>
<td>7.78</td>
</tr>
<tr>
<td>Ethnicity → mobp</td>
<td>.83</td>
<td>8.50</td>
</tr>
<tr>
<td>SES → maxvo</td>
<td>.93</td>
<td>17.23</td>
</tr>
<tr>
<td>SES → books</td>
<td>.35</td>
<td>5.46</td>
</tr>
<tr>
<td>SES → ICSEA</td>
<td>.33</td>
<td>5.23</td>
</tr>
</tbody>
</table>

RW=Regression Weight 1 $t \geq 1.96 \Rightarrow p < .05$

As shown in Table 38, Criterion 2 was satisfied with all constructs. All things considered, these data indicated suitable discriminant validity amongst all constructs except
for a possible unidimensionality issue with behavioural and control Beliefs. These however theoretically co-vary and it is perhaps unsurprisingly that the results indicated this possibility.

**7.31. Modification Indices**

Table 39

*Modification Indices UDIF Model (>10)*

<table>
<thead>
<tr>
<th>Modification</th>
<th>M.I.</th>
<th>Par Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>e2↔e5</td>
<td>22.52</td>
<td>-.06</td>
</tr>
<tr>
<td>e1↔e5</td>
<td>17.05</td>
<td>.07</td>
</tr>
<tr>
<td>e29↔MamASC</td>
<td>16.62</td>
<td>.23</td>
</tr>
<tr>
<td>e2↔e3</td>
<td>16.21</td>
<td>.04</td>
</tr>
<tr>
<td>e8↔e14</td>
<td>13.83</td>
<td>11.46</td>
</tr>
<tr>
<td>e24↔e26</td>
<td>11.76</td>
<td>.16</td>
</tr>
<tr>
<td>e1↔e3</td>
<td>11.69</td>
<td>-.04</td>
</tr>
</tbody>
</table>

Table 39 shows the modification indices for the model. Modification indices were examined for possible covariance to adjust for word similarity on the same factor as recommended by Kenny (2012). Following this analysis, e2↔e5, e1↔e5 were co-varied.
Figure 8. UDIS Final CFA model
7.32. Structural Model Evaluation

Table 40

GOF Results of Structural Model

<table>
<thead>
<tr>
<th>GOF Measure</th>
<th>Result</th>
<th>Acceptable thresholds (Hu &amp; Bentler, 1999)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2 \ [df] (\text{sig})$</td>
<td>674.37 [430] ($p&lt;.001$)</td>
<td>($p&gt;0.05$)</td>
</tr>
<tr>
<td>$\chi^2 / df$</td>
<td>1.55</td>
<td>$\leq 3$</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.05 PCLOSE .762</td>
<td>$\leq 0.08$ (PCLOSE&gt;.05)</td>
</tr>
<tr>
<td>AGFI</td>
<td>0.83</td>
<td>$\geq 0.80$</td>
</tr>
<tr>
<td>SRMR</td>
<td>0.05</td>
<td>$\leq 0.09$</td>
</tr>
<tr>
<td>CFI</td>
<td>0.96</td>
<td>$\geq 0.95$</td>
</tr>
<tr>
<td>TLI</td>
<td>0.96</td>
<td>$\geq 0.95$</td>
</tr>
<tr>
<td>PGFI</td>
<td>0.70</td>
<td>$\wedge$</td>
</tr>
<tr>
<td>PNFI</td>
<td>0.78</td>
<td>$\wedge$</td>
</tr>
</tbody>
</table>

$\wedge$=No specific recommendations: Score ranges between: 0=poor fit-1=very good fit (Mulaik et al 1989)

The fit indices shown in Table 40 indicate that the hypothesised structural model is a good fit of the data. The $\chi^2 / df$ ratio (=1.55) is acceptable ($\leq 3$), The other fit measures showed that the model adequately fit the observed data ($AGFI=0.83$; $SRMR=0.05$; $RMSEA=0.05$ $PCLOSE (.76)$; $CFI .96 (\geq .95)$; $TLI 0.96 (\geq .95)$ were acceptable according to Hu and Bentler’s (1999) recommendations. The parsimony measures are the following: $PGFI .70$ and $PNFI .78$ respectively.
7.33. Hypothesis Testing

Table 41

<table>
<thead>
<tr>
<th>Construct</th>
<th>Code</th>
<th>Hypotheses</th>
<th>Hypothesised relationship (positive) in the UDIF model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive behavioural beliefs</td>
<td>PosB</td>
<td>H9</td>
<td>PosB→BI</td>
</tr>
<tr>
<td>Normative beliefs</td>
<td>NomB</td>
<td>H10</td>
<td>NomB→BI</td>
</tr>
<tr>
<td>Control beliefs</td>
<td>ConB</td>
<td>H11</td>
<td>ConB→BI</td>
</tr>
<tr>
<td>General Academic Self-Concept</td>
<td>GenAsc</td>
<td>H12</td>
<td>GenAsc→BI</td>
</tr>
<tr>
<td>Verbal Academic Self-Concept</td>
<td>VbAsC</td>
<td>H13</td>
<td>VbAsC→BI</td>
</tr>
<tr>
<td>Mathematical Academic Self-Concept</td>
<td>MaMASc</td>
<td>H14</td>
<td>MaMASc→BI</td>
</tr>
<tr>
<td>SES</td>
<td>SES</td>
<td>H15</td>
<td>SES→BI</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Eth</td>
<td>H16</td>
<td>Eth→BI</td>
</tr>
</tbody>
</table>

This section presents results of hypothesis testing. Table 41 shows hypotheses represented by causal paths (H9, H10, H11, H12, H13, H14 etc.) that were used to test the relationships between the latent constructs.
Table 42

Parameter Estimates

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Relationship (positive)</th>
<th>Beta coefficients ($\beta$)</th>
<th>$t$</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>H9</td>
<td>PosB→BI</td>
<td>.50</td>
<td>5.48</td>
<td>YES***</td>
</tr>
<tr>
<td>H10</td>
<td>NomB→BI</td>
<td>.08</td>
<td>1.08</td>
<td>NO</td>
</tr>
<tr>
<td>H11</td>
<td>ConB→BI</td>
<td>.11</td>
<td>1.01</td>
<td>NO</td>
</tr>
<tr>
<td>H12</td>
<td>GenAsc→BI</td>
<td>.18</td>
<td>2.24</td>
<td>YES*</td>
</tr>
<tr>
<td>H13</td>
<td>VbAsC→BI</td>
<td>-.09</td>
<td>-1.64</td>
<td>NO</td>
</tr>
<tr>
<td>H14</td>
<td>MamASC→BI</td>
<td>.01</td>
<td>.264</td>
<td>NO</td>
</tr>
<tr>
<td>H15</td>
<td>SES→BI</td>
<td>.14</td>
<td>3.43</td>
<td>YES***</td>
</tr>
<tr>
<td>H16</td>
<td>Eth→BI</td>
<td>.12</td>
<td>2.59</td>
<td>YES**</td>
</tr>
</tbody>
</table>

Notes: ***$p<.001$ **$p<.01$ *$p<0.05$

As shown in Table 42, parameter estimates were examined to evaluate the hypothesised structural model. Estimates suggest that 4 out of 8 hypothesised paths were significant. Thus, indicating support for the 4 hypotheses. These results are presented in detail as follows:

7.34. Hypothesis 9

*Aggregated positive behavioural beliefs will have a significant positive effect on students’ intentions to study at university as a component of the UDIF.*

Hypothesis 9 was supported by the data. The parameter estimates shown in Table 42 report that aggregated positive beliefs has a significant ($p<.001$) positive effect on students’ BI to study at university ($\beta=0.50, t=5.48$). This finding suggests that students’ positive behavioural beliefs are a significant predictor of their intention to study at university as a component of the UDIF model.
7.35. Hypothesis 10

*Aggregated normative beliefs will have a significant positive effect on students’ intentions to study at university as a section of the UDIF.*

Hypothesis 10 was not supported by the data. The parameter estimates ($\beta=0.08$, $t=1.08$), as shown in Table 42, show that aggregated normative beliefs in the prediction of students’ behavioural intention is not significantly different from zero ($p>0.05$). Therefore, this result indicates that normative beliefs are not a significant predictor of students’ intentions to study at university as a component of the UDIF model.

7.36. Hypothesis 11

*Aggregated control beliefs will have a significant positive effect on students’ intentions to study at university as a component of the UDIF.*

Hypothesis 11 was not supported by the data. As shown in Table 42, the parameter estimates for ConB→BI were $\beta=0.11$, $t=1.01$. Therefore, aggregated control beliefs in the prediction of Students’ BI is not significantly different from zero. Hence, this result indicates that students’ control beliefs are not a significant predictor of their intention to study at university as a component of the UDIF model.
7.37. Hypothesis 12

*General academic self-concept will have a significant positive effect on students’ intentions to study at university as an element of the UDIF.*

Hypothesis 12 was supported by the data. As shown in Table 42, the parameter estimates for GenAsc $\rightarrow$ BI were $\beta = .18$, $t = 2.24$. This result indicates that general academic self-concept is a significant predictor of students’ intentions to study at university as a component of the UDIF model ($p < .05$). This result is contrasted with the result earlier in the UPIF model analysis which indicated that general academic self-concept did not have a significant predictor of students’ intentions to study at university.

7.38. Hypothesis 13

*Verbal academic self-concept will have a significant positive effect on students’ intentions to study at university as an element of the UDIF.*

Hypothesis 13 was not supported by the data. As shown Table 42 reported that the $\beta = -0.09$ and $t = -1.64$ for VbAsC $\rightarrow$ BI. This result indicates that the use of verbal academic self-concept in the prediction of students’ BI is not significantly different from zero. This result suggests that verbal academic self-concept is not a significant predictor of students’ intentions to study at university as a component of the UDIF model.
7.39. Hypothesis 14

Mathematical academic self-concept will have a significant positive effect on students’ intentions to study at university as an element of the UDIF.

Hypothesis 14 was not supported by the data. Shown in Table 42, the parameter estimates ($\beta=.01, t=.26$) indicated that MamASC $\rightarrow$ BI is not statistically significant in the UDIF. This result indicates that the use of mathematical academic self-concept in the prediction of students’ BI is not significantly different from zero in the UDIF model.

7.40. Hypothesis 15

SES will have a significant positive effect on students’ intention to study at university as a component of the UDIF.

Hypothesis 15 was supported by the data. The parameter estimates ($\beta=.14, t=3.43$) for SES$\rightarrow$BI are shown in Table 42. This result indicates that SES has a significant ($p<.001$) positive effect on students’ intentions to study at university as a component of the UDIF. This finding indicates that students’ SES is a significant predictor of their intention to study at university as a component of the UDIF model.
7.41. Hypothesis 16

Indicators of ethnicity will have a significant positive effect on students’ intention to study at university as a component of the UDIF.

Hypothesis 16 was supported by the data. The parameter estimates $\beta = .12$, $t = 2.59$ for the Eth→BI path as shown in Table 42. This result indicates that ethnicity has a significant ($p < .01$) positive effect on students’ intentions to study at university as a component of the UDIF. Hence, this result suggests that students’ ethnicity is a significant predictor of their intention to study at university as a component of the UDIF model.

7.42. Covariance Parameter Estimates

Following analysis of the parameter estimates, it is now necessary to examine the covariance parameter estimates in order to examine bi-directional relationships between exogenous variables for significant relationships. While factors may not have a direct effect on behavioural intention, they can possibly still have an indirect effect on it via other factors and these results will indicate if this is the case.
As shown in Table 43, 19 (out of 28) were significant at $p < .001$ with another 5 paths significant at $p < .05$. This result indicates a high level of correlation between many of the variables, especially between the indirect variables of the TPB (behavioural, normative and control beliefs). Particularly strong covariance is indicated by positive behavioural Beliefs ↔ normative beliefs (.74), positive behavioural beliefs ↔ control beliefs (.83), NomativeBeliefs ↔ ControlBeliefs (.80) and PositiveBehaviouralbeliefs ↔ NomativeBeliefs (.74).
7.43. Modifying Structural Model by Removing Non-significant Paths

The structural model was re-specified by removing non-significant paths to the endogenous variable and between exogenous variables. This process is likely to provide better fit to the data and improve parsimony.

Table 44

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Relationship (positive)</th>
<th>Beta coefficients (β)</th>
<th>t</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>H9</td>
<td>PosB→BI</td>
<td>.65</td>
<td>11.20</td>
<td><strong>YES</strong>*</td>
</tr>
<tr>
<td>H12</td>
<td>GenAsc→BI</td>
<td>.16</td>
<td>3.20</td>
<td><strong>YES</strong>*</td>
</tr>
<tr>
<td>H15</td>
<td>SES→BI</td>
<td>.16</td>
<td>3.58</td>
<td><strong>YES</strong>*</td>
</tr>
<tr>
<td>H16</td>
<td>Eth→BI</td>
<td>.14</td>
<td>3.16</td>
<td><strong>YES</strong></td>
</tr>
</tbody>
</table>

The results of the revised structural model, as shown Table 44, indicated that H9, H12, H15 and H16 were all statistically significant (*p* < .01). Removal of the non-significant paths had the following effects on β and t scores: PosB→BI (β = .65; *t* = 11.20; *p* < .001), GenAsc→BI (β = .16; *t* = 3.20; *p* < .001), SES→BI (β = .16; *t* = 3.58; *p* < .001), Eth→BI (β = .14; *t* = 3.16; *p* < .001).
Table 45

Results of the Revised GOF Measures

<table>
<thead>
<tr>
<th>GOF Measure</th>
<th>Result</th>
<th>Acceptable thresholds (Hu &amp; Bentler, 1999)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2$ <a href="sig">df </a></td>
<td>682.87 [434] ($p&lt;.001$) ($p&gt;.05$)</td>
<td></td>
</tr>
<tr>
<td>$\chi^2$/df</td>
<td>1.54</td>
<td>0-3 ≤</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.05 PCLOSE .78</td>
<td>≤.08 (PCLOSE&gt;.05)</td>
</tr>
<tr>
<td>AGFI</td>
<td>.83</td>
<td>≥.80</td>
</tr>
<tr>
<td>SRMR</td>
<td>.05</td>
<td>≤.09</td>
</tr>
<tr>
<td>CFI</td>
<td>.96</td>
<td>≥.95</td>
</tr>
<tr>
<td>TLI</td>
<td>.96</td>
<td>≥.95</td>
</tr>
<tr>
<td>PGFI</td>
<td>.71</td>
<td>^</td>
</tr>
<tr>
<td>PNFI</td>
<td>.79</td>
<td>^</td>
</tr>
</tbody>
</table>

*=No specific recommendations: Score ranges between: 0=poor fit-1=very good fit (Mulaik et al 1989)

Table 45 shows the final GOF measures for the structural model. All GOF measures are within acceptable guidelines.
Figure 9. Final UDIF structural model as shown in AMOS
7.44. **UDIF Structural correlations and Confidence Interval**

As shown in Figure 9, the UDIF’s $R^2 = .70$. This result indicates that the exogenous variables of the model explain 70% of the variance in students’ intentions to study at university. Using Equation 3 in Appendix O, an $R^2$ confidence interval was calculated. With 95% confidence, $R^2 = ≥.64 ≤.76$. As previously discussed, with 95% confidence the $R^2$ of the UPIF= ≥.71 ≤.80 and the UDIF’s $R^2 = ≥.64 ≤.76$. These results indicate that both models explain approximately the same amount of variance in students’ intentions to enrol in university.

7.45. **Summary of Results in Phase 3**

The UPIF model explained 76% [95% C.I. .71, .8] of the variance in students’ intentions to enrol in university. As components of the UPIF model, attitude, subjective norm and SES were significant predictors of students’ intentions to study at university. The indirect measures of the UDIF model probed the salient beliefs that underpinned students’ intentions to attend university. The variables in the UDIF model explained 70% [95% C.I. .64, .76] of the variance in students’ intention to study at university. Positive behavioural beliefs, general academic self-concept, SES and ethnicity were significant predictors of students’ intentions to study at university as components of the UDIF model. Confidence intervals measures indicate that both models explain approximately the same amount of variance in students’ intentions to attend university. In the upcoming chapter, the findings of this research are positioned within a broader research discourse and research questions posed in the present study are answered.
Chapter 8. Discussion

8.1. Introduction

This chapter advances the thesis by answering and discussing Research Question 1, 2 and 3. First, the salient behavioural, normative and control beliefs that underpin students’ intentions to enrol at university are stated in response to Question 1 of this study. Subsequently, Research Question 2 examines the impact of, and predictors of students’ intentions to enrol at university. Lastly, Research Question 3 explores the pedagogical and theoretical recommendations regarding the possible design of programs targeting greater university participation underpinned by an extended TPB model. A discussion of the intention-based models used in this study, student aspirations and different forms of capital also positions this research within a broader research discourse.

8.2. Research Question 1

What are the reported behavioural, normative and control beliefs that underpin students’ intentions to enrol at university?

Data from Phase 1 of this study are used in the following section in order to answer Research Question 1. For clarity of reading, behavioural, normative and control beliefs are addressed individually.
8.3. Reported Behavioural Beliefs Underpinning Students’ Intentions to enrol at University

8.3.1. Career Aspirations.

During the interviews conducted during Phase 1 of this study, students’ future Career aspirations were the most commonly reported advantage of studying at university. The results indicate that an important behavioural belief underpinning students’ intentions to enrol in university is to improve job prospects and/or be the springboard for their career. This result is consistent with a study by Guo et al. (2015) examining over 2,200 American students over a number of years. Guo and colleagues echoed the idea that students with strong intentions of studying further are usually prepared to delay gratification in the immediate future for the perceived expectancy of future career success. Other researchers such as Galliott, Graham and Sweller (2015) and Hill et al. (2004) reported similar sentiments. This result highlights how the expectancy of career success after university appears to be an important behavioural belief underlying students’ intentions to enrol in university.

8.3.2. Student interest in Study Field.

Students’ interest in learning about a specific field was equally the second most popular positive behavioural belief. Students generally reported intrinsic motivation to learn a topic because of inherent interests, enjoyment and to achieve mastery of the subject. Likewise, other studies conducted in the US such as (Hennessey, 2015) and in the UK (Groves, Sellars, Smith & Barber, 2015) present similar findings. This result indicates that students’ intrinsic interest in a subject/course area appears to be an important behavioural belief underlying students’ intentions to enrol in university study. In what is perhaps an encouraging sign for
educators, this result may challenge the notion that students are usually only motivated to attend university for economic advancement and career outcomes.

8.3.3. Graduate Premium.

Students’ beliefs about an expected higher income following university study were equally the second most popular positive behavioural belief reported. Australian research has reported that for males, the median lifetime income gap between students with a bachelor degree as opposed to those who completed year 12 is $1.1 million (Norton, 2012). For females, this gap is approximately $800,000 (Norton, 2012). For many students, the gains from higher earnings if they graduate far outweigh the loss of earnings in the short term (Davis, 2014). Again, themes of economic advancement and career outcomes appear to be important motivating behavioural beliefs underpinning students’ intentions to enrol in university.

8.3.4. University Lifestyle.

The fourth most reported positive behavioural belief underpinning students’ intention to enrol at university is outcomes associated with a university lifestyle. It is perhaps not surprising that young people look forward to the element of university lifestyle that comprises of meeting new people, socialising and developing a greater sense of independence and identity (Peralta, 2007).

8.3.5. Study Debt.

The only behavioural belief in relation to the perceived disadvantages of attending university was study debt. All students reported that a study debt was a disadvantage to studying at university. At the time of this study, the proposed move by the former Abbott
Government to deregulate student fees at Australian universities received significant media coverage, commentary and community discussion. Confusion, or possibly ignorance, of study debt may continue well after students have begun their degree. For instance, Cull and Whitton’s (2011) study of more than 470 university students reported that just over half (54%) of their sample knew the amount of their study debt. Following graduation, there is however a substantial increase in the reported awareness of study debt in those who earn between $25,000 to $45,000, reflective of the income range in which students make compulsory repayments at the time of Cull and Whitton’s (2011) research.

8.4. Reported Normative beliefs underpinning students’ intentions to enrol at university

8.4.1. Parents.

In Phase 1, all participants reported that their parents were a significant normative influence on their intentions to enrol at university. Research on the factors affecting the educational and occupational aspirations of Australian students stated that participants’ whose parents wanted them to attend university were 11 times more likely to go on to higher education compared with those whose parents expected them to choose a non-university pathway (Gemici, Bednarz, Karmel & Lim, 2014).

8.4.2. Teachers.

During Phase 1, the second most commonly reported normative influence to enrol at university was teachers. Hattie’s (2009) meta-analysis repeats similar findings, indicating that teachers who have created positive teacher student relationships are more likely to have above average effects on student achievement. Teachers may be a particularly important normative influence for students from non-traditional backgrounds such as low SES
backgrounds (See, Gorard & Torgerson, 2012). Students from low SES backgrounds are likely to especially need emotional support, trusting relationships and advice about the future (Baker, Grant, & Morlock, 2008). Strong teacher-student relationships are likely to foster a culture of empathy and caring that has the potential to considerably change students’ lives.

8.4.3. Peers.

In Phase 1, one participant mentioned peers as a normative influence on their future study plans. Despite the ongoing debate in the psychology literature regarding the relative importance of peers versus parents in human development (Franzoi, 2011; Harwood, Miller & Vasta, 2008), studies by Kirk (2000) and Zimmerman (2003) claim that pressure exerted by peer groups can promote change of beliefs, especially in adolescence and the relatively young. The National Centre for Vocational Education Research claimed that “students whose friends plan to attend university are nearly four times more likely to plan to attend universities themselves” (Gemici, Bednarz, Karmel & Lim, 2014, p.17).

8.5. Reported Control Beliefs underpinning Students’ Intentions to enrol at University

8.5.1. Passing University Studies.

In Phase 1, three interview participants discussed their control beliefs regarding their intended university study. From these conversations, it seemed as if there was confusion about the expectations and structure of the university teaching schedule. In similar findings, Gardner (2012) reported students commonly feared that university will be too difficult and some worried about being perceived as stupid or some other type of undesirable by peers. Many students starting university share the exact same fears and are normal transitional pains (Gardner, 2012).
8.5.2. Expected ATAR.

Three interview participants in Phase 1 reported control beliefs regarding their expected ATAR (Australian Tertiary Admission Rank). The ATAR is an allocated number between 0-99.95 intended to indicate the performance of a student in Year 12 examinations and assessments relative to other students. Typically, the final year of high school can be quite stressful on students (Teese & Polesel, 2003) and therefore it is reasonable to see how perceived control may be affected by this control belief.

8.5.3. Fiscal Resources.

In Phase 1, three interview participants discussed their control beliefs regarding their perceived future access to the fiscal resources they will need to complete their studies. Similar concerns have been stated in other Australian research; with the highest overall level of financial concern expressed by full-time, low-SES undergraduates, of whom 76% indicated that they were worried about finances (Bexley, Daroesman, Arkoudis & James, 2012).
Table 46

*Reported Behavioural, Normative and Control Beliefs*

<table>
<thead>
<tr>
<th>Positive Behavioural Beliefs:</th>
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</thead>
<tbody>
<tr>
<td>Career Aspirations</td>
</tr>
<tr>
<td>Student interest in study field</td>
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<tr>
<td>Graduate Premium</td>
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<tr>
<td>University Lifestyle</td>
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</tbody>
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<table>
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<tr>
<th>Negative Behavioural Beliefs:</th>
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<tbody>
<tr>
<td>Study Debt</td>
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<tr>
<th>Normative Beliefs:</th>
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<tr>
<td>Teachers</td>
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<td>Peers</td>
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<td>Parents</td>
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<tr>
<th>Control Beliefs:</th>
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<tr>
<td>Passing University</td>
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<tr>
<td>Expected ATAR</td>
</tr>
<tr>
<td>Fiscal Resources</td>
</tr>
</tbody>
</table>

Table 46 provides a summary answer to Research Question 1. In order to answer the research questions posed, it is essential to go beyond listing the reported behavioural, normative and control beliefs that underpin students’ intentions to enrol at university. Research Question 2 delves into the predictors of students’ intentions to enrol at university.
8.5. Research Question 2

*Using an extended Theory of Planned Behaviour model, what are the predictors of students’ intentions to enrol at university?*

8.6. Attitudes (UPIF) / Aggregated Behavioural Beliefs (UDIF)

Attitude as part of the UPIF model and aggregated behavioural beliefs in the UDIF model were both identified as the most significant predictors of students’ intentions to enrol in university. Therefore, students typically reported higher levels of intention when they had more positive attitudes and underlying beliefs associated with attending university. As discussed, salient reported beliefs included (1) career aspirations, (2) student interest in study field, (3) the graduate premium and (4) university lifestyle. These results highlight the importance and potential of attitude to influence how people orient themselves to the world according to their beliefs and evaluations of those beliefs (Ajzen, 2001; Shields, 2002). Attitudes can be viewed as a construct that activates behaviour and gives it direction; energizes and directs goal-oriented behaviour; and influences the intensity and direction of behaviour (Ajzen, 2005). The present study reaffirms other studies such as Zint (2002) and Ajzen (1991) that have discussed the importance of, and relationship between attitude and intention formation. Particularly in individualistic societies like Australia, there is typical societal valuing of independence, autonomy, personal achievement (Skillman, 2000), and a definition of self apart from the group (Desai, 2007). Such conditions may foster an environment where attitudes are relatively more predictive of intention (and theoretically future behaviour) than other constructs of the TPB model. For instance, collectivistic societies value family cohesion, cooperation, solidarity, and conformity (Skillman & Fiese, 1999). Thus, people in these societies tend to emphasise group goals and follow the
expectations and regulations of the group (Desai, 2007). The former may foster an
environment where subjective norm, when compared to attitude, is a more salient predictor of
students’ intentions to attend university. The implication of this finding is that attitude, and
the beliefs that form it, was the strongest predictor of students’ intentions to enrol in
university.

This study contributes to the considerable amount of research that has investigated the
relationship between attitude, intentions and behaviour (Ajzen, 1991; Ajzen, 2005; Ajzen &
Fishbein, 1980; Fazio & Zanna, 1978; Triandis, 1982). Mean correlations between attitudes
and behaviour have ranged considerably across studies, varying between -.20 and .73
(Glasman & Albarracin, 2006). In studies where attitudes have been elicited that were not
specific to a future behaviour, the strength of the attitude-behaviour relationship has been
relatively weak (Ajzen, 2005), with Kraus’ (1995) meta-analysis indicating a mean
correlation score of .38. For example, if the attitude is quite general—say for instance, an
attitude towards learning—and the behaviour is very specific—for instance, enrolling in
university next year—we may not expect a high correlation between attitudinal response and
behaviour. Conversely, when the attitude is specifically relevant to the observed behaviour,
attitude is more predictive of future behaviour (Ajzen, 2005; Six & Eckes, 1996; Wallace et
al., 2004). In the context of this study, the type of attitude elicited from participants is
important. The implication for researchers interested in how attitudes may predict students’
intentions is that eliciting attitudes specific to the behaviour is likely to increase the
explanatory power of the construct.

8.7. Subjective Norms (UoIF) / Aggregated Normative Beliefs (UDIF)

This study found mixed results on the predictive capacity of subjective norm on
students’ intentions to enrol in university. For instance, the analysis indicated that subjective
norm was a significant predictor of students’ intentions to enrol in university in the UPIF model. Conversely, the aggregated indirect measures in the UDIIF model were not significant predictors of students’ intentions to enrol in university. A potential reason for the varying results between models may be that all salient normative influences were not elicited in the Phase 1. For instance, research suggests that normative influences that may impact students’ intentions include families, friends, mentors, teachers, guidance counsellors and mass media (Kinzie, 2004; Shields, 2002). While teachers, peers and parents were normative influences included in the UDIF’s measures, the potential effect of other significant normative influences (e.g. siblings, mentors, guidance counsellors and the mass media) (Jones, 2013; Marjoribanks, 2004) may apply additional influence that theoretically would have been captured in the subjective norm measure, yet not in the aggregated normative belief items. In similar research, previous studies using the TPB variables found that subjective norm was a significant predictor of high school students’ academic choices (Taylor, 2014). Consistent with the former, other studies indicate that parents (Davis-Kean, 2005; Gemici, Bednarz, Karmel & Lim, 2014), peers (Gemici, Bednarz, Karmel & Lim, 2014) and teachers (Gorard & Torgerson, 2012) are important social influences on students’ academic outcomes. Similar qualitative evidence was elicited in Phase 1 of this study. On balance, there is some evidence from the results of the UPIF model to support the notion that subjective norm is a predictor of students’ intentions to enrol at university. However, the relative magnitude of this variable as a predictor of intention was relatively small. As discussed, attitude was a much stronger predictor. These results add further weight to the earlier discussion regarding the dominant notions of individualism that permeate western societies like Australia, and how attitude was a more stronger predictor of intentions.
8.9. Perceived Behavioural Control (PBC) (UPIF) / Aggregated Control Beliefs (UDIF)

In both the UPIF and UDIF model, neither PBC nor control beliefs were significant predictors of students’ intentions in their respective models. Similarly, these results are consistent with Taylor’s (2015) earlier discussed study using TPB variables to understand students’ subject choices in senior high school. Such results are perhaps a little surprising considering the conceptual similarity between PBC/ aggregated control beliefs and self-efficacy (Fishbein & Cappella, 2006) which has long been recognised as influential in the academic pathways students chose (Bandura, 1989; Bandura, 1997; Lange, Kruglanski & Higgins, 2012). These results imply that students typically felt a high level of perceived control (self-efficacy) regarding their intentions to enrol in university. A potential explanation for this finding is the sampling collection strategy used in this study. As discussed, participants’ responses were collected at the VCE Expo in Melbourne and it’s possible that the sample who attended this event already had high levels of self-efficacy in relation to their intended university study. Had the sample contained a greater proportion of lower achieving students, it is possible that PBC/control beliefs might had had a greater impact on students’ intentions, a potential avenue for future research. This point should be kept in mind when considering the findings.

8.10. Covariance between the TPB factors

In both the UPIF and UDIF models, there was a high degree of covariance between the TPB variables. Such results are consistent with other studies examining the stability and associations of TPB variables (Bamberg & Schmidt, 2003; Sassen, Kok, Schepers & Vanhees, 2015). Considering similar patterns in other studies (Chan et al., 2015; Hankonen, Haukkala and Ravaja, 2015; Ickes & Sharma, 2011), the likely explanation for these results is the iterative relationship of the TPB intention predictor variables and their bi-directional
associations, of varying degrees, between beliefs. The implications of this result support the theoretical design of the TPB, with strong associations reported amongst the constructs.
8.11. Students’ Intentions to Enrol at University and Academic Self-Concepts

8.11.1. General Academic Self-Concept.

This study presents mixed results as to whether the addition of general academic self-concept improves the predictive capacity of students’ intentions. General academic self-concept was a significant predictor of intention in the UDIF model while it wasn’t in the UPIF modelling. Earlier research indicates that academic self-concept may have a considerable effect on students’ educational pathways including post school transitions to further education (Marsh, Byrne & Yeung, 1999; Koumi, 2000; Nagy et al., 2006). Likewise, students with low academic self-concept are less likely to choose more difficult coursework in schools, engage in additional educational opportunities and apply for more competitive courses (Craven & Marsh, 1991; Nagy, Trautwein, Baumert, Koller & Garrett, 2006).

Noteworthy of further discussion is the covariance between general academic self-concept and TPB variables. One potential explanation may be that higher levels of injunctive (e.g. Behaviour modelling from significant others) and/or descriptive (e.g. Verbal encouragement to attend university from significant others) subjective norm/normative influence may positively impact students’ academic concept of self to a point where the student is confident enough to enrol in a university course. The implications of this result, together with earlier results discussing the effect of subjective norm on behavioural intention, further support earlier evidence suggesting that significant others (e.g. Parents /teachers /peers /others) are likely to be important sources of normative influence on students’ intentions to enrol in university.

Other covariance between general academic self-concept and TPB variables was also evident in the results. For example, PBC/control beliefs and general academic self-concept
had relatively high covariance (≈.60-.75). Such results indicate relatively strong links between self-efficacy and general academic self-concepts. While there has been debate in the literature about the conceptual differences (if any) between perceived behavioural control (self-efficacy) and general academic self-concepts (Bong & Skaalvik, 2003), there is evidence to suggest that… “self-efficacy and self-concept measures—even after partialling out the effects of prior achievement—are likely to contribute to the prediction of subsequent behaviours that are dependent on active choice, motivation, and sustained effort” (Marsh et al., 1991, p.336). Thus, this study’s results support the idea that researchers should measure both concepts in order to improve explanatory power of their models. As these data indicate, both concepts are related- but are likely to be concepts in their own right. Bong and Skaalvik (2003) stated similar sentiments, reporting that in general, self-concept better predicts affective reactions such as anxiety, satisfaction, and self-esteem, whereas self-efficacy better predicts cognitive processes and actual performance (Bong & Skaalvik, 2003).

### 8.11.2. Verbal Academic Self-Concept.

Verbal Academic Self-Concept was not a direct, significant predictor of students’ intentions to enrol at university in both models. These results indicated that Verbal Academic Self-Concept did not predict students’ intentions to enrol at university in either model. Although Verbal Academic Self-Concept was not a significant predictor factor of students’ intentions, it may be that different cohorts (e.g. English Literature Majors/Engineering students) may typically have different levels of Verbal Academic Self-Concept and the influence of this factor may be considerably different depending on students’ intended course/actual enrolment. While this study was generally looking at any student intending to enrol at university in any course, future research might choose to examine
potential discrepancies of Verbal Academic Self-Concept, for example, between English Literature Majors and students completing a Maths-related degree.

8.11.3. Mathematical Academic Self-Concept.

Mathematical Academic Self-Concept was not a predictor of students’ intentions to enrol at university in either model. Similar to Verbal Academic Self-Concept, it may be entirely possible that different cohorts (e.g. Engineering students/English Literature Majors) may typically have different levels of Mathematical Academic Self-Concept and its influence may be different depending on students’ intended course/actual enrolment. Future research might choose to examine differences of Mathematical Academic Self-Concept between different cohorts of students.


Both the UPIF and UDIF models highlighted bi-directional relationships, of varying degrees, between the different academic self-concepts. For instance, significant relationships were reported between verbal academic self-concept and general academic self-concept. Such covariance is consistent with other studies (Harter, 1999; Marsh, 1990; Marsh, 2007; Parker, Marsh, Ciarrochi, Marshall & Abduljabbar, 2014). Other noteworthy relationships include the relatively low correlation between Verbal Academic self-concept and Mathematical academic self-concepts in both models. These relatively low correlations may be explained by what Marsh & Hau (2004) describe as the inverse relationship concerning Verbal academic self-concept and Mathematical academic self-concept. For instance, students with higher levels of Mathematical academic self-concept are more likely to have lower levels of Verbal academic self-concept and vice versa (Marsh, 1986). This result supports the idea that students implicitly label themselves with an academic self-concept along the lines of ‘I’m a
Maths person’ or the ‘I’m an English person’ and these self-concepts may have consequences for the subjects or courses they study in the future (Marsh & Hau, 2004). This result highlights the importance of educators (e.g. parents/teachers) to foster and promote academic self-concepts by providing children with specific feedback that focuses on their particular skills or abilities (Craven & Marsh, 2008).

8.13. SES

SES was identified as a significant predictor of students’ intentions in both models. This is consistent with other research that reports that low SES students are one-third as likely to attend university as their peers from high SES backgrounds (Phillimore & Koshy, 2010). Even though SES was a significant predictor in both models, its predictive capacity was relatively small when compared to, for example, attitude or behavioural beliefs. There may be a number of possible explanations. For instance, (1) one possible explanation is that the influence of SES on students’ intentions to enrol in university is relatively weak. Though there is previous research to indicate that that SES is a salient predictor of academic outcomes, including university participation (Caro, 2009; Curtis, 2012). (2) Another possible explanation is that students from low SES backgrounds have relatively strong intentions to enrol in university, but when it comes to performing the behaviour, other beliefs or situations emerge that limit the capacity of the student to behave in the way they intended. This may be indicative of the intention-behaviour gap (Ajzen, 2011). Although actual behaviour was not measured in this study, future research may measure both intention and behaviour and examine the possible extent of the intention/behaviour gap in relation to university enrolment. (3) A third possibility is that the composite measure used in this study was not effective in capturing students’ ‘true SES status’. As discussed earlier, although there are differing views, it is generally accepted that different dimensions of SES can be linked to educational
outcomes in different ways (NCVER, 2011). Therefore, it may be desirable to use several single measures, as opposed to an index, when investigating the process by which SES background may influence educational participation and outcomes.

Other considerations such as the sample size of students who participated in this study are also important to consider. Based on the evidence from this study, SES was a significant predictor of students’ intentions to enrol in university, but its capacity to predict students’ university intentions was relatively small.

8.14. Ethnicity

This study found mixed results on the predictive capacity of ethnicity on students’ intentions to enrol in university. For instance, in the UPIF model it was not a significant predictor of students’ university intentions while in the UDIF it was. Again, it is important to keep in mind the relatively small sample size in this study when considering the results of this study. The literature also paints a rather mixed picture in relation to how ethnicity affects education outcomes. For instance, research from the US suggests that first-generation immigrant parents typically see education as a key means of upward mobility for their children, despite their own low levels of education and income (Kim & Díaz, 2013). Similarly, more recent Australian-based research suggested that subjective norm may be a more salient influence on behaviour in different countries, especially in Asia, considering individuals are more likely to follow their parent’s wishes in regards to education (Yeung, McInerney & Ali, 2014). There is evidence to suggest that students in Australia who have parents born overseas typically have greater motivation to participate in higher education compared to other Australian students whose parents were both born in Australia (Yeung, McInerney & Ali, 2014). Conversely, other studies examining immigrant’s education pathways found that first-generation immigrant students tend to perform worse than students
without an immigrant background, and second-generation immigrant students perform somewhere between the two (OECD, 2015). Compared to domestic students, immigrants to Australia may face additional barriers to higher education because of lower SES status, not speaking the local language at home, lower reading proficiency, and the adjustment of recently arriving (Martin, Liem, Mok, & Xu, 2012; Museus et al., 2011). There is research to suggest that schools have an important role to play in supporting immigrants on their educational pathway. Initiatives such as additional and intensive literacy development, homework groups, breakfast clubs, access to books/computers and extra-curricular activities lay a better foundation for positive outcomes for immigrants (Martin, Liem, Mok, & Xu, 2012). Building strong relationships and knowing students’ backgrounds/experiences in addition to cultural professional learning is likely to assist students from diverse backgrounds. The implication of this research is that educators and policy makers need to be cognizant that background characteristics, such as ethnicity, can affect students’ intentions to enrol at university.
8.15. UPIF Model

Figure 10. UPIF model. Notes: (**p<.01, *p<.05)
8.16. UDIF Model

Figure 11. UDIF model. Notes: (**p < .01, *p < .05)
8.17. Research Question 3

What pedagogical and theoretical recommendations can be made regarding the design of programs targeting greater participation in higher education and future research underpinned by an extended TPB model?

8.17.1. Pedagogical recommendations.

As a result of this study, there are a number of recommendations to stakeholders when designing programs aiming to increase students’ intentions to enrol in university. If stakeholders are focusing on elicitation of direct measures of students’ intentions to attend university, they should primarily focus on the variables reported in the UPIF model. Activities that get students to think about their attitudes regarding tertiary study and significant people in their life (subjective norms) that have chosen/not chosen university study appear to be worthy of exploration. Stakeholders may also decide on focus on the salient aggregated beliefs that underpin students’ intentions to enrol at university and hence they would focus on the factors in the UDIF model.
<table>
<thead>
<tr>
<th>Beliefs/Factors</th>
<th>Recommended Learning Intentions for students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioural Beliefs/Attitudes</td>
<td>1. Exploration of career aspirations and what stepping stones are needed to get there? Is university one of these stepping stones?</td>
</tr>
<tr>
<td></td>
<td>2. What are you interested in learning about at school? What subjects do you enjoy the most and why?</td>
</tr>
<tr>
<td></td>
<td>3. Research desired occupations and their average remuneration packages</td>
</tr>
<tr>
<td></td>
<td>4. Discuss the social benefits of attending university (e.g., special interest groups and making strong friendships)</td>
</tr>
<tr>
<td>Normative Beliefs/Subjective Norm</td>
<td>1. Students think about their parents/guardians and discuss if you have talked about the possibility of</td>
</tr>
</tbody>
</table>
According to this research, stakeholders are advised to plan learning tasks that elicit students’ beliefs and self-concepts as shown in Table 47.

8.18. Broader Pedagogical Recommendations

8.18.1. Educators need to be cognisant of Students’ Backgrounds and Experiences.

From this research, there is evidence to suggest that background factors such as SES and ethnicity can predict students’ higher education intentions. While the predictive magnitude of such factors was relatively small in this study, educators and policy makers need to be cognisant that SES and background characteristics may have a crucial, potentially caustic effect on students’ education pathways. As Devlin et al (2012) stated, “It can be seductive to think that if
non-traditional students are clever enough, or try hard enough, or persevere enough, or believe
enough in their own ability, they can engineer their success at university” (p.1). The situation
students are born may have a considerable impact on their education participation and outcomes.
In the context of this research, it is important to realise that advanced statistical methods, such as
the ones used in this study, may not reveal the extent to which students’ backgrounds and
experiences impact their attitudes and/or beliefs about higher education. These factors may have
a profound impact on students in their formative years, when they may be consciously or
subconsciously forming attitudes about education and the perceived value of it in their life.

8.19. Theoretical Recommendations

From a theoretical perspective, there are important recommendations to make for future
studies. An important part of this increased understanding relates to the ontological
conceptualisation of intention in the education field. Using the TPB offers stakeholders another
way of predicting students’ university intentions. This paradigm has many potential applications
in the education research area investigating. The author posits that it is important to critically
examine quickly evolving cultural, social, and organisational dynamics in education research. In
order to do this, it may be necessary to investigate the behaviours and intentions of others,
including, but not limited to school administers, teachers, and of course students. While
researching the predictors of intention and behaviour can be complex and challenging,
the models used in this research may be particularly helpful in helping researchers conceptualise intention-based (and possibly behaviour-based) models. Two final models, incorporating direct and indirect TPB measures were produced in this study. The theoretical implications of the UPIF and UDIF frameworks deserve examination below.

8.20. The UPIF model

The UPIF modelling indicated that attitude, subjective norm and SES were significant predictors of students’ intentions to attend university. In terms of magnitude, attitude was clearly the strongest predictor. There was also significant covariance between PBC, general / verbal /mathematic academic self-concepts and ethnicity which suggests interactions between these variables. There are similarities between this study’s results and Taylor’s study (2015) of >550 students using the TPB to understand students’ subject choices in senior high school. Taylor stated that the efficacy of the TPB factors was likely to be because the high stakes nature of the behaviour and resulting consequences involved in making a poor decision about subject choice and hence, the behaviour is highly planned. Similarly, and perhaps even more of a high stakes decision, is the intention to enrol at university. The resulting consequences of a poor decision may result in considerable loss of money, time and effort for undesirable outcomes. Consistent with Taylor’s (2015) comments, the highly planned nature of forming an intention to enrol at university is a serious decision and it’s precisely because of the high stakes nature of this behaviour that the TPB factors may be particularly effective in predicting students’ intentions to
enrol at university.

8.21. The UDIF model

The UDIF modelling indicated that positive behavioural beliefs, general academic self-concept, ethnicity and SES were significant predictors of students’ intentions to attend university. Similar to the UPIF, positive behavioural beliefs was the most salient predictor of intentions highlighting that typically students were motivated most by career aspirations, interest in the course, the graduate premium and the university lifestyle. The advantage of the UDIF, when compared to the UPIF, is the inclusion of behavioural, normative and control beliefs in the modelling. Consequently, this modelling has the potential to make a contribution to the design of interventions designed to increase students’ intentions to enrol at university.

8.22. Which model is preferable?

The UPIF and UDIF are underpinned by different assumptions about an individual’s underlying cognitive processes. As discussed, direct measures (used in the UPIF) are supported by the idea that people can accurately report their beliefs that may actually consist of a range of positive and negative beliefs. Conversely, indirect measures (used in the UDIF) are underpinned by a supposition that individuals cannot give a summary estimate of their beliefs about behaviour. However, it assumes that people can report the relative weightings of their beliefs. By measuring constructs using both direct and indirect measures, it is likely to increase the validity
of TPB-related studies (Armitage & Christian, 2004; Francis et al., 2004; Sutton et al., 2003). In sum, both direct and indirect measures should be used.

8.23. Intention-based Frameworks and Student Aspirations

As discussed in Chapter 2, much research has been conducted on the importance of students’ aspirations and university participation. The results of this study support the idea that the elicitation of intentions to enrol in university may be an alternative measure to probing students’ educational aspirations that may offer some advantages. The first possible advantage is that social desirability bias may have less impact on the TPB constructs than aspirations. Discussed in previous chapters, social desirability bias describes the tendency of survey respondents to answer questions in a manner that will be viewed favourably by others (Creswell, 2003). There is evidence to suggest that students commonly overestimate their aspirations because of social desirability bias (Gale & Parker, 2013). Conversely, there is research to indicate that the impact of social desirability on the TPB determinants is minimal (Armitage & Connor, 1998). The second possible advantage is that there is a much firmer empirical basis for describing the underlying mechanism that underpins the formation of intention, and theoretically future behaviour, in the TPB models. Conversely, the author is unaware of any commonly agreed social mechanism that underpins students’ aspirations. When stakeholders consider interventions that try to address the changing students’ higher education participation, it seems more reasonable to use a behaviour-based framework such as the TPB compared to a concept
such as students’ aspirations which has multi definitions and which has no agreed upon underlying mechanism.

8.24. Intention-based Frameworks and Forms of Capital

Earlier in the thesis, different explanations of students’ university participation were discussed and positioned within the context of this study. Different forms of capital (e.g. Economic, cultural and social) were evaluated from a psychosocial perspective. While in no way diminishing the value of this research, it’s the position of this study that cultural and social capitals are only partial explanations of the mechanisms that explain students’ university participation. One could argue that theories of cultural and social capital pay generally more attention to ‘macro’ (e.g. curriculum, policy, system officials) / ‘meso’ influences (e.g. school, teachers, parents). Conversely, the TPB models tested in the present study use a different lens to describe students’ intentions to participate in higher education from a more ‘meso’ (e.g. parents, teachers, peers) / ‘micro’ level (e.g. attitude, perceived behavioural control). One may, depending on one’s perspective, claim that micro level influences such as attitude are a construction of the agent-that individuals have the capacity to act independently. Conversely, others may claim that an attitude is a complete manifestation of the social environment, and hence there is an illusion of control over the agent’s true potential to act independently. While a consensus on the primacy of agency and structure may never be reached in the literature, the
position of this research is that a students’ university participation is a dynamic and complex synthesis of factors influenced both by the agent and their social milieu.

The lens acts as an effective metaphor to highlight how one perspective may ‘focus’ on certain factors, probably only to miss larger structural influences. Likewise, a larger viewpoint may miss the finer details found by using a smaller lens. Perspectives of different kinds should not necessarily be compared; rather, each perspective to a problem should increase understanding of the problem. The ‘meso/micro’ lens used in this study complements others perspectives and explanations including those involving cultural and social capital. In this case, the extended TPB models make an ontological contribution to the field of education by reconceptualising how one can measure students’ beliefs and intentions. Educational researchers are encouraged to consider using this study’s conceptualisation of intention in their work.

8.25. Limitations of this Study

Although it was beyond the scope of this study for a range of reasons (e.g. shortage of time, allocation of funds, difficulties with student tracking), it may be fair to say that a limitation of this study is that actual behaviour (e.g. university enrolment) is not measured. As discussed, the intention-behaviour gap is an important consideration in keep in mind when interpreting these results. On a related issue, only one behavioural intention was measured in the present study and potentially conflicting intentions, behaviours and subsequent events in students’ lives
(e.g. pregnancy, capacity to function, lack of money, and offers of employment) may override salient beliefs underpinning the behavioural execution of university enrolment.

Considering the psychosocial variables measured in this study, it is perhaps not likely to explicitly capture the broader macro social influences (e.g. legislation, mass media, societal norms etc.) that may impact students’ intentions to enrol in university. This limitation may be particularly relevant with the indirect or distal measures of the TPB. For instance, students may not even be aware of how normative influences such as the mass media may affect their intentions and behaviour. Theoretically the direct measures of the TPB should encompass beliefs partly formed by these seemingly implicit macro-level influences (Ajzen, 2005). On the other hand, Ajzen posits that behaviour is influenced by a range of other factors (e.g. Social, cultural, and personality factors), but argues that the effects of such distal factors are largely mediated by the proximal factors specified by the TPB model (Ajzen, 2005).

The sample of students in this study mostly originated from metropolitan areas. Regional and rural students may face additional barriers to participating in higher education. For instance, regional/rural students may have to move away from home in order to study. Moving away from parents may be considered a positive or negative behavioural consequence of university studies (Henriksen, Dillon & Ryder, 2014) that may either inhibit or promote students’ behavioural intentions at attend university. As a caveat to the former, it is appropriate to keep in mind that from the ASGC-RA ranking, 97% of the students in this sample reported their enrolment in a school located in a _Major Cities of Australia or Inner Regional Australia_ zone. Consequently,
moving away may not be a salient consideration in relation to this sample’s characteristics. Nevertheless, it is worth mentioning as a potential limitation in the present study.

Eliciting the academic performance of participants in this study was not possible due to ethical and practical constraints (e.g. limited time and money) of this study. This is a potential limitation of the present study because academic performance is an important indicator of students’ academic pathways (Jones, 2013). Yet, considering research to indicate a significant correlation between academic self-concepts and academic achievement (Emmanuel, Adom, Josephine & Solomon, 2014), it was perhaps adequate to use academic self-concepts as a proxy measure of students’ academic ability like Dramanu and Balarabe’s (2013) research.

The collection of data at the VCE Expo may be a potential limitation of this study. Although the results indicate that students from a range of backgrounds participated in this study, it may be feasible to expect that students uninterested in further study, such as students entering the workforce straight after school and those who have already left their studies before year 12, did not attend the expo and consequently were not offered the opportunity to participate in this research. As discussed, it is also important to keep in mind that the sample size of this study was approximately 250 in Phase 3. While this was enough to conduct the relatively complex methodologies used, it is important to point out that these results are not generaliserable and further research using considerably larger samples may help confirm the results of this study.
8.26. Summary

This chapter addressed the research questions posed in this study. Addressing Question 1, the salient behavioural beliefs that underpinned students’ intentions to enrol at university included career aspirations, student interest in study field, the graduate premium, university lifestyle and study debt. Moreover, teachers, peers and parents were reported to be the most influential normative influences on students’ intentions to enrol in university. The most salient control beliefs were passing university studies, expected ATAR and fiscal resources.

Research Question 2 investigated the predictors of students’ intentions to enrol at university, measuring TPB constructs, academic self-concepts and social backgrounds measures. Attitude and aggregated behavioural beliefs were both identified as the most significant predictors of intention in their respective models. This study found mixed results on the predictive capability of subjective norm on students’ intentions to enrol in university. Likewise, General academic self-concept was a significant predictor of intention in the UDIF model while it wasn’t in the UPIF modelling. SES was identified as a significant predictor of intention in both models although its predictive capacity was relatively weak. This study found mixed results on the predictive capacity of ethnicity on students’ intentions to enrol in university. Perceived behaviour control, mathematic and verbal academic self concepts were not significant predictors of students’ higher education intentions.
Research Question 3 looked at recommendations regarding the design of programs targeting greater participation in higher education and future research underpinned by an extended TPB model. Priority should be given to activities that encourage students to reflect on their attitudes and beliefs regarding higher education. Students should also be given the opportunity to reflect on important people in their lives (subjective norm) and if they have gone to university. Additionally, students should be given ample opportunity to reflect on their General academic self-concept. Educators and policy makers need to be cognizant that SES and background characteristics may also impact students’ university intentions. The next chapter advances the thesis by recapping its purpose and overview, the contribution that it has made to the field and identified future study opportunities.
Chapter 9. Concluding Chapter

9.1. Introduction

Chapter 9 is the final section of this thesis. This chapter contributes to the thesis by 1) reiterating the purpose and providing an overview of this study. 2) discussing noteworthy advancements as a result of conducting this investigation and 3) stating future research opportunities.

9.2. Purpose and Overview of this Study

Increasing and widening participation in higher education has been an important part of economic and social justice policy for recent Australian governments. Despite this extensive literature, Chapters 2 and 3 reported a gap related to 1) the ontological ambiguity regarding the concept of intention in education 2) shortcomings concerning the explanations by previous research regarding students’ participation in higher education and 3) a significant gap in the literature measuring students’ intentions to enrol university using psychosocial measures. The purpose of this thesis was to further understanding of the factors that underpin students’ intentions to enrol at university. Intention was measured in the present study using an extended Theory of Planned Behaviour (TPB) model. The TPB posits that one’s intention is a direct antecedent of behaviour. Predicting students’ intentions to attend university has the potential to change student behaviour for those in pre-tertiary education by designing interventions that
target the beliefs mostly saliently linked to students’ intentions, and theoretically future behaviour.

Discussed in Chapter 4, a 3-phase study was designed to examine the salient factors that predict students’ intentions to enrol in a degree. Chapter 5 explained Phase 1 of this study which involved eliciting the modal salient beliefs from a sample of students in order to design the survey instrument. In Chapter 6, Phase 2 of this study detailed the reliability measurements of the survey instrument with a pilot sample. Phase 3 of this study was reported in Chapter 7, examining the psychosocial predictors of students’ intentions to attend university.

In Chapter 8, Research Question 1 of this study was discussed and answered. A summary of the salient behavioural, normative and control beliefs that underpin students’ intentions to enrol at university were reported. This chapter also answered Research Question 2, examining the utility of extended Theory of Planned Behaviour (TPB) models, using proximal and distal measures respectively, to predict students’ intentions to enrol in university. Attitude and positive behavioural beliefs were both identified as the most significant predictors of intention in their respective models.

Research Question 3 stated the pedagogical and theoretical recommendations regarding the design of programs targeting greater participation in higher education and future research underpinned by an extended TPB model. While a complete list of these is discussed in the previous chapter, a short summary of the answer follows. Activities that get students to think about their attitudes regarding tertiary study and significant people in their life (subjective
norms) that have chosen/not chosen university study are certainly worthy of substantial exploration. Additionally, students may be given opportunities to reflect on their General Academic self-concept. The broader pedagogical implications of this research are perhaps reflective of best practice in any case, but may be especially important pedagogical strategies. Educators and policy makers need to be cognizant that SES and background characteristics may have a crucial, effect on students’ intentions to enrol at university.

This research makes three main contributions to the literature. (1) this study increases understanding of salient factors that predict students’ intentions to enrol in university. Synthesising the constructs of the TPB, academic self-concept and demographic factors highlights an important theoretical contribution of this study to the field. Examining the psychosocial factors that form behavioural intention offers stakeholders another way of examining and explaining students’ intentions and behaviours across many areas of education research. An important part of this increased understanding relates to the ontological clarification of behavioural intention in the education field. (2) The author is unaware of any study in Australia, or internationally, that has used SEM analysis to examine students’ intended university enrolment. The increased use of SEM is encouraged in educational research in order to investigate complex relationships amongst measured variables, latent variables and amongst the latent variables themself. Complex analysis, such as students’ university intentions, requires careful research design and sophisticated methods like those used in this study. (3) The author is unaware of any education-related studies that have used SEM analysis to measure both direct and
indirect measures of the TPB. This study paves the way for researchers to use SEM to examine direct and indirect measures of the TPB. Considering the ever-increasing use of SEM techniques in the social sciences and the extensive use of the TPB across different fields, this study breaks new ground.

9.3. Future Research

Future researchers may be interested in measuring actual enrolment of students’ intentions to attend university by conducting longitudinal studies. Other researchers may choose to replicate the UPIF and UDIF models in other geographical areas and/or different cohorts of students to investigate the robustness of these models. Future researchers should consider using larger sample sizes than the amount used in this study.

Although Verbal and Mathematical academic self-concepts did not appear to be a significant predictor of students’ intentions, it may be possible that different cohorts may typically have different levels of Verbal/ Mathematical academic self-concepts and the influence of this factor may be considerably different depending on students’ intended course/actual enrolment. While this study was generally looking at any student intending to enrol at university, future research could examine potential discrepancies of Verbal Academic Self-Concept, for example, between English Literature Majors and students completing a Maths-related degree.
Future researchers may include more possible referent groups because of their potential impact on students’ normative influences. Considering the results in relation to the influence of subjective norm and aggregated normative beliefs on students’ intentions to enrol at university, the potential influence of other normative influences such as siblings, mentors, guidance counsellors and mass media may have some bearing on the results. Students may not even be aware of how influences such as the mass media may affect their intentions and behaviour.

9.4. A final word

This study concludes with how it started, discussing the etymology of intention. As stated, the historical roots of the word intention can be traced to the Latin word *intendere*-meaning to have a direction towards a goal (Oxford University Press, 2010). Students need many opportunities to discuss, probe and reflect on their beliefs about future pathways, both at school and at home, in order for them to move in a meaningful direction towards their intended goals. This study has investigated students’ intentions from a new perspective, advancing understanding of the salient predictors of their intentions to enrol in university.
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INVITATION FOR SCHOOL TO PARTICIPATE IN A RESEARCH PROJECT:
What’s your intention? Exploring senior secondary students’ beliefs regarding participation in higher education using the Theory of Planned Behaviour

Dear principal,

Your school has been chosen to participate in a research project being conducted by RMIT University. The purpose of this study is to investigate students’ beliefs regarding their intention to attend university. The researcher is particularly interested in students’ attitudes, the influence of others and how confident they feel studying for a degree.

The eligibility criteria of this study states that only year 12 students enrolled in a Victorian school are eligible to participate in this study.

The research is being conducted by student researcher Grant Cooper in partial fulfilment of a Doctor of Philosophy (Education). Professor Rob Strathdee, Head of School and Dr. Tasos Barkatsas, Senior Lecturer at RMIT University are supervisors of the study.

This study has been approved by the RMIT Human Research Ethics Committee (CHEAN A 000019185-01/15). This project has also been approved by the Department of Education and Early Childhood Development (2015_002618).

While we would be pleased to have your school participate we respect your right to decline. If you decide to discontinue participation at any time, you may do so without providing an explanation.

If I agree for the study to be conducted in my school, what are students asked to do?

This study is broken into 3 elements:

Element 1: Individual interviews (5 students) – May be conducted at the school or RMIT if this is convenient/suitable for stakeholders
Element 2: Pilot survey (50- students) – May be conducted at the school or RMIT if this is convenient/suitable for stakeholders

Element 3: Survey completion (200-300 students) – May be conducted at the school or RMIT if this is convenient/suitable for stakeholders

The researcher is happy to provide principals with the pre-designed questions that participants will be asked.

- If you agree to let us conduct research with your students, the researcher will give a short PowerPoint discussion to students discussing:
  - Why have students been approached?
  - What is the study about?
  - If students agree to participate, what will they be required to do?
  - What are the possible risks or disadvantages of participating?
  - What are the benefits associated with participation?
  - What will happen to the information students provide?
  - What are my rights as a participant?
  - Inviting them to participate in this study

What are the possible risks or disadvantages?

There are no specific risks anticipated with participation in this study.

If participates are unduly concerned about their responses to any of the questionnaire items or in the unlikely event that a participant may find this study distressing, Professor Rob Strathdee is available to confidentially discuss any concerns and suggest appropriate follow-up if necessary.

What are the benefits associated with participation?

Students are given an opportunity to reflect on their beliefs, thoughts and intentions concerning university study. This may help clarify the future pathways they intend to take after they leave school. By taking the findings of this study and linking them with those of other studies, it should provide valuable information for educational institutions, governments and education departments.

What will happen to the information students provide?

The data collected from participants is collected is strictly confidential. Data will be seen by the Student investigator, supervisor and co-supervisor of this study.

Any information that you provide can be disclosed only if (1) it is to protect you or others from harm, (2) if specifically required or allowed by law, or (3) you provide the researchers with written permission.
All of the research data will be locked in a cabinet located in Building: 220, level: 4, room: 33 for a period of five years.

The results will be published and disseminated in a thesis in the RMIT Repository that is publicly accessible using an online library of research papers. It is also likely to be published in an education/psychology journals.

**What are my rights?**

- The right to withdraw your school’s participation at any time
- The right to request that any recording cease
- The right to have any unprocessed data withdrawn and destroyed, provided it can be reliably identified, and provided that so doing does not increase the risk for the participant.
- The right to have any questions answered at any time.

**What should I do if I am happy for my school to participate?**

Please contact X to discuss your possible participation further on XXXXXXXX or email XXXXXXXXX. Alternatively, it is likely that X will be in contact soon to discuss the possibility of your school participating in this study. Adhering to ethical requirements, written confirmation stating permission to conduct this study at the school is required.

Yours sincerely,

Head supervisor

Professor Rob Strathdee PhD, MEd, BEd

Co-Supervisor


Grant Cooper BEd Hons

If you have any concerns about your participation in this project, which you do not wish to discuss with the researchers, then you can contact the Ethics Officer, Research Integrity, Governance and Systems, RMIT University, GPO Box 2476V VIC 3001. Tel: (03) 9925 2251 or email human.ethics@rmit.edu.au

Thank you for taking the time to consider this study.
Appendix B: Interview Schedule

Researcher read this to participants: “Welcome to this interview and thank you for participating in this study. This research aims to explore what beliefs are behind students intending to go to university and those who don’t. Remember there are no correct answers. Thank you for participating in this study. If you are taking a gap year or a break from study, this should not affect how you answer these questions. Please answer what you intend to do within the next 3 years. Within the context of this survey, studying at university is defined as the act of enrolling in a degree course at a university with the genuine intent of completing the course. It is important to point out that there are no right or wrong answers; I’m interested in your beliefs about your future pathway”.

(Demographic information)

1. Let’s start with you telling me a little bit about yourself. (Remember to ask: Where they go to school, ancestry, and education level of parents)
2. What subjects are you currently studying at the moment? (Remember to ask: VCE/VCAL?)

Researcher read this to participants: All questions in this survey relate to the next three years of your life.

Participants’ intention to study at university:

3. Answering yes or no to the following question, do you intend to study at university for a degree? Why?

Behavioural beliefs

4. What do you think might be some advantages to study for a degree at university?
5. What do you think might be some disadvantages to study for a degree at university?

Normative Beliefs:

6. Considering other people’s opinion who you value, is there anyone who may have had an influence on you to study for a degree at university? Why do think this is the case?

Control beliefs:

7. What factors or circumstances make it difficult or impossible for you to study for a degree at university? Why?

Supplementary:

8. Is there anything else that comes to mind when you think about university study for a degree?
Appendix C: Information sheet for interview participants

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

What’s your intention? Exploring senior secondary students’ beliefs regarding participation in higher education using the Theory of Planned Behaviour

Investigators:

Dear participant,

You are invited to participate in a research project being conducted by RMIT University. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate. If you have any questions about the project, please ask one of the investigators.

The research is being conducted by student researcher Grant Cooper in partial fulfilment of a Doctor of Philosophy (Education). Professor Rob Strathdee, Head of School and Tasos Barkatsas, Senior Lecturer at RMIT University are supervisors of the study.

This study has been approved by the RMIT Human Research Ethics Committee (CHEAN A 000019185-01/15). This project has also been approved by the Department of Education and Early Childhood Development (2015_002618).

It is important that you understand that your involvement in this study is voluntary. While we would be pleased to have you participate however we respect your right to decline. If you decide to discontinue participation at any time, you may do so without providing an explanation.

Why have you been approached?

You are eligible to participate in this study because you are currently enrolled in year 12 of a high school in a Victorian school.
What is the project about? What are the questions being addressed?

The purpose of this study is to investigate students’ beliefs about their intention to attend university. The researcher is particularly interested in your attitudes, the influence of others and how confident you feel studying for a degree.

If I agree to participate, what will I be required to do?

Participate in individual interviews regarding your beliefs about going to university. You may be asked *what you think are some possible advantages/disadvantages of studying a degree course at university?* You may also be asked to talk about *individuals or groups who would approve/disapprove of you studying a degree course at university?* Lastly, you may be asked about how confident you feel about going to university if you wanted to. It is anticipated that each interview will last for approximately 45 minutes. You are welcome to examine the question sheet before deciding whether you want to participate.

The student investigator will collect your first name and email address so they can organise a mutually acceptable time to conduct the interview.

What are the possible risks or disadvantages?

There are no specific risks anticipated with participation in this study.

If you are unduly concerned about your responses to any of the questionnaire items or if you find participation in the project distressing, you should contact Professor Rob Strathdee as soon as convenient. Rob will discuss your concerns with you confidentially and suggest appropriate follow-up, if necessary.

What are the benefits associated with participation?

You may benefit from participation in the study because you are given an opportunity to reflect on your beliefs, thoughts and intentions concerning university study. By taking the findings of this study and linking them with those of other studies, it should provide valuable information for educational institutions, governments and education departments.

What will happen to the information I provide?

The data collected from you is collected is strictly confidential. Your data will be seen by the Student investigator, supervisor and co-supervisor of this study.

Any information that you provide can be disclosed only if (1) it is to protect you or others from harm, (2) if specifically required or allowed by law, or (3) you provide the researchers with written permission.

As soon as the interview is completed, any personal information including names and email addresses will be permanently destroyed and sound files collected from the interviews will be replaced with a randomly generated code by the student investigator.

All of the research data will be locked in a cabinet located in building: 220, level: 4, room: 33 for a period of five years.
The results will be published and disseminated in a thesis in the RMIT Repository that is publicly accessible using an online library of research papers. It is also likely to be published in an education/psychology journal.

**What are my rights as a participant?**

- The right to withdraw from participation at any time
- The right to request that any recording cease
- The right to have any unprocessed data withdrawn and destroyed, provided it can be reliably identified, and provided that so doing does not increase the risk for the participant.
- The right to have any questions answered at any time.

**Whom should I contact if I have any questions?**

If you have any concerns about your participation in this project, which you do not wish to discuss with the researchers, then you can contact the Ethics Officer, Research Integrity, Governance and Systems, RMIT University, GPO Box 2476V VIC 3001. Tel: (03) 9925 2251 or email human.ethics@rmit.edu.au

Thank you for taking the time to consider this study.
Appendix D: Consent sheet for interview participants

CONSENT TEMPLATE

1. I have had the project explained to me, and I have read the information sheet.
2. I agree to participate in the research project as described.
3. I agree to be interviewed and that my voice will be audio recorded.
4. I acknowledge that:
   (a) I understand that my participation is voluntary and that I am free to withdraw from the project at any time and to withdraw any unprocessed data previously supplied (unless follow-up is needed for safety).
   (b) The project is for the purpose of research. It may not be of direct benefit to me.
   (c) The privacy of the personal information I provide will be safeguarded and only disclosed where I have consented to the disclosure or as required by law.
   (d) The security of the research data will be protected during and after completion of the study. The data collected during the study may be published, and a report of the project outcomes will be emailed to you by requesting a copy from the student investigator. Any information which will identify me will not be used.

Participant: ___________________________ Date: ___________________________

(Signature)

Where participant is under 18 years of age:

I consent to the participation of ___________________________ in the above project.

Signature: (1) ___________________________ (2) ___________________________ Date: ___________________________

(Signatures of parents or guardians)
Appendix E: Survey instrument

PLEASE READ THESE INSTRUCTIONS FIRST

Thank you for participating in this study. If you are taking a gap year or a break from study, this should not affect how you answer these questions. Please answer what you intend to do within the next 3 years.

A genuine intent to study at university is indicated by enrolling in a degree course. When questions in this survey ask you about studying at university, I want you to think about your intention to enrol in a university degree course in the next 3 years. It is important to point out that there are no right or wrong answers; I’m interested in your beliefs about your future pathway.

Section 1: Some general information about you

In this section you will be asked some questions about you, your family and your home. Some of the following questions are about your parents or people who are like your parents to you — for example, guardians, step parents, foster parents, etc. If you share your time with more than one set of parents/guardians, please answer the following questions for those parents/guardians you spend the most time with.

Q1. Are you male or female?

☐ Male ☐ Female

Q2. I currently attend a: (Please ask if not sure)

☐ State Government school ☐ Catholic/Independent school

Q3. The name of the school I currently attend is:

________________________________________________________________________

Q4. Parent 1 is ☐ Male / ☐ female.

What is Parent 1’s main or most recent job? (e.g. School teacher, kitchen-hand, sales manager). Please write in the job title below:

Q5. Has Parent 1 completed a degree or higher at university?
Q6. Where was Parent 1 born?

- □ In Australia
- □ Outside Australia

Q7. Parent 2 is □ Male / □ female.

What is Parent 2’s main or most recent job? (e.g. school teacher, kitchen-hand, sales manager). Please write in the job title below:

________________________________________________________________________

Q8. Has Parent 2 completed a degree or higher at university?

- □ Yes
- □ No

Q9. Where was Parent 2 born?

- □ In Australia
- □ Outside Australia

Q10. Where were you born?

- □ In Australia
- □ Outside Australia

Q11. Is English the main language spoken in your home?

- □ Yes
- □ No

If No, what is the main language spoken in your home?

- □ Arabic
- □ Mandarin
- □ Italian
- □ Greek
- □ Cantonese
- □ Other (If other, please specify___________________________)
- □ Vietnamese

Q12. Do you have a religious affiliation?

- □ Christian
- □ Buddhist
- □ Islam
- □ No religion
- □ Other (If Other, please specify___________________________)

Q13. How many books are there in your home?

There are usually about 40 books per metre of shelving. Do not include magazines, newspapers, or your school books.

Please write number of books here: _______
Section 2

Please indicate your response to the following questions/statements:

<table>
<thead>
<tr>
<th>Q. 14</th>
<th>I expect to study a degree at university</th>
<th>Strongly disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.15</td>
<td>I want to study a degree at university</td>
<td>Strongly disagree</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>Q.16</td>
<td>I intend to study a degree at university</td>
<td>Strongly disagree</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>Q.17</td>
<td>I plan to study a degree at university</td>
<td>Strongly disagree</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>Q.18</td>
<td>Studying a degree at university is something I will try and do</td>
<td>Strongly disagree</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>

If you do intend to go to university to study a degree, please tick the course you intend to enrol in, otherwise tick N/A:

- □ Science-related
- □ Engineering-related
- □ Management/ Business/Commerce
- □ Health-related
- □ Humanities/Arts
- □ Creative Arts
- □ Education
- □ N/A: Not intending to study a degree within next 3 years

Section 3

<table>
<thead>
<tr>
<th>Q.19</th>
<th>I believe studying a degree at university will be:</th>
<th>Bad for me</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Good for me</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.20</td>
<td>I believe studying a degree at university will be:</td>
<td>Useless</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Worthwhile</td>
</tr>
<tr>
<td>Q.21</td>
<td>Studying a degree at university will be:</td>
<td>Unpleasant</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Pleasant</td>
</tr>
<tr>
<td>Q.22</td>
<td>I believe studying a degree at university will be:</td>
<td>Unenjoyable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Enjoyable</td>
</tr>
<tr>
<td>Q.23</td>
<td>If I study a degree at university, I will find it easier to get a job I like</td>
<td>Very unlikely</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Very Likely</td>
</tr>
<tr>
<td>Q.24</td>
<td>If I study a degree at university, I will get the opportunity to learn things I am interested in</td>
<td>Very unlikely</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Very Likely</td>
</tr>
<tr>
<td>Q.25</td>
<td>If I study a degree at university, I will have more money in the future</td>
<td>Very unlikely</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Very Likely</td>
</tr>
<tr>
<td>Q.26</td>
<td>If I study a degree at university, I will attend social events (e.g. parties/ social and special interest clubs)</td>
<td>Very unlikely</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Very Likely</td>
</tr>
<tr>
<td>Q.27</td>
<td>If I study a degree at university, I will have a study debt</td>
<td>Very unlikely</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Very Likely</td>
</tr>
<tr>
<td>Q.28</td>
<td>Finding a job I like is:</td>
<td>Extremely undesirable</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Extremely desirable</td>
</tr>
<tr>
<td>Q.29</td>
<td>Learning things I am interested in is:</td>
<td>Extremely undesirable</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Extremely desirable</td>
</tr>
</tbody>
</table>
### Section 5

**Q.30** Having money is:  
| Extremely undesirable | -3 | -2 | -1 | 0 | 1 | 2 | 3 | Extremely desirable |

**Q.31** Attending social events (e.g. parties/social and special interest clubs) is:  
| Extremely undesirable | -3 | -2 | -1 | 0 | 1 | 2 | 3 | Extremely desirable |

**Q.32** Having a study debt is:  
| Extremely undesirable | -3 | -2 | -1 | 0 | 1 | 2 | 3 | Extremely desirable |

### Section 6

**Q.33** Most people who are important to me think that I:  
| Should not study a degree course at university | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Should study a degree course at university |

**Q.34** It is expected of me to study a degree course at university  
| Strongly disagree | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Strongly agree |

**Q.35** People who are important to me want me to study a degree course at university  
| Strongly disagree | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Strongly agree |

### Section 6

**Q.36** My parents/guardians generally think I:  
| Should not study a degree course at university | -3 | -2 | -1 | 0 | 1 | 2 | 3 | Should study a degree course at university |

**Q.37** My teachers generally think I:  
| Should not study a degree course at university | -3 | -2 | -1 | 0 | 1 | 2 | 3 | Should study a degree course at university |
### Section 7

<table>
<thead>
<tr>
<th>Q.38</th>
<th><strong>My friends generally would:</strong></th>
<th>Disapprove of me studying a degree at university</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Approve of me studying a degree at university</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q.39</td>
<td><strong>My parent’s/guardian’s approval is important to me:</strong></td>
<td>Not at all</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Very much</td>
</tr>
<tr>
<td>Q.40</td>
<td><strong>What teachers think I should do matters to me</strong></td>
<td>Not at all</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Very much</td>
</tr>
<tr>
<td>Q.41</td>
<td><strong>What friends think I should do matters to me</strong></td>
<td>Not at all</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Very much</td>
</tr>
</tbody>
</table>

### Section 8

Please indicate your response to the following questions/statements:

<table>
<thead>
<tr>
<th>Q.42</th>
<th><strong>I am confident that I could study a degree course at university if I wanted to</strong></th>
<th>Strongly disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.43</td>
<td><strong>If I wanted to, I feel in complete control of whether to study for a degree at university</strong></td>
<td>Completely false</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Completely true</td>
</tr>
<tr>
<td>Q.44</td>
<td><strong>Whether I decide to study for a degree at university is entirely is up to me</strong></td>
<td>Completely false</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>Completely true</td>
</tr>
</tbody>
</table>

### Q.45

**Having access to enough money (e.g. savings/parent’s** | Very unlikely | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Very Likely |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.46</td>
<td>My confidence in successfully passing university in the future is important in order to study a degree</td>
<td>Very unlikely</td>
<td>1 2 3 4 5 6 7</td>
<td>Very Likely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>--------------</td>
<td>----------------</td>
<td>-------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q.47</td>
<td>Getting the final high school results needed for university entry is important in order to study a degree</td>
<td>Very unlikely</td>
<td>1 2 3 4 5 6 7</td>
<td>Very Likely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q.48</td>
<td>My access to money (e.g. savings/parent’s help) means that I am: Less likely to study a degree at university</td>
<td>-3 -2 -1 0 1 2 3</td>
<td>More likely to study a degree at university</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q.49</td>
<td>My confidence in successfully passing university in the future means I am: Less likely to study a degree</td>
<td>-3 -2 -1 0 1 2 3</td>
<td>More likely to study a degree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q.50</td>
<td>The final high school results I expect to receive overall mean I am: Less likely to study a degree at university</td>
<td>-3 -2 -1 0 1 2 3</td>
<td>More likely to study a degree at university</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Section 9**

Please indicate your response to the following questions/statements:

<p>| Q.51 | I’m good at most school subjects | Strongly disagree | 1 2 3 4 5 6 7 | Strongly agree |</p>
<table>
<thead>
<tr>
<th>Q.52</th>
<th>I learn things quickly in most school subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>Q.53</td>
<td>If I work really hard, I could be one of the best students in my school year</td>
</tr>
<tr>
<td></td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>Q.54</td>
<td>Work in English classes is easy for me</td>
</tr>
<tr>
<td></td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>Q.55</td>
<td>English is one of my best subjects</td>
</tr>
<tr>
<td></td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>Q.56</td>
<td>I get good marks in English</td>
</tr>
<tr>
<td></td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>Q.57</td>
<td>I have always done well in mathematics</td>
</tr>
<tr>
<td></td>
<td>Strongly agree</td>
</tr>
<tr>
<td>Q.58</td>
<td>Mathematics is one of my best subjects</td>
</tr>
<tr>
<td></td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>Q.59</td>
<td>I get good marks in mathematics</td>
</tr>
<tr>
<td></td>
<td>Strongly disagree</td>
</tr>
</tbody>
</table>

Thank you for your time and participation. Your contribution is appreciated.
Appendix F: Information sheet for survey participants

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

What’s your intention? Exploring senior secondary students’ beliefs regarding participation in higher education using the Theory of Planned Behaviour

Dear participant,

You are invited to participate in a research project being conducted by RMIT University. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate. If you have any questions about the project, please ask one of the investigators.

The research is being conducted by student researcher Grant Cooper in partial fulfilment of a Doctor of Philosophy (Education). Professor Rob Strathdee, Head of School and Tasos Barkatsas, Senior Lecturer at RMIT University are supervisors of the study.

This study has been approved by the RMIT Human Research Ethics Committee (CHEAN A 0000019185-01/15). This project has also been approved by the Department of Education and Early Childhood Development (2015_002618).

It is important that you understand that your involvement in this study is voluntary. While we would be pleased to have you participate however we respect your right to decline. If you decide to discontinue participation at any time, you may do so without providing an explanation.

Why have you been approached?

You are eligible to participate in this study because you are currently enrolled in year 12 of high school in a Melbourne metropolitan school.

What is the project about? What are the questions being addressed?
The purpose of this study is to investigate students’ beliefs about their intention to attend university. The researcher is particularly interested in your attitudes, the influence of others and how confident you feel studying for a degree.

**If I agree to participate, what will I be required to do?**

Fill out a survey would that will take approximately 20-25 minutes to complete. The survey asks questions about your intention to study at university. You will be asked about your attitudes towards studying at university. You will also be asked to answer if important people have influenced you in any way in regards to your intention to study at university. Lastly, you will be asked about how confident you feel about going to university if you wanted to. You are welcome to examine the question sheet before deciding whether you want to participate.

Depending on the research phase, you may also be asked to complete this survey twice, one now and again in 2 weeks.

**What are the possible risks or disadvantages?**

There are no specific risks anticipated with participation in this study.

If you are unduly concerned about your responses to any of the questionnaire items or if you find participation in the project distressing, you should contact Professor Rob Strathdee as soon as convenient. Rob will discuss your concerns with you confidentially and suggest appropriate follow-up, if necessary.

**What are the benefits associated with participation?**

You may benefit from participation in the study because you are given an opportunity to reflect on your beliefs, thoughts and intentions concerning university study. By taking the findings of this study and linking them with those of other studies, it should provide valuable information for educational institutions, governments and education departments.

**What will happen to the information I provide?**

The data collected from you is collected is strictly confidential. Your data will be seen by the Student investigator, supervisor and co-supervisor of this study.

Any information that you provide can be disclosed only if (1) it is to protect you or others from harm, (2) if specifically required or allowed by law, or (3) you provide the researchers with written permission.

As soon as the survey is completed, any personal information including names and email addresses will be permanently destroyed and sound files collected from the interviews will be replaced with a randomly generated code by the student investigator.

All of the research data will be locked in a cabinet located in building: 220, level: 4, room: 33 for a period of five years. The results will be published and disseminated in a thesis in the RMIT Repository that is publicly accessible using an online library of research papers. It is also likely to be published in an education/social-psychology journal.
What are my rights as a participant?

- The right to withdraw from participation at any time
- The right to request that any recording cease
- The right to have any unprocessed data withdrawn and destroyed, provided it can be reliably identified, and provided that so doing does not increase the risk for the participant.
- The right to have any questions answered at any time.

Whom should I contact if I have any questions?

If you have any concerns about your participation in this project, which you do not wish to discuss with the researchers, then you can contact the Ethics Officer, Research Integrity, Governance and Systems, RMIT University, GPO Box 2476V VIC 3001. Tel: (03) 9925 2251 or email human.ethics@rmit.edu.au

Thank you for taking the time to consider this study.
Appendix G: Consent sheet for survey participants

CONSENT TEMPLATE

1. I have had the project explained to me, and I have read the information sheet.
2. I agree to participate in the research project as described.
3. I agree to undertake the survey outlined.
4. I acknowledge that:

   (a) I understand that my participation is voluntary and that I am free to withdraw from the project at any time and to withdraw any unprocessed data previously supplied (unless follow-up is needed for safety).
   (b) The project is for the purpose of research. It may not be of direct benefit to me.
   (c) The privacy of the personal information I provide will be safeguarded and only disclosed where I have consented to the disclosure or as required by law.
   (d) The security of the research data will be protected during and after completion of the study. The data collected during the study may be published, and a report of the project outcomes will be emailed to you by requesting a copy from the student investigator. Any information which will identify me will not be used.

Participant’s Consent

Participant: ________________________ Date: ______________

______________________________ ________________________
(Signature) ______________________

I consent to the participation of ______________________________ in the above project.

Signature: (1) ________________________ (2) ________________________ Date: ______________

(Signatures of parents or guardians)
Appendix H: Ethics Approval (HREC)

RMIT UNIVERSITY
Design and Social Context College Human Ethics Advisory Network (CHEAN)
Sub-committee of the RMIT Human Research Ethics Committee (HREC)

Notice of Approval

Date: 04 March 2015
Project number: CHEAN A 00000219185-02/15
Project title: What’s your intention? Exploring senior secondary students’ beliefs regarding participation in higher education using an extended Theory of Planned Behaviour model
Risk classification: Low Risk
Investigator: Professor Rob Stratidiee and Mr Grant Cooper

Approved: From 04 March 2015 To 20 August 2020

I am pleased to advise that your application has been granted ethics approval by the Design and Social Context College Human Ethics Advisory Network as a subcommittee of the RMIT Human Research Ethics Committee (HREC).

Terms of approval:
1. Responsibility of investigator
   It is the responsibility of the above investigator/s to ensure that all other investigators and staff on a project are aware of the terms of approval and to ensure that the project is conducted as approved by the CHEAN. Approval is only valid whilst the investigator/s holds a position at RMIT University.
2. Amendments
   Approval must be sought from the CHEAN to amend any aspect of a project including approved documents. To apply for an amendment please use the ‘Request for Amendment Form’ that is available on the RMIT website. Amendments must not be implemented without first gaining approval from CHEAN.
3. Adverse events
   You should notify HREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
4. Participant Information and Consent Form (PICF)
   The PICF and any other material used to recruit and inform participants of the project must include the RMIT university logo. The PICF must contain a complaints clause including the project number.
5. Annual reports
   Continued approval of this project is dependent on the submission of an annual report. This form can be located online on the human research ethics web page on the RMIT website.
6. Final report
   A final report must be provided at the conclusion of the project. CHEAN must be notified if the project is discontinued before the expected date of completion.
7. Monitoring
   Projects may be subject to an audit or any other form of monitoring by HREC at any time.
8. Retention and storage of data
   The investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

In any future correspondence please quote the project number and project title.

On behalf of the DSC College Human Ethics Advisory Network I wish you well in your research.

Suzana Kovačević
Research and Ethics Officer
College of Design and Social Context
RMIT University
Ph: 03 9925 2974
Email: suzana.kovacevic@rmit.edu.au
Website: www.rmit.edu.au/dsc

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Appendix I: Ipad competition entry form

Website address:

https://rmit.asia.qualtrics.com/SE/?SID=SV_0wBARc3r2JgItZb

Screen shot of website
Appendix J: Approval letter (DEECD)

Dear Mr Cooper

Thank you for your application of 10 February 2015 in which you request permission to conduct research in Victorian government schools and/or early childhood settings titled “What’s your intention? Exploring similar secondary students' beliefs regarding participation in higher education using an extended Theory of Planned behaviour model.”

I am pleased to advise that on the basis of the information you have provided your research proposal is approved in principle subject to the conditions detailed below.

1. The research is conducted in accordance with the final documentation you provided to the Department of Education and Training.

2. Separate approval for the research needs to be sought from school principals and/or centre directors. This is to be supported by the Department of Education and Training approved documentation and, if applicable, the letter of approval from a relevant and formally constituted Human Research Ethics Committee.

3. The project is commenced within 12 months of this approval letter and any extensions or variations to your study, including those requested by an ethics committee must be submitted to the Department of Education and Training for its consideration before you proceed.

4. As a matter of courtesy, you advise the relevant Regional Director of the schools or governing body of the early childhood settings that you intend to approach. An outline of your research and a copy of this letter should be provided to the Regional Director or governing body.

5. You acknowledge the support of the Department of Education Training in any publications arising from the research.

6. The Research Agreement conditions, which include the reporting requirements at the conclusion of your study, are upheld. A reminder will be sent for reports not submitted by the study’s indicative completion date.

7. If the Department of Education Training has commissioned you to undertake this research, the responsible Branch/Division will need to approve any material you provide for publication on the Department’s Research and Evaluation Register.

I wish you well with your research study. Should you have further enquiries on this matter, please contact Paula Kihlstrom, Project Support Officer, Research, Evaluation and Analytics Branch, by telephone on (03) 9637 7207 or by email at paula.kihlstrom@education.vic.gov.au.

Yours sincerely,

[Signature]  
Director, Research, Evaluation and Analytics Branch

2015_022018

Mr Grant Cooper
Appendix K: Approval letter (CEO)

GE15/009
04/03/2015

Mr Grant Cooper

Dear Mr Cooper

I am writing with regard to your research application received on 19/02/2015 concerning your forthcoming project titled, 'What's your intention? Exploring senior secondary students' beliefs regarding participation in higher education. You have asked approval to approach Catholic schools in the Archdiocese of Melbourne, as you wish to involve year 12 students.

I am pleased to advise that your research proposal is approved in principle subject to the eight standard conditions outlined below.

1. The decision as to whether or not research can proceed in a school rests with the school's principal, so you will need to obtain approval directly from the principal of the school that you wish to involve. You should provide the principal with an outline of your research proposal and indicate what will be asked of the school. A copy of this letter of approval, and a copy of notification of approval from the organisation/university's Ethics Committee, should also be provided.

2. A copy of the approval notification from your institution’s Ethics Committee must be forwarded to this Office, together with any modifications to your research protocol requested by the Committee. You may not start any research in Catholic Schools until this step has been completed.

3. A Working with Children (WWC) check – or registration with the Victorian Institute of Teaching (VIT) – is necessary for all researchers visiting schools. Appropriate documentation must be shown to the principal before starting the research in the school.

4. No student is to participate in the research study unless s/he is willing to do so and informed consent is given in writing by a parent/guardian.

1 of 2
Appendix L: Exploratory Analysis of the Differences in Predictors of Students’ Intentions According to School Type

Introduction

For exploratory purposes, the differences in predictors of students’ intentions according to school type were conducted. A tension is evident in the literature about the relative importance of school type and educational outcomes (Harvey, 2013; Jones, 2013). There is research to suggest that school characteristics have the potential to impact future participation in education (Muijs, Harris, Chapman, Stoll, & Russ, 2009). Bearing in mind the research discussing important differences in educational outcomes between those attending public versus private/independent schooling, this section examines statistically significant ($p<.05$) differences between students enrolled in government schools ($n=163$) compared to catholic/independent schools ($n=89$).
School Type and Multigroup Analysis

Table 47

*Catholic/independent and Government Comparison of UPIF model*

<table>
<thead>
<tr>
<th></th>
<th>catholic/indep</th>
<th></th>
<th>government</th>
<th></th>
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<th></th>
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<td>Sig</td>
<td>Estimate</td>
<td>Sig</td>
<td>z-score</td>
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</tr>
<tr>
<td>BI ← Att</td>
<td>0.63</td>
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<td>1.10</td>
<td>p&lt;.001</td>
<td>2.74*</td>
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</tr>
<tr>
<td>BI ← SN</td>
<td>0.23</td>
<td>0.01</td>
<td>0.40</td>
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<tr>
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<td>p&lt;.001</td>
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<td>0.99</td>
<td>p&lt;.001</td>
<td>-0.08</td>
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</tr>
<tr>
<td>intent3 ← BI</td>
<td>1.07</td>
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<td>1.01</td>
<td>p&lt;.001</td>
<td>-0.67</td>
<td></td>
</tr>
<tr>
<td>intent2 ← BI</td>
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<td>1.01</td>
<td>p&lt;.001</td>
<td>-1.05</td>
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</tr>
<tr>
<td>att4 ← Att</td>
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<td>1.33</td>
<td>p&lt;.001</td>
<td>4.43*</td>
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</tr>
<tr>
<td>att3 ← Att</td>
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<td>p&lt;.001</td>
<td>1.28</td>
<td>p&lt;.001</td>
<td>4.52*</td>
<td></td>
</tr>
<tr>
<td>att2 ← Att</td>
<td>0.87</td>
<td>p&lt;.001</td>
<td>1.30</td>
<td>p&lt;.001</td>
<td>3.82*</td>
<td></td>
</tr>
<tr>
<td>att1 ← Att</td>
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<td>p&lt;.001</td>
<td>1.49</td>
<td>p&lt;.001</td>
<td>3.26*</td>
<td></td>
</tr>
<tr>
<td>sbn3 ← SN</td>
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<td>p&lt;.001</td>
<td>1.35</td>
<td>p&lt;.001</td>
<td>2.64*</td>
<td></td>
</tr>
<tr>
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<td>p&lt;.001</td>
<td>1.51</td>
<td>p&lt;.001</td>
<td>4.25*</td>
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</tr>
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<td>sbn1 ← SN</td>
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<td>p&lt;.001</td>
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<td>p&lt;.001</td>
<td>3.14*</td>
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<tr>
<td>pbc2 ← PBC</td>
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<td>p&lt;.001</td>
<td>1.24</td>
<td>p&lt;.001</td>
<td>2.78*</td>
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<td>1.32</td>
<td>p&lt;.001</td>
<td>1.30</td>
<td></td>
</tr>
<tr>
<td>moed ← SES</td>
<td>0.32</td>
<td>p&lt;.001</td>
<td>0.28</td>
<td>p&lt;.001</td>
<td>-0.65</td>
<td></td>
</tr>
<tr>
<td>faed ← SES</td>
<td>0.36</td>
<td>p&lt;.001</td>
<td>0.35</td>
<td>p&lt;.001</td>
<td>-0.06</td>
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</tr>
<tr>
<td>books ← SES</td>
<td>22.30</td>
<td>0.01</td>
<td>28.80</td>
<td>p&lt;.001</td>
<td>0.65</td>
<td></td>
</tr>
<tr>
<td>ICSEA ← SES</td>
<td>14.62</td>
<td>0.01</td>
<td>19.43</td>
<td>p&lt;.001</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>maxvo ← SES</td>
<td>21.27</td>
<td>p&lt;.001</td>
<td>19.66</td>
<td>p&lt;.001</td>
<td>-0.65</td>
<td></td>
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<tr>
<td>genac1 ← GenA</td>
<td>1.04</td>
<td>p&lt;.001</td>
<td>1.09</td>
<td>p&lt;.001</td>
<td>0.35</td>
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</tr>
<tr>
<td>genac2 ← GenA</td>
<td>1.07</td>
<td>p&lt;.001</td>
<td>1.21</td>
<td>p&lt;.001</td>
<td>0.82</td>
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<tr>
<td>genac3 ← GenA</td>
<td>1.23</td>
<td>p&lt;.001</td>
<td>1.20</td>
<td>p&lt;.001</td>
<td>-0.22</td>
<td></td>
</tr>
<tr>
<td>mamac1 ← MamA</td>
<td>1.362</td>
<td>p&lt;.001</td>
<td>1.39</td>
<td>p&lt;.001</td>
<td>0.14</td>
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<tr>
<td></td>
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<td>-------</td>
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<td></td>
</tr>
<tr>
<td>mamac2</td>
<td>MamA</td>
<td>1.75</td>
<td>( p &lt; .001 )</td>
<td>1.81</td>
<td>( p &lt; .001 )</td>
<td>0.27</td>
</tr>
<tr>
<td>mamac3</td>
<td>MamA</td>
<td>1.67</td>
<td>( p &lt; .001 )</td>
<td>1.71</td>
<td>( p &lt; .001 )</td>
<td>0.20</td>
</tr>
<tr>
<td>verac1</td>
<td>VerbA</td>
<td>1.34</td>
<td>( p &lt; .001 )</td>
<td>1.39</td>
<td>( p &lt; .001 )</td>
<td>0.30</td>
</tr>
<tr>
<td>verac2</td>
<td>VerbA</td>
<td>1.48</td>
<td>( p &lt; .001 )</td>
<td>1.56</td>
<td>( p &lt; .001 )</td>
<td>0.47</td>
</tr>
<tr>
<td>verac3</td>
<td>VerbA</td>
<td>1.21</td>
<td>( p &lt; .001 )</td>
<td>1.46</td>
<td>( p &lt; .001 )</td>
<td>1.39</td>
</tr>
<tr>
<td>fabp</td>
<td>Eth</td>
<td>0.42</td>
<td>( p &lt; .001 )</td>
<td>0.25</td>
<td>( p &lt; .001 )</td>
<td>-2.88*</td>
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<tr>
<td>mobp</td>
<td>Eth</td>
<td>0.41</td>
<td>( p &lt; .001 )</td>
<td>0.26</td>
<td>( p &lt; .001 )</td>
<td>-2.52*</td>
</tr>
<tr>
<td>sbp</td>
<td>Eth</td>
<td>0.11</td>
<td>0.01</td>
<td>0.25</td>
<td>( p &lt; .001 )</td>
<td>2.95*</td>
</tr>
</tbody>
</table>

Notes: \( z \)-score=2.58= \( p < 0.01 \); \( z \)-score=1.96= \( p < 0.05 \) (\textit{intent1}-Regression Weight)

*= sig estimates (\( p < 0.05 \)) and sig (\( p < 0.05 \)) \( z \)-score difference

Table 48 shows the Catholic/independent and Government Comparison of UPIF model. While groups show mostly non-significant differences, indicators of ethnicity showed that there were a significantly higher number of fathers and mothers reported to be born overseas in the catholic/indep cohort compared to the government group. Conversely, there was a significantly higher number of government students in the sample that reported being born overseas compared to the Catholic/independent group. These differences should be considered before cohorts are compared for differences and similarities.

Of the four intent item questions (not counting \textit{intent1} because it is the regression weight) on the survey instrument, three out of the four showed no significant differences in the sample’s intention to enrol at university. Perhaps surprisingly, the path BI←Att is significantly higher in students from government schools, indicating that their intention is formed more by their attitude compared to students from Catholic/independent schools. These results indicate an increased
salience of attitude in the formation of behavioural intention concerning government school students. The results of the UDIF may shed some further light on these potential differences between groups:

Table 48

**Catholic/independent and Government Comparison of UDIF**

<table>
<thead>
<tr>
<th></th>
<th>Catholic/indep</th>
<th></th>
<th>Government</th>
<th></th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>Sig</td>
<td>Estimate</td>
<td>Sig</td>
<td>z-score</td>
<td></td>
</tr>
<tr>
<td>BI ← PosB</td>
<td>0.48</td>
<td>p &lt; .001</td>
<td>1.20</td>
<td>p &lt; .001</td>
<td>4.46*</td>
<td></td>
</tr>
<tr>
<td>BI ← SES</td>
<td>0.18</td>
<td>0.013</td>
<td>0.18</td>
<td>0.04</td>
<td>-0.03</td>
<td></td>
</tr>
<tr>
<td>BI ← Ethnicity</td>
<td>0.27</td>
<td>p &lt; .001</td>
<td>0.11</td>
<td>0.197</td>
<td>-1.34</td>
<td></td>
</tr>
<tr>
<td>BI ← GenAcSc</td>
<td>0.29</td>
<td>p &lt; .001</td>
<td>0.18</td>
<td>0.11</td>
<td>-0.76</td>
<td></td>
</tr>
<tr>
<td>intent5 ← BI</td>
<td>0.83</td>
<td>p &lt; .001</td>
<td>1.01</td>
<td>p &lt; .001</td>
<td>3.02*</td>
<td></td>
</tr>
<tr>
<td>intent4 ← BI</td>
<td>1.02</td>
<td>p &lt; .001</td>
<td>1.00</td>
<td>p &lt; .001</td>
<td>-0.24</td>
<td></td>
</tr>
<tr>
<td>intent3 ← BI</td>
<td>1.09</td>
<td>p &lt; .001</td>
<td>1.02</td>
<td>p &lt; .001</td>
<td>-0.94</td>
<td></td>
</tr>
<tr>
<td>intent2 ← BI</td>
<td>1.08</td>
<td>p &lt; .001</td>
<td>1.01</td>
<td>p &lt; .001</td>
<td>-0.82</td>
<td></td>
</tr>
<tr>
<td>unilife ← PosB</td>
<td>3.64</td>
<td>p &lt; .001</td>
<td>4.78</td>
<td>p &lt; .001</td>
<td>1.11</td>
<td></td>
</tr>
<tr>
<td>CareerAsp ← PosB</td>
<td>5.05</td>
<td>p &lt; .001</td>
<td>6.82</td>
<td>p &lt; .001</td>
<td>2.57*</td>
<td></td>
</tr>
<tr>
<td>GradPrem ← PosB</td>
<td>5.58</td>
<td>p &lt; .001</td>
<td>5.90</td>
<td>p &lt; .001</td>
<td>0.34</td>
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<tr>
<td>Stuinterest ← PosB</td>
<td>4.80</td>
<td>p &lt; .001</td>
<td>7.28</td>
<td>p &lt; .001</td>
<td>2.98*</td>
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<tr>
<td>Peers ← NormB</td>
<td>5.68</td>
<td>p &lt; .001</td>
<td>6.80</td>
<td>p &lt; .001</td>
<td>1.36</td>
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<tr>
<td>Teachers ← NormB</td>
<td>6.32</td>
<td>p &lt; .001</td>
<td>6.88</td>
<td>p &lt; .001</td>
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<tr>
<td>Parents ← NormB</td>
<td>4.96</td>
<td>p &lt; .001</td>
<td>6.85</td>
<td>p &lt; .001</td>
<td>2.27*</td>
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<tr>
<td>Fiscal ← ConB</td>
<td>3.57</td>
<td>p &lt; .001</td>
<td>5.10</td>
<td>p &lt; .001</td>
<td>1.27</td>
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<tr>
<td>Passuni ← ConB</td>
<td>5.17</td>
<td>p &lt; .001</td>
<td>7.22</td>
<td>p &lt; .001</td>
<td>2.40*</td>
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<td>EATAR ← ConB</td>
<td>6.21</td>
<td>p &lt; .001</td>
<td>7.10</td>
<td>p &lt; .001</td>
<td>1.02</td>
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<tr>
<td>ICSEA ← SES</td>
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<td>19.26</td>
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<td>0.09</td>
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<td>faed ← SES</td>
<td>0.34</td>
<td>p &lt; .001</td>
<td>0.35</td>
<td>p &lt; .001</td>
<td>0.09</td>
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<tr>
<td>moed ← SES</td>
<td>0.31</td>
<td>p &lt; .001</td>
<td>0.28</td>
<td>p &lt; .001</td>
<td>-0.49</td>
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<tr>
<td>books ← SES</td>
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<td>1.09</td>
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<tr>
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<td>1.34</td>
<td>p&lt;.001</td>
<td>1.39</td>
<td>p&lt;.001</td>
<td>0.27</td>
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<td>verac2 ← VerbA</td>
<td>1.47</td>
<td>p&lt;.001</td>
<td>1.56</td>
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<tr>
<td>verac3 ← VerbA</td>
<td>1.22</td>
<td>p&lt;.001</td>
<td>1.46</td>
<td>p&lt;.001</td>
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<td>mamac1 ← MamA</td>
<td>1.36</td>
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<td>1.38</td>
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<td>0.12</td>
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<td>1.75</td>
<td>p&lt;.001</td>
<td>1.81</td>
<td>p&lt;.001</td>
<td>0.28</td>
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<td>1.67</td>
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<td>1.71</td>
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<td>0.20</td>
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<td>0.27</td>
<td>p&lt;.001</td>
<td>3.48*</td>
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<td>p&lt;.001</td>
<td>0.24</td>
<td>p&lt;.001</td>
<td>2.74*</td>
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</tr>
<tr>
<td>mobp ← Eth</td>
<td>0.43</td>
<td>p&lt;.001</td>
<td>0.25</td>
<td>p&lt;.001</td>
<td>3.13*</td>
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</tbody>
</table>

Notes: z-score=2.58= p< 0.01; z-score=1.96= p< 0.05 (intent1-Regression Weight) 
*= sig estimates (p<0.05) and sig (p<0.05) z-score difference ***p<.001

Table 49 shows the Catholic/independent and Government Comparison of UDIF model. 
Like the direct measures of attitude in the UPIF model, of the four intent item questions (not counting intent1 because it is the regression weight) on the survey instrument, three out of the four showed no significant differences in the sample’s intention to enrol at university. 
Also similarly, the UDIF model identified significantly different results of BI←PosB between government and catholic/independent school students. This result indicates that government school students’ positive behavioural beliefs underpinning their intention to attend university were significantly higher than Catholic/independent participants.

In particular, government students’ positive behaviour beliefs were significantly more influenced by Career Aspirations. Another significant difference is that government students’ positive behaviour beliefs were significantly more influenced by Students’ interest in the subject.
area. Government students reported significantly greater normative pressure from parents to attend university compared to their Catholic/independent peers. This result suggests that there is typically greater social pressure from parents on students from government schools to attend university than their Catholic/independent peers. Moreover, the government cohort reported significantly higher levels of confidence to pass their future university studies compared to the Catholic/independent group.

**The impact of school type on Students’ Intentions to Attend University**

Much has been written about the benefit of, and differences between, students enrolled in government compared to catholic/independent schools. This study found that government school students’ positive behavioural beliefs underpinning their intention to attend university were significantly higher than Catholic/independent participants. In perhaps related findings, Dobson and Skuja (2005), research has focused on the relationship between tertiary rank (ATAR), school type and university achievement. Results consistently suggest that, once at university, a government school student will out-perform an independent school student with the same ATAR.

This last component of this section probes the differences between students enrolled in government schools (n=163) and those who attend a catholic/independent schools (n=89). Of the four intent item questions (not counting intent1 because it is the regression weight) on the survey instrument, three out of the four showed no significant differences in the sample’s
intention to enrol at university. These results indicate that there was no significant difference between participants’ intentions enrolled at a government school as opposed to a catholic/independent school.

The path BI←Att is significantly higher in students from government schools. Similarly, the UDIF model identified significantly different results of BI←PosB between government and catholic/independent school students. Moreover, government-school students’ positive behaviour beliefs were significantly more influenced by Career Aspirations and Students’ interest in the subject area. These results imply that while government-school students may attend university for reasons more closely aligned with development of the self (e.g. Interest in subject/course, career), other factors may be typically underpinning Catholic/independent students. While normative influence could be a reasonable starting point to think about potential differences, yet, no significant differences were indicated. Raw comparisons of student outcomes in public and private schools generally show higher learning outcomes in private schools as measured by NAPLAN data (Commonwealth of Australia, 2015). Beyond the measurement concerns surrounding NAPLAN data, these comparisons may be misleading because public schools enrol the vast proportion of disadvantaged students who, on average, have much lower results than students from high SES families (Gale & Parker, 2013; McGee, 2014). For instance, a study examining the Longitudinal Study of Australian Children (LSAC) data found that independent schooling did not result in any significant advantage on students, while the cognitive outcomes for students in Catholic schools were worse than those for students
in public schools when demographic factors was taken into account (Nghiem, Nguyen, Khanam & Connelly, 2015). Likewise, there is a body of research to suggest that government school graduates do better at university than private school graduates with the same end-of-school tertiary entrance score (Birch & Miller, 2007; Dobson & Skuja, 2005; Win & Miller, 2005). While the public versus private debate is a complex issue beyond the scope of this paper, the results of this study raises serious questions about the capacity of non-government schools to instil the same motivational drivers that their similarly SES positioned peers appear to be developing in government schools. From what the research is reporting, the motivational drivers developed in government schools may be valuable for future success at university.
Appendix M: Differences in Determinants of Students’ Intention According to Gender

Introduction

While girls typically have more positive aspirations and attitudes than boys, children’s attitudes and aspirations to university study vary significantly with parent education and attitudes to study, age and different perceptions regarding the value of education (Rampino & Taylor, 2013). There is research to suggest that typically males are more responsive than females to positive parental influences, while educational attitudes and aspirations of boys deteriorate at a relatively younger age (Rampino & Taylor, 2013). Considering the research discussing important differences between male and female students, multi-group analysis is used to examine statistically significant differences between determinants of students’ intention based on gender.
Gender Comparison Using Multigroup Analysis

Table 49

*Gender Comparison of UPI model*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Condition</th>
<th>Males B estimate</th>
<th>Sig</th>
<th>Females B estimate</th>
<th>Sig</th>
<th>z-score</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI</td>
<td>← Att</td>
<td>1.44</td>
<td>&lt; 0.01</td>
<td>0.70</td>
<td>&lt; 0.01</td>
<td>-3.46*</td>
</tr>
<tr>
<td>BI</td>
<td>← SN</td>
<td>0.16</td>
<td>0.278</td>
<td>0.38</td>
<td>&lt; 0.01</td>
<td>1.19</td>
</tr>
<tr>
<td>BI</td>
<td>← SES</td>
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<td>0.646</td>
<td>0.30</td>
<td>0.009</td>
<td>2.17</td>
</tr>
<tr>
<td>intent5</td>
<td>← BI</td>
<td>1.01</td>
<td>&lt; 0.01</td>
<td>0.99</td>
<td>&lt; 0.01</td>
<td>-0.37</td>
</tr>
<tr>
<td>intent4</td>
<td>← BI</td>
<td>0.98</td>
<td>&lt; 0.01</td>
<td>1.02</td>
<td>&lt; 0.01</td>
<td>0.70</td>
</tr>
<tr>
<td>intent3</td>
<td>← BI</td>
<td>1.01</td>
<td>&lt; 0.01</td>
<td>1.06</td>
<td>&lt; 0.01</td>
<td>0.71</td>
</tr>
<tr>
<td>intent2</td>
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<td>1.04</td>
<td>&lt; 0.01</td>
<td>1.01</td>
<td>&lt; 0.01</td>
<td>-0.62</td>
</tr>
<tr>
<td>att4</td>
<td>← Att</td>
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<td>&lt; 0.01</td>
<td>0.87</td>
<td>&lt; 0.01</td>
<td>-4.02*</td>
</tr>
<tr>
<td>att3</td>
<td>← Att</td>
<td>1.39</td>
<td>&lt; 0.01</td>
<td>0.82</td>
<td>&lt; 0.01</td>
<td>-4.64*</td>
</tr>
<tr>
<td>att2</td>
<td>← Att</td>
<td>1.43</td>
<td>&lt; 0.01</td>
<td>0.86</td>
<td>&lt; 0.01</td>
<td>-4.53*</td>
</tr>
<tr>
<td>att1</td>
<td>← Att</td>
<td>1.58</td>
<td>&lt; 0.01</td>
<td>0.89</td>
<td>&lt; 0.01</td>
<td>-4.57*</td>
</tr>
<tr>
<td>sbn3</td>
<td>← SN</td>
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<td>&lt; 0.01</td>
<td>1.01</td>
<td>&lt; 0.01</td>
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</tr>
<tr>
<td>sbn2</td>
<td>← SN</td>
<td>1.56</td>
<td>&lt; 0.01</td>
<td>1.16</td>
<td>&lt; 0.01</td>
<td>-2.37*</td>
</tr>
<tr>
<td>sbn1</td>
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<td>1.48</td>
<td>&lt; 0.01</td>
<td>0.96</td>
<td>&lt; 0.01</td>
<td>-3.58*</td>
</tr>
<tr>
<td>pbc3</td>
<td>← PBC</td>
<td>1.32</td>
<td>&lt; 0.01</td>
<td>0.78</td>
<td>&lt; 0.01</td>
<td>-3.20*</td>
</tr>
<tr>
<td>pbc2</td>
<td>← PBC</td>
<td>1.33</td>
<td>&lt; 0.01</td>
<td>0.88</td>
<td>&lt; 0.01</td>
<td>-2.79*</td>
</tr>
<tr>
<td>pbc1</td>
<td>← PBC</td>
<td>1.46</td>
<td>&lt; 0.01</td>
<td>0.99</td>
<td>&lt; 0.01</td>
<td>-3.06*</td>
</tr>
<tr>
<td>moed</td>
<td>← SES</td>
<td>0.31</td>
<td>&lt; 0.01</td>
<td>0.30</td>
<td>&lt; 0.01</td>
<td>-0.30</td>
</tr>
<tr>
<td>faed</td>
<td>← SES</td>
<td>0.31</td>
<td>&lt; 0.01</td>
<td>0.39</td>
<td>&lt; 0.01</td>
<td>1.35</td>
</tr>
<tr>
<td>books</td>
<td>← SES</td>
<td>25.24</td>
<td>&lt; 0.01</td>
<td>27.90</td>
<td>&lt; 0.01</td>
<td>0.27</td>
</tr>
<tr>
<td>ICSEA</td>
<td>← SES</td>
<td>19.97</td>
<td>&lt; 0.01</td>
<td>20.92</td>
<td>&lt; 0.01</td>
<td>0.12</td>
</tr>
<tr>
<td>maxvo</td>
<td>← SES</td>
<td>20.19</td>
<td>&lt; 0.01</td>
<td>20.87</td>
<td>&lt; 0.01</td>
<td>0.28</td>
</tr>
<tr>
<td>genac2</td>
<td>← GenA</td>
<td>1.34</td>
<td>&lt; 0.01</td>
<td>1.05</td>
<td>&lt; 0.01</td>
<td>-1.71</td>
</tr>
<tr>
<td>genac3</td>
<td>← GenA</td>
<td>1.39</td>
<td>&lt; 0.01</td>
<td>0.99</td>
<td>&lt; 0.01</td>
<td>-2.65*</td>
</tr>
<tr>
<td>mamac1</td>
<td>← MamA</td>
<td>1.60</td>
<td>&lt; 0.01</td>
<td>1.24</td>
<td>&lt; 0.01</td>
<td>-1.90</td>
</tr>
<tr>
<td>mamac2</td>
<td>← MamA</td>
<td>1.70</td>
<td>&lt; 0.01</td>
<td>1.82</td>
<td>&lt; 0.01</td>
<td>0.62</td>
</tr>
</tbody>
</table>
Table 50 shows the gender comparison of UPIM model. As discussed, this study’s results comprise of \( n = 109 \) males and \( n = 143 \) females. The results indicated a significant difference between males’ attitude, compared to females’ attitude, to effect students’ intentions to study at university. Perhaps interestingly, males overall reported a significantly stronger attitude to attend university than females despite both genders having non-significant differences of behavioural intention to study at university across all items.

<table>
<thead>
<tr>
<th></th>
<th>MamA</th>
<th>VerbA</th>
<th>VerbA</th>
<th>VerbA</th>
<th>VerbA</th>
</tr>
</thead>
<tbody>
<tr>
<td>mamac3</td>
<td>1.52</td>
<td>&lt; 0.01</td>
<td>1.78</td>
<td>&lt; 0.01</td>
<td>1.57</td>
</tr>
<tr>
<td>verac1</td>
<td>1.38</td>
<td>&lt; 0.01</td>
<td>1.36</td>
<td>&lt; 0.01</td>
<td>-0.13</td>
</tr>
<tr>
<td>verac2</td>
<td>1.49</td>
<td>&lt; 0.01</td>
<td>1.57</td>
<td>&lt; 0.01</td>
<td>0.45</td>
</tr>
<tr>
<td>verac3</td>
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<td>1.32</td>
<td>&lt; 0.01</td>
<td>-0.72</td>
</tr>
<tr>
<td>fabp</td>
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<td>&lt; 0.01</td>
<td>0.38</td>
<td>&lt; 0.01</td>
<td>2.47*</td>
</tr>
<tr>
<td>mobp</td>
<td>0.32</td>
<td>&lt; 0.01</td>
<td>0.34</td>
<td>&lt; 0.01</td>
<td>0.29</td>
</tr>
<tr>
<td>sbp</td>
<td>0.12</td>
<td>&lt; 0.01</td>
<td>0.21</td>
<td>&lt; 0.01</td>
<td>2.14*</td>
</tr>
</tbody>
</table>

Notes: z-score=2.58= \( p < 0.01 \); z-score=1.96= \( p < 0.05 \) (\( intentl \)-Regression Weight)
\* = sig estimates (\( p < 0.05 \)) and sig (\( p < 0.05 \)) z-score difference
Table 50

*Gender Comparison of UDI model*

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B Estimates</td>
<td>Sig</td>
<td>B Estimates</td>
<td>Sig</td>
<td>z-score</td>
</tr>
<tr>
<td>BI ← PosBvh</td>
<td>1.27</td>
<td>&lt; 0.01</td>
<td>0.70</td>
<td>&lt; 0.01</td>
<td>-3.08*</td>
</tr>
<tr>
<td>BI ← SES</td>
<td>0.24</td>
<td>0.655</td>
<td>0.32</td>
<td>&lt; 0.01</td>
<td>2.11</td>
</tr>
<tr>
<td>BI ← Ethnicity</td>
<td>0.09</td>
<td>0.345</td>
<td>0.24</td>
<td>0.007</td>
<td>1.14</td>
</tr>
<tr>
<td>BI ← GenAcSc</td>
<td>0.28</td>
<td>0.015</td>
<td>0.22</td>
<td>0.025</td>
<td>-0.40</td>
</tr>
<tr>
<td>intent5 ← BI</td>
<td>1.03</td>
<td>&lt; 0.01</td>
<td>1.06</td>
<td>&lt; 0.01</td>
<td>0.71</td>
</tr>
<tr>
<td>intent4 ← BI</td>
<td>1.03</td>
<td>&lt; 0.01</td>
<td>1.01</td>
<td>&lt; 0.01</td>
<td>-0.35</td>
</tr>
<tr>
<td>intent3 ← BI</td>
<td>1.03</td>
<td>&lt; 0.01</td>
<td>1.01</td>
<td>&lt; 0.01</td>
<td>-0.35</td>
</tr>
<tr>
<td>unilifest ← PosBvh</td>
<td>5.00</td>
<td>&lt; 0.01</td>
<td>3.57</td>
<td>&lt; 0.01</td>
<td>-1.38</td>
</tr>
<tr>
<td>CareerAs ← PosBvh</td>
<td>7.39</td>
<td>&lt; 0.01</td>
<td>4.98</td>
<td>&lt; 0.01</td>
<td>-3.42*</td>
</tr>
<tr>
<td>GradPre ← PosBvh</td>
<td>6.39</td>
<td>&lt; 0.01</td>
<td>4.71</td>
<td>&lt; 0.01</td>
<td>-1.75</td>
</tr>
<tr>
<td>Studtinter ← PosBvh</td>
<td>7.91</td>
<td>&lt; 0.01</td>
<td>4.86</td>
<td>&lt; 0.01</td>
<td>-3.78*</td>
</tr>
<tr>
<td>Peers ← NormB</td>
<td>7.03</td>
<td>&lt; 0.01</td>
<td>5.93</td>
<td>&lt; 0.01</td>
<td>-1.40</td>
</tr>
<tr>
<td>Teachers ← NormB</td>
<td>7.32</td>
<td>&lt; 0.01</td>
<td>6.10</td>
<td>&lt; 0.01</td>
<td>-1.52</td>
</tr>
<tr>
<td>Parents ← NormB</td>
<td>6.93</td>
<td>&lt; 0.01</td>
<td>5.52</td>
<td>&lt; 0.01</td>
<td>-1.65</td>
</tr>
<tr>
<td>Fiscal ← ConB</td>
<td>5.55</td>
<td>&lt; 0.01</td>
<td>3.83</td>
<td>&lt; 0.01</td>
<td>-1.49</td>
</tr>
<tr>
<td>Passuni ← ConB</td>
<td>7.33</td>
<td>&lt; 0.01</td>
<td>5.99</td>
<td>&lt; 0.01</td>
<td>-1.59</td>
</tr>
<tr>
<td>E.ATAR ← ConB</td>
<td>7.77</td>
<td>&lt; 0.01</td>
<td>5.99</td>
<td>&lt; 0.01</td>
<td>-2.09*</td>
</tr>
<tr>
<td>ICSEA ← SES</td>
<td>19.15</td>
<td>&lt; 0.01</td>
<td>20.77</td>
<td>&lt; 0.01</td>
<td>0.20</td>
</tr>
<tr>
<td>faed ← SES</td>
<td>0.30</td>
<td>&lt; 0.01</td>
<td>0.39</td>
<td>&lt; 0.01</td>
<td>1.42</td>
</tr>
<tr>
<td>moed ← SES</td>
<td>0.31</td>
<td>&lt; 0.01</td>
<td>0.30</td>
<td>&lt; 0.01</td>
<td>-0.27</td>
</tr>
<tr>
<td>books ← SES</td>
<td>23.92</td>
<td>0.002</td>
<td>27.92</td>
<td>&lt; 0.01</td>
<td>0.40</td>
</tr>
<tr>
<td>maxvo ← SES</td>
<td>20.54</td>
<td>&lt; 0.01</td>
<td>20.86</td>
<td>&lt; 0.01</td>
<td>0.13</td>
</tr>
<tr>
<td>genac1 ← GenAcS</td>
<td>1.28</td>
<td>&lt; 0.01</td>
<td>0.90</td>
<td>&lt; 0.01</td>
<td>-2.77*</td>
</tr>
<tr>
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<td>1.34</td>
<td>&lt; 0.01</td>
<td>1.10</td>
<td>&lt; 0.01</td>
<td>-1.43</td>
</tr>
<tr>
<td>genac3 ← GenAcS</td>
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<td>&lt; 0.01</td>
<td>0.97</td>
<td>&lt; 0.01</td>
<td>-2.80*</td>
</tr>
<tr>
<td>verac1 ← VerbAc</td>
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<td>&lt; 0.01</td>
<td>1.36</td>
<td>&lt; 0.01</td>
<td>-0.14</td>
</tr>
<tr>
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<td>1.50</td>
<td>&lt; 0.01</td>
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<td>&lt; 0.01</td>
<td>0.44</td>
</tr>
<tr>
<td>verac3 ← VerbAc</td>
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<td>&lt; 0.01</td>
<td>1.32</td>
<td>&lt; 0.01</td>
<td>-0.70</td>
</tr>
</tbody>
</table>
Validating the results in Table 50, the results in Table 51 indicated a significant ($p<0.01$) difference between males’ positive behavioural beliefs compared to females’ behavioural beliefs on the effect of students’ intentions to study at university. In relation to specific behavioural beliefs, males reported a significantly higher score than females in relation to CareerAs←PosBvh. The effect of students’ reported intrinsic interest in the subject they intend to enrol in university on their positive behavioural beliefs (Studenti←PosBvh) appears to be significantly higher in males when compared to females. At the same time, there is not a significant difference between males’ and females’ intentions to study at university. Other noteworthy differences include males commonly reporting significantly higher levels of confidence compared to females to achieve the ATAR they need to study their chosen course at university.

<table>
<thead>
<tr>
<th></th>
<th>MamAc</th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>mamac1</td>
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<td>1.80</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>mamac3</td>
<td>MamAc</td>
<td>1.51</td>
<td>&lt; 0.01</td>
<td>1.80</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>sbp</td>
<td>Ethnicity</td>
<td>0.12</td>
<td>&lt; 0.01</td>
<td>0.21</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>fabp</td>
<td>Ethnicity</td>
<td>0.22</td>
<td>&lt; 0.01</td>
<td>0.38</td>
<td>&lt; 0.01</td>
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<tr>
<td>mobp</td>
<td>Ethnicity</td>
<td>0.32</td>
<td>&lt; 0.01</td>
<td>0.33</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

Notes: $z$-score=2.58= $p<0.01$; $z$-score=1.96= $p<0.05$ ($intentI$-Regression Weight)

*= sig estimates ($p<0.05$) and sig ($p<0.05$) $z$-score difference
Summary

Multigroup analysis illustrated a number of differences and similarities between genders and intention determinants. For instance, the results indicated a significant difference between males’ attitude, compared to females’ attitude, to study at university. Perhaps interestingly, males overall reported a significantly stronger salience of attitudes to attend university than females despite both genders having non-significant differences of behavioural intention to study at university. Validating the results above, there was a significant difference between males’ positive behavioural beliefs compared to females’ behavioural beliefs on the effect of students’ intentions to study at university. Males reported a significantly higher score than females in relation to CareerAs←PosBvh. Other noteworthy differences include males commonly reporting significantly higher levels of confidence compared to females to achieve the ATAR they need to study their chosen course at university.
Appendix N: Correlation between Study Debt and Intention to Enrol in University

Although there were not enough negative beliefs elicited in Phase 1 to warrant a latent construct in the SEM analysis, tests were still run to see if study debt would have an impact on students’ intentions. Students indicated a typically negative evaluation about the debt they will incur as indicated by item Study debt and its negative score ($\mu=-7.35$, SD=11.85). A Pearson product-moment correlation coefficient was computed to assess the relationship between the students’ behavioural intention to study at university and their level of negativity regarding their expected study debt:

Table 51

| Correlation between Study Debt and Intention to Enrol in University |
|------------------------|------------------|
| Intent $\mu$ | Study debt |
| Pearson Correlation | -0.176*** | N |
| Sig. (2-tailed) | 0.005 | 252 |

As shown in Table 52, there was a negative correlation between the two variables [$r = -0.176^{**}$, $n = 252$, $p < 0.01$], indicating a significant relationship between increased student
negativity about future study debt and decreasing intent μ to study at university. However, according to Dancey and Reidy's (2004) classification of correlation coefficients, the strength of the relationship between these variables is ‘weak’. This result suggests that although participants typically felt negative about a future study debt, it did not typically have much impact on their intention to study at university. One potential explanation may be that students’ study debt carries little significance while at university until they graduate, find a job and need to pay it back. This explanation appears to be supported by Cull and Whitton’s (2011) study of >470 university students, who reported that just over half (54%) of their sample knew the amount of their study debt. Following graduation, there is a substantial increase in the knowledge of the study debt in the income range $25,000 to $45,000, reflective of the income range in which students begin repaying their study debt at the time of Cull and Whitton’s (2011) research. While beyond the scope of this study, the proposed changes of a deregulated university system by the former Abbott Government would result in a significant rise in fees and hence student study debt. Considering the results of this study, perhaps more needs to be done to help students understand the financial implications of studying at university and what a new deregulated university environment would mean. Considering this result, and the point that Study debt is one item and thus can’t be used as a latent factor, the choice was made to not include it further in the analysis. It is clear that students don’t like the study debt they incur at university, but these results suggest that it typically has a relatively weak impact on their intention to study at university.
Appendix O: Formulas List

Equation 1. Composite Reliability Formula (Fornell & Larcker, 1981)

\[
CR = \frac{\left(\sum_{i=1}^{n} \lambda_i \right)^2}{\left(\sum_{i=1}^{n} \lambda_i \right)^2 + \left(\sum_{i=1}^{n} \delta_i \right)^2}
\]

\(\lambda = \) standardised regression weights  
\(i = \) total number of items  
\(\delta = \) error variance for each latent construct

Equation 2. Average Variance Extracted Formula (Fornell & Larcker, 1981)

\[
AVE = \frac{\sum_{i=1}^{n} \lambda_i^2}{n}
\]

\(\lambda = \) standardised factor loadings  
\(n = \) number of items
Equation 3. Multiple Squared Correlation Confidence Interval Formula

Standard error for an $R^2$ value (Olkin and Finn's approximation):

$$SE_{R^2} \approx \left( \frac{4R^2(1-R^2)^2(n-k-1)^2}{(n^2-1)(3+n)} \right)^{\frac{1}{2}}$$

where $R^2$ is the squared multiple correlation, $k$ is the number of predictors in the model, and $n$ is the total sample size

$$R^2 \pm t_{(\frac{1-\alpha}{2}, n-k-1)} SE_{R^2}$$

where $R^2$ is the squared multiple correlation, $\alpha$ is the desired confidence interval percentage, $SE_{R^2}$ is the standard error for $R^2$, $t$ is a $t$-value, $k$ is the number of predictors in the model, and $n$ is the total sample size.