

# Factors that Influence First-year Students' Academic Performance in Introductory Accounting: a Systematic Literature Review and Avenues for Future Research

*Corlia Joynt*

## **Abstract**

This study involved a systematic review of academic research conducted between 1968 and 2022 on the factors that predict academic performance in introductory accounting. Several significant predictors including prior knowledge in accounting, academic aptitude and mathematical ability, as well as personal attributes like grit and self-efficacy have been shown to influence student success in this field. The study's findings will assist educators to adapt their programmes and integrate these predictive factors. Moreover, this research expands on the theoretical framework established by Rankin, Silvester, Wallely and Wyatt (2003), offering a holistic perspective and highlighting potential areas that warrant further investigation. Future research could explore the role of critical reasoning skills and reading comprehension's impact as predictors of academic performance in introductory accounting.

**Key words:** predictive factors, introductory accounting, high school accounting, academic performance, systematic review, theoretical framework

## **Résumé**

Cette étude a consisté en un examen systématique des recherches universitaires menées entre 1968 et 2022 sur les facteurs qui permettent de prédire les résultats scolaires dans les cours d'introduction à la comptabilité. Plusieurs prédicteurs significatifs, notamment les connaissances préalables en comptabilité, les aptitudes scolaires et mathématiques, ainsi que des attributs personnels tels que le courage et

---

**ABOUT THE AUTHOR:** CORLIA JOYNT, University of Pretoria, South Africa, email: corlia.joynt@up.ac.za

l'auto-efficacité, se sont avérés influencer la réussite des étudiants dans ce domaine. Les résultats de l'étude aideront les éducateurs à adapter leurs programmes et à intégrer ces facteurs prédictifs. En outre, cette recherche développe le cadre théorique établi par Rankin et al. en offrant une perspective holistique et en mettant en évidence les domaines potentiels qui méritent d'être étudiés plus avant. Des recherches futures pourraient explorer le rôle des compétences de raisonnement critique et l'impact de la compréhension de la lecture en tant que facteurs prédictifs de la performance académique dans l'introduction à la comptabilité.

**Mots clés :** Facteurs prédictifs, introduction à la comptabilité, comptabilité au lycée, résultats scolaires, examen systématique, cadre théorique.

### Introduction

South Africa's unemployment rate of 32.9% in 2023 (Statistics South Africa (Stats SA), 2023) is among the highest in the world. A shortage of qualified professionals, managers and other high demand occupations was reported at the same time (Department of Higher Education and Training (DHET), 2020), with 58 such occupations in the professional and managerial fields. Thirty-eight per cent of degrees preparing graduates for these occupations will require introductory accounting (or first-year accounting) (DHET, 2020). However, accounting is perceived as difficult to master, especially if a student did not take this subject at school (Friedlan, 1995; Mladenovic, 2000; Goldstein, Sauer, and O'Donnell, 2014). This leads to anxiety, low self-efficacy and even depression (Byrne, Flood and Griffin, 2014). Students are also aware of the courses with a high failure rate, negatively influencing self-efficacy (Sharma, 1997).

The South African education system fails to produce satisfactory throughput rates – measured from the start of school (Grade 1) to graduation with an undergraduate qualification. Only 4% of students (measured from Grade 1 intakes) obtain a three-year degree within six years (Council on Higher Education (CHE), 2017). The fact that most BCom programmes at South African universities require that students complete a course in introductory accounting exacerbates the problem. The Department of Basic Education (DBE) offers accounting as a Grade

12 subject, but the number of students enrolled for accounting in this grade declined by 47% from 2009 to 2020 (DBE, 2012, 2020).

In this context, it is important for educators to ascertain the factors associated with academic performance in introductory accounting.

Early research on predictors of academic performance in accounting focused on school subjects such as accounting, mathematics, economics, and English. Studies conducted since 1986 explored additional factors like academic ability, university entrance scores, and effort as indicators of motivation. However, these studies yielded contradictory results. Prior to Rankin et al.'s theoretical framework in 2003, research on these factors was fragmented and lacked integration. Rankin et al. consolidated these disparate traits into a comprehensive framework, providing a common theoretical basis to understand academic performance in accounting (Rankin, Silvester, Vallely, and Wyatt, 2003).

Numerous studies have been conducted on a range of diverse topics subsequent to the development of Rankin et al.'s framework, calling for an update of this theoretical construct. This study aimed to promote informed, methodical academic research on this issue by synthesising existing knowledge and identifying gaps within the research landscape. It thus not only adds to the body of knowledge but also facilitates decision-making grounded in empirical evidence.

The aim of the study was to systemically review existing research on the factors predicting academic performance in introductory accounting. This will enable educators to adjust current programmes to incorporate the development of these factors or traits. The study also expands the theoretical framework proposed by Rankin et al. (2003) (see Figure 1).

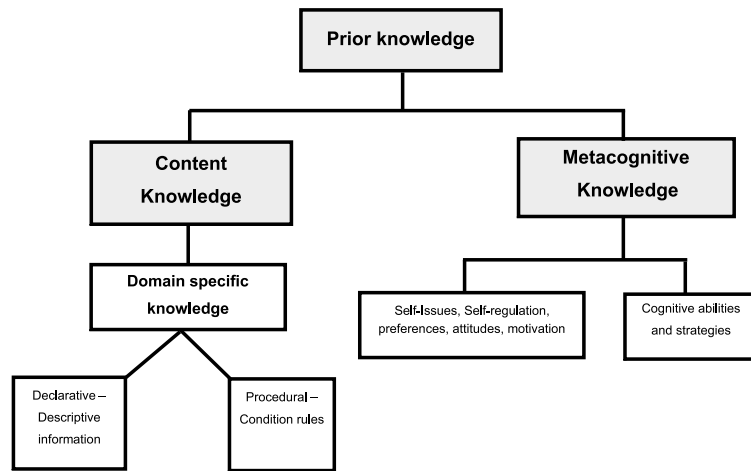


Figure 1: The theoretical framework for prior knowledge (Rankin et al., 2003)

Relevant articles, including published and unpublished literature dating back to 1968 are reviewed. However, the methodology does not make any claim to completeness. The author aimed to incorporate relevant South African and international literature to provide a comprehensive review of existing literature and to identify avenues for future research.

The article is organised as follows: The next section describes the methodology employed to select and analyse the articles under review. This is followed by a discussion on the predictive factors for academic performance, including a schematic illustration of the categorisation of the themes as an expansion of the theoretical framework proposed by Rankin et al. (2003). The gaps in the literature are explored in the second to last section and the final section concludes with implications for policy makers, academics and career advisors.

### Methodology

The literature review followed the systematic approach outlined by Tranfield, Denyer, and Smart (2003) that is considered scientific, transparent, and reproducible by other researchers. Tranfield et al. (2003) identified the following six steps which were employed to conduct the review.

### Identification of Research and Databases

Keywords were derived from the research question and formed into a search string. The search string was used to query titles and abstracts in academic publications, utilising research databases like EBSCOHost and Taylor and Francis. As the field is well-established, the search was restricted to the two theses (that formed the seminal works) and peer-reviewed academic journals listed by the Australian Business Deans Council (ABDC) for 2022.

The research question was ‘Which factors are associated with academic performance in an introductory accounting course?’ The search string used for the databases (with slight adjustments depending on the requirements of each search function) was “Introductory accounting” OR “First-year accounting” AND “Predictors” OR “Determinants” OR “Indicators” OR “Factors” AND “Academic achievement” OR “Academic performance” OR “Academic success”. Figure 1 shows the database search results.

### Inclusion and Exclusion criteria

Academic material was included based on the following criteria:

- The main aim or purpose was to explore factors that could predict academic performance in introductory or first-year financial accounting.
- Studies that included students in various years of study (i.e., introductory and intermediate accounting) on condition that students in introductory accounting formed part of the sample and results were demarcated for this specific group.
- For academic articles, only peer-reviewed journal papers were considered, not books or conference proceedings.
- Academic work that fell within the scope of Rankin’s theoretical framework or expanded on factors included in it.
- Written in English, or when written in another language, available in English.
- Published in any year.

Articles were excluded from the review if:

- The journal was not included in the ABDC list for 2022.
- The study only explored later years of study, e.g., intermediate, second-year, final year of accounting or postgraduate studies.

- c. The study was in fields other than financial accounting.
- d. Thematically differed from Rankin's theoretical framework; therefore, studies that explored the effect of participation in supplemental instruction, strategies for student retention, delivery mode, teaching styles, curriculum design and transition from school to university were excluded.

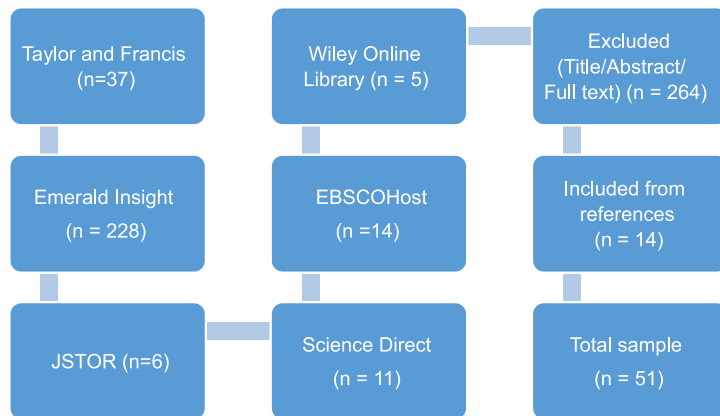


Figure 2: Flowchart of studies identified, excluded and included

### Selection of Studies

The inclusion and exclusion criteria were applied to all the studies identified during the preliminary search using the key words. The reference list of these studies was used to identify those that were not included in the initial search. This resulted in the addition of 14 studies. In total, 51 studies were reviewed, two of which were theses.

### Assessment of Quality

No additional quality measures were employed; instead, the quality of the articles was assumed based on their inclusion in the ABDC list and the journal rankings ranging from A\* to C. The inclusion of the selected theses was based on their status as seminal works.

### Data Extraction

Articles that met the requirements were read and specific information, i.e., predicting factor or method and results were documented.

### Data Synthesis

The results from the studies were synthesised to expand the theoretical framework.

### Results of the Literature Review

Table 1, located at the conclusion of this article, presents the findings from each study. The following section examines the significance of the results pertaining to each predictor.

### Factors Affecting Academic Performance

#### *Prior Knowledge of Accounting*

Multiple studies have concluded that taking accounting at school contributes to academic performance in introductory accounting (Smith, 1968; Mitchell, 1985; Schroeder, 1986; Eskew and Faley, 1988; Farley and Ramsay, 1988; Keef and Hooper, 1991; Doran, Bouillon and Smith, 1991; Loveday, 1993; Tickell and Smyrniotis, 2005; Tan and Laswad, 2008). The overlap between school and university accounting curricula is proposed as a possible explanation (Rankin et al., 2003), particularly in South Africa (Rowlands, 1988; Van Rensburg, Penn and Haiden, 1998). However, caution should be exercised in generalising the findings without considering the overlap between curricula (Mitchell, 1988).

Despite the positive impact of taking accounting at school, some studies suggest that students without prior accounting knowledge demonstrate greater academic progress, possibly indicating diminishing benefits over time (Smith, 1968; Jacoby, 1975; Bartlett, Peel and Pendlebury, 1993; Xiang and Gruber, 2012). For example, Van Rensburg et al. (1998) found that South African students who did not study accounting in high school outperformed their peers in second-year accounting. Other studies also reported no or limited benefits of taking accounting at school for university-level students, although the degree of curriculum overlap and learning approaches were not explicitly considered (Baldwin and Howe, 1982; Keef, 1988; Koh and Koh, 1999; McDowall and Jackling, 2006; Byrne and Flood, 2008).

The duration and performance in high school accounting may influence academic performance in introductory accounting. Students with more than one year of accounting in high school tend to outperform

those with no prior accounting, while the level of prior exposure to accounting may not significantly affect introductory accounting performance (Schroeder, 1986; Farley and Ramsey, 1988; Keef, 1988). However, differences in curricula could contribute to the mixed results across studies.

Improvements in research rigour have led to regression analyses being conducted, expanding the number of independent variables to examine the effect of taking accounting at school (Eskew and Faley, 1988). Recent studies continue to support the argument that high school accounting knowledge is beneficial to students, at least initially, even if the benefits may erode over time (Boshua and Van der Nest, 2015; Xiang and Gruber, 2012).

#### *Academic Aptitude*

Academic aptitude refers to a student's ability to absorb and retain information, encompassing cognitive skills that contribute to academic success (Thompson and Zamboanga, 2004). It serves as a proxy for intelligence, commitment, and diligence (Auyeung and Sands, 1994; Seow et al., 2014).

Various proxies have been used to measure academic aptitude and examine its impact on academic performance. Common measures include university entrance examinations (Schroeder, 1986; Eskew and Faley, 1988; Rankin et al., 2003) and Grade Point Average (GPA) or the South African academic performance score (APS) based on high school performance (Doran et al., 1991; Van Rensburg et al., 1998; Koh and Koh, 1999; Tickell and Smyrnios, 2005). Some studies also use a dummy variable for accounting as a major to proxy academic aptitude (Doran et al., 1991).

Many of the reviewed studies highlight the substantial role played by academic aptitude as a predictor of academic performance in accounting, with some researchers even regarding it as the most influential factor (Doran et al., 1991; Seow et al., 2014). The significance of academic aptitude has been reinforced by several studies (Koh and Koh, 1999; Rohde and Kavanagh, 1996; Rankin et al., 2003; Tickell and Smyrnios, 2005; Byrne and Flood, 2008). Nonetheless, it is crucial to interpret academic aptitude in conjunction with motivation and other non-cognitive variables such as expectations (Tepper and Yourstone, 2015).

This will enable a more comprehensive understanding of the predictors of academic performance in accounting.

#### *Mathematics at School*

Accounting has its roots in mathematics, particularly arithmetic (Sangster, Stoner, and McCarthy, 2008). Numerical understanding is thus essential for success in accounting studies (Collier and McGowan, 1989). In South Africa, mathematics is a prerequisite for undergraduate accounting studies.

The potential impact of mathematical ability (prior knowledge of mathematics) was recognised by Mitchell (1985), who recommended including a proxy for mathematics performance in studies on predictive factors of success in accounting. Mitchell (1988) later concluded that students who did not complete high school mathematics were at higher risk of underperforming in university-level accounting. Subsequent studies concluded that mathematical aptitude (sometimes referred to as numerical aptitude) served as a significant predictor (Eskew and Faley, 1988; Farley and Ramsey, 1988; Gul and, Fong 1993; Tho, 1994; Seow, Pan, and Tay, 2014). Van Rensburg et al. (1998) included mathematics as a predictive factor in a South African study but did not report its significance. Boshua and Van der Nest (2015) found mathematics to be a significant predictor of academic success in South African accounting.

While most studies confirmed the significant influence of prior mathematical knowledge, contradictory findings were also reported, making the findings inconclusive without considering the specific study contexts (Keef, 1988; Bartlett et al., 1993; Lane and Porch, 2002b).

#### *Language*

Language skills, including speaking, writing, and understanding, are part of cognitive abilities and play a crucial role in academic progress. Comprehension of spoken and written language is necessary to learn from lectures, textbooks, and assessments. Cognition encompasses a student's ability to regulate and evaluate comprehension, referred to as meta-comprehension (Schleifer and Dull, 2009). Second language learners, who constantly evaluate their understanding of both language and concepts, are often more cognitively and metacognitively engaged (Tan and Laswad, 2008).

### *Gender*

Strategy knowledge – as part of metacognition – includes learning strategies, time management, allocation of resources, and monitoring and evaluation of the learning processes used (Dochy and Alexander, 1995). The learning approaches of male and female students tend to differ (Elias, 2005); it is thus pertinent to determine the effect of gender on academic performance in introductory accounting, as this may influence the accounting pedagogy. The inclusion of gender as a variable in regression models has also resulted in numerous contradictory findings, which has led to the formation of three schools of thought:

- men outperform women (Bartlett et al., 1993; Koh and Koh, 1999; Lipe, 1989; Seow et al., 2014);
- women outperform men (Mutchler, Turner and Williams, 1987; Tyson, 1989; Tan and Laswad, 2008); and
- gender is an insignificant variable with little explanatory value for variance in performance (Eskew and Faley, 1988; Buckless, Lipe and Ravenscroft, 1991; Carpenter, Friar and Lipe, 1993; Tho, 1994; Gist, Goedde and Ward, 1996; Lee, 1999; Tickell and Smyrnios, 2005; McDowall and Jackling, 2006; Byrne and Flood, 2008).

The results from prior research render the effect of gender inconclusive.

### *Motivation*

Metacognitive knowledge encompasses learning strategies, self-regulation, preferences, attitudes, and motivation (Winne, 1995). Motivation is a broad construct that has been highlighted in the literature, and the inclusion of a proxy for motivation has been recommended (Bartlett et al., 1993; Doran et al., 1991; Mitchell, 1988; Xiang and Gruber, 2012). Various proxies have been used to measure it, including majoring in accounting, the number of assessments, self-expectation of the examination, degree programme and tutorial attendance, interest in accounting, self-efficacy, and student motivation (Schroeder, 1986; Tan and Laswad, 2008; Eskew and Faley, 1988; Gul and Fong, 1993; Rankin et al., 2003; Tickell and Smyrnios, 2005; Byrne and Flood, 2008; Tepper and Yourstone, 2015; Viviers, De Villiers and Van der Merwe, 2022).

The inclusion of variables related to motivation gained traction in the

1990s. Gul and Fong (1993) included self-expectation of examination results as a proxy for self-efficacy in their regression analysis, although its timing was a limitation.

Academic self-efficacy is associated with improved use of metacognitive strategies, assisting students in adapting and mastering unfamiliar concepts (Byrne and Flood, 2008; Schleifer and Dull, 2009). Positive correlations have been confirmed between self-efficacy and academic performance (Tepper and Yourstone, 2015; Joynt, 2022; Viviers et al., 2022).

Byrne et al. (2014) included student motivation and self-efficacy specific to accounting and found that the latter was a stronger predictor of academic success than university entry scores. This aligns with prior research that highlights self-efficacy as a significant predictor of performance (Pintrich and De Groot, 1990).

Studies measuring motivation to learn in accounting have yielded inconclusive results on its significance as a predictor of academic performance. Positive attitudes towards accounting, major field of study, tutorial attendance, and interest in accounting have been used as proxies for motivation to learn, showing varying levels of significance (Lane and Porch, 2002b; Rankin et al., 2003; Tickell and Smyrnios, 2005). However, some studies found no difference in accounting performance between students intending to major in accounting and those in other business disciplines (Tan and Laswad, 2008).

### *Age*

Research indicates an indirect relationship between age and metacognitive ability (Palmer, David and Fleming, 2014). Age is not often a variable of interest in studies as most university students enrol immediately after high school, typically between the ages of 18 and 19. However, understanding the metacognitive abilities associated with different age groups can help to set realistic expectations. Some studies have included age as a covariate to examine its impact on prior accounting knowledge. Koh and Koh (1999) found that it was a significant determinant of academic performance in accounting, while Lane and Porch (2002a, 2002b) reported that older students outperformed younger ones. Conversely, Tickell and Smyrnios (2005) and Tan and Laswad (2008) found age to be an insignificant predictor.

Given that most studies focus on first-year students age is generally not considered a significant predictor.

#### *Socio-economic Status*

Metacognitive skills are influenced by the learning environment and socio-economic factors, which can impact how students learn and their readiness for university (Shaw, 2001). However, these variables have not been extensively used as determinants of academic performance. Some studies employed the type of school attended (private or public) and residential status as control variables to isolate the effect of prior accounting knowledge (Bartlett et al., 1993; Lee, 1999; Tickell and Smyrniotis, 2005). The results are inconclusive, with Bartlett et al. (1993) and Tho (1994) finding them insignificant, while Lee (1999) and Tickell and Smyrniotis (2005) reported a significant relationship between the type of school attended and the effect of prior accounting knowledge. In other disciplines such as mathematics, socio-economic factors were not significant predictors of academic success in the first year (Laging and Voßkamp, 2017).

#### *Other*

Among the reviewed studies, Jackling and Wigg (1997) were the pioneers in broadening the range of predictive factors by investigating the influence of memory. Their findings revealed that when students perceive accounting as challenging, they tend to rely on memorisation, which adversely affects their learning strategies and leads to surface-level learning. Additional predictors explored in later studies include personality types (Oswick and Barber, 1998; Bealing Jr, Staley and Baker, 2009; Papageorgiou and Callaghan, 2018), extracurricular activities (Wooten, 1998), the impact of class attendance (Steenkamp, Baard and Frick, 2009; Baard, Steenkamp, Frick and Kidd, 2010), and grit (Vinson, McMillan and Schleifer, 2022). By considering the potential effects of generic skills and employing more metacognitive strategies, educators can gain a better understanding of these crucial determinants of academic performance and implement appropriate strategies to promote awareness among students.

### **The Expansion of Rankin's Theoretical Framework**

Authors such as Ausubel (1963) and Alexander, Kulikowich, and Schulze (1994) have emphasised the importance of prior knowledge as a key factor in academic performance. Prior knowledge encompasses the essential knowledge, skills, and competencies necessary to learn new tasks (Bloom, 1976). Dochy and Alexander (1995) define it as a person's entire knowledge, existing in multiple states with explicit and tacit components, including conceptual and metacognitive aspects.

The theoretical framework developed by Rankin et al. (2003) initially categorised prior knowledge into content knowledge and metacognitive knowledge. However, the expanded theory proposes three divisions: cognition (Anderson, 1996), self-regulated learning (Boekaerts, 1999), and motivation (Pintrich and De Groot, 1990). Cognition encompasses attributes and skills acquired from birth, including language, memory, problem-solving and critical thinking. Metacognitive knowledge involves being aware of one's cognitive processes and self-regulated learning strategies. Motivation, including expectancy and value, plays a crucial role in utilising cognitive and metacognitive strategies.

Factors such as accounting and mathematics performance at school, academic aptitude, language effect, and motivation have been identified as influencing academic performance in introductory accounting. Other studies explored the impact of gender, age, and socio-economic status. Rankin et al.'s (2003) framework made a significant contribution by explaining inconsistencies in previous findings. The current study expands on this framework, incorporating constructs from psychology and educational psychology to enhance our understanding of the factors related to academic performance.

Drawing on studies and seminal papers in psychology and educational psychology, the expanded theoretical framework presented in Figure 3 provides a synopsis of the relationships of each of the predictors of academic success and prior knowledge, cognition, and self-regulated learning. The constructs from these fields are indicated in italics in Figure 3.

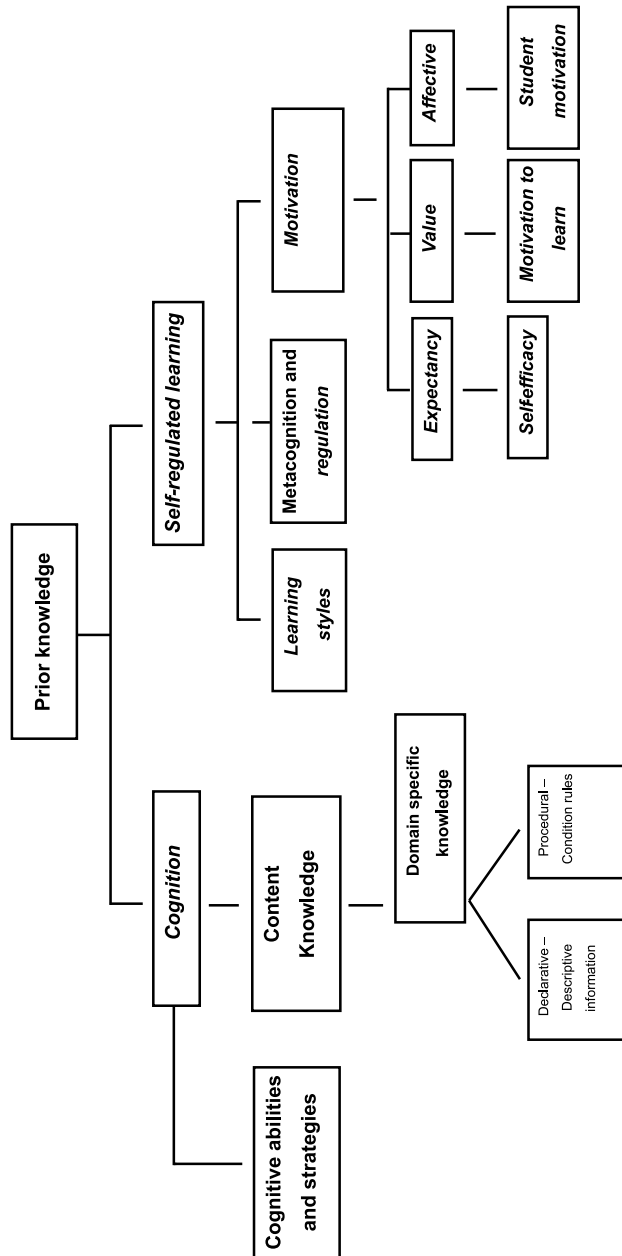


Figure 3. Expanded theoretical framework (expansion in italics)

### Research Gaps

#### *Prior Knowledge: Accounting at School*

The assertion that prior knowledge is a significant predictor of academic performance in the first year of accounting can be supported by empirical evidence and research findings.

However, it is important to note that the literature review indicated a lack of recent studies on accounting at school level as a proxy for prior knowledge. As curricula and educational systems evolve over time, it is plausible that the relevance and content of accounting education at secondary school level may have changed. Furthermore, tertiary accounting education might also have undergone modifications.

Therefore, it is suggested that researchers frequently examine the impact of prior knowledge on academic performance in accounting and remain knowledgeable about the extent of overlap between school and tertiary accounting curricula. By conducting regular assessments, researchers can ensure that their findings are up-to-date and relevant to the current educational context. This approach will enhance understanding of the role of prior knowledge in accounting education.

#### *Language of Tuition vs Home Language*

The impact of mother-tongue versus non-mother-tongue education has been extensively studied. Although not included in this review, Nyika (2015) reports that using a second language as the medium of instruction may contribute to poorer performance in some universities in developing countries. It is generally recognised that students studying in their mother tongue have an advantage over those studying in a second or third language. Second-language accounting students may encounter language-related comprehension difficulties, leading to suggestions for language and reading comprehension instruction in accounting courses (Janse van Rensburg, Coetzee and Schmulian, 2014). When the language of instruction aligns with a student's home language, information reception and sharing are enhanced (Sugahara, Suzuki and Boland, 2012). Conversely, second-language accounting students may face academic challenges when the language of instruction differs from their home language (Coetzee and Schmulian, 2013). It is thus suggested that researchers explore the extent of first-year accounting students' reading comprehension as well as possible strategies to address the reading comprehension of a diverse cohort of students.



### *Socio-economic Status*

Socio-economic status encompasses various factors that can directly impact academic performance. In countries like South Africa, inequality between the poor and the wealthy is apparent in the quality of education provided. South Africa's school education system is divided into five quintiles, indicating the level of dependence on government funding. Quintile 5, representing the highest level, receives less government support, indicating that households associated with these schools generally have higher disposable incomes than those in quintile 1 schools, which are typically located in townships. Consequently, there is a need for research on the effects of school quintiles in South Africa (or similar educational structures in other developing nations) as predictors of academic performance in accounting.

### *Other Generic Skills and Traits*

The education landscape has undergone significant changes due to the impact of the COVID-19 pandemic. Disruptive events like pandemics, wars, political unrest and natural disasters serve as external shocks to the education system. Is there a way to better equip students and educators to cope with such events? While several studies have examined generic skills, to date, only one has investigated the importance of grit (Vinson, McMillan and Schleifer, 2022). Raising awareness of traits such as grit and intellectual perseverance may help to mitigate the negative effects of uncontrollable circumstances.

Despite growing recognition of the importance of critical thinking in education, none of the studies examined in this review considered critical reasoning as a predictor of academic performance. However, there is an increasing trend towards incorporating it in accounting education.

### **Conclusion**

Since the 1960s, numerous studies have been conducted to examine the factors that predict academic success in introductory accounting, with the aim of supporting educators in both schools and universities. This study contributes to the body of knowledge by expanding the existing theoretical framework and presenting a comprehensive descriptive-analytical narrative of the factors associated with academic performance in introductory accounting.

Although there are some contradictory findings, the majority of the studies reviewed support a positive association between prior knowledge of accounting, mathematics, and academic aptitude. The variations in these findings can be attributed to factors such as the alignment of the accounting curriculum between schools and universities, the types of assessment used, and differences in learning approaches.

Motivation and academic aptitude are acknowledged as important factors affecting academic performance in introductory accounting. However, it is essential for researchers to provide clear definitions and delineate the specific motivational constructs they investigate, as the existing literature in this field often lacks precision and refinement. To improve future research, it is recommended that validated instruments from the field of psychology be used to measure motivational constructs. This approach could enhance our understanding of motivation as a predictor of academic performance.

The study's findings have practical implications for educators, decision-makers, and career guidance advisors. The research highlights the importance of addressing student perceptions of accounting as a challenging subject and emphasises the need to create diverse learning opportunities to support students with varying levels of prior knowledge. Furthermore, policy-makers are encouraged to promote the inclusion of accounting in school curricula, ensure alignment between school and university accounting programmes, and emphasise mathematics as a prerequisite for accounting studies. This is crucial in South Africa given the significant shortage of finance skills in the country.

In summary, this study contributes to the understanding of the factors that influence academic performance in introductory accounting. It highlights the importance of prior knowledge, mathematics proficiency, motivation, and academic aptitude. By addressing curriculum alignment, assessment methods, and learning approaches, educators and policymakers can enhance the quality of accounting education and better support students in achieving academic success.

## References

- Alexander, P.A., Kulikowich, J.M., and Schulze, S.K. (1994). The influence of topic knowledge, domain knowledge, and interest on the comprehension of scientific exposition. *Learning and Individual Differences* 6(4), 379-397.
- Anderson, J.R. (1996). *The architecture of cognition* (Vol. 5). Psychology Press.
- Arquero, J.L., Byrne, M., Flood, B., and González, J.M. (2009). Motives, expectations, preparedness and academic performance: a study of students of accounting at a Spanish university. *Accounting Review* 12(2), 279-300.
- Ausubel, D.P. (1963). *The psychology of meaningful verbal learning*. Oxford: Grune and Stratton.
- Auyeung, P.K., and Sands, D.F. (1994). Predicting success in first-year university Accounting using gender-based learning analysis. *Accounting Education* 3(3), 259-272.
- Baard, R.S., Steenkamp, L.P., Frick, B.L., and Kidd, M. (2010). Factors influencing success in first-year Accounting at a South African university: The profile of a successful first-year Accounting student. *South African Journal of Accounting Research* 24(1), 129-147.
- Baldwin, B.A., and Howe, K.R. (1982). Secondary-level study of Accounting and subsequent performance in the first college course. *The Accounting Review* 57(3), 619-627. Available at: <http://eds.a.ebscohost.com/uplib.idm.oclc.org/ehost/pdfviewer/pdfviewer?sid=d61d8df9-3c45-40d0-a762-f10720a430b6%2540sessi onmgr4007&vid=1&hid=4110> (Accessed: 24 August 2016).
- Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. *Journal of Social and Clinical Psychology* 4(3), 359-373.
- Bartlett, S., Peel, M.J., and Pendlebury, M. (1993). From fresher to finalist. *Accounting Education* 2(2), 111-122.
- Bealing Jr, W.E., Staley, A.B., and Baker, R.L. (2009). An exploratory examination of the relationship between a short form of the Keirsey Temperament Sorter and success in an introductory accounting course: A research note. *Accounting Education: An International Journal* 18(3), 331-339.
- Bloom, B.S. (1976). *Human characteristics and school learning*. New York, NY: McGraw-Hill.
- Boekaerts, M., (1999). Self-regulated learning: Where we are today. *International Journal of Educational Research* 31(6), 445-457.
- Bouillon, M.L., Doran, B.M., and Smith, C.G. (1990). Factors that predict success in principles of accounting classes. *Journal of Education for Business* 66(1), 23-27.
- Brophy, J. (1983). Conceptualizing student motivation. *Educational Psychologist* 18, 200-215.
- Brophy, J. (1986). *On motivating students*. Occasional Paper No. 101. East Lansing, MI: Institute for Research on Teaching, Michigan State University.
- Buckless, F.A., Lipe, M.G., and Ravenscroft, S.P. (1991). Do gender effects on Accounting course performance persist after controlling for general academic aptitude? *Issues in Accounting Education* 6(2), 248-261.
- Byrne, M., and Flood, B. (2008). Examining the relationships among background variables and academic performance of first year Accounting students at an Irish University. *Journal of Accounting Education* 26, 202-212. doi: 10.1016/j.jaccedu.2009.02.001
- Byrne, M., Flood, B., and Griffin, J. (2014). Measuring the academic self-efficacy of first-year Accounting students. *Accounting Education* 23(5), 407-423.
- Canlar, M., and Bristol, J.T. (1988). Female and male undergraduate Accounting students. *The Woman CPA* 50(2, April), 20-23.
- Carpenter, V.L., Friar, S., and Lipe, M.G. (1993). Evidence on the performance of Accounting students: race, gender, and expectations. *Issues in Accounting Education* 8(1), 1-17.
- Coetzee, S.A., and Schmulian, A. (2013). The effect of IFRS adoption on financial reporting pedagogy in South Africa. *Issues in Accounting Education* 28(2), 243-251. doi: 10.2308/iace-50386
- Collier, H., and McGowan, C. (1989). An empirical examination of the relationship between mathematic skills and course grade in Intermediate Accounting I. *The Accounting Educators' Journal* 2, 78-86.
- Council on Higher Education (CHE). (2017). *Briefly speaking (2): Educational pathways*. Available at: <http://www.che.ac.za/sites/default/files/publications/BrieflySpeaking%20%282%29%20Educational%20pathways.pdf> (Accessed: 10 October 2018).

- Deci, E., and Ryan, R. (1985). *Intrinsic motivation and self-determination in human behaviour*. New York, NY: Plenum.
- Deci, E., and Ryan, R. (n.d). *Theory overview*. Available at [www.selfdeterminationtheory.org/theory/](http://www.selfdeterminationtheory.org/theory/) (Accessed: 14 September 2016).
- Department of Basic Education. (2012). *National Senior Certification Examination: Schools Subject Report*. Available at [https://www.education.gov.za/Portals/0/Documents/Reports/NSC%20School%20subject%20report%202012%20\(2\).pdf?ver=2013-03-12-225552-000](https://www.education.gov.za/Portals/0/Documents/Reports/NSC%20School%20subject%20report%202012%20(2).pdf?ver=2013-03-12-225552-000) (Accessed: 29 June 2021)
- Department of Basic Education. (2020). *National Senior Certification Examination: Schools Subject Report*. Available at <https://www.education.gov.za/Portals/0/Documents/Reports/2021%20NSC%20Reports/School%20Subject%20Report%202020%20Final.pdf?ver=2021-02-22-173254-820> (Accessed: 29 June 2021)
- Department of Higher Education and Training. (2020). *The 2020 List of Occupations in High Demand: A Technical Report*. Available at <https://www.dhet.gov.za/SiteAssets/Latest%20News/November%202020/The%202020%20List%20of%20Occupations%20in%20High%20Demand-%20A%20Technical%20Report.pdf> (Accessed: 28 June 2021).
- Statistics South Africa. (2023). *Quarterly Labour Force Survey (QLFS) – Q1:2023*. Available at <https://www.statssa.gov.za/publications/Po211/Po2111stQuarter2023.pdf> (Accessed: 2 June 2023).
- Dochy, F.J., and Alexander, P.A. (1995). Mapping prior knowledge: A framework for discussion among researchers. *European Journal of Psychology of Education* 10(3), 225-242.
- Doran, B.M., Bouillon, M., and Smith, C.G. (1991). Determinants of student performance in Accounting Principles I and II. *Issues in Accounting Education* 6(1), 74-84. Available at: <http://eds.b.ebscohost.com.uplib.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=4&sid=2bafo062-efb1-4fa8-bdc6-d1baaacfabd5%2540sessionmgr106&hid=114>
- Duff, A. (2004). Understanding academic performance and progression of first-year accounting and business economics undergraduates: The role of approaches to learning and prior academic achievement. *Accounting Education* 13(4), 409-430.
- Duff, A., and Mladenovic, R. (2015). Antecedents and consequences of accounting students' approaches to learning: A cluster analytic approach. *The British Accounting Review* 47(3), 321-338.
- Dull, R.B., Schleifer, L.L.F., and McMillan, J.J. (2015). Achievement goal theory: the relationship of Accounting students' goal orientations with self-efficacy, anxiety, and achievement. *Accounting Education* 24(2), 152-174. doi: 10.1080/09639284.2015.1036892
- Elias, R.Z. (2005). Students' approaches in introductory Accounting courses. *Journal of Education for Business* 3-4, 194-199.
- Eskew, R.K., and Faley, R.H. (1988). Some determinants of student performance in the first college-level Financial Accounting course. *The Accounting Review* 63(1), 137-147.
- Farley, A.A., and Ramsay, A.L. (1988). Student performance in first year tertiary Accounting courses and its relationship to secondary Accounting education. *Accounting and Finance* 28(1), 29-44.
- Fraser, A.A., Lytle, R., and Stolle, C. (1978). Profile of female Accounting majors: academic performance and behavioral characteristics. *The Woman CPA October*, 18-21.
- Friedlan, J.M. (1995). The effects of different teaching approaches on students' perceptions of the skills needed for success in accounting courses and by practicing accountants. *Issues in Accounting Education* 10(1), 47-63.
- Gist, W.E., Goedde, H., and Ward, B.H. (1996). The influence of mathematical skills and other factors on minority student performance in Principles of Accounting. *Issues in Accounting Education* 11(1), 49-60. Available at: <http://search.proquest.com/docview/210932176?accountid=14717> (Accessed: 12 October 2015).
- Goldstein, J., Sauer, P., and O'Donnell, J. (2014). Understanding factors leading to participation in supplemental instruction programs in introductory accounting courses. *Accounting Education* 23(6), 507-526.
- Gul, F.A., and Fong, S.C.C. (1993). Predicting success for introductory Accounting students: some further Hong Kong evidence. *Accounting Education* 2(1), 33-42. doi: 10.1080/09639289300000003
- Jackling, B., and Wigg, R. (1997). A multicampus study of first year accounting: An Australian study. *Asian Review of Accounting* 5(1), 126-146.

- Jacoby, C.R. (1975). *The effects of teaching methods and experiences in achievement of Business students in the first college level Accounting course*. Unpublished doctoral dissertation. Pennsylvania State University, State College, PE.
- Janse van Rensburg, C., Coetzee, S.A., and Schmulian, A. (2014). South African financial reporting students' reading comprehension of the IASB Conceptual Framework. *Journal of Accounting Education* 32(4), 1-15. doi: 10.1016/j.jaccedu.2014.10.003
- Joynt, C. (2022). How to assess the effectiveness of accounting education interventions: Evidence from the assessment of a bridging course before introductory accounting. *Meditari Accountancy Research* 30(7), 237-255.
- Keef, S.P. (1988). Preparation for a first level university Accounting course: The experience in New Zealand. *Journal of Accounting Education* 6, 293-307.
- Keef, S.P. (1992). The effect of prior Accounting education: Some evidence from New Zealand. *Accounting Education* 1(1), 63-68.
- Keef, S.P., and Hooper, K.C. (1991). Prior Accounting education and performance in a first-level university course in New Zealand. *Accounting and Finance* 31(1), 85-91.
- Koh, M.Y., and Koh, H.C. (1999). The determinants of performance in an Accountancy degree programme. *Accounting Education* 8 (Nanyang Business School, Nanyang Technological University), 13-29. doi: 10.1080/096392899331017
- Laging, A., and Voßkamp, R. (2017). Determinants of maths performance of first-year business administration and economics students. *International Journal of Research in Undergraduate Mathematics Education* 3(1), 108-142.
- Lane, A., and Porch, M. (2002a). Computer Aided Learning (CAL) and its impact on the performance of non-specialist Accounting undergraduates. *Accounting Education* 11(3), 217-233.
- Lane, A., and Porch, M. (2002b). The impact of background factors on the performance of non-specialist undergraduate students on Accounting modules – a longitudinal study: a research note. *Accounting Education: An International Journal* 11(1), 109-118.
- Lee, D.S.Y. (1999). Strength of high school Accounting qualification and student performance in university-level introductory Accounting courses in Hong Kong. *Journal of Education for Business* 74(5), 301-306.
- Lipe, M.G. (1989). Further evidence on the performance of female versus male Accounting students. *Issues in Accounting Education* 4(1), 144-152.
- Loveday, P.M. (1993). Exemptions from first semester Accounting and performance in the second semester course: an empirical study. *Accounting Education* 2(2), 143-150.
- Lucas, U. (2000). Worlds apart: Students' experiences of learning introductory Accounting. *Critical Perspectives on Accounting* 11(11), 479-504.
- Lucas, U. (2001). Deep and surface approaches to learning within introductory Accounting: a phenomenographic study. *Accounting Education: An International Journal* 10(2), 161-184.
- Lucas, U., and Meyer, J.H.F. (2005). 'Towards a mapping of the student world': the identification of variation in students' conceptions of, and motivations to learn, Introductory Accounting. *British Accounting Review* 37(2), 177-204.
- Lynn, B., Shehata, M., and White, L. (1994). The effects of secondary school Accounting education in university Accounting performance – a Canadian experience. *Contemporary Accounting Research* 10(2), 737-758.
- McDowall, T., and Jackling, B. (2006). The impact of computer-assisted learning on academic grades: An assessment of students' perceptions. *Accounting Education* 15(4), 377-389. doi: 10.1080/09639280601011065
- Mitchell, F. (1985). School Accounting qualifications and student performance in first level university Accounting examinations. *Accounting and Business Research* 58(15), 81-86.
- Mitchell, F. (1988). High school Accounting and student performance in the first level university Accounting course: A UK study. *Journal of Accounting Education* 6(2), 279-291.
- Mladenovic, R. (2000). An investigation into ways of challenging Introductory Accounting students' negative perceptions of Accounting. *Accounting Education* 9(2), 135-155.
- Mutchler, J.F., Turner, J.H., and Williams, D.D. 1987. The performance of female versus male Accounting students. *Issues in Accounting Education Spring*, 103-111.

- Nyika, A. (2015). Mother tongue as the medium of instruction at developing country universities in a global context. *South African Journal of Science* 111(1-2), 1-6. doi: 10.17159/sajs.2015/20140005
- Oswick, C., and Barber, P. (1998). Personality type and performance in an introductory level accounting course: A research note. *Accounting Education* 7(3), 249-254.
- Pajares, F., and Schunk, D.H. (2002). Self and self-belief in psychology and education: a historical perspective. In Aronson, J. (ed.) *Improving academic achievement: impact of psychological factors on education*. New York, NY: Academic Press.
- Palmer, E.C., David, A.S., and Fleming, S.M., (2014). Effects of age on metacognitive efficiency. *Consciousness and Cognition* 28, 151-160.
- Papageorgiou, E., and Callaghan, C.W. (2018). Personality and adjustment in South African higher education accounting studies. *South African Journal of Accounting Research* 32(2-3), 189-204.
- Papageorgiou, E., and Callaghan, C.W. (2020). Accountancy learning skills and student performance in accounting education: evidence from the South African context. *Accounting Education* 29(2), 205-228.
- Pintrich, P.R., and de Groot, E.V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology* 82(1), 33-40. doi: 10.1037/0022-0663.82.1.33
- Rankin, M., Silvester, M., Vallely, M., and Wyatt, A. (2003). An analysis of the implications of diversity for students' first level Accounting performance. *Accounting and Finance* 43(3), 365-393. doi: 10.1111/j.1467-629x.2003.00096.x
- Rohde, F.H., and Kavanagh, M. (1996). Performance in first year university Accounting: Quantifying the advantage of secondary school Accounting. *Accounting and Finance* 36(2), 275-285. doi: 10.1111/j.1467-629x.1996.tb00311.x
- Rowlands, J.E. (1988). The effect of secondary school Accounting study on student performance in the first year university Financial Accounting course. *De Ratione* 2(2), 17-21.
- Sangster, A., Stoner, G.N., and McCarthy, P. (2008). The market for Luca Pacioli's *Summa Arithmetica*. *Accounting Historians Journal* 35(1), 111-134.

- Schleifer, L.L.F., and Dull, R.B. (2009). Metacognition and performance in the Accounting classroom. *Issues in Accounting Education* 24(3), 339-367.
- Schroeder, N.W. (1986). Previous Accounting education and college-level Accounting exam performance. *Issues in Accounting Education* 1(1), 37-47.
- Schunk, D.H. (1991). Self-efficacy and academic motivation. *Educational Psychologist* 26, 207-231.
- Seow, P., Pan, G., and Tay, J. (2014). Revisiting the determinants of student performance in an undergraduate accountancy degree programme in Singapore. *Global Perspectives on Accounting Education* 11, 1-23.
- Schleifer, L.L., and Dull, R.B., (2009). Metacognition and performance in the accounting classroom. *Issues in Accounting Education* 24(3), 339-367.
- Sharma, D.S. (1997). Accounting students' learning conceptions, approaches to learning, and the influence of the learning-teaching context on approaches to learning. *Accounting Education* 6(2), 125-146.
- Shaw, G. (2001) Promoting general metacognitive awareness. In Hartman, H.J. (ed.) *Metacognition in learning and instruction: Theory, research and practice* (Vol. 19). Springer Science and Business Media.
- Smith, J.W. (1968). *Articulation of high school bookkeeping and college elementary Accounting*. Unpublished doctoral thesis. Norman, OK: University of Oklahoma Graduate College.
- Solberg, V.S., O'Brien, K., Villareal, P., Kennel, R., and Davis, B. (1993). Self-efficacy and Hispanic college students: Validation of the college self-efficacy instrument. *Hispanic Journal of Behavioural Sciences* 15(1), 80-95.
- Steenkamp, L.P., Baard, R.S., and Frick, B.L. (2009). Factors influencing success in first-year accounting at a South African university: A comparison between lecturers' assumptions and students' perceptions. *South African Journal of Accounting Research* 23(1), 113-140.
- Sugahara, S., Suzuki, K., and Boland, G. (2012). Students' major choice in Accounting and its effect on their self-efficacy towards generic skills: An Australian study. *Asian Review of Accounting* 18(2), 131-147.

**Annex 1: Predictors of success in Accounting identified in the prior literature**

Author(s)	High school Accounting knowledge	Academic aptitude	Mathematics at school	Language	Gender	Motivation	Age	Socio economic status	Other
Smith (1968)	Significant	-	-	-	-	-	-	-	-
Jacoby (1975)	Initially significant, eroded	-	-	-	-	-	-	-	-
Balwin and Howe (1982)	Insignificant	-	-	-	-	-	-	-	-
Mitchell (1985)	Significant	-	Inclusion recommended	-	-	-	-	-	-
Schroeder (1986)	Significant (if longer than 1 year)	Significant	-	-	-	Significant (Academic major)	-	-	-
Eskewand Faley (1988)	Significant	Significant	Significant	-	Insignificant	Significant (Number of assessments)	-	-	-
Fatheyand Ramsay (1988)	Significant	Significant	Significant	-	-	-	-	-	-
Keef (1988)	Insignificant	-	Insignificant	-	-	-	-	-	-
Mitchell (1988)	Inconclusive	-	Significant	-	-	Inclusion recommended	-	-	-
Rowlands (1988)	Significant (eroded)	-	-	-	-	-	-	-	-
Bouillon, Doranand Smith (1990)	Significant (only 1 <sup>st</sup> year)	Significant	Significant	-	-	Majoring in Accounting (Significant)	-	-	-
Doranet al (1991)	Significant	Significant	Significant	-	Males outperformed females	Inclusion recommended	-	-	-
Keefand Hooper (1991)	Significant	-	-	-	-	-	-	-	-
Keef (1992)	Insignificant (if > one year)	-	-	-	-	-	-	-	-
Bartlettet al. (1993)	Significant (quickly eroded)	Insignificant	Insignificant (used as proxy for academic aptitude)	-	Inconclusive	Inclusion recommended	-	Insignificant (type of school)	-
Gu andFong (1993)	Significant	-	Significant	-	-	Significant (self expectation of exam)	-	-	-
Loweday (1993)	Significant	-	-	-	-	-	-	-	-

Author(s)	High school Accounting knowledge	Academic aptitude	Mathematics at school	Language	Gender	Motivation	Age	Socio economic status	Other
Auyeungand Sands (1994)	Significant (surface learning)	Significant	Significant	-	Significant (Males)	-	-	Inclusion of socioeconomic factors recommended	-
Lynn, Shehata andWhite (1994)	Significant (level at school)	-	-	-	-	-	-	-	-
Tho (1994)	Significant	-	Significant	-	Insignificant	-	-	Insignificant (residential status)	-
Rohdeand Kavanagh (1996)	Significant	Significant	-	-	-	-	-	-	-
Gist, Goedde, Ward (1996)	-	Significant	Significant	-	Insignificant	-	-	-	-
Jacklingand Wigg (1997)	Significant	Significant	Significant	-	Insignificant	Significant	-	-	Memory
Oswickand Barber (1998)	-	-	-	-	-	-	-	-	Personality type (MBTI) (insignificant)
Van Rensburg, Penmand Hayden (1988)	Significant	Included	-	-	-	-	-	-	-
Wooten (1998)	-	Significant	-	-	-	Effort (significant) Classroom environment	-	-	Family activities Work activities Extracurricular activities
Koh andKoh (1999)	Insignificant	Significant	Significant	-	Significant (males better than females) Insignificant	-	Significant	-	-
Lee (1999)	Significant	-	-	-	-	-	-	Significant (type of school)	-
Laneand Porch (2002a)	-	Significant	-	-	-	-	Significant (older)	-	-
Laneand Porch (2002b)	-	Insignificant	Insignificant	-	-	Significant (attitude)	Significant (older)	-	-
Rankin, Shvester, Valley and Wyatt (2003)	Significant	Significant	-	-	-	Significant (degree and number of tutorials)	-	-	-

Author(s)	High school Accounting (prior knowledge)	Academic aptitude	Mathematics at school	Language	Gender	Motivation	Age	Socio economic status	Other
Duff (2004)		Significant							Study pathologies: effective vs ineffective learners
Trickell and Smyrnios (2005)	Significant	Significant	-		Insignificant	Significant (Interest in Accounting)	Insignificant	Significant (Type of school)	
McDowall and Jackling (2006)	Insignificant	-	-		Insignificant	-	-	-	
Byrne and Flood (2008)	Insignificant	Significant	-		Insignificant	Significant (Self efficacy and Motivation to learn (Value))	-	-	
Tan and Laswad (2008)	Significant	-	-		Significant (females better than males)	Insignificant (Intention to major in Accounting)	Insignificant	Significant (Language)	
Arquero, Byrne, Flood and Gonzalez (2009)	Significant	Significant				Strong Interest in Accounting and career (significant)			Personality Type (Keirsey Temperament Sorter) (Significant)
Bealing Jr, Staley and Baker (2009)	-	-	-		-	Self-efficacy	-	-	
Schleifer and Duff (2009)	-	-	-		Significant	Significant (Metacognitive attributes)			Class attendance (significant)
Steenkamp, Beard and Frick (2009)	Significant			Significant (Home language)					Class attendance (significant) Degree programme
Steenkamp, Frick and Kidd (2010)	Significant	Significant	Significant	Significant (Home language)					
Xiang and Gruber (2012)	Significant (eroded)	-	-		-	Inclusion recommended	-	-	
Janse van Rensburg,	-	-	-	Significant	-	-	-	-	

Author(s)	High school Accounting (prior knowledge)	Academic aptitude	Mathematics at school	Language	Gender	Motivation	Age	Socio economic status	Other
Coetze and Schmulian, (2014)									
Seow, Paand Tay (2014)		Significant	Significant		Significant (males better than females)	-	-	-	
Tepper and Yourstone (2015)		Significant				Self-efficacy (significant)			Non-cognitive variables (e.g. expecting a harder time studying Accounting) Expectations or learning variables (Personality differences conscientiousness)
Duff and Mladenovic (2015)					Inconclusive				Generic skills (significant) Race (insignificant)
Papageorgiou and Callaghan (2018)	-	-	-		-	-	-	Significant (poor students)	
Papageorgiou and Callaghan (2020)	-	-	-		-	-	-		
Joynt (2022)	Significant	Significant	Significant	Insignificant	Insignificant	Self-efficacy (Significant)	Insignificant		Grit (significant)
Vinson, McMillan and Schleifer (2022)	-	Significant	-	-	-	-	-	-	
Viviers, De Villiers and Van der Merwe (2022)	-	-	-	-	-	Significant (Self efficacy)	-	-	