

**THE EFFECT OF HIGH SCHOOL ACCOUNTING STUDY ON  
SELF-EFFICACY: AN EMPIRICAL STUDY ON STUDENTS  
ENROLLED IN AN INTRODUCTORY TERTIARY  
ACCOUNTING COURSE**

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## Abstract

Self-efficacy is defined as the convictions of individuals that they can accomplish a particular task (Bandura, 1977a). Prior research has found that self-efficacy can help students perform better academically (Beatson, Berg, & Smith, 2019). If prior knowledge could affect a student's self-efficacy, it could indirectly lead to students achieving better grades. This study investigated whether prior accounting knowledge gained from the study of accounting at high school would affect a student's self-efficacy when they undertook an introductory tertiary accounting course.

Student responses were captured through an anonymous survey, and this research had a sample size of 272 respondents. This research used regression analyses to compare the self-efficacy of respondents who had studied accounting at high school and those who did not do so. Prior knowledge is represented by three proxies in this research: i.e. the presence or absence of prior knowledge gained from the study of accounting at high school (*PK*), the highest level of any accounting syllabi studied at high school (*HL*), and the type of accounting syllabi studied at high school (*AS*).

This research found that there was no significant difference in self-efficacy levels between students who had studied accounting at high school and those who did not do so. The results were similar for all proxies of prior knowledge (i.e. *PK*, *HL*, and *AS*). These results refuted anecdotal accounts that studying accounting at high school would make one more confident when studying the subject at a tertiary level. The possible explanations for these results are the difference in between university and high school accounting syllabi, the presence of alternate factors that could be a better predictor of self-efficacy (i.e. prior results), the potential impact of other sources of self-efficacy besides enactive mastery experiences (i.e. vicarious experiences, verbal persuasion and physiological states), or even the type of self-efficacy scales used in the research.

The implication of the research is that high school teachers, lecturers and career counsellors should not discourage students from studying accounting at university on the basis that they did not study the subject at high school. However, the limitation of this study is that it may not be representative of the students enrolled in the introductory tertiary accounting course in terms of ethnicity. Besides that, there were also no students who studied one type of accounting syllabi, i.e. International Baccalaureate (*IB*).

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## **Attestation of authorship.**

“I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.”



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Nicolas Choo

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# **Chapter 1: Introduction**

## **1.1 Calls to improve student learning outcomes**

The call to improve student learning outcomes originates from public sector bodies such as the Ministry of Education (2014, p. 5) to improve “the performance and value for money of the tertiary education system”. This call was made at a time when the tertiary education sector was facing funding pressures, and it led to a demand for greater public accountability from institutions across New Zealand (Ministry of Education, 2014). They claim that educators need to provide cost-efficient courses that will prepare students to meet the needs of their respective employment. Similar calls have been made in other countries as well. For example, several key personnel within the Australian Department of education have also called for the improvement of student learning outcomes to ensure that the resources allocated to each institution are used effectively (Barr et al., 2008).

The public sector’s call to improve student learning outcomes has since spread to the research community. This can be seen through their recommendations for future research to examine strategies that could improve student learning outcomes (Graham, Woodfield, & Harrison, 2013; Musgrove, 2016). The term student learning outcomes will be used interchangeably with academic results or other terms with a similar meaning (e.g. academic achievement). This is because students would be attaining better academic results when they meet the student learning outcomes set out in their courses (Byrne, Flood, & Willis, 2002). It is important to focus on strategies that could improve student learning outcomes as they could help reduce dropout rates (Duff, 2004; López-Pérez, Pérez-López, & Rodríguez-Ariza, 2011) and improve student satisfaction with the course (Eom, Wen, & Ashill, 2006; López-Pérez et al., 2011).

## **1.2 Context for looking into strategies to improve student learning outcomes**

Prior research had examined the use of different strategies to improve student learning outcomes. Some of them included learning approaches that discussed deep, strategic or/and surface learning (Booth, Luckett, & Mladenovic, 1999; Hall, Ramsay, & Raven, 2004), the use of information technology (Broad, Matthews, & McDonald, 2004; Senik & Broad, 2011), collaborative/cooperative learning (Julie Yazici, 2005; Miglietti, 2002), and problem-based learning (Breton, 1999; Stanley & Marsden, 2012). While it is beneficial to think about ways to help students perform better academically, an equally important question would be to

investigate the reasons why certain groups are performing better than others. This could be achieved by investigating contextual factors that affect the achievement of student learning outcomes.

Another reason to investigate contextual factors that affect the achievement of student learning outcomes among students is that prior studies have produced conflicting results across different disciplines when investigating strategies to improve student learning outcomes. For example, Larson and Sung (2009) found that blended learning did not affect a student's performance in their Management Information Systems exams.<sup>1</sup> However, Pereira et al. (2007) found that students exposed to blended learning achieved Human Anatomy test scores that were significantly higher than their counterparts who were not exposed to blended learning. Similar examples can also be found within accounting education, e.g. Hall et al. (2004) found that learning approaches (deep and surface approach) impacted a student's academic achievements regardless of gender. However, Byrne et al. (2002) only found such results among female students but not male students. Such differences could be attributed to differences in sample and methodology. However, it might be that the reasons for these results are not fully understood.

### **1.3 Social Cognitive Theory**

Social Cognitive Theory can be used to explain the effects of contextual factors on student learning outcomes. In this theory, Bandura (1986) uses Triadic Reciprocal Determinism to explain that human functioning is the result of the multidirectional effects of environmental, personal, and behavioural factors on an individual. This researcher claims that humans have several basic capabilities which allow them to obtain information for decision making; one of these basic capabilities is self-reflectiveness, and this is where self-efficacy originates from (Bandura, 1986).

### **1.4 Self-efficacy and its effect on student learning outcomes in different disciplines**

Within Social Cognitive Theory, self-efficacy is defined by Bandura (1977a) as the individual's belief that they can accomplish a particular task. Bandura (1977a) claimed that a person's self-efficacy affects how they react in a given situation, and that stronger self-efficacy beliefs would drive the individual to attain better

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<sup>1</sup> Blended learning is the use of multiple delivery methods when teaching students about the relevant course content.

academic performance. This claim is supported by the findings of Zajacova, Lynch, and Espenshade (2005), and Chemers, Hu, and Garcia (2001) who investigated the effects of self-efficacy on a student's academic performance in a multi-disciplinary study. Given the relationship between self-efficacy and the achievement of student learning outcomes, further investigation into sources of self-efficacy may assist in the development of calls to improve student learning outcomes.

## **1.5 Purpose of this research**

Bandura (1977a) identified four sources of self-efficacy, i.e. performance accomplishments,<sup>2</sup> vicarious experience, verbal persuasion, and physiological states; claiming that among them performance accomplishments are one of the strongest sources of self-efficacy. This is supported by empirical research in fields such as mathematics (Hailikari, Nevgi, & Komulainen, 2008; Usher & Pajares, 2009), music (de Vries, 2017; Zelenak, 2015), engineering (Hutchison, Follman, Sumpter, & Bodner, 2006) and hospitality (Ineson, Jung, Hains, & Kim, 2013). Using prior knowledge as a measure of performance accomplishments similar to the research of Ineson et al. (2013), this research investigates whether the study of accounting at high school would increase the self-efficacy of students enrolled in an introductory tertiary accounting course; compared to their peers who did not study accounting at high school. The purpose of this research is therefore to investigate the effects of enactive mastery experiences (i.e. prior knowledge gained through the study of accounting at high school) on the self-efficacy of students enrolled in an introductory tertiary accounting course at a university in Auckland, New Zealand.

## **1.6 Potential contributions**

The findings of this research will demonstrate whether there was a significant difference between the self-efficacy levels of students who had studied accounting at high school and those who did not study accounting at high school. This would provide insights for educators and students regarding the importance of prior knowledge gained from the study of accounting at high school when students transit from high

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<sup>2</sup> In the research of Bandura (1977a, pp. 195, 211), the term “performance accomplishments” was the formal way the researcher referred to that source of self-efficacy; although he did use the term “mastery experiences” or “enactive mastery” throughout the study. This demonstrated that both terms could be used interchangeably, with recent research using the term “enactive mastery experiences” in their research (Beatson, 2019, p. 9). This research uses the term “performance accomplishments” when introducing it as per the oldest available reference which was the research of Bandura (1977a), while the other term (enactive mastery experiences) is used interchangeably with the former term in line with recent self-efficacy studies such as Beatson (2019).

school to university and attempt a tertiary level introductory accounting course. Self-efficacy has been identified as a factor that is found to affect the achievement of student learning outcomes of accounting students (Beatson et al., 2019; Cheng & Chiou, 2010). Factors that affect an accounting student's self-efficacy could indirectly affect their academic results. One of these factors is performance accomplishments (represented by prior knowledge gained from the study of accounting at high school in this research), and it is considered the strongest source of self-efficacy by Bandura (1977a). He claims that this is the strongest source of self-efficacy because successes and failures from prior experiences would influence an individual's future efficacy expectations when performing a task.

Besides the presence or absence of prior knowledge of accounting gained at high school, this study will investigate the effects of different forms of prior knowledge on the self-efficacy of the respondents. These forms of prior knowledge are the highest level of accounting studied at high school and the type of accounting syllabi taken at high school. Prior research has found that differing levels of education can affect an individual's self-efficacy, where respondents who were more educated (e.g. obtaining a master's degree compared to a bachelor's degree) had higher levels of self-efficacy (Loreman, Sharma, & Forlin, 2013). This suggests that accounting students who studied the highest level of an accounting syllabus at high school could have higher levels of self-efficacy when compared to students who did not do so. Besides that, the effects of different high school accounting syllabi have also not been researched in other studies which have evaluated the effects of prior knowledge on the student's self-efficacy levels. Different high school accounting syllabi could have differing effects on a student's self-efficacy levels, and this provides the motivation to examine the self-efficacy beliefs of a sample that does not have a homogenous educational background. The results of this research would increase the understanding of how different forms of prior knowledge affect the self-efficacy of accounting students and could potentially help suggest alternative strategies that could facilitate the achievement of student learning outcomes.

## **1.7 Chapter sequence**

This research is structured in the following manner. Chapter 2 outlines the literature review for this research. This chapter describes the parts of Social Cognitive Theory that are relevant to this research, i.e. self-efficacy, the concept of Triadic Reciprocal Determinism and its representation in a model by Bandura (1986). The literature review chapter also classifies prior research using Triadic Reciprocal Determinism

from Social Cognitive Theory to analyse the effects of different environmental, personal and behavioural factors on the achievement of student learning outcomes. The research method is discussed in Chapter 3, where the research instrument (a self-efficacy questionnaire) and the method of data analysis are described. This is then followed by the empirical results of the research in Chapter 4; where the main results of the study are described, and the hypotheses established in the literature review chapter are either accepted or rejected. Chapter 4 also contains the descriptive statistics of this research and the analyses of sample representativeness. Chapter 5 presents a summary of the empirical results of this research before discussing these results. This discussion includes the significance of the research results to theory and practice in regard to the achievement of student learning outcome among students enrolled in an introductory accounting course. Chapter 5 also discusses several explanations for the empirical results and provides some suggestions for future research. Finally, the conclusion of this research is presented in Chapter 6.

## **Chapter 2: Literature review**

### **2.1 Introduction**

This chapter reviews prior studies that are relevant to this research. First, Section 2.2 commences with calls from prior research to investigate strategies that could improve the achievement of student learning outcomes of accounting students. Second, the theoretical underpinning of this research is discussed in Section 2.3. This research uses Social Cognitive Theory which was first introduced by Bandura (1986) as its theoretical underpinning. With this theory, the concept of Triadic Reciprocal Determinism is used to discuss the effects of environmental, behavioural, and personal factors in the field of accounting education. Third, Section 2.4 differentiates efficacy expectations from outcome expectations. This research would examine the efficacy expectations of the participants and not their outcome expectations. Fourth, Section 2.5 discusses the four sources of self-efficacy initially proposed by Bandura (1986). These sources are vicarious experiences, verbal persuasion, physiological states, and performance accomplishments. Fifth, Section 2.6 provides a summary of past self-efficacy research using the Triadic Reciprocal Determinism model developed by Bandura (1986). This also includes the current gaps in prior studies that led to the development of this research. Finally, Section 2.7 develops three hypotheses for this research. The hypotheses in this research examine the effect of (1) the presence or absence of prior knowledge gained from the study of accounting at high school, (2) the highest level of any accounting syllabi studied at high school, and (3) the accounting syllabi studied at high school on the self-efficacy beliefs of the students enrolled in an introductory tertiary accounting course.

### **2.2 Strategies that could improve student learning outcomes**

Several calls have been made to investigate strategies that could improve the achievement of learning outcomes of accounting students (Booth et al., 1999; Duff, 2004). Understanding the factors which could influence the achievement of learning outcomes could provide insights into developing such strategies, which could then lead to an increase in the achievement of student learning outcomes among accounting students. However, prior research that has analysed the effects of contextual factors on the achievement of student learning outcomes has produced conflicting results. For example, this can be seen in the results of



Gul and Fong (1993) and Koh and Koh (1999) where both groups of researchers investigated the relationship between prior knowledge on the achievement of student learning outcomes.

## **2.3 Theoretical underpinning**

Social Cognitive Theory is developed from Social Learning Theory (Grusec, 1992). Social Learning Theory states that individuals learn by modelling the behaviour of others around them in a process called Observational Learning (Bandura, 1977b). Observational Learning occurs when humans pay attention to events around them and remember these events; they will then think about how to perform the tasks related to those events, and do it in real life if there was a motivation for them to do so (Bandura, 1977b). From Social Learning Theory, Albert Bandura developed Social Cognitive Theory to reflect the depth of his theory compared to the popular perception of learning at that time (Gibson, 2004). Bandura (1986, p. xii) claimed that a learning theory was typically understood as “a conditioning model of response acquisition”; and that the new label (i.e. Social Cognitive Theory) would better explain his interpretation of learning, i.e. “knowledge acquisition through cognitive processing of information”. Humans naturally have several basic capabilities which allow them to cognitively process and retain information which then influences the decision that they make in their daily lives (Bandura, 1986).

### **2.3.1 Triadic Reciprocal Determinism**

Social Cognitive Theory can help to explain the determinants and mechanisms behind an investigated phenomenon in different research contexts (Bandura, 1986). Central to the theory is the concept of Triadic Reciprocal Determinism, which Social Cognitive Theory uses to explain human functioning (Bandura, 1986). Triadic Reciprocal Determinism refers to the 3-way multidirectional effects that a person’s behavioural, personal and environmental factors have on each other, and Bandura (1986) presented this concept as a model as shown in Figure 2.1. The interactions between a person’s behavioural, personal and environmental factors are not always equal although they might be bidirectional, Bandura (1986) calls this the Temporal Dynamics of Triadic Reciprocal Determinism.

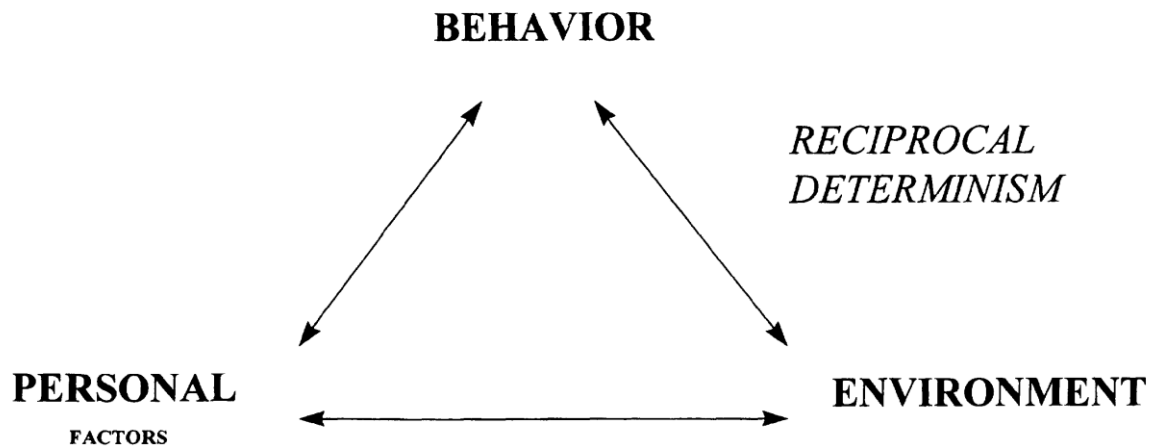


Figure 2.1: Triadic Reciprocal Determinism proposed by Bandura (1986)

Bandura (1986) claims that the interplay of a person's behaviour, environment and personal factors explains human functioning. Environmental factors relate to the physical and social environments in which behaviours occur (Bandura, 1997; Dirette, 2010). For example, this could be the faculty or university that the student is part of within a study that investigates factors of academic misconduct among tertiary students (Tadesse & Getachew, 2010). Meanwhile, personal factors are thoughts, emotions, physical characteristics or biological properties of a person which are unique to the individual (Bandura, 1999; Dirette, 2010; Lent, Brown, & Hackett, 1994; Love, 2016). For example, such characteristics include a person's interest in a particular career or their perception of the prestige of a particular career when investigating determinants of career choice (Fatoki, 2014). Behavioural factors are those that relate to actions carried out by the individual (Dirette, 2010; Lent et al., 1994). For example, this is the act of cheating in research that investigates students' perceptions of ethics and cheating at a tertiary level (Burnett, Smith, & Wessel, 2016).

Unlike prior studies that examined the 1-sided effects of environmental, personal, or behavioural factors when analysing human behaviours, Bandura (1986) argued that human behaviour is affected by the reciprocal effects of environmental, personal, and behavioural factors. Within Triadic Reciprocal Determinism, Bandura (1997) claims that humans try to exercise control over the events that occur in their lives through behaviours that are perceived to benefit them; after considering personal and environmental factors surrounding the individual. This supports a subsequent claim by Bandura (2001) that humans are products of their environments, and that they also have an influence on the environment they live in. There

are different personal, environmental or behavioural factors that could affect the achievement of student learning outcomes for students enrolled in an introductory tertiary accounting course. Using the model in Figure 2.1, prior studies that investigated factors which influences the achievement of student learning outcomes would be classified into personal, environmental factor or behavioural factors (see Table 2.1).

Table 2.1: Summary of environmental, behavioural, and personal factors that affect student learning outcomes.

Factors within the Triadic Reciprocal Determinism	Prior research that investigated different drivers of student learning outcomes
Environmental factors	Social media usage in the course (Cao, Ajjan, & Hong, 2013; Conway, Cao, & Hong, 2011; Park, Cha, Lim, & Jung, 2014) Teaching environments (Guney, 2009; Hartnett, Römcke, & Yap, 2003; Naser & Peel, 1998) Distance learning (Buckley, 2003; Cavanaugh & Jacquemin, 2015; Xu & Jaggars, 2013)
Behavioural factors	Prior knowledge (Chiang & Dunkel, 1992; García-Almeida, Hernandez-Lopez, Ballesteros, & De Saa-Perez, 2012; Rohde & Kavanagh, 1996; Tan & Laswad, 2008) Past results (Byrne & Flood, 2008; Venkatas, Rampersad, & Mashige, 2014; Wamala, 2013) Self-regulated learning (Pintrich & De Groot, 1990; Valle Arias et al., 2008).
Personal factors	Age (Duff, 2004; Gracia & Jenkins, 2003; Koh & Koh, 1999; Tan & Laswad, 2008), Gender (Byrne & Flood, 2008; Tan & Laswad, 2008) Ethnicity (Alfan & Othman, 2005; Keef & Roush, 1997); Self-efficacy (Aleta, 2016; Chemers et al., 2001; Cheng & Chiou, 2010; Hailikari et al., 2008; Liew, McTigue, Barrois, & Hughes, 2008; Zajacova et al., 2005)

### 2.3.2 Environmental factors

Prior research has investigated the relationship between environmental factors and the achievement of student learning outcomes (Guney, 2009; Hartnett et al., 2003). It is important to investigate the effects of environmental factors as the exclusion of such factors could lead to an incomplete picture when examining the achievement of student learning outcomes (Guney, 2009). Some examples of studies that investigate the effect of environmental factors on student learning outcomes include the effects of social media usage in the course (Cao et al., 2013; Conway et al., 2011; Park et al., 2014), teaching environments (Guney, 2009; Hartnett et al., 2003; Naser & Peel, 1998), and distance learning (Buckley, 2003; Cavanaugh & Jacquemin, 2015; Xu & Jaggars, 2013). In terms of Social Cognitive Theory, these factors have been classified as

environmental factors as they relate to the circumstances in which the achievement of student learning outcomes take place.

The research that was undertaken by Hartnett et al. (2003), Guney (2009), & Naser and Peel (1998) demonstrated that teaching environments do affect the achievement of learning outcomes for tertiary students. However, the above studies focused on different areas when investigating the effects of the teaching environment on the achievement of student learning outcomes. This makes it difficult to compare the effects of each of the examined factors on the achievement of student learning outcomes. For example, Naser and Peel (1998) evaluated the impact of course complexity, a student's effort and teaching quality on the academic achievement of tertiary students. The researchers found that after controlling for some of the well-known factors such as prior knowledge, age, and gender of tertiary students; all three experimental variables had a significant effect on a student's academic performance. Meanwhile, Hartnett et al. (2003) investigated the impact of instructor approachability on the achievement of student learning outcomes. They found that an instructor could manipulate his/her teaching style and this led to improved approachability; which then had a positive effect on the academic achievement of the students in the study.

### **2.3.3 Behavioural factors**

Some examples of behavioural factors which are found to influence the achievement of student learning outcomes are prior knowledge (Chiang & Dunkel, 1992; García-Almeida et al., 2012; Rohde & Kavanagh, 1996; Tan & Laswad, 2008), past results (Byrne & Flood, 2008; Venkatas et al., 2014; Wamala, 2013), and self-regulated learning (Pintrich & De Groot, 1990; Valle Arias et al., 2008). These factors are classified as behavioural factors as they are related to actions initiated by the individual.

Among the factors discussed earlier, prior knowledge has received much attention from researchers. This is because many prior studies have found a strong relationship between prior knowledge and student learning outcomes in different disciplines (Byrne & Flood, 2008; Tan & Laswad, 2008; Thompson & Zamboanga, 2004; Yenilmez, Sungur, & Tekkaya, 2006). There is also evidence that such relationships exist at different educational levels such as undergraduate (Gul & Fong, 1993; Thompson & Zamboanga, 2004) and postgraduate study (Dodds, Reid, Conn, Elliott, & McColl, 2010). Although prior knowledge does affect a student's academic results most of the time, this is not always the case. For example, prior research has found links between prior knowledge and subsequent academic achievements at a tertiary level (Duff, 2004;

Gul & Fong, 1993; Koh & Koh, 1999; Rohde & Kavanagh, 1996). Koh and Koh (1999) found that prior knowledge is significantly correlated with better academic performance of second and third-year university students, but such findings do not apply for first-year students. In a separate study, Gul and Fong (1993) found that prior knowledge was significantly correlated with the performance of first-year students. Both findings suggest that while prior knowledge can lead to better academic results among university students, it may not be the best explanatory factor of academic performance.

#### **2.3.4 Personal factors**

Prior studies have also investigated the effects of personal factors on student learning outcomes. The more popular factors include age (Duff, 2004; Gracia & Jenkins, 2003; Koh & Koh, 1999; Tan & Laswad, 2008), gender (Byrne & Flood, 2008; Tan & Laswad, 2008) and ethnicity (Alfan & Othman, 2005; Keef & Roush, 1997). However, these factors are found to have an inconsistent influence on student learning outcomes. For example, Koh and Koh (1999) and Gracia and Jenkins (2003) found that age has a significant effect on academic performance while similar studies undertaken by Tan and Laswad (2008) and Duff (2004) produced conflicting findings. The above inconsistency suggests that gender, ethnicity and age may not be good predictors of student learning outcomes. Another personal factor that has attracted the attention of researchers due to its links with better academic achievement is self-efficacy (Chemers et al., 2001; Zajacova et al., 2005).

One of the widely researched personal factors tied to student learning outcomes is self-efficacy (Usher & Pajares, 2009). Besides the claim of Usher and Pajares (2009), this is demonstrated through a summary of environmental, behavioural, and personal factors that are found to affect student learning outcomes in Table 2.1. Bandura (1977a) defined self-efficacy as the convictions in individuals that they can accomplish a task, and this researcher had identified it as an important factor that leads to the successful completion of a task. These findings were consistent across different age groups such as children (Liew et al., 2008) and adults (Zajacova et al., 2005). Both studies found that there were no strong relationships between an individual's age and their self-efficacy. This shows that the effects of self-efficacy are likely to be consistent across different age groups. In addition to that, the positive links between self-efficacy and academic performance have been established in different subject areas such as accounting (Cheng & Chiou, 2010), engineering (Aleta, 2016) and mathematics (Hailikari et al., 2008). According to Bandura (1977a), there is a distinction

between an individual's belief that they can accomplish a task (efficacy expectations) and the belief that a particular behaviour would lead to an expected outcome (outcome expectations).

## 2.4 Efficacy expectations and outcome expectations

Bandura (1977a) made a distinction between efficacy expectations and outcome expectations within the theoretical framework of self-efficacy, as illustrated in Figure 2.2. An efficacy expectation is the conviction of an individual that they can successfully perform an activity while an outcome expectation is the individual's perception that a given behaviour will lead to the outcome expected by the individual (Bandura, 1977a).<sup>3</sup> Efficacy expectations are distinguished from outcome expectations because while outcome expectations may be high, an individual would not decide to do a particular task if they have low efficacy expectations to begin with (Bandura, 1986).

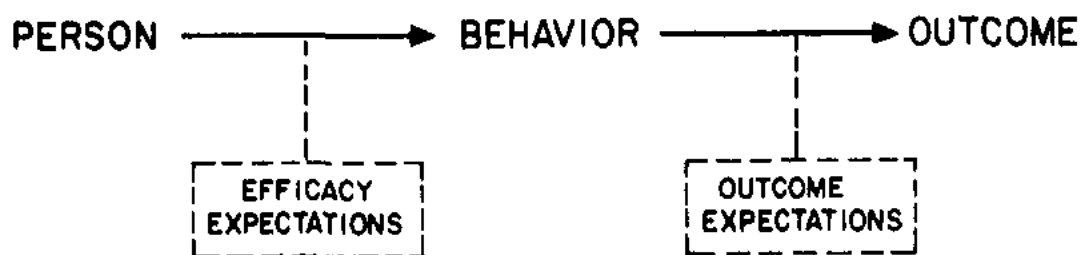


Figure 2.2: Distinction between efficacy expectations and outcome expectations by Bandura (1977a)

Both efficacy expectations and outcome expectations affect a behavioural outcome, although efficacy expectations affect them more than outcome expectations (Bandura, 1986). Compared to efficacy expectations, outcome expectations would play a smaller role in an individual's performance accomplishments, as outcome expectations are dependent on his/her self-efficacy (Bandura, 1986). Prior research has also found that self-efficacy (efficacy expectations) was a better predictor of academic achievement in literacy tests when compared to outcome expectations (Shell, Colvin, & Bruning, 1995; Shell, Murphy, & Bruning, 1989). Such findings are consistent with the theoretical framework of self-efficacy, in regard to the claim of Bandura (1977a) about efficacy expectations and outcome expectations.

<sup>3</sup> The word 'Behaviour' in Figure 2.2 is not to be confused with 'Behaviour' in Figure 2.1, and both identical words are unrelated.

Strong efficacy expectations could increase the efforts spent on tasks by individuals in challenging situations and this could eventually lead to the successful performance of a task in that situation (Bandura, 1977a; Bandura & Adams, 1977). Bandura and Adams (1977) found that stronger self-efficacy levels affected the persistence of coping behaviour, which helped some of the research participants to overcome their phobias of snakes. This led the researchers to infer that self-efficacy is a good predictor of whether an individual would be able to overcome their phobia of snakes after receiving a treatment to help them overcome those phobias.

Efficacy expectations can also affect outcome expectations; however, this relationship is not always consistent, and it is contingent on the context of a particular behaviour. When outcomes are not associated with performance quality or if actions are perceived to not lead to anticipated outcomes, Bandura (1986) claimed that the link between efficacy expectations and outcome expectations could be disconnected.

In summary, both the person's efficacy expectations and outcome expectations could influence the outcome of their behaviours. However, efficacy expectations were found to affect behavioural outcomes more than outcome expectations (Shell et al., 1995; Shell et al., 1989). Efficacy expectations are a part of Social Cognitive Theory that originates from the self-reflective capabilities that humans possess (Bandura, 1986). Humans can reflect on their personal experiences, which then lead them to develop perceptions about their abilities to perform a particular task, i.e. self-efficacy (Bandura, 1986). Having distinguished between efficacy expectations and outcome expectations this research will focus on sources of self-efficacy (efficacy expectations) due to its effects on behavioural outcomes as demonstrated in prior research (Shell et al., 1995; Shell et al., 1989).

## **2.5 Sources of self-efficacy**

A person's self-efficacy can be affected by four sources of information; and these four sources are vicarious experiences, verbal persuasion, physiological states, and performance accomplishments (Bandura, 1977a). Each of these sources contributes differently to the individual's self-efficacy beliefs (Bandura, 1986), and a person's self-efficacy could be affected by a mixture of different sources (Bandura, 1977a).

### **2.5.1 Vicarious experience**

A person's self-efficacy can originate from vicarious experiences (Bandura, 1977a). People can learn by observing others perform a task, and this is one of the basic human capabilities under Social Cognitive

Theory (see Section 2.3). However, Bandura (1986) claimed that vicarious experiences are a weaker source of a person's self-efficacy as it is dependent on the individual comparing themselves with others around them to gauge their performance, this then affects their self-efficacy. When there are other direct sources of self-efficacy compared to vicarious experiences (e.g. performance accomplishments), these direct sources of self-efficacy will play a more significant role in affecting a student's self-efficacy (Lent, Lopez, & Bieschke, 1991). These researchers claimed that vicarious sources of self-efficacy are not as strong as performance accomplishments in their study, as the participants were more likely to have had direct knowledge of their maths skills through performance accomplishments. As a consequence, they claimed that the participants would rely less on efficacy information obtained from observing others.

### **2.5.2 Verbal persuasion**

Another source of self-efficacy is verbal persuasion. Bandura (1986) claimed that individuals could be led to believe that they possess the ability to perform a task in response to the suggestion by those around them. Just like vicarious experiences, verbal persuasions are weaker than performance accomplishments as a source of self-efficacy because "they do not provide an authentic experiential base" (Bandura, 1977a). However, verbal persuasions are still a strong source of self-efficacy when the individual has a supportive environment (Bandura, 1977a, 1986). When women who pursued mathematics-related careers were taught by supportive instructors, they thought that the verbal persuasions from their instructors contributed a lot to their self-efficacy beliefs (Zeldin & Pajares, 2000). This supports the claim that verbal persuasions that occur in a supportive environment would still have a substantial effect on an individual's self-efficacy.

### **2.5.3 Physiological states**

Stressful or taxing situations can also impact a person's self-efficacy (Bandura, 1986). If a person is feeling tense when thinking about facing a stressful situation, their physiological state will make them feel inadequate when judging their capabilities to accomplish a particular task (Bandura, 1977a). For example, Schunk and DiBenedetto (2015) claimed that negative emotions (e.g. nervousness) could lead to lower self-efficacy levels when an individual was facing an exam. This is supported by the empirical analysis of Barrows, Dunn, and Lloyd (2013), who found that a student's self-efficacy is inversely correlated with their anxiety levels.



#### **2.5.4 Performance accomplishments**

According to Bandura (1977a), one of the strongest sources of self-efficacy is performance accomplishments. This seems intuitive as being successful in completing a task would increase one's self-efficacy while failing to accomplish a task would have an opposite effect (Bandura, 1986). Self-efficacy has been researched in other fields such as mathematics (Hailikari et al., 2008; Usher & Pajares, 2009), music (de Vries, 2017; Zelenak, 2015) and engineering (Hutchison et al., 2006). While different factors are found to influence an individual's self-efficacy, all of the above research confirmed that prior experiences in completing a task are one of the largest sources of a person's self-efficacy. This similarity should not be generalised to other domains or levels of education as the way people perceive information that could affect their self-efficacy in a particular discipline is non-linear (Usher & Pajares, 2009). However, such links suggest that enactive mastery experience may be a primary source of self-efficacy that deserves the attention of future research in other domains where such relationships have not been established. In disciplines where such relationships have been established, research should be undertaken in an attempt to demonstrate its consistency across different settings (Hailikari et al., 2008).

### **2.6 Background of self-efficacy in accounting education**

Prior research in accounting education has linked different factors such as goal setting (Cheng & Chiou, 2010), prior results (Beatson et al., 2019; Cheng & Chiou, 2010), and mastery feedback (Beatson, Berg, & Smith, 2018) to the self-efficacy of accounting students. However, there are no studies that have investigated the effect of prior knowledge gained from the study of accounting at high school (a form of enactive mastery experience) on a student's self-efficacy in an introductory tertiary accounting course. The preceding section had explained that enactive mastery experiences appear to be the strongest source of a person's self-efficacy, and such findings appear to be consistent in different fields. Since self-efficacy can positively impact a student's academic performance (Cheng & Chiou, 2010), prior accounting knowledge could indirectly affect a student's academic performance if it can influence the individual's self-efficacy. This might help explain the inconsistency behind prior research that evaluated the effect of prior knowledge on academic achievement, which was previously discussed in Section 2.3.3. However, there have been few studies undertaken to investigate the sources of self-efficacy beliefs of accounting students (Beatson, 2019).

In Ireland, Byrne, Flood, and Griffin (2014) found that accounting students who were willing to seek help in their studies displayed higher levels of self-efficacy. These researchers suggested that all accounting students should be provided with a supportive environment so that they might be more willing to seek help in their studies. This could increase their self-efficacy levels and drive them to achieve better grades at university (Byrne et al., 2014). However, such suggestions are not practicable if there is a lack of understanding of which demographics could be suffering from lower self-efficacy and thus need more academic support in an introductory tertiary accounting course. For other courses such as physics, Lindstrøm and Sharma (2011) found that students who studied physics at high school had self-efficacy beliefs that were significantly higher than their peers who did not study physics at high school. Students who were familiar with the subject they studied before would have the enactive mastery experiences needed to form self-efficacy beliefs about physics-related tasks (Lindstrøm & Sharma, 2011). This might be a reason why students who had studied physics at high school had self-efficacy beliefs that were significantly higher than those who did not do so. At the university that the researchers undertook their study, the participants were enrolled in 2 different classes based on their education background (i.e. the absence or presence of prior knowledge of gained from the study of physics at high school) for the first semester of their first year; they then had the option to continue studying a physics major or a different major at the university. However, this is not likely to occur in a business degree due to its generality and flexible entry requirements. With prior research demonstrating that prior physics education at high school could impact the self-efficacy of first-year physics students (Lindstrøm & Sharma, 2011), the same findings could apply to students enrolled in an introductory tertiary accounting course. The current research would serve to highlight if the difference in their educational background (i.e. the absence or presence of prior knowledge gained from the study of accounting at high school) would affect the self-efficacy of first-year accounting students. This would help educators to develop a supportive environment that could aid in the achievement of student learning outcomes.

The connection between prior education and self-efficacy has been established in other university-level courses such as physics (Lindstrøm & Sharma, 2011) and mathematics (Hailikari et al., 2008); and they found that prior knowledge can boost students' self-efficacy. Ineson et al. (2013) also found similar results among hospitality students taking a business course (Hotel Operations Tactics and Strategy) when examining the effect of prior knowledge on the respondents' self-efficacy. These results appear to indicate that prior

education has a positive effect on a student's self-efficacy, but it is unknown if such a phenomenon exists in an introductory tertiary accounting course. Lindstrøm and Sharma (2011) suggested that future studies can distribute self-efficacy questionnaires at the commencement of the course when students had limited exposure to the relevant tertiary level subject material. The timing of the questionnaire could influence the results of a self-efficacy study, as the exposure to tertiary level accounting materials might be able to change students' perceptions of his or her ability to succeed in the course.

Prior studies have demonstrated that enactive mastery experiences can be influenced through prior education (Hailikari et al., 2008; Ineson et al., 2013; Lindstrøm & Sharma, 2011). Adapting the work of Ineson et al. (2013) to an introductory tertiary accounting course, this study uses prior accounting education undertaken in high school as a measure of enactive mastery experience; in order to determine the effects of prior knowledge on a student's self-efficacy in an introductory tertiary accounting course. The purpose of this research is to investigate if prior knowledge gained from the study of accounting at high school would have a positive effect on a student's self-efficacy levels when they undertake an introductory tertiary accounting course.

## **2.7 Hypothesis development**

### **2.7.1 The effect of prior knowledge on self-efficacy**

Prior research has found that enactive mastery experience is one of the strongest sources of self-efficacy (Bandura, 1977a; Hutchison et al., 2006; Usher & Pajares, 2009). Among hospitality students attempting a business course (Hotel Operations Tactics and Strategy business simulation course), Ineson et al. (2013) found that students with prior knowledge had a higher level of self-efficacy compared to other students who had no prior knowledge. Although that study was undertaken with hospitality students, the findings of Ineson et al. (2013) suggest that prior knowledge could have a positive effect on an individual's self-efficacy. Therefore, the following hypothesis is intended to evaluate if prior knowledge of accounting acquired at high school has a positive effect on the self-efficacy of students studying an introductory tertiary accounting course at university.

H1: Studying accounting as a subject at high school has a positive effect on a student's self-efficacy.

### **2.7.2 The effect of the highest level of any accounting syllabi on self-efficacy**

In the New Zealand context, Keef and Hooper (1991) found that studying the highest level of an accounting syllabus at high school had a statistically significant effect on a student's performance at an introductory tertiary accounting course at university. They attributed this result to the similarities between the material taught at the highest level of accounting studied at high school and the syllabus covered in the introductory tertiary accounting course at university. The findings of Keef and Hooper (1991) contradicted another prior study involving New Zealand students, where Keef (1988) found that different levels of accounting study at high school did not have any statistically significant effect on a student's performance in an introductory tertiary accounting course. The highest level of any accounting syllabus taken at high school could have influenced a student's self-efficacy; which then affected their academic performance in an introductory tertiary accounting course. The following hypothesis evaluates if taking the highest level of any accounting syllabus has a positive effect on a student's self-efficacy in an introductory tertiary accounting course.

H2: Studying the highest level of any accounting syllabus at high school has a positive effect on a student's self-efficacy.

### **2.7.3 The effect of different accounting syllabi on self-efficacy**

In Section 2.3.3, it was highlighted that although prior knowledge in accounting affected the academic performance of accounting students, there were several inconsistencies between the findings of Gul and Fong (1993), and Koh and Koh (1999). Further research has since found that self-efficacy had an impact on academic performance (Thompson & Zamboanga, 2004; Yenilmez et al., 2006), this suggests that factors that could influence a student's self-efficacy might affect their academic performance.

The inconsistent effect of prior accounting knowledge on academic performance in an accounting course could be due to the content differences of the different accounting syllabi (Koh & Koh, 1999). Different types of accounting syllabi might focus on different aspects of the subject or be taught using a different pedagogy (e.g. the subject being taught in a modular format for NCEA or in a continuous format for Cambridge International Examinations. These are two common types of high school accounting syllabi in New Zealand.). Hence, each accounting syllabi could have a different effect on a student's self-efficacy in an introductory tertiary accounting course. This inference leads to the hypotheses below.

H3a: Students who studied NCEA at high school have higher self-efficacy than those who did not study accounting at high school.

H3b: Students who studied Cambridge at high school have higher self-efficacy than those who did not study accounting at high school.

H3c: Students who studied IB at high school have higher self-efficacy than those who did not study accounting at high school.

H3d: Students who studied other accounting syllabi at high school have higher self-efficacy than those who did not study accounting at high school.

## **Chapter 3: Research method**

### **3.1 Introduction**

This chapter presents the research method used to test the hypotheses, which examines the effect of prior knowledge gained from the study of accounting at high school on a student's self-efficacy in an introductory tertiary accounting course. Section 3.2 explains the design of the questionnaire, which is followed by the sample selection in Section 3.3. Section 3.4 discusses the data analysis undertaken in the study. The last three sections of this chapter discuss the individual variables in this research, Section 3.5 for the dependent variable, Section 3.6 for the test variables and Section 3.7 for the control variables.

### **3.2 Questionnaire design**

The questionnaire was distributed to students enrolled in an introductory tertiary accounting course, and it consisted of two parts. Part A collected demographic information such as the students' campus, gender, age and primary ethnicity. It also asked them to indicate if they had studied accounting as a subject at high school; and if yes, the accounting syllabi studied. Prior studies had demonstrated that both previous work experience (Cunnen, MartinRogers, & Mortimer, 2009) and failure to accomplish a task (Bandura, 1977a; Lane, Jones, & Stevens, 2002) could affect a person's self-efficacy. Therefore, two additional questions were added to the questionnaire. The first one was if they were a repeating student in the introductory tertiary accounting course and the second one was if they had prior work experience in accounting (this could be paid or unpaid). This information was used to examine the effects of prior work experience and repeating the same course material on a student's self-efficacy.

In part B, students self-reported their perceived self-efficacy through a 5-point likert scale from (1) strongly disagree to (5) strongly agree. A lower score would indicate that the respondents thought that they had lower self-efficacy levels, while a higher score would indicate otherwise. A copy of the questionnaire can be found in Appendix B. This research used an adapted version of the New General Self-Efficacy scale (NGSE) developed by Chen, Gully, and Eden (2001) to measure the perceived self-efficacy of the respondents. According to Chen et al. (2001), the NGSE scale was an alternative to the 17- item General Self-Efficacy scale (GSE) developed by Sherer et al. (1982). Chen et al. (2001) found that the NGSE scale had a higher construct validity and reliability when compared to the GSE scale. This scale had also been used in other

self-efficacy studies such as Ineson et al. (2013), Judd et al. (2006), and Ng and Earl (2008). Compared to the GSE scale, the adapted version of the NGSE scale was considered more appropriate as it would minimise any disruptions to the class; since the questionnaires were distributed and administered during lecture times. The average time taken to complete the questionnaire was approximately 5 minutes. Furthermore, the use of a shorter questionnaire was likely to encourage a higher response rate (Edwards et al., 2002).

### **3.3 Participants**

Consistent with recent self-efficacy studies (Beatson, 2019; Beatson et al., 2019; Beatson et al., 2018), students who enrolled in an introductory tertiary accounting course were invited to participate in the current research. The population in this research was the students who were enrolled in an introductory tertiary accounting course during Semester one of 2019 (the course ran from February 2019 till June 2019). These students studied on either the City Campus or the South Campus at Auckland University of Technology (AUT). The purpose of this research was to investigate whether studying accounting at a high school level would lead to higher self-efficacy levels among students enrolled in an introductory course; when the former group was compared to their peers who did not study accounting at high school. Consistent with the purpose of this research, the first introductory tertiary accounting course was selected to prevent the students' self-efficacy from being affected by other university-level accounting courses. Those tertiary accounting courses might influence a student's self-efficacy, and that will likely lead to a biased response from students.

The required information was collected through a paper-based questionnaire distributed during lecture times in week four of the semester, and this was supervised by the course lecturer to ensure that the process proceeded smoothly. As there were several lectures in this introductory tertiary accounting course, the data collection period lasted for a week. A chocolate fish was offered to each student who returned a completed questionnaire form. This small incentive was distributed to the research participants to maximise the response rate, and it was unlikely that this would influence the student's answers (Mizes, Fleece, & Roos, 1984). Students were informed that the questionnaire was completely anonymous, and their participation in this research was voluntary. They would not be disadvantaged in any way by not taking part in the research. Before the commencement of this research, the AUT Ethics Committee had approved the researcher's application to undertake this study. A copy of this approval can be found in Appendix A.

There were 919 students enrolled in the introductory tertiary accounting course during semester one, 574 questionnaires were distributed in class, and 366 usable questionnaires were received. This led to a response rate of 65%,<sup>4</sup> confirming that an adequate number of responses was collected from participants when compared to similar studies (Opdecam & Everaert, 2012; Tickell, Lim, & Balachandran, 2012). The response rate in this research was similar to other studies involving students enrolled in an introductory tertiary accounting course. Opdecam and Everaert (2012) had a response rate of 68% and Tickell et al. (2012) had a 69% response rate in their study. In this study, the researcher was only able to distribute questionnaires to students who attended the lecture and were willing to complete the questionnaire. Therefore, the class attendance at that time and the willingness of the students to complete the questionnaire could have affected the response rate.

From the 366 questionnaires received, 91 cases with missing data were excluded from the dataset. While the statistical power of the dataset would be reduced, listwise deletion was an acceptable method to manage missing data in this instance as the missing data was missing completely at random (Acock, 2005); as demonstrated by the untabulated results of Little's MCAR test,  $X^2 = 38.878$ ,  $df = 41$ ,  $p = 0.565$ . The sample selection process in this research is summarised in Table 3.1.

A preliminary regression analysis (untabulated) which included the three questionnaires of other genders, suggests the existence of multicollinearity. The variance inflation factor (VIF) for the preliminary regression analysis was 26.344 for males and 26.404 for females.<sup>5</sup> A subsequent regression analysis that excluded other genders (untabulated) did not display any evidence of multicollinearity in the dataset. Therefore, these questionnaires have been excluded from the analyses. Another self-efficacy study by Beatson et al. (2018) in a similar context also excluded other genders from their analysis, although this information was collected in their research. Their sample was also made up of students enrolled in an introductory tertiary accounting course at a university in New Zealand.

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<sup>4</sup> The response rate is calculated as the number of received questionnaires divided by the number of questionnaires given out ( $366/574 = 65\%$ ).

<sup>5</sup> Allison (1999) suggests that a VIF of more than 2.5 is an indication of multicollinearity.



Table 3.1: Sample selection process

Description	Number
Total student enrolment in the introductory tertiary accounting course.	919
Questionnaires distributed during lecture times.	574
Questionnaires received	366
Less: questionnaires with missing data	91
Less: questionnaires of students listing their gender as “other”	3
Questionnaires used in this research (final sample)	272

### 3.4 Data analysis

To test the hypotheses, several regression analyses were employed to investigate the effect of prior knowledge gained from the study of accounting in high school on the self-efficacy of students enrolled in an introductory tertiary accounting course (*SE*).<sup>6</sup> Each of the regression analysis used one of three proxies for prior knowledge gained from the study of accounting in high school when testing the hypotheses in this research. These proxies are (1) the presence or absence of prior knowledge gained from the study of accounting at high school (*PK*), (2) the highest level of any accounting syllabi studied at high school (*HL*) and (3) the type of accounting syllabi studied at high school (*AS*). The regression model used to test the three hypotheses in the research is as follows:

$$SE = \beta_0 + \beta_1 PRIORKNOWLEDGE + \beta_2 AGE + \beta_3 ETHNICITY + \beta_4 GENDER \\ + \beta_5 WORKEXPERIENCE + \beta_6 REPEATINGSTUDENTS + e$$

Where

Dependent variable

*SE* = The self-efficacy of students enrolled in an introductory tertiary accounting course. It is defined by the sum of likert-scale responses for eight statements in the NGSE questionnaire. These responses range from (1) strongly disagree to (5) strongly agree, based on the respondent's

<sup>6</sup> The software used in this research is SPSS. The regression analyses conducted is also known as an Ordinary Least Squares regression.

perceived abilities that are described in the eight statements of the NGSE questionnaire.

#### Test variable

(*PRIORKNOWLEDGE* represents prior knowledge gained from the study of accounting at high school, which will be proxied by *PK*, *HL* and *AS*, as defined below. Each regression analysis will use a different proxy.)

*PK* = Whether the respondent studied accounting as a subject at high school. *PK* was coded as one if he or she studied accounting at high school and zero if they did not take any accounting courses at high school. The presence of accounting courses undertaken at high school was indicated by the respondent choosing any of the high school accounting syllabi listed in question three.

*HL* = Whether the respondents studied the highest level of any accounting syllabi when he or she took accounting as a subject at high school. *HL* was coded as one if the respondent studied the highest level of any accounting syllabi at high school, and zero otherwise. In Question three, the highest level of accounting study for each for the following syllabi is as follows in brackets: NCEA (level 3), Cambridge (A-Levels). Those respondents who took International Baccalaureate (IB) and other accounting syllabi not mentioned above are considered to have completed the highest level of accounting. The respondents who did not study accounting at high school are considered to have not attempted the highest level of any accounting syllabi at high school.

*AS* = The type of accounting curriculum studied by the student. There are three main types of accounting syllabi accepted by the university: NCEA, Cambridge international examinations (Cambridge), and International Baccalaureate (IB). The fourth option, “other accounting syllabus not mentioned above” was for respondents who studied other

types of accounting syllabi that were accepted by the university for enrolment purposes. Four dummy variables were created for *AS* (i.e. *AS\_NCEA*, *AS\_Cambridge*, *AS\_IB*, *AS\_Others*).

*AS\_NCEA* = Whether the respondent had studied the NCEA curriculum at high school. This curriculum included different stages such as Level 1, Level 2, or Level 3, as indicated in Question three of the questionnaire. *AS\_NCEA* was coded as one if the respondent had studied accounting in either Level 1, Level 2, or Level 3, of the NCEA curriculum and zero otherwise.

*AS\_CAMBRIDGE* = Whether the respondent had studied the Cambridge curriculum at high school. This curriculum included different forms of examinations such as O-Levels, IGCSE or A-Levels. *AS\_CAMBRIDGE* was coded as one if the respondent had studied accounting in either O-Levels, IGCSE or A-Levels of the Cambridge curriculum and zero otherwise.

*AS\_IB* = Whether the respondent had studied the IB (International Baccalaureate) curriculum at high school. *AS\_IB* was coded as one if the respondent had studied accounting in IB and zero if otherwise.

*AS\_OTHERS* = Whether the respondent had studied any other types of accounting syllabus other than NCEA, Cambridge, or IB. *AS\_OTHERS* was coded as one if the respondent had studied other accounting syllabi and zero otherwise.

Control variables

*AGE* = The age of the respondent when the questionnaire was distributed.

*ETHNICITY* = The primary ethnicity of the respondent. The options are as follows: European/ NZ European, Maori, Pasifika, Asian, Middle Eastern, Latin American, and other ethnicities. All of the ethnicities above had been

obtained from Stats NZ (2013). *ETHNICITY* was coded as one for European/ NZ European students and zero otherwise.

*GENDER* = The gender identified by the respondent. There are three options the students can choose: male, female, and other. Although the data for other genders had been collected in this research, these cases had been excluded due to multicollinearity issues (see Section 3.3). *GENDER* was coded as one if the respondent was a male and zero otherwise.

*WORKEXPERIENCE* = Whether the respondent had undertaken any form of accounting work before (paid or unpaid). *WORKEXPERIENCE* was coded as one if the student had accounting work experiences and zero otherwise.

*REPEATINGSTUDENTS* = Whether the respondent was currently a repeating student, i.e. taken the introductory tertiary accounting course in previous semesters. *REPEATINGSTUDENTS* was coded as one if the respondent was a repeating student and zero otherwise.

The variable measurements are further discussed in Section 3.5, 3.6, 3.7. The questionnaire used in this research is included in Appendix B.

### 3.5 Dependent variable

The dependent variable in this research was the sum of the respondent's self-reported self-efficacy scores (*SE*). Following Maurer and Andrews (2000) and Maurer and Pierce (1998) who summed the likert-type scale responses to obtain a self-efficacy score for a particular participant, *SE* was measured by summing the student's responses on the NGSE questionnaire ((1) strongly disagree to (5) strongly agree). A higher score would indicate that the participants thought that they had higher levels of *SE*, while a lower score would indicate otherwise.

*SE* was traditionally measured by first obtaining a dichotomous response from individuals regarding their ability to perform a task as described in the works of Bandura (1984). The individual's self-efficacy was then rated, where the total ratings of the likert-type scores are taken to be the strength of an individual's self-efficacy. Subsequent studies have elected to test an individual's self-efficacy using a likert-type scale without asking respondents whether they can perform a particular task or not (Choi, 2005; Odaci, 2011). This method

of measuring the respondent's self-efficacy has become more commonly used; and can be found in self-efficacy studies undertaken by Pajares and Miller (1994), Eastin and LaRose (2000), and Carberry, Lee, and Ohland (2010). Despite not being as detailed as the traditional measures of self-efficacy, the above studies demonstrated that the use of a simplified questionnaire without first obtaining a dichotomous response regarding an individual's ability to perform a task was an acceptable practice when undertaking a self-efficacy research.

### **3.6 Test Variable: Prior knowledge**

The three proxies of the test variable (prior knowledge) are: (1) the presence or absence of prior knowledge gained from the study of accounting at high school (*PK*), (2) the highest level of any accounting syllabi studied at high school (*HL*) & the type of accounting syllabi studied at high school (*AS*).

#### **3.6.1 The presence or absence of prior knowledge of accounting at high school (*PK*)**

This research used the proxy *PK* to test Hypothesis 1 (H1). *PK* was a dummy variable that was coded as one if the student studied accounting at high school and zero if he or she did not take any accounting courses at high school. The study of accounting at high school was evidenced by whether the student chooses any of the accounting syllabi at high school in Question three of the questionnaire. This method of assessing prior knowledge in a self-efficacy study was also used by Beatson et al. (2019). In their study, Beatson et al. (2019, p. 12) had a similar variable called "*HIGHSCHOOL*" to indicate if the respondents in their study took accounting as a subject at high school.

It is expected that taking accounting as a subject at high school will have a positive effect on a student's self-efficacy when compared to those who did not do so. Prior studies demonstrated that having prior knowledge in a particular domain would have a positive impact on a student's self-efficacy. Such findings are found in other disciplines such as mathematics (Hailikari et al., 2008; Usher & Pajares, 2009), music (de Vries, 2017; Zelenak, 2015) and engineering (Hutchison et al., 2006). Consistent with the results of the prior research, it is expected that prior knowledge gained from the study of accounting at high school would have a positive effect on the self-efficacy of students enrolled in an introductory tertiary accounting course. The coefficient ( $\beta_1$ ) for prior knowledge (*PK*) in the regression model should be significantly positive if H1 was supported.

### 3.6.2 The highest level of any accounting syllabi studied at high school (*HL*)

This research used the proxy *HL* to test Hypothesis 2 (H2). *HL* was a dummy variable that was coded as one if the student studied the highest level of any accounting syllabi at high school and zero otherwise. This measurement was consistent with Keef and Hooper (1991); who had classified students based on the level of accounting curriculum taken by the student (these are the fifth form, sixth form and seventh form), to examine the impact of prior knowledge on academic results of New Zealand students. Although students could enter university with their sixth form university bursaries examination results, Keef and Hooper (1991) claimed that the last (or highest) level that the students could study for was the seventh form. This would imply that the seventh form was the highest level of accounting education taken at a high school level, consistent with the definition of what *HL* constitutes in that study.

The following details explain what was considered the highest level in each of the four accounting syllabi that students could select in the questionnaire. NCEA had three different levels (Levels 1, 2 and 3) with Level 3 being the highest level (in terms of difficulty of the subject) that students will undertake during the last few years of their high school (New Zealand Qualifications Authority, n.d.). If a student mentioned that he/she had selected the “Level 3” option (the highest level) under NCEA (a type of accounting syllabus); then he/she was considered to have taken the highest level of accounting study at high school. As for Cambridge international examinations (Cambridge), O-Levels and IGCSE are two alternative branches of its lower-level accounting studies while A-Levels was the highest level of accounting study under this accounting syllabus (Cambridge International, 2019). For accounting syllabi that have only one option (i.e. IB and Others), the option was automatically considered to be the highest level of accounting study as these syllabi are not broken up into different levels of study (unlike NCEA and Cambridge) that could be used for university admission purposes.

Different methods could have been used to compare the levels of different accounting syllabi (e.g. comparing whether the respondents took the lowest level of an accounting syllabi at high school). However, this research examines the effect of the highest level of accounting study at high school on the self-efficacy of the respondents because each individual could have studied a different accounting syllabus at high school (e.g. NCEA, Cambridge, IB and Others). Different types of accounting syllabi have a different number of levels of study, but they all have the highest level; thus, it was fair only to compare students who took the highest

level of accounting study and those who did not. For example, NCEA had three levels (New Zealand Qualifications Authority, n.d.) while other accounting syllabi ('others' in the research questionnaire) accepted by the university for admission purposes could have more or less than three levels depending on the type of syllabus, but all of them definitely have the highest level of study.

It is expected that students who studied the highest level of any accounting syllabi at high school would have higher self-efficacy compared to their peers who did not study the highest level of accounting. Prior studies have found that higher levels of education have a significant effect on an individual's self-efficacy (Larsen & Zahner, 2011; Loreman et al., 2013). For example, Loreman et al. (2013) found that teachers with bachelor's and master's degrees reported higher self-efficacy levels that were statistically significant when compared to other teachers who had only a secondary school education. These results suggested that taking higher levels of education can impact an individual's self-efficacy, and this could apply to the accounting students who have studied different levels of any accounting syllabi at high school. Based on the findings of Loreman et al. (2013), it is expected that studying the highest level of accounting at high school would have a positive effect on the self-efficacy of students enrolled in an introductory tertiary accounting course. The coefficient ( $\beta_1$ ) for prior knowledge (using the proxy *HL*) in the regression model should be significantly positive if H2 was supported.

### **3.6.3 The accounting syllabi studied at high school (AS)**

This research used the proxy *AS* to test Hypothesis 3 (H3). For *AS*, four dummy variables were used to investigate the effects of each accounting syllabi on the respondent's self-efficacy, namely *AS\_NCEA*, *AS\_CAMBRIDGE*, *AS\_IB*, and *AS\_OTHERS*. Each dummy variable was labelled as *AS* followed by the type of accounting syllabi it was supposed to represent. This was coded as one if the dummy variable label matches the type of *AS* it supposed to represent and zero if otherwise. For example, respondents who studied NCEA would be coded as one and students who studied other accounting syllabi would be coded as zero for the dummy variable called "*AS\_NCEA*" in Section 3.4.

To the best of my knowledge, there has been no other accounting research that simultaneously compared different types of accounting syllabi. This research was the first to include the entrance qualifications that the university accepts for enrolment purposes. There are three specific types of entrance qualifications accepted by AUT for enrolment into its Bachelor of Business program, namely NCEA, Cambridge a-levels, and IB

(Auckland University of Technology, n.d.). An additional category called ‘Others’ had been created for respondents who did not take any of the accounting syllabi mentioned above but were still accepted by the university for entrance into a bachelor program. For example, international students who attended high school in their country of origin.

The respondents were asked to select the most recent accounting qualification they attempted at high school to avoid any potentially complex scenarios where certain students have taken multiple forms of accounting syllabi. The advantages of having prior accounting knowledge seem to reduce over time (Koh & Koh, 1999). These researchers suggest that if a student had studied multiple accounting syllabi at high school, it was likely that only the most recent one would benefit the student. Therefore, only the most recent accounting syllabi undertaken by the student was used when comparing the self-efficacy of students taking different accounting syllabi at high school.

It is uncertain how different types of accounting syllabi would affect a student’s self-efficacy as there was no accounting education research that simultaneously examined the effects of different accounting syllabi.

Within this research, the examination of how different accounting syllabi affects a student’s self-efficacy would be exploratory in nature. However, studying any type of accounting syllabi at high school could have a positive effect on the self-efficacy of students enrolled in an introductory tertiary accounting course since prior education can positively affect an individual’s self-efficacy (Hailikari et al., 2008; Usher & Pajares, 2009). The coefficient ( $\beta_1$ ) for prior knowledge (using the proxies: *AS\_NCEA*, *AS\_CAMBRIDGE*, *AS\_IB*, and *AS\_OTHERS*) in the regression model should be significantly positive if H3 was supported.

### **3.7 Control variables**

Several control variables were included in the regression model due to their potential effects on an individual’s self-efficacy. While the regression model in Section 3.4 provided the definition and measurement of these factors, this section will discuss the potential impact of each control variable on the respondent’s self-efficacy.

#### **3.7.1 Age**

*AGE* referred to how old the student was when this research was undertaken. Given the similarities between this research and the works of Beatson et al. (2018) in terms of the dependent variable (self-efficacy of the



students) and the context of the study (students studying an introductory tertiary accounting course), it is expected that age would have a negative effect on the respondent's self-efficacy although this effect might not be statistically significant. This implies that older students are likely to have lower self-efficacy levels compared to younger students.

### **3.7.2 Ethnicity**

The participants were required to provide their primary ethnicity in the questionnaire. All of the ethnic groupings were obtained from the website of Stats NZ (2013). Following the research of Beatson et al. (2018), *ETHNICITY* was coded as one for European/ NZ European students and zero otherwise. They considered anyone who was not of European descent to be part of the 'others' category.<sup>7</sup> They found that students of European descent in New Zealand (NZ European) have a lower sense of self-efficacy compared to other ethnicities. This finding was surprising given that prior studies have found that higher self-efficacy levels are associated with better academic achievements (Aleta, 2016; Beatson et al., 2019; Lent, Brown, & Larkin, 1984). Furthermore, the research cited below suggests that students of European descent were more likely to have higher levels of self-efficacy since this group had academically outperformed students from other ethnic groups. In a cross-disciplinary study of university students, Juhong and Maloney (2006) found that Pakeha or NZ European students tend to outperform other ethnicities in the following order: Asian followed by Maori and then Pasifika students.<sup>8</sup> Nevertheless, the results of Beatson et al. (2018) would still provide the basis for the expectation that students of NZ European descent might have a lower self-efficacy compared to other ethnicities.

### **3.7.3 Gender**

The effects of the respondent's gender were also controlled for in this research. There were three options the students can choose: Male, Female, and Other. Although the data for 'Other' genders had been collected in this research, these cases were excluded due to multicollinearity issues (see Section 3.3). *GENDER* was coded as one if the respondent was male and zero if the respondent was female. Byrne et al. (2014) found that there were very few differences in self-efficacy between male and female accounting students when

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<sup>7</sup> This included ethnicities such as Māori, Samoan, Cook Island Māori, Tongan, Niuean, Chinese, Indian, and other ethnicities not mentioned above.

<sup>8</sup> Ethnicity had a statistically negative effect on academic performance of Asians, Maori and Pasifika when they were compared to Pakeha/NZ European students (Juhong & Maloney, 2006).

measuring the self-efficacy of finance and accounting students, although females self-reported a slightly higher level of self-efficacy based on the results of the t-tests.<sup>9</sup> Such results suggest that female students might have a slightly higher self-efficacy when compared to males, but this effect was likely to be not statistically significant. However, the effect of gender on a person's self-efficacy appeared to be inconsistent in other studies. Beatson et al. (2018) used a self-efficacy questionnaire that had three factors related to self-efficacy, i.e. Academic Success, Academic Help Seeking, and Academic Organization. For factors such as Academic Success and Academic Help Seeking, the researchers found that the regression coefficient for these two factors was positive although they were not statistically significant. For the last factor (Academic Organization), they found that the regression coefficient for this factor was negative although it was not statistically significant. In the research undertaken by Beatson et al. (2018), the researchers did not state which gender had a higher level of self-efficacy. However, such results demonstrated that the effect of gender on self-efficacy was inconsistent. In a meta-analysis of self-efficacy studies, Huang (2013) found that males had a higher self-efficacy in social science subjects; and that such findings might be generalisable to subjects such as accounting.<sup>10</sup> The researchers were also cautious when interpreting these results as there were only five studies within the social sciences category of their research. Either males or females might have a higher level of self-efficacy, but this difference was not likely to be significant.

#### **3.7.4 Work experience**

*WORKEXP* indicated whether the respondents in this research had undertaken any form of accounting work before (either paid or unpaid). This was coded as one if they had accounting work experiences and zero otherwise. The self-efficacy of students who had prior work experience in accounting had not been previously examined in any accounting education papers. However, the self-efficacy of students with prior work experience had been examined in disciplines such as hospitality (Ineson et al., 2013) and business (Zhao, Seibert, & Hills, 2005).<sup>11</sup> Those findings will be used to predict the effect of

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<sup>9</sup> Byrne et al. (2014, p. 415) individually compared the mean score for each self-efficacy related question. They found that males were significantly more confident than females for one of the question ("the standard required to get good marks in exams") while females were significantly more confident than males within three questions (i.e. "attempt questions in advance of their tutorial, draw up a study plan, and to ask for help from a classmate.").

<sup>10</sup> There were no accounting studies that were classified as social sciences in the research of Huang (2013). The statement beside the footnote in the main text is a generalisation of the findings in a broad field of disciplines (i.e. social science) to an individual subject (i.e. accounting) which is part of that field.

<sup>11</sup> Zhao et al. (2005) had a sample that comprised of students undertaking a Master of Business Administration (MBA) at five different universities in the USA.

*WORKEXPERIENCE* on the self-efficacy of the respondents. In a study involving hospitality students, Ineson et al. (2013) found that having prior work experiences significantly increased the self-efficacy of an individual. Another study by Zhao et al. (2005) found that entrepreneurial work experience was significantly correlated with the entrepreneurial self-efficacy of the respondents in the sample. The researchers proposed that respondents who had prior work experience would have gained enactive mastery experiences that could have increased their self-efficacy levels. Although it focused on students pursuing a Master of Business Administration, the results of Zhao et al. (2005) suggested that work experiences would have a positive effect on the self-efficacy levels of students undertaking an introductory tertiary accounting course.

### **3.7.5 Repeating students**

*REPEATINGSTUDENTS* indicated whether the respondents in this research had studied the introductory tertiary accounting course before in previous semesters. It was coded as one if they were a repeating student and zero otherwise. The self-efficacy of students who were repeating the course had not been previously examined in any accounting education papers. However, the self-efficacy of repeating students had been examined in other disciplines such as physical education (Ünlü & Kalemoglu, 2011) as well as information technology (IT) and engineering (Tek, Benli, & Deveci, 2018). This research builds on these results to predict the potential effects of repeating the course material on the respondent's self-efficacy. In general, repeating students were found to have a lower self-efficacy when compared to students who did not repeat the course (Tek et al., 2018; Ünlü & Kalemoglu, 2011). Tek et al. (2018) found that repeating students thought that they had limited programming aptitude, and the researchers claimed that this might have affected the self-efficacy of the respondents who were repeating the course. The findings of Tek et al. (2018) were also supported by Ünlü and Kalemoglu (2011), who found that sports science students who were repeating some of their courses had lower self-efficacy levels compared to their peers who did not repeat those courses. In this research, it is expected that repeating students will report lower self-efficacy scores compared to non-repeating students.

## **Chapter 4: Empirical results**

### **4.1 Introduction**

This chapter presents the empirical results of the hypothesis tests that examine the effect of prior knowledge gained from the study of accounting at high school on a student's self-efficacy in an introductory tertiary accounting course; where prior knowledge was proxied by the presence or absence of prior knowledge gained from the study of accounting at high school (*PK*), the highest level of any accounting syllabi studied at high school (*HL*), and the type of accounting syllabi studied at high school (*AS*). Section 4.2 provides the descriptive statistics of variables used in the regression analyses and the demographic information of the sample respondents. This was followed by a comparison between the students enrolled in the introductory tertiary accounting course and the respondents of the research to evaluate the representativeness of the sample in Section 4.3. Section 4.4 reports a factor analysis that examines whether the eight statements used to measure the respondent's self-efficacy in the questionnaire have the same underlying latent factor. Section 4.4 provides the regression analyses results. Finally, a summary of the empirical results and the conclusion of this chapter are provided in Section 4.6.

### **4.2 Descriptive statistics and demographic information.**

Table 4.1 presents the descriptive statistics for this research. The mean self-efficacy score in the sample was 30, with the lowest score being 16 and the highest score being 40. Approximately 5% of respondents had a maximum self-efficacy score of 40. The mean age of the respondents was 21, and only 25% of the sample were older than the mean age. The youngest respondent was 17 and the oldest respondent was 58. Within the sample, 42% of all the respondents had studied accounting at high school while 31% of all respondents studied the highest level of accounting at high school. Among different types of accounting syllabi accepted at the university, 35% of all respondents studied the NCEA curriculum, 3% of all respondents studied the Cambridge curriculum, and 4% of all respondents studied other types of accounting syllabi not mentioned above. In terms of ethnicity, 32% of all respondents were of European/ NZ European descent while the rest belong to other ethnic groups.

Table 4.1: Descriptive statistics

Variables	Mean	SD	Min	Percentile							Max
				1	5	25	50	75	95	99	
<i>SE</i>	30.41	16.00	16.00	19.73	23.00	27.00	30.50	34.00	40.00	40.00	40.00
<i>PK</i>	0.42	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00
<i>HL</i>	0.31	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00
<i>AS_NCEA</i>	0.35	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00
<i>AS_CAMBRIDGE</i>	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
<i>AS_OTHERS</i>	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
<i>AGE</i>	20.54	17.00	17.00	17.00	18.00	18.00	19.00	21.00	29.00	48.27	58.00
<i>ETHNICITY</i>	0.32	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00
<i>GENDER</i>	0.48	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00
<i>WORKINGEXPERIENCE</i>	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00
<i>REPEATINGSTUDENTS</i>	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
n = 272											

Table 4.2 summarises the demographic information of the sample used in tests of the hypotheses based on respondents' age groups and gender. This demographic information was comparable to a recent self-efficacy study undertaken by Beatson et al. (2019) in a similar context (i.e. students enrolled in an introductory tertiary accounting course). The majority of the respondents were aged between 18-19 years old (55%) while older students (30 years old and over) were the minority (3%). Beatson et al. (2019) also used the New Zealand context involving students enrolled in an introductory tertiary accounting course, where a majority of the students were between 18-19 years old (67%) while the oldest group of students (23 and over) barely made up 4% of the sample in semester one and similar results were reported in semester two.<sup>12</sup> In terms of genders, the respondents were about evenly split between male (48%) and female (52%) students.

The last two columns in Table 4.2 show whether respondents have accounting work experience or if they were repeating the course. For 96% of the students, this was their first attempt at studying the introductory tertiary accounting course while only 4% of the respondents were repeating students. Some of the students

<sup>12</sup> This research was undertaken across two semesters. For the 2<sup>nd</sup> semester, Beatson et al. (2019) reported that 65% of their respondents were aged 18-19 while those aged 23 and above made up 8% of the sample.

(15%) involved in this research have worked in an accounting role before.<sup>13</sup> Beatson et al. (2019) had a sample where 10% of all respondents were repeating students and about 2% of all respondents had prior work experiences across the two semesters that their research was undertaken. Compared to Beatson et al. (2019), who used identical definitions of what counts as working experience and who were repeating students,<sup>14</sup> this research had a lower percentage of repeating students but a higher percentage of students who had prior work experiences.

Table 4.2: Demographic information of the sample

Age groups	Gender	Total	% of age groups subtotals based on the total sample size	Work experience		Repeating students	
				no (n)	yes (n)	no (n)	yes (n)
17 or younger		n					
	male	5		3	2	5	0
	female	7		5	2	7	0
	total	12	4%				
18-19	male	71		60	11	68	3
	female	79		71	8	77	2
	total	150	55%				
20-24	male	41		34	7	38	3
	female	41		32	9	39	2
	total	82	30%				
25-29	male	11		11	0	11	0
	female	9		8	1	9	0
	total	20	7%				
30 or older	male	2		2	0	2	0
	female	6		6	0	6	0
	total	8	3%	85%	15%	96%	4%
total sample size			272	232	40	262	10

### 4.3 Comparison between sample demographics and population

To ensure the sample was representative of the students enrolled for the introductory tertiary accounting course at AUT, a Pearson's Chi-Square test (Chi-Square test) was used to compare the goodness-of-fit between the sample and enrolment data. This comparison had been undertaken by age groups (Table 4.3) and genders (Table 4.4) based on the demographics provided by the university. However, it was not undertaken

<sup>13</sup> This was regardless of whether the role was paid/unpaid, and the length of working experience was not considered.

<sup>14</sup> On the survey form of Beatson et al. (2019, p. 22), students indicated that they had working experience in by circling the following statement; i.e. "I have worked in this field before". This definition was similar to what was used in this research, i.e. any form of accounting work that could be paid or unpaid.

by ethnicity due to the classification differences between the information provided by the university and the ones collected in this research.<sup>15</sup> The dataset also met the assumption of independence between categories that was needed to perform the Chi-Square test as the required data was collected on a cross-sectional basis and that the respondents of this research cannot be simultaneously in more than one category for either age or gender. For example, a respondent cannot be 25 years old and 18 years old at the same time. The assumption of minimum expected frequencies when using a Chi-Square test would be individually addressed when the Chi-Square test results for age and gender are discussed.

#### 4.3.1 Sample representativeness by age

The Chi-Square test for age ranges shows that the sample was representative of the students enrolled in the introductory tertiary accounting course ( $X^2(4) = 5.577, p = .233$ ). The number of respondents in each age group was compared to the expected frequency in that particular age group, and this was based on the course enrolment information provided by the university (see Table 4.3). The minimum expected frequency was 10, which meets the requirements of the Chi-Square test. However, to meet the Chi-Square assumption of having a minimum expected value of 5 in each age group, the last age group (50 years old and above) was combined with the preceding age group (30 till 49 years old). This resulted in a new category that was only used in the Chi-Square test, i.e. the 30 and above age group.<sup>16</sup>

Table 4.3: Expected and observed frequency of the age ranges of the respondents

Ages	Observed (n)	Expected (n)
0 - 17	12	17
18-19	150	133
20-24	82	93
25-29	20	19
30 and over	8	10
Total sample size	272	272

<sup>15</sup> A Chi-Square test was not conducted for ethnicity because there were some differences between the ethnicity classification of this research and the information provided by the university. The ethnicity listed in the questionnaire was adapted from the demographic classification of the 2013 New Zealand census produced by Stats NZ (2013) while the university had classified the ethnicity of its enrolled students differently. This might help explain some of the differences between the demographics of the research participants and the students enrolled in the introductory tertiary accounting course. It was not possible to recode the ethnicity of the respondents using the university demographics as these classifications may not be accurate.

<sup>16</sup> The last age group (50 years old and above) consisted of only one student in both the sample and the enrolment information provided by the university.

### 4.3.2 Sample representativeness by gender

The Chi-Square test for gender shows that the sample was representative of the students enrolled in the introductory tertiary accounting course ( $X^2(1) = .407, p = .524$ ).<sup>17</sup> The number of respondents in each gender category was compared to the expected frequency in that particular category. The expected frequency of each gender category was based on the course enrolment information provided by the university (see Table 4.4 column three). These observed frequencies of each gender category were not statistically different from the students enrolled in the introductory tertiary accounting course based on the Chi-Square results. Other genders had been excluded from the analysis as the university did not provide any information regarding this category.

Table 4.4: Expected and observed frequency of the gender of the respondents

Gender	Observed (n)	Expected (n)
Male	130	135
Female	142	137
Total sample size excluding other genders	272	272

### 4.3.3 Differences in ethnicity between the respondents and the enrolled students

Table 4.5 presents the ethnicity of both the students enrolled in the introductory tertiary accounting course and the respondents in the sample. It also presented the difference between the two. A Chi-Square test was not conducted as the university had a different classification of ethnicity compared to this research. The ethnicity listed in the questionnaire was adapted from the demographic classification of the 2013 New Zealand census produced by Stats NZ (2013), while the university had classified the ethnicity of its enrolled students differently. This might help explain some of the differences between the demographics of the research participants and the students enrolled in the introductory tertiary accounting course. One of the limitations of this research would be that the sample might not be representative of the population in terms of ethnicity. For example, most of the respondents were European/NZ European, while Asians made up the second-largest ethnic group in the sample. However, the ethnicity information in this research was not consistent with the data provided by the university, which listed Asian as the ethnicity of the majority followed by European/NZ European. The university also does not have a classification for “Middle

<sup>17</sup> Other genders had been excluded from the analysis as the university did not provide any information regarding this category



Eastern/Latin American/African” students, while the questionnaire does not include a category for respondents whose ethnicity was ‘unknown’. The details for all other ethnicities can be found in Table 4.5.

Table 4.5: Ethnicity information of the sample respondents and the students enrolled in the introductory tertiary accounting course

Ethnicity	% for enrolled students	% for the sample	% difference
Asian	35.5	29.1	6.4
European/NZ European	23.8	31.3	-7.5
Maori	10.7	5.1	5.6
Other	7.3	10.5	-3.2
Pasifika	22.1	18.9	3.2
Unknown	0.7	not available	not available
Middle Eastern/Latin American/African	not available	5.1	not available
Total	100	100	

## 4.4 Factor analysis

Table 4.6 shows the factor analysis that was conducted to evaluate the dimensionality of the dependent variable, i.e. the student’s self-efficacy in an introductory tertiary accounting course. All eight statements within the NGSE scale loaded onto 1 factor (eigenvalues = 4.817) with high internal reliability ( $\alpha = 0.905$ ). This demonstrated the validity of the questionnaire as a measure of self-efficacy in this research. Such results were similar to an earlier study undertaken by Ineson et al. (2013). They also used the same questionnaire and reported that all eight statements also loaded onto 1 factor (eigenvalues = 4.794) with high internal reliability ( $\alpha = 0.904$ ) in their factor analysis.<sup>18</sup> The Bartlett’s test of sphericity (see Table 4.6) conducted on the dependent variable returns a significant result ( $X^2(28) = 1162.388, p < .001$ ). This means that the eight statements are correlated and that the second requirement to conduct a factor analysis has been met. Besides that, Table 4.6 also shows the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.915; which indicated that in general there was a linear relationship between the statements in the dataset (Kaiser, 1974).

<sup>18</sup> Each statement was abbreviated as S. for example, S1 would be the represent question 1; this format would be used for all other statements as well.

Table 4.6: Factor analysis of self-efficacy

Variables	Factor name: <i>SE</i>
Loading value (min - max)	(0.676 - 0.796)
Eigenvalue	4.817
Accumulated rate	54.621
Cronbach's alpha (reliability coefficient)	0.905
KMO	0.913
Bartlett's test (Approximate Chi-square)	$X^2(28) = 1162.388, p < 0.001$

Table 4.7 presents a correlation matrix of the eight statements. This provided supporting evidence for the results of Bartlett's test of sphericity (see Table 4.6). Consistent with Bartlett's test of sphericity, none of the correlations between the statements fell below 0.3, which demonstrates that there was an acceptable correlation between individual statements to conduct the factor analysis (Field, 2013). Lastly, there were no correlation coefficients that were more than 0.8 in Table 4.7, which indicates that there was no sign of multicollinearity among the eight statements (Field, 2013).

Table 4.7: Correlation matrix

	S1	S2	S3	S4	S5	S6	S7	S8
S1	1	0.615	0.609	0.625	0.592	0.571	0.473	0.495
S2	0.615	1	0.580	0.494	0.554	0.617	0.536	0.621
S3	0.609	0.580	1	0.560	0.496	0.486	0.461	0.515
S4	0.625	0.494	0.560	1	0.559	0.540	0.368	0.396
S5	0.592	0.554	0.496	0.559	1	0.664	0.486	0.537
S6	0.571	0.617	0.486	0.540	0.664	1	0.609	0.582
S7	0.473	0.536	0.461	0.368	0.486	0.609	1	0.592
S8	0.495	0.621	0.515	0.396	0.537	0.582	0.592	1

a. Determinant = .013

Table 4.8 provides supporting evidence for the results of the KMO measure of sampling adequacy (see Table 4.6). While the KMO measure of sampling adequacy in Table 4.6 generally applies to all statements in the questionnaire, the Anti-Image Correlation Matrices in Table 4.8 presents the individual KMO measure of sampling adequacy for each statement: S1 – S8.<sup>19</sup> The Anti-image Correlation Matrices in Table 4.8 shows that there were no individual linear relationships that were less than 0.8, which was an acceptable result needed to conduct a factor analysis (Kaiser, 1974).

<sup>19</sup> These figures are accompanied by the letter “a” within Table 4.8.

Table 4.8: Anti-image correlation matrices

	S1	S2	S3	S4	S5	S6	S7	S8
S1	.915 <sup>a</sup>	-0.212	-0.223	-0.289	-0.165	-0.055	-0.059	-0.003
S2	-0.212	.925 <sup>a</sup>	-0.181	-0.019	-0.043	-0.183	-0.076	-0.262
S3	-0.223	-0.181	.921 <sup>a</sup>	-0.236	-0.029	0.053	-0.092	-0.141
S4	-0.289	-0.019	-0.236	.899 <sup>a</sup>	-0.177	-0.166	0.069	0.062
S5	-0.165	-0.043	-0.029	-0.177	.922 <sup>a</sup>	-0.323	-0.018	-0.135
S6	-0.055	-0.183	0.053	-0.166	-0.323	.899 <sup>a</sup>	-0.290	-0.115
S7	-0.059	-0.076	-0.092	0.069	-0.018	-0.290	.910 <sup>a</sup>	-0.268
S8	-0.003	-0.262	-0.141	0.062	-0.135	-0.115	-0.268	.912 <sup>a</sup>

a = Measures of Sampling Adequacy (MSA)

Section 4.3 confirmed that the sample was representative of the population. The sample was representative of the population in terms of age (see Section 4.3.1) and gender (see Section 4.3.2). However, this might not be the case in terms of ethnicity (see Section 4.3.3). Section 4.4 also confirmed that the questionnaire was an adequate measure of self-efficacy in this research. The factor analysis in Section 4.4 was compared to the research of Ineson et al. (2013), and this confirmed that the questionnaire used in this research was an adequate measure of self-efficacy. This research used an adapted version of the NGSE questionnaire created by Chen et al. (2001), and this was also used by Ineson et al. (2013).

## 4.5 Main results

This section introduces the results of the regression analyses discussed in the previous section. Previously, Section 3.4 provided the regression model and the expected results for the variables employed in the regression model. Section 4.5.1 first describes the hypothesis tests performed in this research, followed by a summary of the empirical results in Table 4.9. Each hypothesis was tested using one of the three proxies of prior knowledge gained from the study of accounting at high school (see Section 3.6). Section 4.5.2 then reports the results of the hypothesis tests. Lastly, this section also reports the results of the control variables used in this research.

### 4.5.1 Tests for Hypotheses 1 – 3

There were three hypotheses in this research. Hypothesis 1 (H1) predicted that studying accounting as a subject at high school would have a positive influence on a student's self-efficacy. This was tested using the proxy called *PK*. Hypothesis 2 (H2) predicted that studying the highest level of accounting syllabus at high school would have a positive influence on a student's self-efficacy. This was tested using the proxy called *HL*. Hypothesis 3 (H3) predicted that studying any accounting syllabi at high school would have a positive

influence on a student's self-efficacy. This was tested using the proxy called *AS*. Several regression analyses were conducted using the equation presented in the regression model (see Section 3.4) to individually test H1 – H3 through its associated proxy of prior accounting knowledge. The regression model examined the effects of prior knowledge gained from the study of accounting at high school on a student's self-efficacy in an introductory tertiary accounting course; after controlling for other variables such as age, ethnicity, gender, work experience, and whether the respondent was a repeating student.

The definition of the dependent variable and the test variables are as follows. The student's self-efficacy (dependent variable) was measured using an NGSE questionnaire that was created by Chen et al. (2001). There were three proxies used to represent prior knowledge (test variable), i.e. the presence or absence of prior knowledge gained from the study of accounting at high school (i.e. *PK*), whether they studied the highest level of any accounting syllabi at high school (i.e. *HL*), and which accounting syllabi the respondent studied at high school (i.e. *AS*). *PK* was a dummy variable that was coded as one if they studied accounting at high school and zero if they did not study accounting at high school. *HL* was also a dummy variable where students who studied the highest level of any accounting syllabi at high school were coded as one, and those who did not do so were coded as zero. For *AS*, four dummy variables were created to investigate the effects of different accounting syllabi on the self-efficacy of the respondents when compared to students who did not study accounting at high school. Each dummy variable had a heading that corresponds with the type of accounting syllabi it was supposed to represent, which was coded as one if the dummy variable matches the type of accounting syllabi it supposed to represent and zero if otherwise.

The expectation for each of the three proxies of prior knowledge is as follows. The coefficient for *PK* captures the effect of studying accounting at high school on the respondent's self-efficacy. If H1 was supported, the coefficient for *PK* should be significantly positive in the regression based on the regression model. The coefficient for *HL* captures the effect of studying the highest level of any accounting syllabi at high school on the respondent's self-efficacy. If H2 was supported, the coefficient for *HL* should be significantly positive in the regression based on the regression model. The coefficient for *AS* captures the effect of studying different types of accounting syllabi at high school on the respondent's self-efficacy. If H3 was supported, the coefficient for the four dummy variables representing *AS* should be significantly positive in the regression based on the regression model.

The R-squared statistic for the regression analyses was in the vicinity of 6%. This was slightly higher than the R-squared statistic (about 4%) in research undertaken in a similar context by Beatson et al. (2018). They had investigated the effect of mastery feedback on the self-efficacy of students enrolled in an introductory tertiary accounting course. This implied that the independent variables adequately explain the variances of the dependent variable when the self-efficacy of the respondents was analysed in the current context.

Table 4.9 summarises the regression results of the tests for H1 – H3, which investigate the effect of prior knowledge gained from the study of accounting at high school on the self-efficacy of students enrolled in an introductory tertiary accounting course. In summary, there was no significant difference between the self-efficacy levels of students who had studied accounting at high school and those who did not study accounting at high school.

Table 4.9: Summary of empirical results.

	(1)	(2)	(3)
Proxy	<i>PK</i>	<i>HL</i>	<i>AS</i>
	0.650 (0.296)	0.182(0.785)	
<i>AS_NCEA</i>			0.357 (0.587)
<i>AS_CAMBRIDGE</i>			3.081 (0.105)
<i>AS_OTHERS</i>			1.404 (0.362)
<i>AGE</i>	0.197*** (0.002)	0.189*** (0.003)	0.192*** (0.003)
<i>ETHNICITY</i>	-0.613 (0.343)	-0.679 (0.297)	-0.545 (0.399)
<i>GENDER</i>	1.211** (0.042)	1.186** (0.048)	1.153** (0.054)
<i>WORKEXPERIENCE</i>	0.533 (0.533)	0.664 (0.433)	0.665 (0.440)
<i>REPEATINGSTUDENTS</i>	-1.346 (0.396)	-1.388 (0.386)	-1.590 (0.320)
Constant	25.676*** (0.001)	26.061*** (0.001)	25.782*** (0.001)
Observations (n)	272	272	272
R-squared	0.058	0.054	0.066
F test	2.697	2.518	2.315

The dependent variable was the sum of self-efficacy scores. *PK* was a dummy variable this was coded as one if the respondents studied accounting at high school and zero if they did not take accounting at high school. *HL* was also a dummy variable where students who studied the highest level of any accounting syllabi at high school were coded as one, and those who did not do so were coded as zero. For *AS*, four dummy variables were created to investigate the effects of different accounting syllabi on the self-efficacy of the respondents when compared to students who did not study accounting at high school. Each dummy variable had a heading that corresponds with the type of *AS* it was supposed to represent, this was coded as one if the dummy variable matches the type of accounting syllabi it supposed to represent and zero if otherwise. *Age* was a continuous variable that indicates how old the respondent was when the research was undertaken. *ETHNICITY* was a dummy variable where students who considered themselves as European/NZ European as coded as one, and respondents in all other ethnic groups were coded as zero. *GENDER* was a dummy variable where males were coded as one, and females were coded as zero. *WORKEXPERIENCE* was a dummy variable where respondents with prior work experiences in accounting were coded as one, and other respondents were coded as zero. *REPEATINGSTUDENTS* was a dummy variable where respondents who were repeating the introductory tertiary accounting course were coded as one, and other respondents were coded as zero. The *p-values* were in parentheses; \* indicates significance at 10%, \*\* indicates significance at 5%, and \*\*\* indicates significance at 1%.

#### 4.5.2 Test results for Hypothesis 1 – 3

Column one of Table 4.9 reports the results of the test for H1, which predicted that studying accounting as a subject at high school had a positive influence on a student's self-efficacy. H1 was tested using the proxy *PK*. The coefficient for *PK* was positive but not significant ( $\beta = .650, p = .296$ ), thus failing to support H1. This implied that accounting students with prior accounting education do not have higher self-efficacy in the introductory tertiary accounting course, relative to those who did not study accounting at high school.

Column two of Table 4.9 reports the results of the test for H2, which predicted that studying the highest level of accounting syllabus at high school would have a positive influence on a student's self-efficacy. H2 was

tested using the proxy *HL*. The coefficient for *HL* was positive but not significant ( $\beta = .182, p = .785$ ), thus failing to support H2. This implied that accounting students who studied the highest level of accounting taken at high school do not have higher self-efficacy in the introductory tertiary accounting course, relative to those who did not study the highest level of accounting at high school.

Column three of Table 4.9 reports the results of the test for H3, which predicted whether studying different accounting syllabi at high school would have a positive influence on a student's self-efficacy. H3 was tested using four dummy variables, *AS\_NCEA*, *AS\_CAMBRIDGE*, *AS\_IB*, and *AS\_OTHERS*. None of the respondents studied under an IB syllabus at high school, so the results for *AS\_IB* was unavailable. The coefficient for *HL* was positive but not significant for all 3 dummy variables: *AS\_NCEA* ( $\beta = .357, p = .587$ ), *AS\_CAMBRIDGE* ( $\beta = 3.081, p = .105$ ), and *AS\_OTHERS* ( $\beta = 1.404, p = .362$ ). Thus, H3 was rejected. This implied that accounting students who studied different accounting syllabi taken at high school do not have higher self-efficacy in the introductory tertiary accounting course, relative to those who did not study accounting at high school.

The effects of the control variables are also presented in Table 4.9 while Section 3.7 provides a summary of the expected results of the five control variables employed in this research. Only 2 of the control variables were statistically significant. These variables were Age (see Column 1, 2, and 3) and Gender (see Column 1, 2, and 3). Contrary to the expectations developed based on the research of Beatson et al. (2018), Age had a positive effect on the self-efficacy of the respondents in the sample (see Column 1, 2, and 3). In other words, older students had a higher level of self-efficacy compared to younger students. In all of the regression analyses, males have a higher self-efficacy compared to females (see Column 1, 2, and 3). The current results supported the findings of Huang (2013) but were inconsistent with the results of Byrne et al. (2014).

The other three control variables did not have a significant effect on the self-efficacy of the respondents in this research, and caution should be exercised when interpreting the effects of these control variables. For ethnicity, European/NZ European students reported lower self-efficacy levels compared to other ethnicities (see Column 1, 2, and 3). This was consistent with the findings of Beatson et al. (2018), who examined the effects of ethnicity on a student's self-efficacy within the context of an introductory tertiary accounting course. In this research, students who had prior work experience in accounting regardless of whether it was a paid or unpaid role had higher self-efficacy levels (see Column 1, 2, and 3) compared to students who had no

prior work experience. These results were consistent with the expectations of this research based on the findings of prior studies (Ineson et al., 2013; Zhao et al., 2005). Students who repeated the course had lower self-efficacy levels (see Column 1, 2, and 3) compared to first-timers. This was consistent with the findings of Tek et al. (2018), & Ünlü and Kalemoglu (2011).

## **4.6 Summary**

The empirical results of this research demonstrate that respondents who had not studied accounting before at high school had self-efficacy levels that were not significantly different from their peers who had studied that subject at high school. This was still the case even when the effects of prior knowledge gained from the study of accounting at high school was analysed in more detail, i.e. when using the highest level of prior accounting knowledge or the accounting syllabi studied at high school. These results were inconsistent with prior research in other domains such as hospitality (Ineson et al., 2013) and physics (Lindstrøm & Sharma, 2011). In other words, the study of accounting at high school does not necessarily make an individual more confident when taking an introductory tertiary accounting course at university.



## **Chapter 5: Discussion**

### **5.1 Introduction**

This chapter first provides a summary of the research results. This is followed by a summary of the role of prior knowledge in accounting education (see Section 5.2). It commences with a summary of prior studies that examine the role of prior knowledge on student learning outcomes, followed by a discussion on the effects of accounting study at high school (HS) on the respondent's self-efficacy (see Section 5.3). Using the theoretical underpinning presented in Section 2.3, Section 5.4 provides several theoretical explanations for the inconsistent findings between this research and prior studies.

### **5.2 Summary of results**

The purpose of this research was to investigate the effects of HS on the self-efficacy of students enrolled in an introductory tertiary accounting course. The empirical results of this research demonstrated that there was no significant difference between the self-efficacy levels of students who had studied accounting at high school and those who did not do so. These findings remained consistent even when the effects of two other forms of HS on the participants' self-efficacy were investigated in this research., i.e. (1) the highest level of any accounting syllabi studied at high school or (2) the type of accounting syllabi studied at high school.

### **5.3 Role of prior knowledge in accounting education**

The results of this research have demonstrated that there was no significant difference in self-efficacy levels between students who studied accounting at high school and those who did not do so. This adds to our understanding of the role of HS within accounting education. Prior research undertaken by Tan and Laswad (2008) and Koh and Koh (1999) have demonstrated that prior knowledge had a positive effect on student learning outcomes, but little is understood about why this phenomenon occurs. More recent research undertaken by Beatson et al. (2019), and Cheng and Chiou (2010) have demonstrated the links between self-efficacy and student success in accounting education. Besides that, prior studies undertaken in other domains such as mathematics (Hailikari et al., 2008) and engineering (Hutchison et al., 2006) have found that the prior knowledge had a positive effect on the self-efficacy levels of an individual. These findings suggest that self-efficacy could potentially help to explain why prior knowledge had a positive effect on student learning outcomes in prior studies undertaken by Tan and Laswad (2008) and Koh and Koh (1999).

As both self-efficacy (Beatson et al., 2019) and prior knowledge (Tan & Laswad, 2008) can positively influence a student's academic performance; it is possible that prior knowledge could affect an individual's self-efficacy. However, this research found that students who undertook HS did not have self-efficacy levels that were significantly different from their peers who did not study accounting at high school. This finding was inconsistent with those from prior studies undertaken in other disciplines such as mathematics and engineering (Hailikari et al., 2008; Hutchison et al., 2006). Prior knowledge by itself can help accounting students achieve student learning outcomes (Tan & Laswad, 2008), and personal factors like an individual's self-efficacy levels also have similar effects on the achievement of student learning outcomes (Beatson et al., 2019). However, the results of this research demonstrated that individuals who studied accounting at high school did not exhibit higher self-efficacy levels when compared to their peers who did not do so. This provides a better understanding of the role of HS in relation to an individual's self-efficacy in an introductory tertiary accounting course.

Initially, this study had hypothesised that studying the highest level of any accounting syllabi might affect the self-efficacy levels of students enrolled in an introductory tertiary accounting course based on the results of other research such as Loreman et al. (2013), and Larsen and Zahner (2011). However, the investigation into the effect of the highest level of any accounting syllabi studied at high school on a student's self-efficacy is similar to that of the presence or absence of HS; i.e. there was no significant difference in self-efficacy levels between students who had studied the highest level of any accounting syllabi at high school and those who did not study that subject at high school. First-year accounting students should not be concerned that they might be disadvantaged by not studying the highest level of any HS.

Besides the highest level of any accounting syllabi studied at high school, this study also found that there was no significant difference in self-efficacy levels between students who had studied any type of accounting syllabi and those who did not study accounting at high school. There are no other known studies that have simultaneously evaluated the effects of different accounting syllabi on self-efficacy. This study is the first one to do so when it investigated the effects of the type of accounting syllabi on the self-efficacy levels of the participants. In Section 2.7.3, it was hypothesised that students who studied accounting at high school would have higher self-efficacy levels when compared to students who did not do so, regardless of the type of accounting syllabi they studied at high school. However, the results of this research demonstrate

otherwise. When deciding on which accounting syllabi to study at high school, prospective students should be aware that the type of accounting syllabi studied at high school does not appear to have a positive effect on their self-efficacy levels.

The results of this research will also provide accounting educators with greater insights. As per the results of this research, the prior study of accounting at high school did not necessarily confer any benefits upon the self-efficacy of the research participants. Hence, those who are advising students about what to study after the completion of high school studies should be cautious when giving such advice. They should consider the current research results and not just rely on anecdotal accounts when advising the students. Lecturers, accounting teachers at a high school level, career counsellors and other parties should not discourage students from majoring in accounting at a tertiary level just because they had not studied accounting as a subject at high school. In addition to that, university lecturers should not assume that students would be more confident (i.e. have higher levels of self-efficacy) just because they had studied accounting at high school. In future, accounting faculties should also consider the prior results of the students and not just whether they have studied accounting at high school (see Section 5.4.2); when developing strategies to help improve student learning outcomes for students enrolled in an introductory tertiary accounting course. This is because performance feedback in the forms of midterm examination grades was found to have a positive effect on a student's self-efficacy (Beatson et al., 2018). The findings of Beatson et al. (2018) suggests that it could be the student's high school accounting results that can affect the self-efficacy of students enrolled in an introductory tertiary accounting course.

## **5.4 Theoretical explanations for the inconsistency of empirical results with prior research**

This research used Social Cognitive Theory as its theoretical underpinning. Central to this theory is the concept of Triadic Reciprocal Determinism; which states that personal, behavioural and environmental factors affect each other reciprocally in different magnitudes (Bandura, 1986). This researcher created a model based on the concept of Triadic Reciprocal Determinism, and it demonstrated that this concept is a 3-way multidirectional relationship between a person's behaviour, personal and environmental factors have on each other. However, the relationship between the factors in the model does not occur in a simultaneous

manner (Bandura, 1986). This allows research that utilises Social Cognitive Theory to investigate several factors of interest without having to study every single factor that might affect the results of the study (Bandura, 1986).

In this research, the impact of HS (a behavioural factor) on a student's self-efficacy (a personal factor) was investigated when the participants had recently enrolled in an introductory tertiary accounting course. It was found that there was no significant difference in the self-efficacy scores of the research participants when their scores were analysed based on their educational background, i.e. the absence or presence of HS (a behavioural factor). Several explanations are provided for the results of this research. First, this study presented a discussion on environmental factors that could have influenced the results of this study; they are (1) the high school accounting curriculum and (2) the university accounting curriculum (i.e. the accounting syllabus taught at the introductory tertiary accounting course). Second, this research also suggested an alternative factor that could affect the self-efficacy of the research participants in Section 5.4.2, i.e. prior results (a behavioural factor). A summary of the above environmental, personal and behavioural factors are represented in a Triadic Reciprocal Determinism model (see Figure 5.1). Third, this study also provides two other explanations that are not related to the Triadic Reciprocal Determinism model in Section 5.4.3 and Section 5.4.4. These explanations include (1) the perception of individuals that other sources of self-efficacy are stronger than enactive mastery experiences (Beatson, 2019), and (2) the suitability of the self-efficacy scales used in this research.

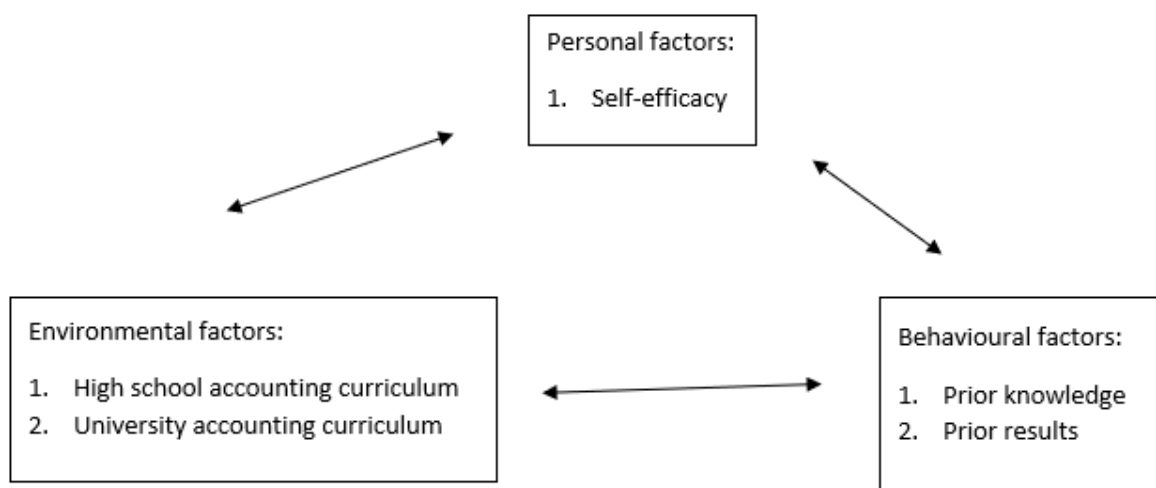


Figure 5.1: Triadic Reciprocal Determinism of factors discussed in this research

#### 5.4.1 Syllabus differences/connectivity

This research found that there was no significant difference in self-efficacy levels between students who had studied accounting at high school and those who did not study that subject at high school; even when the effects of HS on self-efficacy was evaluated in more detail using the highest level of any accounting syllabi at high school or the type of accounting syllabi studied at high school. Such results were inconsistent with prior research undertaken by Ineson et al. (2013), Usher and Pajares (2009), and Hutchison et al. (2006).

One of the reasons for the empirical results might be the relationship between HS and the course content of an introductory tertiary accounting course. The high school accounting syllabi has been largely static, and there had been no radical change in its focus (Greig, 2018); i.e. the focus on bookkeeping skills such as recording transactions using the double-entry system. Meanwhile, calls to update the accounting syllabi in tertiary accounting courses by the Accounting Education Change Commission (1990) and Behn et al. (2012) have driven several changes to the syllabi of introductory tertiary accounting courses; e.g. an increased focus on teaching students about the application of accounting knowledge in the current business environment, and how financial information organised through accounting would affect decision-making at the organisation (Accounting Education Change Commission, 1990). The above discussion demonstrated that while high school accounting tends to focus on traditional bookkeeping aspects of accounting, the emphasis of an introductory tertiary accounting course at this university is about understanding how accounting is used as a tool to support individual businesses in terms of the management of financial resources. Prior knowledge

gained from HS may not influence an individual's self-efficacy due to its difference with the course content of an introductory tertiary accounting course; this might not be the case in other disciplines which have found that the prior knowledge had a positive effect on the self-efficacy levels of an individual (Hailikari et al., 2008; Hutchison et al., 2006)

A potential area for future research is the way HS is measured when investigating its effects on self-efficacy levels. While the current research examined the effect of the highest level of accounting studied at high school, a case could also be made for examining the first level of accounting studied at high school. This research evaluated the effects of the highest level of any accounting syllabi at high school on self-efficacy levels, as prior literature in accounting have discussed the effects of the highest level of any accounting syllabi at high school on student learning outcomes (Keef & Hooper, 1991). Their research provided this study with a systematic method to assess the highest level of any accounting syllabi at high school, which could then be applied to different accounting syllabi. For the type of accounting syllabi studied at high school, this research individually compared the effects of different accounting syllabi to those who did not study accounting at high school. There was no comparison between different types of accounting syllabi studied at high school because there was a great imbalance between different types of accounting syllabi studied at high school among the sample and even the absence of one accounting syllabi (i.e. IB). Hence, future research could compare the effects of different types of accounting syllabi on the self-efficacy levels of accounting students.

#### **5.4.2 Alternate factor to prior knowledge: Prior results.**

There may be other factors besides HS that could affect the self-efficacy of students enrolled in an introductory tertiary accounting course. Another study similar to this research found that enactive mastery experiences in the form of midsemester test results had a positive effect on a student's self-efficacy within a similar course (Beatson et al., 2018). Their finding suggests that the academic results of accounting studied at high school that might influence the self-efficacy levels of students enrolled in an introductory tertiary accounting course, rather than prior knowledge. However, it should be noted that the research scope of both studies was similar but not identical; and this could have affected the research results of each respective study. Beatson et al. (2018) investigated the effect of the students' mid-semester results in the introductory tertiary accounting course on their self-efficacy, while the current study investigated the effects of high

school accounting on the self-efficacy of students enrolled in an introductory tertiary accounting course. The generality of self-efficacy depends on several factors such as the similarity of the activities, the circumstances of the individual, or even their personal characteristics which could dictate the way they act in different scenarios (Bandura, 1997). For these reasons, it is possible that the self-efficacy of accounting students was generalisable within the same course as in the study of Beatson et al. (2018), but not across different courses as demonstrated in this research.

The results of Beatson et al. (2018) were also supported by other studies (Daniels & Larson, 2001; Duijnhouwer, Prins, & Stokking, 2010; Panadero, Tapia, & Huertas, 2012). These studies were undertaken in different disciplines such as counselling (Daniels & Larson, 2001), geography (Panadero et al., 2012) and psychology (Duijnhouwer et al., 2010). Performance feedback can be described as the act or process of informing students about their performance in a specific task. In general, they found that performance feedback about positive performance could improve an individual's self-efficacy while performance feedback about negative performance had the opposite effect. Such results demonstrated that the effects of performance feedback as an indication of enactive mastery experience is not limited to accounting education. While the previously discussed anecdotal accounts emphasised on the importance of HS (see Section 5.4.1), the results of the above studies suggest that prior results delivered in the form of performance feedback should be given more attention due to its demonstrated relationship with an individual's self-efficacy. Subsequent accounting education research could investigate the effects of academic results rather than the presence or absence of HS on an individual's self-efficacy levels in other tertiary accounting courses.

#### **5.4.3 Perception of other sources of self-efficacy**

Another potential explanation for the current research results is that enactive mastery experiences may not be the strongest source of self-efficacy among students enrolled in an introductory tertiary accounting course. When the average self-efficacy levels are reported by means for the population of the research, verbal persuasion had the most positive influence on the student's self-efficacy (Beatson, 2019). However, the researcher also found that when analysed by gender, both males and females believed that prior knowledge contributed the most to their self-efficacy within that course when the mean self-efficacy scores were analysed. While Beatson (2019) explained that the timing of the survey distribution (i.e. before the final exams) could have led to the above results; the findings of the researcher could also suggest that there could

be other sources of self-efficacy that have a stronger effect on an accounting student's self-efficacy than enactive mastery experiences. Alternatively, enactive mastery experiences alone might not be enough to influence the self-efficacy levels of the participants and that it accumulates with other self-efficacy sources to affect an individual's self-efficacy (Bandura, 1986).

Future research should investigate other potential sources of self-efficacy in accounting education. This could either be undertaken in a context similar to this research or at other higher-level accounting courses. According to Bandura (1977a), there are four sources of self-efficacy, i.e. performance accomplishments, vicarious experiences, verbal persuasion and physiological states. Besides performance accomplishments (enactive mastery experiences), the effect of other self-efficacy sources has yet to been investigated within accounting education. The potential effects of these sources on an accounting student's self-efficacy might be stronger or weaker than performance accomplishments. It is even possible that an individual's self-efficacy is affected by multiple sources of self-efficacy (Bandura, 1977a). Beatson (2019, p. 116) had previously evaluated "students' perceptions of the influence of the various sources of self-efficacy" and linked these perceptions to their final grades. The above research is not to be mistakenly interpreted as investigating the effects of different sources on an individual's self-efficacy (Beatson, 2019). In future, the purpose of self-efficacy research within the accounting education field should be to empirically establish the effects of the four sources of self-efficacy on the self-efficacy levels of accounting students. This is because self-efficacy is still largely considered an under-researched area in accounting education (Beatson, 2019). Such research would likely be similar to prior studies undertaken in other disciplines such as mathematics (Lent et al., 1991) or sciences (Britner & Pajares, 2006).

#### **5.4.4 Self-efficacy scales.**

An adapted version of the New General Self-Efficacy scale (NGSE) was used in this research following the study of Ineson et al. (2013). While the NGSE scale was adapted in this research to be more course-specific, it is unclear if such adaptations are adequate to measure the self-efficacy of the research participants as discussed by Bandura (2006). Different results might have been achieved using a different self-efficacy questionnaire, such as the one developed by Byrne et al. (2014). As discussed earlier in Section 3.2, the NGSE questionnaire was adapted for this research as its short length meant that the in-class data collection process would be less disruptive to the ongoing lecture. Furthermore, the length of the questionnaire might



have impacted the response rates as respondents are more likely to complete a short questionnaire rather than a long one (Edwards et al., 2002). Beatson et al. (2018, p. 59) also found that there were three distinct factors related to the self-efficacy of accounting students:<sup>20</sup>

*“Self-efficacy in ability to do well in the course (academic success), self-efficacy in the ability to participate in the course and seek the needed help to do well (academic help seeking), and self-efficacy in the ability to structure the learning environment in order to achieve (academic organization).”*

This research used an adapted version of the NGSE questionnaire to measure the respondents’ self-efficacy levels. A comparison between the questionnaire used in this research and the one used by Beatson et al. (2018) shows that the questionnaire in this research appears to be measuring the participants’ self-efficacy in their ability to do well in the course (academic success). For example, one of the questions in the questionnaire used in this research is “even though things get tough, I can perform quite well in this course”. This statement is similar to another statement in the questionnaire of (Beatson et al., 2018, p. 65), i.e. “pass this course”. HS might affect one’s self-efficacy in terms of academic help seeking or academic organization rather than academic success. This provides an avenue for future research.

## **5.5 Summary**

This chapter first provided a summary of the research results. This was followed by a discussion of the role of HS in light of prior studies within the accounting education field and the current research results. Finally, theoretical explanations are provided to explain the results of this study as it was inconsistent with similar research undertaken in other contexts.

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<sup>20</sup> The research that led to the initial discovery of three distinct factors related to self-efficacy were first presented in a conference paper in 2016. In an email correspondence, Dr Beatson mentioned that their 2016 works had been incorporated into an article published in 2018 (see Beatson et al. (2018)). A copy of the 2016 conference paper was not provided to the researcher during the write-up of this research.

## Chapter 6: Conclusion

This study set out to investigate the effects of accounting study at high school (HS) on the self-efficacy of students enrolled in an introductory tertiary accounting course. In summary, this research demonstrated that there was no significant difference between the self-efficacy levels of students who had studied accounting at high school and those who did not. Even when the effect of prior accounting knowledge was analysed in more detail using the highest level of any accounting syllabi studied at high school or the type of accounting syllabi studied at high school; the findings of this research were still inconsistent with prior research undertaken by Hutchison et al. (2006), Ineson et al. (2013), and Usher and Pajares (2009). The possible reasons for this inconsistency are the difference between university and high school accounting syllabi, alternate factors that could be a better predictor of self-efficacy (i.e. prior results), the potential impact of other sources of self-efficacy besides enactive mastery experiences (i.e. vicarious experiences, verbal persuasion and physiological states), or the self-efficacy scales used in the research. The results of this research had two practical implications; (1) high school teachers, lecturers, and career counsellors should not discourage students who did not study accounting at high school from undertaking accounting studies at university, and (2) studying accounting at high school would not necessarily make an individual more confident over their peers who did not study that subject when both groups attempt an introductory tertiary accounting course.

### 6.1 Contributions

The findings of this research make the following contributions. First, this study has examined the effects of HS on self-efficacy in the accounting discipline. Besides the presence of HS, this research also investigated the effect of the highest level of any accounting syllabi studied at high school and the type of accounting syllabi studied at high school on the self-efficacy levels of the respondents. This method of assessing HS was unlike Lindstrøm and Sharma (2011), who only examined the effect of prior knowledge on the self-efficacy using the presence or absence of prior knowledge among tertiary physics students who just finished high school. By analysing the effects of different forms of prior accounting knowledge (*PK*, *HL*, and *AS* in Section 3.6) on self-efficacy levels, the results of this research became more meaningful as opposed to; if only the effects of the presence or absence of prior knowledge on self-efficacy levels were investigated.

Second, the results of this research provide accounting educators with more insights when developing strategies to improve student learning outcomes. They should not assume that students would be more confident (i.e. possess a higher level of self-efficacy) just because their students had studied accounting at high school. In future, accounting faculties should also consider the prior results of the students besides whether they had studied accounting at high school; when developing strategies to improve student learning outcomes for students enrolled in an introductory tertiary accounting course. This was because performance feedback in the forms of midterm examination grades was found to have had a positive effect on a student's self-efficacy (Beatson et al., 2018). The findings of Beatson et al. (2018) suggested that it could be the student's high school accounting results which affect the self-efficacy of students enrolled in an introductory tertiary accounting course.

Third, the research results make a theoretical contribution by establishing that prior knowledge does not necessarily confer any benefits upon the self-efficacy of an individual; especially when there were few similarities between prior knowledge and the current course studied by the student (see Section 5.4.1). While past research has found that prior knowledge can affect an individual's self-efficacy (Ineson et al., 2013; Usher & Pajares, 2009), this is not always the case as demonstrated through the results of this research.

## **6.2 Limitations**

As with most studies undertaken within a single institution, the generalisability of the results is limited to the sample used in this research. Further research needs to be undertaken to ascertain the generalisability of these results. Additionally, there were also a few issues with the sample of this research. First, the sample was representative of the population in terms of age and gender (when other genders were excluded), but its representativeness in terms of ethnicity has not been established. For ethnicity, it is not possible to compare the university enrolment data with the questionnaire responses. This is because the ethnicity information provided by the university differs from the category classification on the questionnaire. This research excluded questionnaires from respondents of other genders due to statistical issues (i.e. multicollinearity). While other researchers have done so (Beatson et al., 2019), a disclaimer should be made about the results. The results of the research in no way captures the effect of prior accounting knowledge on the self-efficacy of students who do not conform to traditional gender classifications like males and females. Second, the sample had a majority of respondents who took NCEA, a minority of the sample which took other forms

accounting syllabi (i.e. “Cambridge” and “Others” on the questionnaire), and none of the respondents studied IB. The absence of respondents studying IB and high numbers of students studying the national curriculum (NCEA) suggests that results of the research might be biased, and that caution needs to be exercised when interpreting the results of this research. This research only considered prior knowledge gained from HS or by repeating the introductory tertiary accounting course. Besides these two sources, there are other ways that an individual may be able to gain accounting knowledge. This could also affect their self-efficacy levels in the introductory tertiary accounting course.

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## Appendix A: Ethics approval



### Auckland University of Technology Ethics Committee (AUTEC)

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1 February 2019

Paul Wells  
Faculty of Business Economics and Law

Dear Paul

Ethics Application:      19/21 The effect of prior knowledge on self-efficacy: An empirical study involving students enrolled in an introductory accounting course

I wish to advise you that a subcommittee of the Auckland University of Technology Ethics Committee (AUTEC) has approved your ethics application.

This approval is for three years, expiring 31 January 2022.

**Standard Conditions of Approval**

1. A progress report is due annually on the anniversary of the approval date, using form EA2, which is available online through <http://www.aut.ac.nz/research/researchethics>.
2. A final report is due at the expiration of the approval period, or, upon completion of project, using form EA3, which is available online through <http://www.aut.ac.nz/research/researchethics>.
3. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form: <http://www.aut.ac.nz/research/researchethics>.
4. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
5. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.

Please quote the application number and title on all future correspondence related to this project.

AUTEC grants ethical approval only. If you require management approval for access for your research from another institution or organisation then you are responsible for obtaining it. You are reminded that it is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard.

For any enquiries please contact [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz)


Yours sincerely,



Kate O'Connor  
Executive Manager  
Auckland University of Technology Ethics Committee

Cc: [yvw8931@autuni.ac.nz](mailto:yvw8931@autuni.ac.nz); Katie Tseng

## Appendix B: Research questionnaire



**Participant Information Sheet**

**Date Information Sheet Produced:**  
15 January 2018

**Project Title**  
The effect of prior knowledge on self-efficacy: An empirical study involving students enrolled in an introductory accounting course.

**An Invitation**

My name is Nicolas Choo and I am conducting this research as part of my studies for a Master of Business at AUT. The target respondents are accounting students taking (BUSS503: Financial Decision Making), and participation in this research would involve the completion of an anonymous survey questionnaire. I would encourage you to take part in this research as the results would help educators better understand students taking accounting courses; and this could improve the educational experience received by participants and future students taking accounting courses. As a bonus, completion of the survey form would earn you a free chocolate fish (redeemable upon submission).

**What is the purpose of this research?**

The purpose of this research is to examine the effect of prior knowledge in accounting on tertiary students, who are currently taking an introductory accounting course (BUSS503: Financial Decision Making). The results of this research will be documented in a thesis to fulfil the requirement of a Master of Business at AUT.

**How will my privacy be protected?**

This is an anonymous survey. After all responses have been compiled, it would be impossible to match anyone to their responses.

**How do I agree to participate in this research?**

Your participation in this research is voluntary and your choice to participate will neither advantage nor disadvantage you. You can withdraw from the study at any time prior to submitting the completed survey forms. As this is an anonymous survey, it would not be possible to withdraw from the study once you have submitted the survey form. By completing the survey form and submitting it, you have given your consent to participate in this study.

**What do I do if I have concerns about this research?**

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor: Dr. Paul Wells, paul.wells@aut.ac.nz, Mobile: 027 4765 519.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, Kate O'Connor, ethics@aut.ac.nz, 921 9999 ext 6038.

**Whom do I contact for further information about this research?**

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Survey questionnaire.

Part A: demographic questions

Campus	City <input type="checkbox"/>	South <input type="checkbox"/>	
Gender	Male <input type="checkbox"/>	Female <input type="checkbox"/>	Other <input type="checkbox"/>
Age	<hr/>		
Primary ethnicity	European/NZ European	<input type="checkbox"/>	
	Maori	<input type="checkbox"/>	
	Pasifika	<input type="checkbox"/>	
	Asian	<input type="checkbox"/>	
	Middle Eastern/Latin American/African	<input type="checkbox"/>	
	Other Ethnicity	<input type="checkbox"/>	

1. Are you a repeating student in this course (course name)? Yes ☐ No ☐

2. Have you undertaken any previous work in accounting (paid/unpaid)? Yes ☐ No ☐

3. Did you complete any accounting studies at high school or secondary school? If yes, then select the most recent one.

Note: If you did not study accounting at high school, please skip this section and go to Part B.

NCEA (level 1, level 2, level 3)	Level 1 <input type="checkbox"/>	Level 2 <input type="checkbox"/>	Level 3 <input type="checkbox"/>
Cambridge (O-Levels, A-Levels, IGCSE)	O-Levels <input type="checkbox"/>	IGCSE <input type="checkbox"/>	A-Levels <input type="checkbox"/>
International Baccalaureate (IB)	IB <input type="checkbox"/>		
Other accounting syllabus not mentioned above	Other <input type="checkbox"/>		

Please turn over

## Part B: Self-efficacy statements

There is no right or wrong answer. Please use the 5-point scale to express the how you feel about each statement.

Statements	(strongly disagree)			(strongly agree)	
1. I will be able to achieve most of the goals that I have set for myself in this course.	1	2	3	4	5
2. When facing difficult tasks in this course, I am certain that I will accomplish them.	1	2	3	4	5
3. In general, I think that I can obtain outcomes that are important to me in this course.	1	2	3	4	5
4. I believe I can succeed at most endeavors to which I set my mind to in this course.	1	2	3	4	5
5. I will be able to successfully overcome many challenges in this course.	1	2	3	4	5
6. I am confident that I can perform effectively on many different tasks in this course.	1	2	3	4	5
7. Compared to other people, I can do most tasks very well in this course.	1	2	3	4	5
8. Even when things get tough, I can perform quite well in this course.	1	2	3	4	5