Exploring the factors which influence and support the development of academic growth in Higher Education

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One can choose to back toward safety or forward towards growth. Growth must be chosen again and again; fear must be overcome again and again.

Publications and Awards

Publications

Gamble, R., Cassidy, T., McLaughlin, & M., Giles, M. (2018). Predicting Academic Development: the role of Psychosocial and Family Factors. International Journal of Recent Scientific Research. 9 (9), pp. 28847-28853.

Gamble, R., Cassidy, T., McLaughlin, M., and Giles, M., (2016) Academic assessment, time for a revaluation? Social Psychological Review, Vol. 18, No. 2.

Awards

The Vice-Chancellor's Award 2016 Supported by Santander Universities- Awarded for the novel approach to student learning.

Learning and Teaching Award 2016- Excellence in Postgraduate Teaching.

Summary

Higher Education (HE) continues to have a significant impact on the economy in the United Kingdom (UK) and on the lives of the students who participate in it. The HE sector plays a paramount role in acting to underpin and support the development of the nation's economy while creating the knowledge, capability and expertise which allow the UK to compete internationally (BIS, 2016). For the individual, HE has the potential to fundamentally change lives, challenging them to develop deeper learning, analytical and creative skills which benefit them for the rest of their lives.

Achievement outcomes and the possession of a high-level degree (often considered a 2:1 classification and above (BIS, 2016) have been demonstrated to greatly influence a students' opportunity to progress within the education system and to successfully enter employment upon graduation (Ramsden, 2003; Brown & Knight, 2012; Brown & Heaney, 1997; Universities, 2017). As such, high levels of student achievement can act as a catalyst for social mobility by opening doors to a greater range of employment outcomes and offering graduate's higher life time earnings than their non-graduate peers (BIS, 2016; Walker, & Zhu, 2013).

Students who leave HE with lower levels of achievement, are more likely to experience greater difficulty in securing employment that makes the most of their skills, which offers them a good return on their graduate investment (BIS, 2016; ONS, 2017). Given the importance academic achievement in HE plays in the UK economy and to the individual, the continued support and development of student academic achievement is an important concern to the HE system, students and employers alike.

Recognising the importance of ensuring student success in a climate of increased benchmarks and quality assurances (Nichols & Berliner, 2007), recent conversation in psycho-education has seen a growing emphasis on examining academic growth and how indices of student learning develop over time (Anderman, Anderman, Yough, & Gimbert, 2010; Dweck, 2010; Anderman, Gimbert, O'Connell & Riegel, 2015; Martin, 2015; 2011; Gamble, Cassidy, McLaughlin & Giles, 2018). Motivating the academic growth movement is an international rise in accountable requirements aimed at developing student preparation and learning, but also the assessment of teaching skills and educational quality (Anderman., et al 2015).

Accompanying the growing interest in academic growth is the recognition of the progressively diverse backgrounds, academic attainment levels and goals of those entering HE (Rubin, & Kazanjian, 2011: BIS, 2016). HE in the UK is no longer dominated by 18 to 21-year-old students, who having progressed from grammar school, move to live on campus and study a subject full-time due to an inherent interest. Instead, an increasing number of students are working in full-time and part-time jobs while studying to fund their education (Endsleigh, 2015), choosing to live at home with parents (HEFCE, 2009) and are selecting a topic of study based on its potential return in the labour market (HESA, 2018). Indeed, given the success of initiatives, namely widening access, to increase participation levels, students are also becoming more consumer orientated, demanding more from the HE sector than ever before (Kandiko & Mawer, 2013; Tomlinson, 2014, 2016; Universities, 2017).

Given the current demands on Higher Education Institutions (HEI's) and students to experience ever greater levels of academic achievement, understanding the factors which

influence academic growth could assist greatly in one of educations ultimate goals of facilitating long-term learning and growth in academic achievement (Murayama et al., 2013). Nonetheless, creating an ideal environment to encourage and develop academic growth of all students regardless of their initial levels of achievement (Dweck, 2015) will be exceedingly difficult for educators, HEI's and students given how little we currently know about the factors which predict and support the development of academic growth in students attending HE.

As increasing transparency and enhanced reporting on HEI's unique ability to support and develop student achievement outcomes becomes a central focus, driving the decision of where students chose to attend, and the funding each institute receives, failure to ensure academic growth could influence an institutes future survival. Indeed, only when the system can support and ensure a greater number of students reach their academic aspirations, can inequality truly be reduced; simply opening the doors is not enough as "access without support is not opportunity" (Engstrom & Tinto, 2008, p. 50). With this in mind the current investigation set out to examine the factors which predict and support the development of student academic growth.

A wealth of empirical evidence based predominantly with students attending primary and secondary school has highlighted a range of factors which are important in the prediction of academic achievement and which can also serve to offer insight into the role these factors may have in predicting academic growth. This psycho-educational research has evolved into two largely separate bodies of study, one demonstrating the influence of contextual factors, while the other has emphasised the role psychological factors can have upon achievement. Contextual factors for example: socioeconomic status (SES) and

family environment are considered to represent the environmental and social-developmental context a student has encountered throughout their development (Claro, Paunesku & Dweck, 2016). Whereas, psychological factors namely: motivation, problem-solving and optimism to name a few, are said to concern a range of individual differences which represent an individual's goals, aspirations and overall outlook on life (Robbins et al., 2004; Richardson et al., 2012). Similar to the prediction of academic achievement, the developing body of growth research suggests that the prediction of academic growth may be more accurate if based on the inclusion of a variety of contextual and psychological factors (Richardson et al., 2012).

With this in mind Study one of the investigation set out to examine the efficacy of the contextual factors of SES and family environment and the psychological factors of motivation, problem-solving style and optimism have in the prediction of academic growth in a group of 646 students participating in a three-year undergraduate HE degree programme. In keeping with the subject of growth and development, psychological growth, considered development in each of these psychological factors from year one to year two and the impact this has on academic growth was also explored. Findings suggest that family environment and maternal education level in addition to intrinsic motivation, problem-solving self-efficacy and optimism were significant predictors of student academic growth. Further analysis revealed that psychological growth also predicted student academic growth, further suggesting that targeting these psychological resources could provide researchers and educators a means of developing academic growth, and as such overall achievement.

Inspired by findings from Study One, and reinforced by the importance of each and every student to experience academic growth (Dweck, 2015), Study Two explores the relationships between the positive psychological factors of Psychological Capital (PsyCap), Emotional Intelligence (EI) and academic growth in a group of 131 students attending HE. Consistent with the psychological factors examined in Study One, in particular optimism, EI and PsyCap are widely considered state-like in nature, and benefit from a developing literature which demonstrates their tendency to be open to development through the use of short class-based interventions (Luthans, Avolio & Avey 2007). In an effort to address a notable research limitation in the available literature, the ability of PsyCap and EI to predict student GPA over the duration of a three-year degree program was also examined. Results confirmed that student EI shared a significant relationship with student academic growth, suggesting that efforts to develop student EI could offer an additional means of supporting the development of student academic growth.

As the importance of ensuring students experience academic success in Higher Education increases, as to will the need to explore the factors and characteristics which predict and encourage the development of academic growth. The findings from this investigation will be of value to students, educators and Higher Education Institutes interested in designing interventions aiming to jumpstart the development of academic growth and therefore overall academic achievement. The investigations discussion section outlines recommendations which could be advantageous to those wishing to develop student academic growth.

List of Abbreviations

E.I	Emotional Intelligence
H.E.	Higher Education
HEI	Higher Education Institution
PsyCap	Psychological Capital
UK	United Kingdom
n	Number

Declaration

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1. Chapter One: The current landscape of Higher Education and its challenges moving forward - Research Background

1.1. Introduction

This opening chapter provides the background context to the current investigation. The chapter opens by offering an overview of the current landscape of Higher Education (HE) and the future challenges the HE sector faces due to recent educational and governance reforms. The chapter continues by discussing the increasing prominence being placed on students and Higher Education Institutions (HEI's) to support the development of student academic achievement. Acknowledging these demands, the growing interest in exploring achievement from a growth perspective is discussed, alongside research emphasising its potential to develop our understanding of how best academic growth can be supported. The chapter closes by offering the research rationale and outlines the overall structure and aims of the current investigation.

1.2. A shifting HE landscape

Higher Education (HE) continues to have a significant impact on the economy in the United Kingdom (UK) and on the lives of the students who participate in it. The HE sector plays a paramount role in acting to underpin and support the development of the nation's economy while creating the knowledge, capability and expertise which allow the UK to compete internationally (BIS, 2016). For the individual, HE has the potential to

fundamentally change lives, challenging them to develop deeper learning, analytical and creative skills which benefit them for the rest of their lives. Achievement outcomes and the possession of a high-level degree (often considered a 2:1 classification and above, (BIS, 2016) have been demonstrated to greatly influence a students' opportunity to progress within the education system and to successfully enter employment upon graduation (Ramsden, 2003; Brown & Knight, 2012; Brown & Heaney, 1997; Universities, 2017). As such, high levels of student achievement can act as a catalyst for social mobility by opening doors to a greater range of employment outcomes and offering graduate's higher life time earnings than their non-graduate peers (Walker, & Zhu, 2013; BIS, 2016). Students who leave HE with lower levels of achievement, are more likely to experience greater difficulty in securing employment that makes the most of their skills, and which offers them a good return on their graduate investment (BIS, 2016; ONS, 2017). Given the importance academic achievement in HE plays in the UK economy and to the individual, the continued support and development of student academic achievement is an important concern to the HE system, students and employers alike.

The landscape of HE has changed significantly however over the past 20 years and is set to change further with the introduction of new legislative reforms which will increase pressure on students and Higher Education Institutions (HEI's) to further ensure student academic success. The government White paper "Success as a knowledge economy" (BIS, 2016) targets several areas for improvement, namely, participation rates, funding structure and teaching quality assurances in a move which has been deemed necessary to return student outcomes to the front and centre of HE priority (BIS, 2016). These changes are fundamental and in order to address them, HEI's will need to adapt and develop the means of providing a greater number of students, higher quality, better value for money,

and a more significant return for their financial investment. Central to this will be ensuring the development and support of student academic achievement to ensure students reach their academic aspirations and are able to compete in an increasingly competitive employment sector.

Adapting to meet and exceed these demands however is likely to prove problematic for HEI's. For instance, HE is no longer the preserve of the academic privileged thanks to changes in participation rates and the inclusion of former polytechnics into the university system, over 25 years ago. Widening access to HE has become an important policy objective within the UK, and its success has allowed participation rates amongst young people (18-25 years old) to increase from 19% as reported in 1990, to 49% as reported in 2015/2016 (Entwistle & Ramsden, 2015; DfE, 2017). As such, widening access has been considered successful in increasing participation rates and offering a more diverse population and a greater choice of options as to where they can pursue their HE aspirations (Naidoo & Jamieson, 2005). Nonetheless, there is growing evidence which suggests there are patterns of persistent inequalities amongst students attending HE, namely poor student satisfaction, low retention rates and achievement disparities (UCAS, 2015; HEFC, 2016; BIS, 2016). There is a risk this pattern of disparity could be further compounded by the recent removal of student number controls in England, Scotland and Wales, which is set to further expand widening access to include an even more diverse population.

While the cap on student numbers has remained in place in Northern Ireland (NI), there have been calls for the cap to be relaxed, in order to allow NI HEI'S to offset the declining

financial support the sector receives from its biggest funding contributor, the Department of Learning (DEL). The DEL announced in 2015 that it would begin reducing the financial support it offers NI's two HEI's; Queens University and Ulster University HEI's from the £203m level they received in 2014 to 186m in 2015 (BBC, 2015). In response to the cuts, Ulster University has dropped more than 50 degree courses and reduced its number of available student places by 1,200, while Queens University Belfast report that they aim to reduce their undergraduate intake by over 1,000 places over the next three years (BBC, 2015).

While the number of students choosing to attend HE continuing to increase within the UK, a combination of the increasing shortage of NI student spaces and the growing competition from English and Scottish Universities to recruit a greater number of students has encouraged a growing number of students to choose to leave NI to study in Scotland and England HEI's (Belfast Telegraph, 2012; BBC, 2015; BBC, 2018). Recent figures highlight that there has been an almost 20% increase in the number of NI students being accepted into English and Scottish Universities since 2016 (BBC, 2016: UCAS, 2016). While this may be good news for English and Scottish HEI seeking to increase their student numbers and boost their funding reserves, only a third of these students are expected to return to work in NI upon graduation, vastly reducing the number of high skilled workers available in the NI employment sector (BBC, 2015).

Recognition of the increasing number of students choosing to attend HE, steps have been taken to significantly increase investment in the sector and change how the system is funded as it continues to grow. In 2012, over 13 years after student tuition fees were first

introduced, the cost of participating in HE increased significantly. Attendance to many UK universities has increased to £9,000 per year, while the sector has moved away from a reliance on public grants, to a model which is predominately funded by students. As such, participation in HE is contingent on students bearing significantly greater financial debt, through the provision of income-contingent repayable loans. The increased cost of HE for students and families has typically been justified by policy makers as a minor trade-off for the significant financial and employment benefits which can accompany procession of a HE degree. This has put pressure on HEI's to ensure students continue to see a HE degree as a sound investment, persuading students that they should be paying more in order to get more from their HE experience (Brown, 2010). These efforts are likely to need refocused and strengthened in future, given that tuition fees are set to rise to over £9,000 a year and continue to increase in line with inflation.

Research suggests that these changes in participation and the increasing costs associated with obtaining a degree have inevitably had an impact on the expectation's student have regarding their HE experience (Ramsden, 2008). HE in the UK is no longer dominated by 18 to 21-year-old students, who having progressed from grammar school, move to live on campus, study a subject full-time due to an inherent interest and spend their free time devoted to academic and social pursuits. Instead, an increasing number of students are working in full-time and part-time jobs while studying to fund their education (Endsleigh, 2015), choosing to live at home with parents (HEFCE, 2009) and are selecting a topic of study based on its potential return in the labour market (HESA, 2018). Students are also becoming more consumer orientated, demanding more from the HE sector than ever before (Kandiko & Mawer, 2013; Tomlinson, 2014, 2016; Universities, 2017). Many students are dissatisfied with their HE experiences, evident by the growing number of

students who report they feel let down by the provisions they have received, and the increasing number of students who have expressed concern that their HE participation may not pay off (Kandiko, & Mawer, 2013; Abrams, 2014). Increasing student expectations are also reflected in the number of complaints being made by students against HEI's which reached a record 2,000 grievances in 2014 (HEA, 2015). While many of these complaints were later judged as unjustified, it reflects just how sharply student expectations are developing.

The recently published government white paper "Success as a knowledge economy" (BIS, 2016) is set to put even greater pressure on the sector, having outlined a host of policy reforms and expectations designed to incentivise HE as it moves forward. The paper suggests that at the heart of falling standards, low quality teaching, grade inflation, student dissatisfaction and the large variations found in graduate outcomes, is a lack of completion and informed choice (BIS, 2016). To address these concerns, students are to be offered greater access to clearer information regarding achievement outcomes, course satisfaction, teaching quality and graduate employment rates. Furthermore, while access to public funding will continue to be subject to HEI's meeting the requirements of the UK quality code, HEI's will now also be required to meet the expectations of the newly introduced Teaching Excellence Framework (TEF). The TEF has been initiated as a means of incentivising excellence in teaching and providing students information on where they can access the highest quality teaching. However, institutions who fail to meet TEF expectations will be forced to lower their tuition fees and potentially exit the sector completely. As such, the landscape of HE is becoming increasingly more commercialised and one focused on promoting competition, consumer rights and ensuring greater student outcomes.

In all, these changes in the sector could be said to reflect the increasing emphasis being placed on HEI's to ensure students realise their academic potentials. Achievement outcomes and the possession of a high-level or "good" degree (2:1 or a 1st) greatly influencing the life opportunities students can hope to avail of after graduation. Perhaps not surprising, given the influx of graduates entering the employment sector, research by the Association of Graduate Recruiters has shown that three-quarters of graduate employers will now only offer an interview to candidates holding a 2:1 or a 1st (BBC, 2010; ARG, 2013). The filtering of opportunities based on achievement continues within HE where many postgraduate and teacher education courses require students to be holding a 2:1 degree or above. As such it has been remarked that the life chances available to students who hold a 2:1 in comparison to those holding a 2:2 are very different indeed (Seaton, 2011). With this in mind, the continued support and development of student academic achievement is an issue which has been brought to the forefront of educational concern.

1.3. Current Landscape of Higher Education

Now, more than ever there is greater recognition that the skills and human capital created by HE success provide the foundation for a country's economic growth and social well-being. Reports outline that around 20% of the UK's economic growth between 1982 and 2005 was a direct result of the accumulation of graduate skills nationwide (BIS, 2016). Indeed, the influence HE has upon the UK economy is evident even before students have graduated, with student expenditure contributing over £80bn of the UK's economic output and supporting over 830,000 jobs nationally (Nef, 2013). Progressive ties between

universities and industry has also had a positive effect nationally, with recent research collaborations between UK universities and the industry sector helping to support the development of an additional £3.5bn (BIS, 2015) highlighting the essential function HE has in support of the nation's economy.

For the individual, possession of a HE degree offers a premium return, increased employment opportunities, and earning potential. Typically, a graduate can expect their education to return a premium of over £100,000 across their lifetime, when compared to individuals holding two or more A-levels (Davies & Elias, 2003; Valero & Van Reenen, 2016). Evidence also suggests that possession of a degree level education offers additional protection from periods of unemployment, even during periods of economic uncertainty. This was recently confirmed by the number of graduates who reported being in employment, in comparison to non-graduates during the recent economic recession (Universities UK, 2015). The benefit of a degree level education looks set to continue as the economy moves towards a state of economic growth. A recent survey of some of the UK's top employer's future needs and requirements highlighted that they forecast 50% of their vacancies from 2016 to 2022 will require a candidate with a degree level education (UKCES, 2014) further emphasising the growing demand for a skilled graduate workforce, and the significance of HE within the UK.

Given the essential role HE plays in the expansion of the UK's economy, as a means of supporting the continued upward mobility of the nation and its population, the Robbins review (Robbins, 1963) charted the importance of ensuring widening access and creating a system designed to cater for the educational success of the majority rather than as

previous, the select few. As a consequence, the HE sector has adapted and re-established itself from one which served an elite 19% of the nation's population, to one which currently provides an education to 48% of the nation's young people (DoE, 2016). Since its initial inception the vision of widening access has significantly evolved (MacDonald, & Stratta, 2001). Early concepts anticipated that access would be widened to include those students achieving particularly well in grammar schools, but less likely to attend due to their socio-economic backgrounds. Later however, focus shifted to address the issue of providing better access for women, who would previously not have enrolled, thus greater numbers of women, in particular, those from middle class backgrounds began to participate (Vignoles & Murray, 2016). More recently, in the interests of social justice, equality and national competitiveness, priority has moved from increasing participation of the most able and well-educated students, to encouraging participation of all individuals who have the potential to benefit from a HE degree. As such, Government enquiries into the landscape and future of HE, for instance, that chaired by Dearing (NCIHE, 1997), outlined the importance of further expanding widening access, to allow HE to become more accessible to those without previous qualifications, the unskilled, older adults, individuals with disabilities and those from socioeconomic groups which were previously under-represented (MacDonald & Stratta, 2001).

Despite this progress, there is still disparity in the social backgrounds of those attending; with around 63% of current high school pupils expected to attend HE to study for their first degree at some point over their life time, only 24% of these students are anticipated to come from lower SES backgrounds (OECD, 2013; Blanden, & Machin, 2004). In addition to being less likely to attend HE, those from lower SES backgrounds tend to be less likely to successfully complete their degree programs, and, are typically less likely

to obtain a top-class degree (Thomas, 2002; HEFCE, 2004; Department for Education and Skills, 2003, 2006). While increased participation and greater diversity has moved the sector closer to Robbins guiding principle of an education system "available to all who are qualified by ability to pursue it" (Robbins, 1963, p. 296) it provides HEI's the issue of addressing these concerns and providing support to an increasingly diverse student population.

In a move argued necessary to secure the vision of widening access, the sector has undergone significant funding reform. Following on from the Dearing report (Dearing, 1997) which first introduced the concept of students as consumers, the publication of the Browne review outlined a range of financial reforms deemed necessary to support increased participation (Browne, 2010). This meant instigating a steep increase in the personal investment students are required to make in order to attend HEI's; with institutes in England, permitted to more than triple their annual tuition fee from £3,000 to £9,000 (Browne, 2010). While these reforms have been regarded as necessary to increase overall quality, offering greater value for money and enabling the sector to develop on a more sustainable footing, an unintended consequence has been increased pressures on HEI's to provide a greater depth of information and clarity on the outcomes students can expect from their significant financial outlays in order to attract potential students. These changes are being driven by a host of initiatives, most notably the newly proposed Teaching Excellence Framework (TEF) awards, and the current National Student Survey (NSS), while the newly named graduate outcomes survey has added an additional employability element as a means of increasing transparency and informed choice amongst potential students, and improving overall quality, placing increased pressure on universities to ensure and demonstrate their students experience success (Bunce, Baird & Jones, 2017).

Greater scrutiny in relation to students' concerns has highlighted a number of discrepancies, increasing apprehension regarding degree program quality, value for money and a mounting number of students leaving higher education with low levels of basic skills (OECD, 2015, BIS, 2016). Indeed, the introduction of student tuition fees and the transformation of students from learner to consumer has directly impacted student expectations. Research exploring the shifting perceptions and expectations of students has found that students are embracing a consumerist ethos towards their HE, wanting greater value for money; with an increased emphasis placed on contact teaching hours, and the investment institutes devote to their students and their learning spaces and resources (Kandiko, & Mawer, 2013). Increasing demands for satisfaction, and value for money are also reflected by the record number of complaints institutes have faced, with more than 2,000 students making complaints to their universities in 2013, an increase of 10% over the previous year (Abrams, 2014).

Further inquiry, reveals decreased levels of student satisfaction with many claiming to be unhappy with the provisions they are receiving. In fact, in a recent survey conducted by the Higher Education Academy (HEA), only 37% of students reported to believe their degree program offered good value for money (HEA, 2016). Further, poor quality teaching has been highlighted by both students and government, with high variations in the number of contact hours students can expect in the same subject, across institutions, with many universities being reported to have allowed teaching to become a "poor cousin" to research (BIS, 2016 p.12). Adding to these concerns is the apparent lack of confidence students have in relation to their HE improving their employment prospects. For example, over a quarter of students surveyed voiced a lack of confidence that their higher education investment would 'pay off' (Weale, 2016). This decline in confidence

is perhaps in response to the 20% of graduates described as not working in high skilled employment three and a half years after graduation (HEA, 2014). When viewed together, these concerns could explain the record number of complaints being made against intuitions over the past 3 years (BIS, 2016) and the growing number of students making the decision to drop out of HE, as highlighted by student non-continuation rates (BIS, 2016).

In spite of these apprehensions, the continued popularity of HE can be reflected in the record numbers of young people choosing to attend each year, with 465,500 people from the UK placed in HE in 2016. This has resulted in graduates entering the most competitive employment market in over a decade, a positive outcome for employers, however a daunting environment for current students. Figures released by the Higher Education and Statistics Agency (HESA) reveal that the number of students graduating with a first-class degree has almost doubled in the last decade, with 81,640 graduates achieving this top grade in 2014/15, and recent figures highlighting this number is set to increase (HESA, 2015; HESA, 2017). In response to the intense competition for graduate employment, employers have taken to filtering out applicants not holding a 2:1 degree or higher (AGR, 2012). This has led to increased competition between the 70% of students holding what is commonly referred to as a 'good degree' (2:1 or 1st) and substantial employment restrictions for the 30% of graduates who do not achieve this benchmark, as unfortunately for these students (having paid their fees and passed their exams), they are less likely to be considered even for interview by some employers. This has increased the pressure on HEI's, particularly given the widespread view that in order to remain viable, HEI's must respond effectively to students' academic-related concerns, (e.g. program retention,

course satisfaction, academic achievement, degree classification and career aspirations upon graduation).

1.4. Challenges for Higher Education

Set to further exacerbate the situation, the most recent UK White Paper concerning Higher Education: 'Success as a knowledge economy' (BIS, 2016), has introduced a range of radical reforms set to further shape the landscape of the system, and how it moves forward. The emphasis is more consumer orientated- students viewed as both consumers and investors, demanding increased success and greater value in return for their substantial financial investment. As such, the paper maintains that at the heart of the systems' current grievances is a lack of competition, informed choice and poor-quality teaching which has inhibited the sector's potential, and outlines legislation designed to tackle these issues.

One of the measures proposed to address these concerns and incentivise HE institutes to "raise their game" (BIS, 2016, p, 8) involves expanding the depth and detail of information available to potential students. A strategic aspect of this is the introduction of a new TEF charter. Through this framework, HEI's are to provide extensive information on their efficacy in ensuring student focused outcomes with an emphasis on student teaching, feedback, support, employment status upon degree completion, widening access and the entry and completion grades of those who have studied with them (BIS, 2016). While the TEF has been introduced to provide potential students a greater level of information on where the best provisions for their money can be accessed,

it is also expected to incentivise teaching reform by putting quality teaching to the front and centre of students' decision on where to attend (BIS, 2016, p12).

An additional pressure within the UK (excluding NI however) is the scraping of previous participation caps, thus removing the previous enforced limit on the total number of students' institutes were permitted to recruit (Hillman, 2014). Funding to support these additional places is to be met solely through students' tuition fees, with those HEI's deemed to be performing at a successful level through frameworks such as the TEF, allowed to maintain their current tuition fees and allowed to increase them in line with inflation (BIS, 2016). This announcement has been acknowledged to signal two factors; the demand to attend HE is unlikely to decline in the foreseeable future and; the recognised importance that higher numbers of graduates have to the employment sector. The prospect of uncontrolled expansion has been met with reservation however, with the impact higher numbers of students may have upon the quality of provisions students receive being a key concern (Russel group, 2013). In addition to apprehensions regarding quality, HEFCE (2015) has recently confirmed that they will be unable to support the additional funding associated with the cap removal, thus shifting responsibility onto HEI's to ensure they sustain financial stability by ensuring an even balance between students enrolled and overall quality.

Finally, if additional incentives to ensure and maintain student success were necessary, the government acknowledges that if HEI's fail to rise to these reforms, as a consequence they will be forced to close some or perhaps all of their courses and exit the market completely. As a matter of policy, the government has stated it will not seek to stop the

closure of failing institutes (BIS, 2016). From one perspective, these changes may look like an attempt to further marketilise HE. A common feature of a healthy market is competition and a focus on performance outcomes. The government has responded by reasoning the need to create a more flexible system, offering different types of courses, providing students a greater depth of information on value for money, student academic success and encouraging the development of new HE institutes to award their own degrees. However, failure to meet these demands and the expectations of students could result in HEI's being faced with closure.

Adapting to meet these reforms is likely to prove problematic for HEI's. Only recently has it been accepted that, despite a standardised school curriculum, students continue to enter HE with varying levels of academic attainment, leaving some on an uneven footing (Rubin, & Kazanjian, 2011). Adding to this, an increasing number of students are subject to concerns of academic unpreparedness (Greene, & Forster, 2003) an issue which could be further exacerbated by the removal of the cap on participation numbers and a further drive on widening access. Indeed, many of the universities who have the most success in enrolling widening access students, tend also to suffer from the highest attrition rates (Mian & Richards, 2016).

While student success in HE was previously dependent on the efforts and skills of the individual student, the introduction of these new reforms means that HEI's will be expected to develop new approaches to ensure student success in order to safeguard their survival. As students become more consumer oriented, and their expectations of what they expect from their educational investment increase, central to realising these

expectations will be the development of approaches and methods to motivate and progress the academic performance of a more diverse student body. Indeed, only when the system can support and ensure a greater number of students reach their academic aspirations, can inequality truly be reduced; simply opening the doors is not enough as "access without support is not opportunity" (Engstrom & Tinto, 2008, p. 50).

1.5. The growing emphasis on exploring academic growth

Recognising the importance of ensuring student success in a climate of increased benchmarks and quality assurances (Nichols & Berliner, 2007), recent conversation in psycho-education has seen a growing emphasis on examining academic growth and how indices of student learning develop over time (Dweck, 2010; 2015; Martin, 2015, 2011; Anderman, Anderman, Yough, & Gimbert, 2010; Anderman, Gimbert, O'Connell & Riegel, 2014).

In the United Kingdom (UK) interest in student academic growth has been growing, with a number of recently commissioned reports and pilot studies underway to inform HE of the variety of methodological approaches available to measure academic growth and learning gain (OECD, 2008; McGrath et al., 2015; HEFCE, 2017). For example, RAND have published a recent review of the current UK and international measures available to assess academic growth. The review highlighted a host of proxy and direct methods for assessing differences in student performance between two stages of their studies (McGrath et al., 2015). Further, the Higher Education Academy (HEA), with the support of the Department for Business, Innovation and Skills (BIS) has begun piloting 13

collaborative projects involving over 70 HEI'S within the UK. These studies aim to examine a host of approaches to assessing and measuring student academic growth through the use of longitudinal and cross-sectional methods. One example, the National Mixed Methodology Learning Gain Project (NMMLGP) is a longitudinal study making use of a series of questionnaire measures designed to evaluate first- and second-year students' attitudes, motivation and critical thinking of the UK's undergraduate population and how these responses change from year 1 to year 2 (Randles & Cotgrave, 2017). In addition, HEFCE has announced the creation of a large-scale database which will collect and compare measures of HE student academic growth at a national level, with such measures having been identified as potential evaluation metrics (BIS, 2016).

While in the United States (US), a great deal of effort has been spent on developing methods of assessing and understanding academic growth in groups and individual students, to allow for comparisons against national growth goals (Anderman et al., 2015). Most recently, the introduction of the Common Core State Standards (Common Core) represents a new wave of assessment standards designed to better prepare students for success in HE, and has been recognised by 90% of states. The common core has been designed to address the unevenness of student outcomes which are prevalent in national state schools through the introduction of common literacy standards to the curriculum. These common standards provide schools with clearly defined targets that each student should have reached at each stage of their secondary education. As such, students and schools across the US are to be assessed on their proficiency to develop and support student academic growth, with state wide league tables being used to motivate their efforts.

Motivating the academic growth movement and is an international rise in accountable requirements aimed at developing student preparation and learning, but also the assessment of teaching skills and educational quality (Anderman, Gimbert, O'Connell & Riegel, 2015). For example, the international Triennial Program for International Student Assessment (PISA) has recently begun to assess the proficiency of 15-year old students' in one of three core areas, mathematics, science and reading, once every three-years, across 65 countries to evaluate student and teaching provisions (OECD, 2016). In addition to assessing student growth, groups of teachers and schools are also being assessed to establish the efficacy of each countries education system to develop student performance over time and to better understand the practices that promote and enhance academic growth (OECD, 2016).

1.5.1. Measuring academic growth

Research focused on predicting academic growth is dependent on being able to assess it. The question of how best to measure academic growth in HE has garnered much debate (McGrath et al., 2015; Anderman, 2015; Dweck, 2015; OECD, 2016). Approaches discussed have included the use of proxy and direct measures. Proxy measures for example, have included Personal Development Portfolios' (PDP), student satisfaction rates, graduate employment rates and graduates annual salaries all of which have been suggested as potential measures addressing one or two aspects of growth. However, the use of proxy measures has raised concerns regarding their reliability. For example, graduate employment rates depend significantly on the health of the labour market and the needs of employers, both of which are likely to change across time (McGrath et al., 2015).

Proposed direct measures have included the use of student surveys which are often used to collect information about a range of student outcomes (McGrath et al., 2015). There are a number of student surveys currently in use throughout the UK which could be used or adapted to meet this purpose, one example is the nation-wide National Student Survey (NSS). While the NSS was not originally intended to assess academic growth, the survey contains a number of items addressing personal development which have been suggested as a potential means of measuring student academic growth (RAND, 2015). Despite the ease to which this approach could be implemented (e.g. survey is currently in place, nation-wide, has a high-response rate), this approach is subject to a number of significant limitations. For example, self-reports concerning students' experiences may be subject to misrepresentation or bias to improve an institution standing in league tables, while correlations between students' self-reports and traditional measures of learning for instance GPA have been questioned (Bowman, 2010; OECD, 2012).

A recent pilot study (Arico, Gillespie, Lancaster, Ward and Ylonen, 2018) commissioned by the HEFCE has highlighted student self-reported academic self-efficacy (ASE) as a potential measure of student academic growth. ASE is defined as a students' confidence in their personal ability to achieve a specific task or attain a specific goal and is considered a key learning skill developed alongside the curriculum (Bandura, 1977; Arico et al., 2018). In the Pilot study (Arico et al., 2018) HE students were asked to complete a series of multiple choice questions in weekly sessions over the course of the academic year. During each session, students were individually asked to provided responses to a series of 10 questions. Following this, students were gathered into groups and asked to rate and discuses one another's responses. This stage of the session is considered to encourage peer-instruction, with students comparing and discussing each other's answers in a group

setting. These sessions continue with students being asked to provide a second response to each of the questions, and the sessions close with the correct answers to each of the questions being displayed at the end. Following each session, students were asked to rank their confidence at being able to correctly answer similar questions again in the future. Whilst this pilot has highlighted the potential of student self-reported ASE as a potential academic growth indicator (Arico et al., 2018), it could be argued that this approach has its limitations given its decision to focus solely on ASE. ASE is often reported to share a close relationship to academic GPA, however this relationship is not always consistent (Chemers, Hu & Garcia, 2001).

An alternative approach to measuring student academic growth, student gain, focuses on measuring change in actual student grades (McGrath, 2015). Recently proposed by RAND (McGrath et al., 2015) a gain approach makes use of student academic achievement grades, in the form of student Grade Point Average (GPA) and involves measuring the difference between student GPA at two points in time, also known as 'learning gain'. Learning gain has been defined as the measurement of the difference in student performance between two stages of their studies, and is similar to the concept of 'value added' which is commonly used in primary and secondary education (McGrath et al., 2015). One important variation between the two approaches is that while value-added is based on the comparison between achievement initially predicted and actual performance, learning gain is based on the difference between two measures of actual student performance.

In the context of HE, measuring academic growth using the learning gain approach involves measuring the difference between student GPA scores across two points in time. As such a students' final degree classification is based upon their mean performance in examinations and coursework, in typically the final two years of the UK's traditional 3-year degree program. This approach in summarised in Figure 1 below, where academic growth is represented by the learning gain or distance travelled between points A and B in terms of student academic achievement.
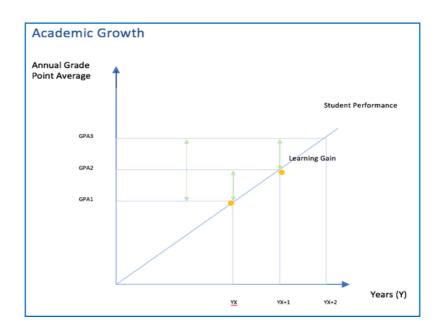
Figure 1-1 Measuring academic growth using a student gain approach.

One of the key advantages of this approach is that it provides a direct measure of academic growth which relies on currently in place assessment methods, given that all HEI's issue grades. In addition, as GPA is one of the most heavily studied measures in HE research (Robbins et al., 2004; Richardson et al., 2012), it offers an extensive literature base from which educators, researchers and policy makers can start to examine the factors which predict and support the development of academic growth in GPA. As such a learning gain approach has been described as a viable means of measuring student academic growth in HE (Rodgers, 2007; McGrath et al., 2015; Anderman et al, 2015 OECD, 2012).

1.6. Advantages to assessing academic growth

McCoach, Rambo and Welsh (2013) discuss a number of advantages to examining academic growth rather than single or static measures of achievement and why a growth perspective could offer additional insight. Growth is considered more equitable than static measures of achievement. There are considered to be large differences in initial levels of academic achievement between groups of students and between institutions (Robbins, et al., 2004; Richardson et al., 2012). Thus, it seems unreasonable to have the same achievement expectation of students and institutions with initially low-achieving students or high-achieving students. Remaining focused on the predictors of high and low static achievement is likely to always reveal that some students are doing better than others as a simple static score such as GPA misses the 'value-added' effect of education, as it assumes a common starting point. Turning attention towards the factors which predict academic growth in high and low achieving students should offer insight into the processes and factors underlying academic growth and inform educators on how to instil growth in students with varying levels of achievement levels (Dweck, 2006; McCoach, Rambo and Welsh, 2013).

Furthermore, in comparison to measures of overall achievement, academic growth has been demonstrated to be less strongly influenced by demographic factors such as socioeconomic status (SES) (Doran, 2003; Downey, Von Hippel, & Hughes, 2008; McCoach et al., 2013). As such, understanding the factors which predict academic growth are less likely to be confounded by student background factors such as student SES or family environment which have a long history of being used to predict static

academic achievement factors of which the student has little control over (White, 1982; Sirin, 2005). Focusing on the academic growth students experience, and the factors which influence it, could therefore allow educators and researchers to better understand the factors which predict academic growth and in turn concentrate on how best to support the development of growth once students have entered HE.

Examining and highlighting student academic growth also allows for both the institute and the student to be recognised for the improvements they have made in academic achievement, even when initial levels of achievement vary (Mc Coach et al., 2013). This is perhaps more in keeping with the basic tenants of education, as its reasoned that growth is at the "very heart and souls of education", (Dweck, 2015 p, 242). Whilst the limitation of traditional approaches to assessing and exploring academic success are becoming increasingly clear, greater attention to growth may provide significant achievement and motivational support for a more diverse student population (Martin, 2015) and allow HEI's contribution towards learning to be recognised. With a number of recently commissioned reports and pilot studies underway to inform HE of the variety of methodological approaches available to measure academic growth and learning gain (OECD, 2008; McGrath et al., 2015; HEFCE, 2017), and the increasing emphasis being placed on HE to encourage and support the development of overall student achievement, developing our understanding of the factors which predict and support student academic growth in HE has become imperative.

1.7. Previous research attending to academic growth

While the literature on student academic growth continues to expand, the majority of studies to date have mainly focused on exploring the predictors of academic growth in school age children (Pajares & Schunk, 2001; Gutman, Sameroff & Cole, 2003; Valentine, Dubois & Cooper, 2004; Hoy & Kurz, 2008; Martin, 2015; Mok, McInerney, Zhu & Or, 2015) with only a few examining predicators of academic growth in those attending HE (Travers, Morisano and Locke, 2014; Elliot, Murayama, Kobeisy & Lichtenfeld, 2015). This research has used different perspectives to assess academic growth but nonetheless, forms the foundation of the academic growth literature. Research conclusions offer a number of converging theories which demonstrate an association with student academic growth and offer insight into how the overall achievement of students could be supported.

For instance, a number of environmental and psychological factors have been observed as having an influence on the academic growth of school aged children (Gutman, Sameroff & Cole, 2003). Examining the relationship between multiple social risk factors, IQ and mental health upon the academic growth of school aged students from 4 years of age to 16 years old, Sameroff et al. (2003) approached 145 families with children aged 4 years old. These families were then asked them to complete a battery of assessments designed to assess their children's IQ and collect details of any student at-risk factors their child may have been exposed to. A total of eight at risk factors were considered in this study (lower SES level, maternal education, family size, father's absence, stressful life events, parenting perspectives, maternal anxiety and positive parent/child interactions)

while childhood mental health was assessed through the use of parental interviews. Upon reaching 18 years old, participants' primary and secondary school educational records were collected from school achievement records with GPA used as a marker of achievement. Hierarchical linear modelling was used to assess the changes in student academic achievement as a function of the at-risk factors and individual differences assessed as this study collected multiple observations for each child. Evidence demonstrated that at-risk factors namely, higher levels of stress, low IQ, lower SES levels, larger family size and lower maternal education level assessed when participants were 4 years old, were adversely associated with academic growth throughout the participants education records. In fact, exposure to a greater number of at-risk factors were associated with a low GPA score across educational participation and an increased number of absence attendance from school. Nonetheless, a number of factors for example, high levels of maternal education and positive parent/ child interactions (displayed via flexible/ adaptive parenting views) were found to be positive predicators of growth in GPA throughout the students' participation in each level of the education system. As such, students who came from families with better educated mothers, with higher SES levels were more likely to report higher quality interactions between parent and child; this relationship predicting greater levels of student academic growth.

While this study chose to follow participants up until, but not into HE education, the findings demonstrate that students who had greater exposure to the aforementioned risk factors were at an increased likelihood of experiencing lower grades and a greater number of absences throughout their educational participation. Conversely, greater levels of interaction within a warm and supportive family environment were predictive of greater levels of academic growth. Given the significant influence these factors have upon

academic growth up until the age of 18 years, the potential is there for these factors to continue to influence student academic growth in later adulthood.

Beyond student demographics, parental involvement factors, namely greater levels of communication between parents and children, and higher parental academic aspirations have been demonstrated to influence students' long-term academic growth (Hong & Ho, 2005). Hong and Ho (2005) made use of data collected from the National Educational Longitudinal Study (NELS) which was conducted in America and had observed 6,000 ethnically diverse students during the course of their participation in secondary education. In addition to collecting student annual GPA, the data also included student demographic characteristics and information on levels of parental involvement in the students' childhood. Hong and Ho (2005) found that students who came from households where the parents demonstrated higher levels of involvement, (which was expressed by greater levels of communication, active participation between parent and student and where the parents had voiced greater educational aspirations for their children), experienced higher levels of academic growth over the four-year study period. Further, it was suggested that the educational aspirations students held of themselves were predictive of both initial academic achievement outcomes and long-term academic growth. Positive student aspirations were able to act as a mediator of the negative influence poorer parenting behaviours had upon academic growth, namely lack of engagement and low-quality parent/ child interactions. Of the factors examined in the study, higher levels of parental supervision in the form of monitoring homework and the student spending more time watching television and socialising were revealed to have an adverse impact on student academic growth. Students who reported greater levels of these behaviours experienced lower levels of academic growth over their participation in secondary school.

While the subjects of Hong and Ho's study (2005) were only observed during their attendance in high school, their study provides important information regarding the influence of parental involvement and the aspirations and goals students hold can have upon long-term academic growth. The greater levels of autonomy students experience throughout their HE, could have a positive influence on their academic growth, whereas students who spend a greater amount of time distracted from their studies by the various socialising and extracurricular activities available at HE, including that of part-time employment could, experience lower levels of academic growth. It is as yet unclear if parental support and involvement continues to play a significant role in predicting student academic growth when students' progress into HE, given that students often move away from home to participate in HE. However, evidence suggest it could be a beneficial factor (Gutman, Sameroff & Cole, 2003; Hong and Ho, 2005).

Consistent with Hong and Ho's (2005) research, which highlights the influence psychological factors can have upon academic growth, there is evidence to suggest that student self-beliefs can predict student academic growth (Valentine, DuBois & Cooper, 2004; Adeyemo, & Torubeli, 2008). At present, there is a well-established literature built around the influence students' beliefs and self-perceptions has upon their academic achievement (Valentine et al., 2004). In general, this research has examined how factors such as self-efficacy, self-concept and self-esteem can influence student behaviours and how this relationship is predictive of achievement outcomes for example that of student GPA. However, much less is known about the nature of the relationship longitudinally and in relation to academic growth. Aiming to address this concern, Valentine et al. (2004) conducted a meta-analysis which examined the association between self-beliefs (namely, self-concept, self-efficacy and self-esteem) and longitudinal student academic

achievement. Their overall analysis included 56 longitudinal studies which comprised of students ranging from primary school level up until HE level. Results confirmed that initial levels of positive student self-beliefs shared a small but significant predictive association with students' academic achievement across time, even when students' prior academic attainment and other confounding variables such as SES, age and measurement delay were controlled for. While the effect sizes of these relationship were considered small, overall evidence supported a significant association between students' self-beliefs and their level of academic achievement over time.

Intrinsic motivation has also been demonstrated as having a significant influence upon student academic growth, assessed from childhood through to adolescence (Gottfried, Marcoulides, Gottfried, Oliver & Guerin, 2007). Intrinsic motivation has long been considered an integral factor for learning and achievement across childhood and adolescence (Elliot & Dweck, 2005) nonetheless, it has also been observed that student motivation levels tend to decline as students age and progress through the education system (Gottfried et al., 2007). As such, declines in motivation levels across time are considered to pose a serious risk to the academic success of students who enter HE (Gottfried et al., 2007). Gottfried et al. (2007) examined whether declines in motivation had a significant influence upon the academic achievement of a group of 114 students between the age of 9-17 years old. Results supported the assertion that motivation levels tend to decline across time, and further, that the decline was significantly related to lower levels of academic achievement. As such, poorer initial levels of achievement and motivation placed the student at risk for long term declines in both achievement and motivation as they got older. Again, while this study focused on students' pre-entry to HE, it demonstrates that motivation, a vital component in the prediction of learning and

achievement tends to decline as students' progress throughout the education system. In fact, these declines were negatively associated with academic growth. As such, if this trend was to continue into HE, students who report higher levels of motivation at the beginning of their degree program could be expected to experience higher levels of academic growth, even while their motivation levels decline over the duration of their studies.

Alternative studies have employed a qualitative methodology in the form of a self-reflective diary, to examine the influence student self-set goals can have upon student growth goals (Travers, Morisano & Locke, 2015). Focusing on 92 final-year students in the UK, Travers et al. (2015) approached students attending an optional module based on theoretical and practical approaches to personal-growth goal setting. As part of the module, participants were each asked to set personal-growth goals, which could range from academic growth goals to goals aimed at improving time keeping, getting a part time job or even being more sociable. Of the 92 students who took part in the study, 35 chose to set academic orientated growth goals which included tasks such as performing better in a forthcoming exam and putting greater effort into writing notes. As well as being asked to set themselves growth goals, students in the module were asked to participate in a growth-goal setting program which consisted of five one-hour sessions over five weeks. Session 1 involved increasing students' awareness of goal-setting theory (GST) (Locke & Latham, 1990, 2002, 2013), models of reflection (Gibbs, 1988) and how to keep a reflective diary, in addition to lectures on interpersonal skills and personal development. Session 2 involved students selecting what they perceived to be suitable growth goals. These goals included enhancing their ability to present new ideas in group settings, improve their concentration and focus and achieve higher assessment scores in a future

examination or piece of coursework. Session 3 consisted of students visualising the behaviours necessary to reach their growth goals, so they could explore the discrepancies between their current behaviour and the behaviours they thought might be conducive of academic growth. Session 4 involved students exploring the types of techniques, models and frameworks that would allow them to put their goals into practice. The final aspect of the program, session 5 saw students putting their growth goals into practice whenever possible and reflecting on their outcomes in their diaries whenever they took place.

In addition to these session, participants were asked to keep a reflective diary during the study, which offered them the opportunity to detail the entire growth-goal setting process, for their own records and the benefit of the studies quantitate analysis at the end of the goal-setting module. Analysis of the reflective accounts revealed that student growth goals were associated with increased perceived self-esteem, self-efficacy and for many students' better stress and time management skills. In relation to academic growth, students who reported setting themselves an academic achievement growth goal (30% of students) reported an increased growth in their chosen academic goals from the time of their previous assessment. Those students who reported growth goals indirectly related to achievement (e.g. well-being) also appeared to have a positive impact on academic growth and overall well-being. As such, both direct and indirect self-set goals and the use of self-reflection have been shown to influence self-assessed academic growth.

In an alternative study, the process of writing down personal growth goals has been demonstrated to have a positive influence on actual GPA growth in HE (Morisano, Hirsh, Peterson, Pihl & Shore, 2010). Using a randomised controlled trial design, Morisano et

al. (2010) examined the effects of personal growth goals on the academic GPA of a group of 85 academically struggling undergraduate students. Participants were asked to participate in a two-hour intervention session which was designed to improve their goal-setting ability. During the intervention, students were asked to imagine and write about their ideal futures and the situations and expectations they had for the future. Participants were then asked to write down a series of goals and sub-goals which they thought would help them realise their ideal futures. Each of the goal's students set had to be of personal relevance and related to either a state, trait or skill that each student wished to attain in the near future. Similar to Travers et al (2015) study, student participants were randomised and placed in either a control or experimental group. Rather than being asked to imagine and write down personal growth goals, students in the control condition were asked to complete a placebo intervention which made use of a basic writing task. At the end of the academic year, using a student gain perspective to assess academic growth, students in the goal setting intervention group demonstrated a statically significant level of academic growth in their overall GPA (an increase on average of 30%) despite there being no baseline differences in GPA between students in the control or intervention group. Participants in the experimental group were also noted to have a greater level of persistence in comparison to the control group, with each student who took part in the intervention completing the year successfully, whereas 20% of students from the control had dropped out of their degree programmes or reduced their course load to part-time by the end of the academic year.

The research of Travers and associates (2015) and Morisano et al (2010) is perhaps some of the few examples which have begun to examine the factors which can predict and support the development of student academic growth in the context of HE. Their findings

indicate that those students who set personal academic growth-based goals were more likely to experience significant levels of growth in their academic achievement in comparison to their peers and their own previous best scores. Their conclusions highlight the importance of setting personal growth goals and continued progress to achieve them has upon academic growth and the development of self-esteem and self-efficacy. Further, students who successfully realised their growth goals were also more inclined to set themselves larger and more difficult to achieve growth goals for the future.

1.8. Study Rationale

Acknowledging the importance of further developing student achievement, recent conversation in psycho-educational research has begun to move away from exploring the determinants of student achievement at a single point in time, towards developing understanding of the factors which predict and support student academic growth (Travers, Morisano & Locke, 2014; Anderman, Gimbert, O'Connell, & Riegel, 2015; Dweck, 2015; Martin, 2015; Mok, Mc Inerney, Zhu & Or, 2015). Academic growth can be understood as changes in student achievement across time and highlights the 'distance travelled', or differences in skills, competencies, knowledge or personal development displayed by students between two points in time (McGrath et al., 2015). The growing emphasis on predicting academic growth has been based on the recognition that students enter the education system with varying levels of academic achievement and as such, the true challenge for educators and researchers is to better understand and support a culture of growth and development (Ballou, 2005; Murayama et al., 2013; Dweck, 2015; Anderman et al., 2015; Gamble, Cassidy, McLaughlin & Giles, 2018).

Despite the increased interested in academic growth, to date there has been a lack of research predicting growth, amongst students attending HE (Murayama et al., 2013 Martin, 2015; Dweck, 2015). As such, greater clarity of the factors which predict and support the development of student academic growth in HE could therefore offer HEI's, policy makers and students a potential means of supporting the development of academic achievement. With this in mind, this investigation set out to explore and identify the factors which predict and support the development of student academic growth.

1.9. Research design

Taken as a whole, research examining the factors which predict and support the development of student academic growth in HE is still in its infancy (Dweck, 2015; Anderman, 2015; Travers, Morisano & Locke, 2015). Given this is an initial inquiry into the factors which predict and support the development of student academic growth, the current investigation consists of two studies. These studies and their aims are discussed below.

1.10.   Study One

A wealth of empirical evidence based predominantly upon students attending primary and secondary school level education, has highlighted a range of factors which are important in the prediction of academic achievement. This research evidence can also act to offer insight into the role these factors may have in the prediction of academic growth. This psycho-educational research has evolved into two largely separate bodies of study, one

demonstrating the influence of contextual factors, while the other has emphasised the role psychological factors have upon achievement. Contextual factors for example: socioeconomic status (SES) and parental involvement are considered to represent the environmental and social-developmental context a student has encountered throughout their development (Claro, Paunesku & Dweck, 2016). Whereas, psychological factors specifically: motivation, problem-solving and optimism are said to concern a range of individual differences which represent an individual's goals, aspirations and overall outlook on life (Robbins et al., 2004; Richardson et al., 2012). Similar to the prediction of achievement, the growth research previously discussed suggests that the prediction of academic growth may be more accurate if based on the inclusion of a variety of contextual and psychological factors (Richardson et al., 2012). With this in mind, Study one of the investigation examines the efficacy of the contextual factors of SES and family environment and the psychological factors of motivation, problem-solving style and optimism in the prediction of academic growth in a group of students attending a three year HE degree programme. In keeping with the subject of growth and development, student psychological growth, which is considered development in the factors of motivation, problem-solving approach and optimism from year one to year two, and the subsequent impact this has on academic growth is also explored.

1.11. Study Two

While Study Two examines the relationship between contextual and psychometric variables which has historically been examined in relation to academic achievement, reinforced by the importance of each and every student to experience academic growth (Dweck, 2015), Study Two explores the relationships between the positive psychological

factors of Psychological Capital (PsyCap), Emotional Intelligence (EI) and student academic growth. Each of these factors are considered state-like rather than trait-like in nature, which allows that they are both open to development, with previous research demonstrating that this development can meaningfully impact performance outcomes (Luthans, 2007; Petrides et al., 2016).

The movement of positive psychology has emphasised the advantages of building and developing the strengths and psychological resources students already possess (Luthans et al., 2012: Lopez & Louis, 2009). Arguably, a central factor of this movement has been Psychological Capital (PsyCap). PsyCap (which combines the psychological theories of hope, self-efficacy, optimism and resilience into one master construct to create a synergising effect), has built upon each of its components considerable empirical foundations to emerge as a single positive construct offering enhanced insight into a positive psychological state which so far, has been associated with a range of adaptive outcomes, including that of academic performance (Luthans, 2007; Petrides et al., 2016). Conversely, research in how emotional competency can influence overall performance and functioning has taken form in emotional intelligence (EI), a form of social intelligence that involves the ability to monitor one's own and others emotions to guide actions and behaviour towards achieving their goals. As such EI has been proposed to help bridge the gap between how individuals appraise and communicate emotion, and how they can use this emotion to better solve their problems, manage their well-being and ensure optimal performance (Salovey, & Mayer, 1990).

While students may report varying levels of PsyCap and EI, both of these constructs are considered state-like in nature, with a developing literature demonstrating their tendency to be open to development through the use of short class-based interventions, and that this development can have a meaningful impact on performance (Luthans, 2007; Salovey, & Mayer, 1990). Evidence of a positive relationship between PsyCap, EI and academic growth could offer a future avenue of intervention for those interested in supporting the development of academic growth. With this in mind Study Two examines the relationship between PsyCap, EI and student academic growth with the aim of offering students, educators and HEI's an additional means of supporting the development of student academic growth.

1.12.   Organisation of the Thesis

This Thesis is structured around each of the two research studies. In all, it comprises of six chapters. This opening chapter presents an overview of the research background, the changing nature of the landscape of HE, the increasing pressure being placed on students, educators and HEI's to ensure students experience academic success and the growing emphasise being placed on examining the factors which predict and support the development of student academic growth. Chapter two comprises of a literature review which summarises the role the contextual factors of SES, family environment and the psychological factors of motivation, problem-solving approach and optimism have in the prediction of academic achievement, and how these factors could influence the development of academic growth. Chapter three details study one of the research investigation, with methodology and results set out, accompanied by a discussion.

Chapter four presents a literature review for study two, which summarises the developing literature of PsyCap and EI and how these psychological factors are linked to academic achievement and how they could help predict and support the development of student academic growth. Chapter five presents the methodology, results of study two which closes with a discussion. The final chapter presents recommendations informed by the current investigation's findings, offering an outline of current interventions which could be tailored and adapted for the purpose of developing academic growth in students attending HE. The chapter concludes by identifying both limitations of the study and implications for future research.

2. Chapter Two: Literature Review One: Exploring the Antecedents of Academic Growth

2.1. Introduction

This chapter presents a review of the literature relating to Study One in the current investigation. Study One explores the role the contextual and psychological factors of socioeconomic status (SES), family environment, motivation, problem-solving and optimism have in predicting academic growth in students attending HE. In addition, the study examines if the three latter psychological factors develop during students' participation in HE. Despite a wealth of literature which has developed our understanding of the prediction of student academic achievement (Robbins et al., 2004; Richardson et al., 2012), much less is known about the association between these factors and student academic growth, or whether these psychological factors develop during student participation in HE. As such, through implication this literature offers an initial starting point for research exploring the antecedents of student academic growth. This chapter beings by discussing the role the contextual factors of SES and family environment have in the development of overall achievement and how these constructs could act to predict academic growth. The chapter continues by reviewing the psychological factors of motivation, optimism and problem-solving approach, providing insight as to how these factors may act to predict academic growth and offers evidence which suggests these factors may develop during participation in HE. The chapter concludes by offering the research aims for this first study. As such, the purpose of this chapter is to provide a contextual background for the first study and to introduce its research aims.

2.2. Uncovering Factors Which Predict Academic Growth

The determinants of academic achievement in HE have long been a preoccupation of educational and psychological researchers (Robbins et al., 2004; Richardson et al., 2012). An expansive volume of literature has developed around the factors which best predict student academic success and how this success can be encouraged. For instance, research contributions such as that offered by Tinto (1975; 2010), Bean (1980) and Bean and Metzner (1985) have distinguished between the social, environmental and psychological theories which ensure a student will experience academic success as measured through academic retention. Alternative research has examined the changes students undergo throughout their participation in HE, for example, Pascarella and Terenzini (1991) identified over 3,000 studies over a twenty-year period which had focused on the cognitive, competence and employment awareness changes which take place during students HE participation and the contextual and psychological factors which contribute to this change. Passarella and Terenzini (1991) suggest that by far, one of the most significant research developments to take place during this period has been research studies which have combined multiple psychological, contextual, cognitive and environmental factors to increase the accuracy of predicting student learning.

Alongside this developing research, given its prominence, student grade point average (GPA) has been at the heart of decades of developmental and educational investigation which has addressed a range of contextual, motivational and psychological variables which influence and predict student GPA (Coleman, 1966; Eccles, & Wigfield, 2002; Robbins., et al, 2004; Sirin, 2005). This research consists of two largely separate bodies

of empirical evidence which demonstrates that student GPA is influenced by contextual factors (for example, socioeconomic status (SES), family environment) and psychological factors for example, motivation, self-efficacy, personality and satisfaction etc. (Coleman, 1966; White, 1982; McIlroy & Bunting, 2002; Sirin, 2005: Fan, 2001; Dubow, Boxer & Huesmann, 2009; Richardson et al., 2012; McIlroy, Palmer-Con, Poole & Ursavas, 2017). Combined this evidence also suggests that similar to the prediction of GPA, the prediction of academic growth may be more accurate if a variety of factors are assessed (Richardson et al., 2012).

Despite this well-established evidence, there have been few research examples which have explored the relationship these contextual and psychological factors have with student academic growth, particularly in students attending HE. As discussed in the previous chapter, research examining academic growth has predominantly examined the predictors of growth in students attending primary and secondary level education (Pajares et al., 2001; Hoy, Hoy & Zurz, 2008; Mok et al., 2015; Anderman., et al, 2015). Nonetheless, as the importance of ensuring student experience academic success increases, so to do the need to explore alternative means of supporting the develop of academic achievement. Undoubtedly, systematic investigation of the determinates of academic growth in students attending HE will be necessary to better understand how to support student growth at this level. With this in mind, the contextual and psychological factors which have been established to predict student GPA offers an initial starting point for research exploring the antecedents of student academic growth.

2.3. Contextual Factors- Socioeconomic Status

Socioeconomic status (SES) is perhaps one of the best established and most widely studied contextual factors in education research (Coleman, 1966; Sirin, 2005; Reardon, 2011). Historically, the publication of the seminal 'Equality of educational opportunity' survey (Coleman et al., 1966) was one of the first large scale research studies designed to examine the influence a students' social background could have upon their academic achievement. Conclusions confirmed the assertions educators had since long held, that a strong relationship existed between SES inequality and numerous measures of student academic outcomes. Indeed, despite the efforts of schooling and teaching quality, it was remarked that these factors had little effect in minimising the negative consequences lower SES levels had upon shaping students' achievement outcomes (Coleman, 1966). Since Coleman and associates (1966) report, research examining the association between SES and academic achievement has continued to progress, with SES now considered the single greatest predictor of student academic achievement (Sirin, 2005).

Nonetheless, despite students from low SES levels being widely regarded as being at an educational disadvantage (Thomas, 2002), many students from low SES backgrounds continue to enter HE, report high GPA's, and persist with their studies through to graduation (HESA, 2017). In spite of this, little research has explored how SES level can influence student academic growth. This is unfortunate and perhaps a cause for concern given the importance social policy and the HE system places on supporting the success of widening access and social and educational equality. As discussed in the previous chapter, HE offers a potential gateway for an individual to develop the skills and attributes

which offer them access to greater career opportunities, which in turn can mitigate social and financial deprivation. As the emphasis on increasing HE participation for those from lower SES groups continues to increase, the impact SES level can have upon the academic growth of students attending HE is as yet unknown. In light of this, what we understand of the relationship between SES and achievement and the behaviours and attitudes underlying their association can provide insight into the potential relationship SES could be expected to share with student academic growth.

2.3.1. Defining and measuring Socioeconomic Status

Despite being a central component of an active research field, the sheer quantity of approaches used to define and operationalise SES act to demonstrate the ongoing debate regarding the construct's conceptualisation (Sirin, 2005; National Centre for Education Statistics, 2012). Research studies focused on children and young adults have often, used various measures of SES interchangeably, creating a level of ambiguity when it comes to interpreting and comparing research conclusions. Typically speaking however, SES is considered a tripartite composite measure used to describe an individual or families ranking on a hierarchy according to their access or control of valued commodities which can include; wealth, power and social standing in relation to others (Mueller & Parcel, 1981; Davis & Guppy, 1997; Davis-Kean, 2005; Bornstein, Hahn, Suwalsky, & Haynes, 2012).

In spite of the continued disagreement around SES measures, the three most commonly used SES indicators include; parental income, parental education and parental occupation

(White, 1984; Gottfried, 1985; Brooks-Gunn & Duncan, 1997; Sirin, 2005). The use of parental income as an indicator of SES reflects a parent's ease of access to economic and social resources and their ability to make these available to the student. Parental education reflects the highest level of education each parent holds and is generally considered a relatively stable measure of SES due to it often being established when students are of a young age (Quagliata, 2008). Parental education as a measure is often closely correlated to parental income and parental occupation, with greater levels of education often required to obtain more senior and higher levels of paid employment (Sirin, 2005). Parental occupation is also considered to significantly influence the friendships, interests and working schedules each level may experience (Green et al, 2012). Studies have examined the relationship between each of these three factors, with a number reporting modest correlations (Bollen, Glanville, & Stecklov, 2001). Nonetheless, these studies have also emphasised that these components measure a distinct aspect of SES and should be considered independent (Sirin, 2005). With this in mind, in the context of the current study, student parental occupation, income and education will be used to measure student SES.

2.3.2. Socioeconomic Status and Student Academic Achievement

Following the publication of the Coleman (1966) report, SES has found itself becoming a core construct in research examining student academic success. Numerous studies have explored the relationship between SES-level and academic achievement across various levels of schooling and offer evidence to support the presence of a significant negative association (White, 1982; Sirin, 2005; Caro, McDonald & Willms, 2009; Crawford,

Macmillan & Vignoles, 2017). For example, in the first meta-analytic study to examine the SES/ achievement relationship (White, 1982), reviewed a total of 200 studies published prior to 1980 which had considered the relationship between SES and various measures of academic achievement, including that of GPA. The body of evidence supported the presence of a significant negative correlation between a students' SES level (White included studies which had used family income, education level and or occupation of household heads as measures of SES) and their subsequent GPA, the lower the SES level of the student the lower their reported levels of academic achievement; this trend apparent across each level of educational participation.

Of additional interest, results from White's (1982) meta review also revealed that the strength of the relationship between SES and student GPA tended to diminish as students got older and progressed in grade level through the education system. Two plausible explanations were proposed to account for this pattern; firstly, the education system could be potentially operating as an intervention to level the achievement playing field between economically advantaged and disadvantaged cohorts. Perhaps more worryingly however, was the suggestion that this trend could also be the result of students from lower SES levels being more likely to drop out of the education system as they got older. This behaviour would of course, result in those students from lower SES levels being less likely to experience academic growth, and be less likely to enter HE in comparison to their more affluent peers. As such, the early research of Coleman and White (1966; 1982) acted to establish within the literature, the negative influence lower levels of SES level could have upon the development of academic achievement in students over various ages and levels of schooling.

More recent investigations into the relationship between student SES levels and academic achievement have confirmed that a medium to large sized negative association continues to exist (Sirin, 2005). Building upon the research of White (1982), Sirin (2005) conducted a meta-analysis which included 74 studies published between 1990 and 2000, to examine if the relationship between SES and student GPA had changed significantly in the 1990's, given the social reform and educational equality experienced in the decade since White's (1982) analysis. Results confirmed that student SES (based on family education, occupation and income level) was still a significant predictor of academic performance. Sirin (2005) remarks that a students' SES remains one of the strongest and most enduring factors which predict academic achievement. However, contrary to the results presented by White (1982), Sirin's (2005) conclusions suggest that the gap between SES and student GPA tended to increase across schooling levels, before levelling off once students were in high school. Sirin (2005) explained this trend as a function of the cumulate process of education, in which early academic achievement success provided the foundation for the development and scaffolding of later, more advanced levels of schooling. As such, Sirin's (2005) conclusions offer evidence to support the tenet that SES in early adulthood may have a depressive influence on the academic growth of students, given the achievement gap between students from low and high SES levels tended to widen and develop as students progress through the schooling system. If this trend were to continue into HE, it could be expected that those students from low SES levels would be less likely to experience academic growth, an outcome which would be detrimental to their future academic success.

Despite the insight offered by these conclusions, it is important to interpret them with caution, as both White and Sirin's (1982; 2005) analyses made use of data from one-time

only assessments, examining the relationship between SES level and achievement using cross-sectional, rather that longitudinal methods. As such, while both studies emphasise a significant negative correlation between SES level and academic achievement across time, their insight into the potential influence SES may have upon academic growth, particularly in students attending HE is limited.

2.3.3. Socioeconomic Status, Widening Access and Academic Achievement

The continued realisation of widening access initiatives globally, and in particular the UK, has resulted in a greater number of students from low SES backgrounds gaining entry and participating in HE than ever before (Robbins, 1963; Macdonald & Stratta, 2001; Blanden, & Machin, 2004; OECD, 2013; DoE, 2016). Nonetheless, despite widening access policy successfully increasing the representation of students from SES backgrounds, which were previously excluded or underrepresented in HE (often referred to in the literature as non-traditional students), its argued that non-traditional students are less likely to attend prestigious institutions (red brick institutions); successfully complete their degree programs or obtain a top-class degree (Thomas, 2002; Department for Education and Skills, 2003; HEFCE, 2004). As a result of these continuing disparities, the achievement outcomes and educational success of students from lower SES levels relative to their higher SES peers in HE has gained considerable research attention. This body of research offers evidence to support several unique differences between students from high and low SES groups, and how these can then offer insight into how SES may influence student academic growth during HE participation (Thomas, 2002; Blanden, & Machin, 2004).

Recently, Crawford et al. (2017) collected GPA and demographic data on around 40,000 students attending 11 universities within the UK, who had participated in HE between 2006 and 2011. Of the institutions included, 5 were members of the Russell Group, while the remaining represented post-1992 institutions. Overall, the student sample included a broadly representative sample of the UK's undergraduate population in terms of gender, but did include more white and younger students than is typical within the UK student population. Considering students first year GPA's, those students who came from lower SES levels consistently achieved a significantly lower GPA than that of their higher SES peers. In fact, even after controlling for student characteristics, namely prior attainment at high school, and subject effects, students belonging to lower SES levels achieved lower GPA's than their peers from higher SES levels, even those studying the same subject course.

In a further secondary analysis, Crawford et al. (2017) presented evidence which demonstrates substantial socio-economic differences in degree drop-out, completion and graduating degree classification (Crawford et al., 2017). Considering over 1,000,000 students who had entered HE aged 18-19 years, between 2004-05 and 2011-12 from secondary schools, those students from higher SES levels were 8% less likely to drop out of HE than their lower SES level peers within two years of entering, and 13% more likely to complete their degrees within 5 years of enrolling. In addition, students from higher SES background were more than 22% more likely to achieve a 2:1 or 1st than their peers from lower SES levels. As such, this research emphasises the negative influence SES can have upon the development of student academic growth across time, with those students belonging to lower SES levels, experiencing lower level of academic growth and being more likely to drop out of their educational programs.

In addition to significant GPA and retention differences between students from differing SES levels, several studies have also observed the differing perceptions and experiences students from higher and lower SES levels have during entry and participation in HE, many of which could have the potential to adversely influence academic growth. For example, students from low SES levels have been reported as commenting that they feel out of place and do not belong in HE in comparison to their more affluent peers (Thomas, 2002). Students from lower SES levels have also been described as being more likely to experience greater difficulty when attempting to settle in and adjust to HE life, while at other times they have been portrayed as being 'problematic' or as 'second-class students' (Thomas, 2002, p. 246). These difficulties and differing perceptions may come as a consequence of students from lower SES levels lacking an understanding of how the HE system works and an unwillingness to adopt a student identity in comparison to their peers from higher SES levels (Thomas, 2002; Read, Archer, and Leathwood, 2003; Christie, Munro & Wager, 2005; Ostrove & Long, 2007).

One research study which explored a sense of belonging amongst students from high and low SES backgrounds (Ostrove & Long, 2007), has reported that students from low SES were more inclined to report a lower sense of belonging during their participation in HE, which was also demonstrated to have a negative influence on their GPA score (Ostrove & Long, 2007). Previously, a sense of belonging, has been described as the sense of feeling part of a particular social group or place, and as such belonging represents a fundamental human motivation which shares an important relationship with emotion, health, well-being and cognition (Baumeister & Leary, 1995 p. 497). When examining this relationship, Ostrove and Long (2007) approached 324 HE students in varying stages of participation and collected data on students' SES level, sense of belonging, academic

adjustment and annual GPA scores. Results confirmed a significant negative correlation between student SES level and sense of belonging. Further, student SES levels shared an inverse relationship with students' academic adjustment with those students from lower SES levels were much more likely to report that they were struggling with their academic work and finding settling in a greater challenge than their peers who reported higher SES levels. Overall, a combination of lower SES levels, sense of belonging and academic adjustment were all found to be negatively correlated with student GPA, with students who came from lower SES levels reporting a lower sense of belonging, experiencing poorer adjustment to academic life, and reporting poorer academic performance. It is possible that the negative influence SES level has upon a students' sense of belonging and academic adjustment could act to inhibit the level of academic growth students from low SES backgrounds might experience, while the opposite could be said for those students who belong to higher SES levels.

SES level has also been demonstrated to influence student study behaviours and aspirations during and after their HE participation (Walpole, 2003). Investigating students' experiences in HE, Walpole (2003) used data from a number of longitudinal studies which had assessed a total of 12,376 students, who had attended HEI for four years in the US. The combined dataset provided extensive information on students' activities during their participation in HE, their plans and aspirations following HE and insight into their educational and occupational status following graduation. From the data, it was apparent that during their HE participation, students from lower SES groups were less likely to engage with student study groups, and more likely to report working 16+ hours a week in part-time or even full-time employment during term time. In terms of academic and employment aspirations, which was established through self-report plans

to attend graduate school, students from lower SES levels tended to report similar educational and employment aspirations to that of their higher SES peers. However, upon follow up nine years later, students from lower SES levels were less likely to have realised their academic or career aspirations than their higher SES peers. As such, lower levels of SES have tended to be associated with less time spent devoted to studying and a greater number of hours spent in part-time/full-time employment during term time; behaviours which may have a significant influence on academic growth.

2.3.4. Socioeconomic Status and Academic Growth

To date, there have been a limited number of research studies which have examined the association between SES and student academic growth, and those which are available have tended to focus on students of school age. For example, in one study which intended to overcome the cross-sectional limitations associated with previous research (White, 1982; Sirin, 2005), Caro (2009) made use of data from the Canada's National Longitudinal Survey (CNLS). This study compiled a data set which had observed students initially from age 7 years, across four points in time, until they reached 15 years old. Participants' academic achievement was measured using standardised annual mathematic tests completed in school, while a measure of SES was calculated using the traditional combination of family income, parental occupation and level of education. Similar to the findings offered by Sirin (2005), results revealed that the achievement gap between high and low SES level students in mathematics tended to develop and expand across time, widening at varying rates as the students progressed through the education system. More specifically, differences in achievement attributed to high and low SES levels remained

relatively stable from the age of 7 to 11 years old, thereafter however, achievement differences between high and low SES groups increased significantly up until the end of the study, when students were preparing to enter high school. In other words, those students entering the education system reporting lower SES levels not only reported initially lower GPA's than their more affluent peers, but experienced lower levels of academic growth throughout the period they were observed in the study.

While this study (Caro et al, 2009) focused solely on mathematics achievement in a group of students attending primary and high school, its conclusions do offer additional evidence of the significant achievement differences associated with high and low SES level students and how this achievement disparity tends to increase throughout students schooling. While the underlying mechanisms explaining the relationship were not explored, Caro (2009) proposed that two factors may have been in action. Firstly, in keeping with Sirin's (2005) suggestion, the pattern displayed could have been an outcome of cumulative advantage theory, whereby students develop new skills by building upon their previous skillset, with students from higher SES backgrounds able to develop skills and knowledge at a faster pace than their less affluent peers. Conversely, an alternative theory was that schooling practices, for example institutional arrangements (i.e. schools repeatedly placing those from lower SES backgrounds in low ability groups, and high SES students often placed in high ability groups) served to influence students' academic development, with low SES students consistently being placed in low ability groups, thereby limiting their opportunity of those from low SES experiencing growth (Merton, 1973; Caro, 2009).

There are currently even fewer examples of research examining the association between student SES level and academic growth in the context of HE. However, one recent exception has explored the academic growth students experienced from primary school through until their first year of HE participation in the UK (from 4 years old to 18 years old) (Crawford, Macmillan, & Vignoles, 2017). Accessing national administration data of 460,653 state schooled students born between 1990 and 1991, Crawford et al. (2017) organised students into two groups, initially high and low performing students who came from both low and high SES level families. Results revealed that students from lower SES levels who initially reported high levels of GPA in primary school fell behind their higher SES peers who had initially reported lower levels of achievement during participation in high school, with the achievement gap showing signs of levelling off once both groups of students entered their first year of HE. In terms of academic growth, those students from poorer backgrounds who were initially high achievers in primary school experienced lower levels of academic growth in comparison to their financially advantaged peers, who despite reporting initially lower levels of GPA, experienced greater levels of academic growth throughout the time they were tracked.

In an attempt to explain this trend, Crawford et al (2017) suggested that the practice of school sorting was in play during students transition into secondary school. It was at this point lower SES students were more likely to be sent to poorer performing high schools in comparison to their richer peers, this decision influencing the opportunities lower SES students had to experience growth which was reflected in their relatively lower GPA scores. Nonetheless, given that Crawford's et al's (2017) study concluded when students were in their first year of HE, whereas it is unclear as to whether SES continues to have a significant influence on academic growth during students' participation in HE.

Taken together these results suggest that SES has a significant influence upon student GPA across each level of the education system, specifically a negative influence on academic growth in HE. To date however, research examining the association between SES and academic growth has predominantly been limited to students participating in primary and secondary level education. Further exploration of the influence SES has upon the academic growth of those attending HE would offer additional insight into how this contextual variable may influence students in HE.

2.4. Family Environment

In addition to SES, the achievement literature has consistency shown that a students' family environment represents an important factor in predicting academic achievement (Davis-Kean, 2005; Duncan, Brooks-Gunn & Klebanov, 1994; Desforges & Abouchaar, 2003; Gutman, Sameroff & Cole, 2003; Jacobs & Harvey, 2005; Turner, Chandler & Heffer, 2009). For many students, the family is a primary source of support and a key environment of socialisation (Hill et al., 2009) and as such, early research revealed that the quality of the relationships within a students' home environment, be this with parents, siblings or caregivers has an important bearing on their academic performance (Duff & Swick, 1978; Jacobs & Harvey, 2005).

Levels of parental involvement and support have been demonstrated to play a central role in the association between family environment and the academic achievement dynamic by helping to shape children's attitudes and beliefs towards achievement and pro-educational behaviours (Hill et al, 2004). This body of research has frequently

emphasised the importance of a warm and supportive family environment, in which parents assume an active role in encouraging students academically, this encouragement and support instilling pro-educational behaviours (e.g. motivation, self-efficacy) which are beneficial throughout a students' participation in the education system (Conger & Dogan, 2007; Mistry et al., 2002; Hill et al., 2004; Davis-Kean, 2005).

Despite this growing body of evidence, the majority of studies have tended to examine young children, who have most often come from low-income families or those students who are considered to be at-risk (in care, low GPA scores, from one parent families), while the conclusions of studies based in the context of HE have at times been inconsistent (Carlstrom, 2005; Roman, Cuestas & Fenollar, 2008). The inconsistency of these results suggests that there may be moderations between family environment and the academic achievement relationship, a trend which could be present when examining academic growth. Acknowledging these somewhat inconsistent outcomes, greater clarity and understanding of the relationship between family environment and its potential to influence academic growth would provide valuable insight into the role a students' family background has in predicting their academic growth in HE.

2.4.1. Defining and Measuring Family Environment

While attending University for many can involve moving out of the family home and into halls of residence with peers, a students' family environment is likely to have a long-term effect on their cognitive and behavioural outcomes as a young adult. Nonetheless there

has been very little research examining the role family environment plays in the development of academic growth.

Family environment has become somewhat of an umbrella term in the literature, with research claiming to assess family environment having come to include environmental characteristics within the home, relationships between family members, levels of parental warmth, conflict, involvement, support and parental aspirations (Moos & Moos, 1994; Björnberg & Nicholson, 2007; Teodoro, Allgayer, & Land, 2009). Typically, however, research examining the relationship between a students' family environment and academic achievement has largely focused on the influence levels of conflict, support and encouragement within the family can have upon the development of achievement (Moos & Moos, 1994; Davis-Kean, 2005; Björnberg & Nicholson, 2007; Teodoro, Allgayer, & Land, 2009). However, in contrast to this a students' family environment could also be said to involve the warmth and support of parent/student interactions and the positive social climate students experience within their family environment.

2.4.2. Family Support and Academic Achievement

The significance of a warm, supportive family environment in the development of academic achievement has been demonstrated by Davis-Kean (2005) who reported the importance of parental aspirations and parenting warmth in predicting higher levels of academic achievement. Using data from a longitudinal study which had tracked children between the age of 8-12 years old, structural equation modelling (SEM) highlighted that family environment factors namely, parental beliefs and behaviours formed the

foundations of a child's academic aspirations, which directly influenced their academic performance in primary school level education. That is, children who developed within a family environment where parents reported higher quality interactions with their children, (characterised by greater levels of warmth (positive feelings, praise, greater levels of response, more interactive play, and a greater emphasis on reading), reported higher levels of achievement across the study age group. In addition, parents who created a warmer more nurturing environment also held higher academic expectations of their children. As such, the positive influence higher parental expectations have on children's performance was evident through the increased levels of achievement children reported. On the contrary, those children who had developed within a family environment where parental behaviour was characterised by lower emotional stability and lower level of paternal warmth, also held lower academic aspirations, and were also less inclined to experience achievement success. This study acts to highlight the differences in behaviours and beliefs parents from warm and nurturing families hold of their children and how these expectations influence their children's behaviours. Whilst the study focused on children in primary level education may limit the insight it can provide to the current investigation, this could suggest that increased achievement noted in response to warm and nurturing family environment may act as a potential predictor of academic growth.

Higher quality interactions and greater levels of parental involvement have also been demonstrated to influence achievement-orientation attitudes. General socialisation and social learning frameworks suggest that the observation of positive educational behaviours and learning experiences within the home environment have the potential to shape a students' future values, beliefs and behaviours (Bandura, 2001; Eccles., et al, 1993; Dubow, Boxer & Huesmann, 2009). Similar to family process models, which

suggests numerous factors interact to represent a students' family environment, social learning frameworks suggest that a students' behaviour is in part, a reflection of the vast array of different learning experiences they have observed within the home (Bandura, 2001). Observing these behaviours within the context of the family environment can encourage the formation of internalised values, aspirations and social norms (Eccles., et al, 1993). Over time these behaviours are reinforced through interactions within the home and the students in the wider social domain developing into stable and persistent attitudes and behaviours which are predictive of their later academic success.

The long-term influence of greater levels of parental support and involvement on childhood academic aspirations has been explored in a group of 463 adolescents from 5 to 16 years of age (Hill, Castellino, Lansford, Nowlin et al., 2004). The families who took part in this particular study were first approached when their children were aged 5 and just entering the education system. These families were contacted annually until their children had reached 16 years of age, and throughout this time, a series of assessments were conducted annually, where parental academic involvement was assessed using reports from parents, teachers and the children themselves, as well as measures of behaviour problems during school, children's aspirations and a measure of academic achievement in the form of annual GPA. Results revealed that parental involvement mattered significantly across a child's primary and secondary level of education, with students whose parents displayed higher levels of academic involvement, reporting higher personal academic aspirations, and fewer behavioural problems when in school, pro-educational behaviours which were directly predictive of GPA scores. Nonetheless, despite the positive relationship between parental involvement, aspirations and pro-educational behaviours, Hill et al's (2004) research failed to provide evidence to support

a direct, significant association between parental aspirations and GPA scores. In all, Hill et al (2004) findings offer evidence to suggest that parental attitudes and beliefs influence student pro-educational behaviours namely higher academic aspirations, and fewer behavioural problems, and that these behaviours share a positive correlation with GPA across primary and secondarily level education.

There is also evidence to suggest the continued importance of parental support in predicting the academic performance of students attending HE, even when prior academic performance in high school is controlled for (Cutrona, Cole, Colangelo, Assouline & Russell, 1994). Approaching 418 undergraduate students in their first and second year of HE. Participants were required to complete standardised measures designed to assess their perceptions on the levels of parental support (considered low levels of family conflict, and higher levels of achievement orientation) they experienced from their parents and peers. Students also completed a scale to measure levels of family conflict and parental achievement orientation, while their previous achievement scores were gathered from students' examinations and current GPA levels. Results provided evidence to support the importance of a supportive family environment, even once students had entered HE. The perception of a supportive family (actively offering advice, assistance, being considered caring and sharing similar interests) was demonstrated to have a small, but significant association with student GPA, as did student academic achievement scores for entry to HE. Parental achievement orientation did not however demonstrate a statically significant relationship on this occasion.

In a second stage of the study, using an independent sample, Cutrona et al., (1994) examined the association parental support shared with student anxiety, academic self-efficacy and GPA. On this occasion, higher levels of perceived parental social support predicted lower levels of student anxiety which in turn predicted higher levels of academic self-efficacy. When these factors were regressed against student GPA, they were able to explain 21% of the variance in GPA, suggesting that perceptions of family social support continue to influence student levels of anxiety, self-efficacy and ultimately GPA, even in students who were likely to have moved away from home. These results demonstrate that higher levels of family support tend to foster greater levels of adaptive behaviours such as self-efficacy. As commented by Cutrona et al. (1994), a supportive family environment offers students a 'safety net' that allows them the opportunity to experience greater active participation and exploration across a range of valuable life experiences within the family, which in turn helps students acquire greater coping skills and self-confidence (Cutrona et al., 1994 p. 369).

2.4.3. Parental Encouragement and Academic Growth in HE

A students' family environment has also been demonstrated to influence the academic performance of students attending HE (Cutrona, Cole, Colangelo, Assouline & Russel, 1994; Dennis, Phinney & Chuateco, 2005; Cheng, Ickes & Verhofstadt, 2012). For example, Cheng et al. (2012) examined the link between family social support on a group of 240 HE students' academic performance across time and found that family support was an important factor in predicting student GPA scores. In this study Cheng et al (2012), approached 373 students in their first semester in a Midwest HEI. Students were asked to

provide demographic information in addition to completing standardised measures deigned to assess levels of family social support, family economic support and asked to allow access to school records for the collection of their GPA at the end of each of their first-year semesters. Upon analysis, it was discovered that of the original sample, 240 students had completed all semesters. Of the students who remained, those students who reported greater levels of family social support (for example expressing, encouragement, emotional support, interest in academic activities) also recorded higher GPA scores each semester, over and above that of their peers who reported experiencing lower levels of family social support. Of further interest, perceived family economic support displayed a non-significant relationship with student GPA, which would suggest family social support, rather than economic support, can act as a more valuable predictor of GPA in the context of HE.

A further analysis in this study, focused on the influence both family social and family economic support played on the stability of students' GPA throughout their first year by examining the variance in GPA scores across each of the three semesters. Students who reported lower to medium levels of family social support reported less stable GPA scores throughout their first year in HE. In other words, their achievement scores were less consistent over the period of the study than their peers who benefited from greater levels of family social support which predicted stable GPA scores. As such, this study demonstrates the advantage a socially supportive family can offer students throughout their first year of participation in HE with students who perceive relatively higher levels of social support from home reporting consistently higher GPA's in comparison to their less well supported peers.

Despite this evidence, it is important to remain mindful that there are a number of inconsistencies within the literature, with some research findings failing to report a significant relationship between family support and GPA in students attending HE (Carlstrom, 2005; Roman, Cuestas & Fenollar, 2008). One research study examined the interrelationships between students' self-esteem, peer expectations, family support and learning approach Roman et al. (2008) were unable to find evidence for a direct relationship between students' perceptions of family support and students GPA levels. Approaching a group of 553 students who were in their first, second, third or fourth year of participation in HE, students were asked to complete standardised measures of academic self-esteem, peer expectations and family support, while GPA was taken from students' school records. Through the use of SEM, family support was demonstrated to share a significant relationship with students' self-esteem, however its relationship with student GPA was reported as being non-significant. With this in mind, the relationship between family environment factors such as family support and student GPA could potentially be mediated through psychological factors, and not just directly. Subsequently, while family environmental factors such as those discussed may not reveal a direct relationship with student GPA and academic growth, its tendency to be associated with beneficial behaviours and attitudes such as that represented by student self-efficacy may still allow it to act as a significant predictor of student academic growth.

Considering the literature reviewed, while acknowledging several inconsistencies, there is compelling evidence to support the role of a warm and supportive family can have in the development and prediction of student academic achievement. Nonetheless, as highlighted this branch of research has largely been reserved to children participating in primary and secondary level education, and has yet to be explored in relation to academic

growth experienced by students throughout their participation in HE. If the encouragement and support which has been demonstrated to be instilled from supportive parents in those attending primary and secondary level education continues to be a positive influence upon academic achievement, it is reasonable to suggest that family environment may also act to predict academic growth in those attending HE.

2.5. Psychological factors

In addition to the aforementioned contextual influences, a strong, but relatively separate research body supports the role of student level psychological factors in the prediction of academic achievement, particularly that of GPA in HE (Pintrich & Groot, 1990; Busato, Prins, Elshout, Hamaker, 2000; Robbins et al., 2004; Dweck, 2010; Richardson., et al, 2012) Furthermore, there is growing evidence which suggests that the prediction of student GPA may be more accurate if based on a combination of multiple psychological factors, offering researchers and educators enhanced predictive ability (Richardson., et al, 2012). Given the developing evidence base, it does however pose the current investigation the challenge of addressing which factors to include in this initial examination of the factors which may influence student academic growth.

Acknowledging this theoretically rich psycho–educational literature, arguably some of the most reviewed and researched predictors of student GPA in the context of HE has been motivation, problem-solving approach and optimism (Robbins et al., 2004; Richardson et al., 2012). Nonetheless, while a considerable body of research demonstrates how motivation, problem-solving and optimism can predict HE students'

GPA, and a number of pro-educational behaviours associated with higher levels of achievement, much less is known about each factor's influence upon student academic growth.

Of particular disappointment, to-date research studies exploring the influence motivation, problem-solving approach and optimism has on achievement outcomes in students attending HE, have failed to examine if the constructs develop during students' participation in HE. Evidence that development in each of these psychological factors can have a meaningful influence on academic growth would offer additional support of their role in predicting and supporting the development of academic growth. Further, each of these psychological constructs has developed an extensive intervention literature which, if a positive relationship were to be supported, would offer an initial starting point to those interested in developing academic growth.

With this in mind, a greater understanding of motivation, problem-solving and optimism, and an overview of the dominant theories used to describe their influence upon student GPA and pro-education behaviours and their stability overtime, offers insight into the role each may play in the prediction of student academic growth.

2.6. Motivation

In recent years, there has been a renewed interest in theories of student motivation within the psychological literature (Dweck, 2010; Robbins et al., 2004; Richardson et al., 2012;

Busato, Prins, Elshout, Hamaker, 2000; Pintrich & Groot, 1990). This growing interest is evident by the increasing use of motivational theories and research to develop our understanding of the development of student GPA across each level of participation in the education system (Pintrich & Schunk, 1996; Covington, 2000; Eccles & Wigfield, 2002; Robbins et al., 2004; Richardson et al., 2012). Whilst our understanding of motivation continues to evolve, and a diverse range of theories and approaches have been proposed to define and conceptualise the construct, motivation can generally be described as the energy that drives and maintains behaviour (Busato, Prins, Elshout & Haymaker, 2000; Covington, 2000; Guay et al., 2010).

Typically, modern theories of motivation have focused on exploring the relationship between an individual's beliefs, values and goals and their association with achievement outcomes (Eccles & Wigfield, 2002). Whilst each theoretical approach varies, at their core motivational forces are most often described as either being intrinsic or extrinsic in nature. Intrinsic motivation has been defined as the motivation underlying behaviour driven by curiosity, or pleasure derived from performing the task. Conversely extrinsic motivation is often considered the product of external reward (i.e. awards, financial gain) (Shamloo & Cox, 2010; Vallerand & O'Connor, 1989).

Previously, student motivation has been strongly linked to academic performance, in particular higher GPA in HE (Richardson et al., 2012; Robins., et al, 2004; Lazowski, & Hulleman, 2016). In addition to its direct association with GPA, motivation has consistently been shown to influence a range of student level pro-educational characteristics and behaviours which support the development of learning, namely; deeper learning strategies, superior student adjustment and greater levels of academic

engagement (Busato, Prins, Elshout, & Hamaker, 2000; Vansteenkiste et al., 2005; Richardson et al., 2012). Evidence has also suggested that high levels of motivation in one particular area (for example maths or science) can also generalise into other areas (Gottfried, 1990). Taken together, the evidence supporting the role of motivation in predicting optimum academic achievement has allowed it to become a crucial component in research exploring academic success and a fundamental aspect of any model which aims to explore human performance (Robins et al., 2004; Pinder, 2011).

One of the most important and yet unresolved questions facing educators is how to improve the academic performance of students, in doing so, an essential aspect of this, will not only be to understand the development of motivation across time, but also the role it plays in sustaining long term growth. With this in mind, while the relationship of motivation with GPA and other achievement outcomes is well charted in school aged children and those attending HE, few studies have examined its relation to academic growth (with the exception of; Murayama, Pekrun & Lichtenfeld & Vom Hofe, 2013). In fact, even fewer studies have examined if and how motivation develops during students' participation in education, particularly in students attending HE. Understanding the relationship between motivation, student GPA, as well as other pro-educational behaviours and how the construct develops overtime, offers insight into the role of motivation in predicting academic growth.

2.6.1. Defining Motivation

Simply put, to be motivated means to be moved to do something (Ryan & Deci, 2000). A student who feels energised to act towards a goal is considered highly motivated, whereas one who finds themselves lacking the inspiration to act can be described as unmotivated (Ryan & Deci, 2000). However, unlike this description suggests, motivation is not simply an all or nothing concept. Motivation can differ in amount (how much motivation) and in orientation (what type of motivation). Orientation describes the underlying attitudes and goals which directs the students' actions- that is, it concerns the why of their actions. For instance, a student may be motivated to do a piece of coursework due to a personal interest in the topic, or to gain approval from their lecturer or peers. The act of doing something for inherent interest or enjoyment is described as an act of intrinsic motivation. Alternatively, a student may put extra effort into their coursework in return for financial incentive from parents or the promise of employment, this behaviour is motived by an external factor or reward and as such is considered extrinsic. As will be discussed, performance as a result of each of these motivational orientations can differ greatly (Elliot & Dweck, 2013; Covington, 2000; Ryan et al., 2000).

2.6.2. Conceptualising Motivation

Motivation has been conceptualised using a number of different theories and investigative approaches (for an in-depth review, see; Elliot & Dweck, 2013; Covington, 2000; Eccles & Wigfield, 2002). While it is beyond the scope of this review to fully consider each of the motivational theories and perspectives mentioned throughout the literature, only a

limited number of motivational constructs have repeatedly been used to examine student GPA which could be considered in three groups; a) attributions; b) sources of motivation; and c) goal types (Richardson et al., 2012).

2.6.3. Attributions

Several motivational theories have focused on examining student beliefs about their confidence, self-efficacy and expectancies for success or failure when approaching an academic task. In general, these theories are concerned with the "can I do this" component when approaching a task (Eccles & Wigfield, 2002). Of these theories, attribution theory (Weiner, 1985) has emerged as one of the most adopted approaches over the last 40 years (Eccles et al., 2002).

Attribution theory and attributions, concern the way in which individuals rationalise causation (Graham & Folkes, 2014). In the context of education this relates to students' explanations of past academic successes or let-downs. When presented with an academic setback, students can do one of two things; blame themselves due to lack of ability and failing to make the necessary effort (make an internal attribution); or attribute the failing to an external factor, such as poor teaching and simply bad luck (external attribution) (Platt, 1988). The stability and generality of these attributions can be evaluated, with the individual's tendency to make either internal or external attributions referred to as a locus of control (Rotter, 2004). Attributions can vary in their stability and domain, for example a pessimistic attribution style (external locus) is described as stable and global in nature, with those holding such attributes believing themselves to be perhaps stupid or lazy, this

the cause of their previous failures. In opposition, an optimistic attribution style (Internal locus) is recognised in students who make less stable, domain specific causations of previous failures (e.g. I failed that one course because of bad luck) while making global, stable attributions for past successes (Richardson et al., 2012). As such, proponents of attribution theory emphasise, that an individual's attributions of their achievement outcomes rather than motivational dispositions determine their achievement motivation (Eccles et al., 2002). The influence of attributions upon academic outcomes has been demonstrated with an internal locus associated with higher levels of academic performance, while an external locus has been linked to lack of student engagement (Skinner, Wellborn & Connell, 1990; Gifford, Briceno-Perriott, & Mianzo, 2006).

2.6.4. Self-determination

Alternative theories of motivation have concentrated on investigating the source of student motivation, or attempting to answer the question of "why" a student may act to perform a specific task. For example, research evidence has demonstrated that student achievement outcomes can be better understood and predicted by distinguishing between the types of motivation (intrinsic and extrinsic), as the behaviours resulting from each of these approaches differs significantly (Bandura, 1997; Covington, 2000).

One approach which answers the "why" question is Self-Determination Theory (SDT) (Ryan & Deci, 2000). SDT has been proposed to integrate two perspectives on motivation a) individuals are motivated to maintain an optimal level of stimulation and b) individuals have a basic need for competence (Eccles et al., 2002). As such, rather than simply

evaluating how motivated students are, SDT addresses the sources underlying motivation and the desire an individual has to undertake a task (Ryan & Deci, 2000). SDT theory maintains, that when people engage in a task to fulfil an internal psychological need, these needs can be organised into three categories; autonomy, competence and relatedness. Performance based on enjoyment is said to involve intrinsic motivation and optimum functioning, whereas performance based on external reward is a result of extrinsic motivation. Of these two sources of motivation, intrinsic is said to be maintained through the presence of challenging and interesting task engagement, that is a task the student wishes and is excited to perform and has been associated with optimal leaning, deeper learning strategies and greater persistence (Covington, 2000; Pintrich & Schunk, 2002; Vansteenkiste, Simons, Lens, Soenens & Matos, 2005). SDT also emphasises the importance of different types of extrinsic motivation, given that many activities students carry out are based on external demands (examinations) or the prospect of reward (well-paying job). The importance of extrinsic motivated goals, can over time become internalised and intergraded to become an important aspect of an individual's sense of self (Ryan & Deci, 2000).

2.6.5. Goal Types

Additional motivation research has focused on examining the achievement goals students hold and how these goals are related to academic performance (Bandura, 1997; Elliot & Dweck, 2013; Covington, 2000). Many different approaches have emerged, for example Schunk (1990) has shown that specific, proximal or relatively challenging goals can predict varying levels of student motivation and achievement outcomes.

An alternative approach, Goal Setting Theory (GST), focuses upon the achievement goals individuals set themselves and their subsequent relationship to achievement behaviour (Dweck, 1999; Pintrich, 2000). This theory makes distinctions in student motivation by organising goals as either performance-approach or performance-avoidance (Skaalvik, 1997); the former results in goals being performed as students do not want to perform worse than peers, while the latter refers to students aiming to do better than others (Murayama, Yamagat & Elliot, 2011). Performance approach goals have been associated with enhanced academic motivation and academic competence, while approach avoidance goals are linked to decreased motivation and achievement (Richardson et al., 2012). Goal theory also suggests that feedback on performance plays a central role to the setting of goals and goal performance (Locke & Latham, 1990). Feedback is said to have a direct impact upon performance self-efficacy and performance expectancies which are said to become more stable as the student progresses through the education system (Lent & Brown, 2006).

Given the wide range of theoretical approaches, constructs and measures used to assess motivation, the vast variety of literature concerning motivation has led it to become one of the most expansive individual differences (Robbins et al., 2004) in educational research. While each of these approaches are distinct, for practical purposes, motivational forces can be distinguished by two sub-types, intrinsic and extrinsic with each of these having the potential to vary in strength (Ryan & Deci, 1985; 2000; Cerasoli & Ford, Nicklin, 2014). As this is an initial inquiry into the factors influencing academic growth, understanding how each of these types of motivation predict GPA and pro-educational behaviours offers insight into the function motivation may play in influencing academic growth.

2.6.6. Motivation and Student GPA

Given the breadth of motivational research, two recently conducted meta-analytic studies which, (having combined multiple motivational theoretical approaches) act to highlight the relationship motivation has upon academic achievement (Robbins et al., 2004; Richardson et al., 2012). Robbins et al. (2004) examined the relationship between psychosocial factors (including that of motivation) and HE students' GPA by undertaking a meta-analysis of 109 independent studies. Robbins and associates (2004) chose to categorise psychosocial factors into 9 broad constructs, including that of SES, self-efficacy and motivational theories, which were merged under the umbrella term of achievement motivation. As such, achievement motivation included studies which had measured motivation using; expectancy theories, self-regulation and goal setting theory. Overall, results confirmed that motivation was the strongest predicator of student GPA, acting as a greater predictor than that offered by student SES or prior achievement in high school.

A second, more recent meta-analysis again examining the antecedent of GPA in students attending HE, offered additional support for the provision of motivation in models examining achievement performance (Richardson et al., 2012). Reviewing 13 years of literature which had focused on the correlates of HE students' GPA, Richardson et al. (2012) conducted a systematic search of studies published between 1997 and 2010. This search identified 7,167 articles, yielding 241 data sets which included 50 conceptually distinct correlates of GPA. Amongst these constructs overall 12 distinct but similar motivational factors were considered in three groups a) attributions (e.g. attribution

theory), b) sources of motivation (e.g. SDT) and c) goal types (e.g. goal orientation theory, self-regulated learning). Analysis revealed that motivational factors such as preferred goal orientations, locus of control, goal commitment and intrinsic motivation were all significantly associated with higher GPA scores. Other forms of motivation namely performance and learning goal orientations also shared a significant association with student GPA. Conversely, higher levels of extrinsic motivation, avoidance goal orientation and pessimistic attributions style were negatively associated with student GPA, further confirming Robbins and associates (2004) conclusions on the importance of motivation in the prediction of GPA. Taken together, the results of these two meta-analyses, highlight that motivation, in particular intrinsic, plays a significant role in the prediction of HE student GPA. In addition, both of these studies included research which had made use of both cross-sectional and longitudinal methods, supporting the likelihood that student motivation represents a significant characteristic in the prediction of academic growth.

Given the strength of evidence supporting the role of motivation in predicting GPA (Robbin et al., 2004; Richardson., 2012) it is generally agreed that motivation is necessary for positive learning and achievement outcomes (Hakan, & Munire, 2014). Students who are highly motivated, and expect to do well in an academic task, tend to exert greater levels of persistence, perform to a higher standard and be more attentive during the learning processes, than students who report poorer levels of motivation (Vallerand & Bissonnette, 1992; Pintrich & Schunk, 2002; Bouffard-Bouchard, Parent, & Larivee, 1991; Elliott & Dweck, 1988). For this reason, research has examined how and when student motivation develops, with evidence suggesting that the family environment plays an important role in the development of motivation.

A students' family environment has been emphasised as making a significant contribution to the formation of student motivation. In one particular longitudinal study, Cassidy and Lynn (1991) examined the function SES, intelligence and personality had in the development of achievement motivation. Approaching 451 participants initially at 16 years old, participants were asked to complete a battery of standardised measures to assess their; intelligence, personality, achievement motivation (through the use of the multi-dimensional Cassidy & Lynn scale, 1989) parental encouragement and SES (father and mother's employment level, education level and family size). Initial analysis revealed that student motivation was significantly influenced by family environment variables such as; family size and levels of parental encouragement. Students who came from families where the parents provided higher levels of encouragement to study reported higher levels of motivation aged 16. Higher levels of intrinsic motivation at 16 years old were also predictive of academic attainment, with the sub-dimensions of the motivation scale, acquisitiveness and dominance levels discovered to be direct predictors of students' high school GPA. Upon follow up seven years later when participants were 23 years old, intrinsic motivation levels as gathered at 16 years of age, were able to predict participants SES levels, with those individuals who reported higher levels of intrinsic motivation also reporting higher SES levels.

2.6.7. Student Motivation and Problem-Solving Approach

Student motivation has also been associated with a range of pro-educational behaviours which are likely to support the development of academic growth, for example student problem-solving. Examining the influence of motivation on GPA in students attending

HE in the UK, Baker (2003) has highlighted that students who report higher levels of intrinsic and extrinsic motivation were more likely to achieve higher overall GPA scores, and also report greater problem-solving abilities (Baker, 2003). Examining the nature of the relationship between motivation, problem-solving and stress and well-being in students attending HE, Baker (2003) approached 104 psychology undergraduates. Students were asked to complete two measures of academic motivation, firstly the academic motivation scale (AMS) (Vallerand et al., 1992) and secondly, the self-reported motivation scale (SRM) (Mallinckrodt, 1988). Considering the AMS scale, this motivation measure is based around the SDT framework proposed by Ryan and Deci (2000) and assesses the sub-dimensions of intrinsic, extrinsic and amotivation, while the second scale, the SRM was used to assess students' expectations of success e.g. 'I am certain I will obtain me degree' and "I expect to do well in university". In addition to the two motivation scales, the study also included a measure of problem-solving (Cassidy-Long Problem-Solving Inventory, 1996) and two measures designed to assess adjustment in university and physical and mental health (Perceived Stress Scale, ((Cohen, Kamarck, & Mermelstein, 1983)) and the Daily Hassle Index (Schaffer, 1998). Analysis began at the end of students first year at university, with student GPA collected from academic records. Examining the relationship between the two measures of motivation and student GPA scores, Baker (2003) revealed that those students who reported greater levels of intrinsic motivation, in particular those students who were motivated to accomplish, recorded higher GPA scores at the end of their first year in HE. Also revealed was the finding that intrinsic motivation was negatively correlated with both extrinsic and amotivation levels (Baker, 2003). In other words, those students who reported a greater tendency to carry out academic tasks as a result of finding them enjoyable or interesting achieved higher GPA and were less amotivated than their extrinsically motivated peers.

In relation to problem-solving, those students who were more motivated to do well in their academic pursuits also reported greater problem-solving ability, with effective self-appraised problem-solving skills directly related to extrinsic motivation and lower levels of amotivation. As such, students who were more self-determined in their abilities were more inclined to take on additional academic related behaviours because they valued them intrinsically. Baker (2003) provides evidence on a significant relationship between both intrinsic motivation and student GPA, but also suggests that intrinsic and extrinsic motivation level can predict the presence of higher levels of problem-solving ability. If this pattern were to be replicated in the current investigation, higher levels of intrinsic motivation could directly predict growth in GPA, while higher level of extrinsic motivation might act to predict higher problems-solving ability, a behaviour which could provide advantage to those students experiencing academic growth.

2.6.8. Motivation and Academic Growth

Despite the significant association between motivation, student GPA, and pro-educational behaviours, surprisingly there has been little research carried out to examine whether motivation variables can predict long-term academic growth (Murayama, Pekrun, Lichtenfeld & Hofe, 2013). One research exception however, is a study conducted in Germany which explored the relationship between student motivation and academic growth in the annual mathematics achievement scores of students participating in secondary level education. Using secondary data source, researchers had access to the annual mathematic achievement scores for 3,530 students who had completed mathematics assessments annually over five years. Students had also completed a self-

reported motivation and IQ assessment on at least one occasion. Analysis of the data set revealed that motivation was able to predict academic growth over and above intelligence. In particular, student levels of intrinsic motivation and perceived control predicted long term academic growth in mathematics. Despite the focus being on school aged children and achievement being constricted solely to mathematics achievement, this conclusion provides evidence that not only can motivation constructs measured at a single point can predict academic achievement at that point in time, but they are also able to predict and shape the achievement outcomes of students in the future (Murayama et al., 2013). Moreover, levels of extrinsic motivation were able to predict initial levels of academic achievement, but were unable to predict student academic growth, in keeping with the discussed short-term nature of extrinsic motivation types.

A further study has explored the role of intrinsic motivation and academic achievement in students from the age of 9 years until the age of 17 years (Marcoulides, Gottfried, Gottfried and Oliver, 2008). Findings further suggest that intrinsic motivation predicts academic growth and is instilled through family environment factors namely family support (Marcoulides et al., 2008). Making use of a longitudinal data set, collected for the Fullerton Longitudinal Study (Gottfried, Gottfried & Guerin, 2006) offered Marcoulides et al. (2008) a measure of motivation for 130 participants at ages 9,10,13,16 and 17 years old, a period which spanned students' participation in primary and high school. Achievement was measured using mathematics and science CAIMI assessments, two annual assessments which gets progressively harder as the student progress through the education system. In addition to these two assessment scores, students' parents' motivational practices, which was concerned with how parents encouraged or rewarded their children when they had done well in their school work, were also collected. Scale

items included "I encourage my child to be persistent in school work" or "I encourage my child to enjoy school learning" and as such allowed for the investigation of intrinsic or extrinsic motivational parenting practices.

Research findings emphasised the importance of parental motivational practices during primary school in the formation of later student motivation levels in high school. Students who reported a family household which had emphasised intrinsic parenting practices, (these practices characterised by the students parents' supporting and encouraging them to be persistent in school), was beneficial in predicting the development of academic growth in student mathematics and science assessments. On the other hand, extrinsic parental practices, which were characterised by parents encouraging their children to do well at school through the use of rewards such as money and toys had an adverse effect on academic growth. The early use of parental intrinsic and extrinsic practices also had a long-term effect on students' initial and subsequent intrinsic motivation levels in later life. Parents use of intrinsic practices was linked to both higher initial motivation levels in primary school and a slower decline in motivation levels throughout high school. The use of extrinsic motivation practices by parents was significantly linked to initially lower levels of intrinsic motivation in primary school and declining levels of intrinsic motivation throughout high school. Overall, this study suggests that that the development of motivation levels in children is closely linked to the family environment they have developed in. Parents who have emphasised the importance on intrinsic rewards made a marked contribution to the development of their children's initial and subsequent intrinsic motivation levels. It was also able to highlight that of the two types of motivation monitored in students, intrinsic was the greater predictor of academic growth. In closing Marcoulides et al., (2008) remark that those students entering adolescence with lower

levels of academic intrinsic motivation may encounter further motivational declines as they progress though educational programmes, a decline which is likely to negatively impact their preparation, progression and academic success in HE.

A notable limitation of the motivation research reviewed has been their reliance on measures of motivation taken at a single point in time, which limits what we know and understand about the stability of motivation levels of students attending HE. To date, research examining the stability of motivation levels in primary school aged children has revealed that motivation tends to decline as students move through the education system, a trend which could have a negative influence upon the academic growth of students attending HE. However, there has been very little research which has examined the stability of motivation in students participating at this level. Nevertheless, of exception, Kyndt et al., (2015) has examined how student motivation levels change during a students' progression from secondary level education up until their second year of participation in HE, while Muller and Palekcic (2005) have examined how motivation develops in students across a three-year degree program (Muller & Palekcic, 2005).

Investigating the development of student motivation across the transition from secondary into HE, Kyndt et al. (2015) collected data on students' motivation levels across a 25-month period. Conceptualising motivation from a self-determined (SDT) perspective (Deci & Ryan, 2002) Kyndt et al. (2015) approached a group of 3704 students who were in their final year of secondary level education, 630 of which chose to take part in the study. Students completed two measures of motivation (Self-regulation questionnaire; Deci, Connell & Ryan, 1989, and the Academic Motivation Scale; Vallerand et al., 1992)

over five waves; twice in secondary school and then three times during students first year in HE. These two measures grouped motivation into three scales, autonomous (performing a task due to enjoyment), controlled (performing a task as it is required) and amotivation (not know why they performed a task).

Analysis using a latent growth methodology revealed that student motivation, in particular autonomous (conceptually similar to intrinsic motivation) motivation developed from secondary into HE level education, while controlled motivation remained stable once students had entered HE. Further, results revealed that student reported lower levels of autonomous motivation at the end of secondary school, reported higher levels once they had entered HE, suggesting that participation in HE had a potentially positive effect on their motivation levels. While the results of this study offer valuable insight into the nature of student motivation in HE, a notable limitation is its reliance on students who chose to progress into HE, a group of students who may in general have been more highly motivated than their peers who chose not to participate in HE.

Further, Muller and Palekcic (2005) have examined how student intrinsic and extrinsic motivation changes during their participation in a three year HE degree, offering evidence to suggest that student motivation remains relatively stable. Approaching motivation using a SDT framework (Deci & Ryan, 2002), A group of 724 students attending HE in Croatia were asked to take part in this study by completing a measure of motivation based on the Vallerand et al (1992) SDT questionnaire for each of the three years of their degree. The Vallerand motivation (1992) questionnaire is designed to measures intrinsic motivation, four types of extrinsic motivation and amotivation. At the end of the students'

three-year degree program, questionnaires were matched so there were three questionnaires available per person, which resulted in a final sample size of 104 students. Overall, results indicated that students were highly motivated, reporting high levels of introjection and identified regulation in comparison to external regulation and amotivation. The SDT framework used by Ryan and Deci's (2002) views motivation on a continuum, with intrinsic motivation on one side, amotivation (an overall lack of either intrinsic or extrinsic motivation) on the other and four types of extrinsic motivation in between. From a longitudinal stance, intrinsic and identified motivation decreased from first to second year, which was put down to students reporting a greater focus on their examinations. When students entered third year however both of these types of motivation increased again. As such, the decline in motivation which has been noted to take place throughout a students' progression through the education system was not apparent in this group of students, whose levels of motivation remained remarkably stable across their degree. The stability of motivation levels discussed here could mean that student motivation levels could act as a predictor of academic growth for each year of their participation.

Taken together, motivation levels have been demonstrated to play a significant role in the prediction of student GPA in HE. A number of studies have demonstrated that of the two primary motivation orientations (intrinsic/extrinsic), intrinsic motivation acts as a better predictor of GPA (Robbins et al., 2004; Richardson et al., 2012). Intrinsic and extrinsic motivation can also predict the use of several pro-educational behaviours including persistence, deeper study engagement and lower levels of stress, which may also positively influence the development of academic growth. With that being said, research examining the influence motivation has on student academic growth has been limited in

focus, with few examples examining the nature of motivation over time, and those which have based mainly on school aged children, with little consideration being placed on its influence in those attending HE.

2.7. Problem Solving

In addition to motivation, student problem-solving ability has consistently been demonstrated to be a significant predictor of GPA in students attending HE (D'Zurilla, & Nezu, 1990; D' Zurilla, & Sheedy, 1991; D' Zurilla, & Sheedy, 1992; Baker, 2003; Cassidy, & Giles, 2009). More recently, research evidence also suggests that student problem-solving ability could act as a predictor of academic growth in those attending HE, given that problem-solving is believed to develop over time, however there is a lack of evidence to suggest how problem-solving ability develops in HE (Baker, 2003; Cassidy & Giles, 2009).

Social problem-solving theory has emerged from decades of research studies as one of the most dominant problem-solving theories in the literature (D' Zurilla et al., 1990). Social problem-solving concerns an individual's problem-solving ability as it occurs in a real-world (or social) setting, with problems defined as situations to which there are no effective or adaptive response immediately available (D' Zurilla & Maydeu-Olivares, 1995). According to social problem-solving theory, an individual's success at overcoming a problematic situation depends upon their cognitive-behavioural ability to identify, assess and formulate pathways which provide the required solutions (D'Zurilla & Nezu, 1982).

Greater problem-solving ability has been demonstrated to predict higher GPA scores (D'Zurilla, & Sheedy, 1991; D'Zurill, & Sheedy, 1992; D'Zurilla, & Nezu, 1990; Baker, 2003; Cassidy, & Giles, 2009), lower levels of perceived stress, worry and superior adjustment to HE life (Belzer, D'Zurilla, & Maydeu-Olivares, 2002). In contrast, those students who report relatively lower levels of problem-solving ability have been revealed to experience greater levels of stress, lower levels of intrinsic motivation and poorer adjustment in HE, lower GPA scores across time and increased risk of failure to obtain a degree (D'Zurilla, & Sheedy, 1992; Rodriguez-Fornells & Maydeu-Olivares, 2000; Chan, 2001; Baker, 2003; Vaez, & Laflamme, 2008; Dermitzaki, Leondari, & Goudas, 2009).

Despite a number of studies which have explored the relationship between student problem-solving, GPA and pro-educational behaviours, little research has specifically examined the role of problem-solving in relation to academic growth. In fact, to date most examples have tended to focus on the influence problem-solving has on GPA at a single point in time (Baker, 2003). This could be viewed as somewhat disappointing as it has previously been suggested that successful problem-solving may emerge over time, with students taking time to adjust to HE and a new way of learning (D'Zurilla, & Sheedy, 1991; Baker, 2003). Nevertheless, research studies support a significant association with GPA and adaptive behaviours, suggesting that problem solving-ability may be an important factor in the development and prediction of student academic growth. With this in mind, a deeper understanding of the association between student problem-solving GPA and pro-educational behaviours may offer insight into its potential influence upon academic growth.

2.7.1. Defining Problem Solving

Problem-solving is defined as the cognitive-behavioural process by which an individual or group attempts to identify or develop effective solutions to a specific problem or set of problems (D'Zurila &, Nezu, 1990). A problem can generally be described as any situation or task (either present or anticipated) that will demand an adaptive response or solution to negotiate, but to which no effective solution is immediately apparent (D'Zurila, Nezu & Maydeu-Olivares, 2004). Problems can take the form of an environmental factor (e.g. course work or employment deadline), be within an individual (e.g. a need or personal goal) or be between two or more individuals (interpersonal). Problems can arise as a consequence of a single event (e.g. car breakdown or lack of resources), a series of related events (e.g. loss of employment, a cold or car breaking down) or an ongoing situation (e.g. the development of a chronic illness or depression) (D'Zurila et al., 1991). Problem-solvers are required to find or develop an effective solution to overcome a problem. Solutions are regarded as situation specific cognitive or behavioural responses that are applied to a problematic situation. In order for a solution to be considered effective it must a) achieve the problem-solvers goal, be this to change a situation so it is in their favour or if it is successful in reducing the emotional distress and b) encourage long or short-term positive outcomes (D'Zurila et al., 1991).

Modern problem-solving research traces its roots back to early clinical studies which examined the relationship between an individual's problem-solving ability and their psychological and behavioural adjustment (Heppner, 1990; Nezu & Perri, 1989; D' Zurila et al., 1991). The results of these studies have generally emphasised that individuals with

greater problem-solving ability tended to experience lower levels of anxiety, depression, be better adjusted, and report lower instances of behavioural and psychological disorders (D' Zurila et al., 1991). Over the past two decades, interest in problem-solving research has begun to expand across many areas of psychology including that of education.

While different concepts of problem-solving can to be found in the research (e.g. Heppner & Krauskopf, 1987) the social problem-solving model proposed by D'Zurila and Nezu (2001) has tended to be the dominant framework used in the education literature. For example, D'Zurilla and Nezu's (2001) social problem-solving framework has been successfully used to examine how problem-solving can influence social competence, psychological wellbeing, personal and higher GPA scores in HE (D'Zurilla & Nezu, 2001; (D' Zurilla, & Sheedy, 1991; D'Zurilla, & Sheedy, 1992; D'Zurilla, & Nezu, 1990; Baker, 2003; Cassidy, & Giles, 2009). An assumption of D'Zurila and Nezu's problem-solving model (herein PSM) is that an individual's problem-solving ability is a multidimensional construct consisting of several related but distinct components (Chang, Sanna, Riley, Thornburg, Zumberg, K. M., & Edwards, 1997). In the original PSM described by D' Zurilla and Goldfried (1971) problem-solving was thought to consist of two partially independent processes, a) problem-solving orientation and b) problem-solving skills, which has since been referred to as problem-solving style (D' Zurilla et al., 2002; D'Zurilla, Nezu & Maydeu-Olivares, 2000). Further research in later studies (Maydeu-Olivares & D'Zurila, 1996) suggested that in fact problem-solving was better understood as a five-factor model which consists of two different but related problem-orientation dimensions; positive problem orientation and negative orientation, and three problem-solving styles; rational problem solving (effective problem-solving) impulsivity/carelessness style and avoidance style.

Positive problem orientation involves the general disposition to a) appraise a problem as a challenge (or perhaps an opportunity to develop), b) believe that a problem is solvable (an optimist outlook), c) having the belief or self-efficacy in one's own ability to solve problems, d) an understanding that successful solving problems takes time and effort and e) committing to solve one's problems rather than attempting to avoid them (D' Zurilla et al., 1990). In contrast, a negative problem orientation is characterised as a dysfunctional process which involves, a) the view that a problem presents a significant threat to one's general wellbeing (social, emotional, economic), b) low self-efficacy concerning personal problem-solving ability (low self-efficacy) and c) frustration and upset when presented with problematic situations (D'Zurilla et al., 1990). Observing the approach and avoidance styles involved in problem-solving orientation, approach/ avoidance styles have been thought to embody a motivational quality (D'Zurilla & Sheedy, 1992).

The second factor in the PSM, problem-solving style, refers to the cognitive and behavioural activities individuals undertake to better understand a problem and attempt to find effective solutions. The D'Zurilla et al (1982) PSM distinguishes between three types of problem-solving style; rational, impulsive-careless and avoidance style. Rational problem solving consists of four major skills, a) problem definition and formulation, b) generation of alternative solutions, c) decision making and d) solution implementation and verification (D'Zurilla et al., 1990). At the initial problem definition and formulation stage, effective problem-solvers attempt to clarify and understand the problem by gathering as much information about it as possible, this allows for successful identification of the problem and the creation of realistic problem-solving goals. In the formation of alternative solutions stage, effective problem-solvers focus on the problem and the creation of as many pathways to success as possible. At the decision-making

stage, the consequences of each of these potential pathways are judged and compared, with the pathway deemed the best fit selected by the individual. The final solution implementation stage, involves the problem-solver monitoring and evaluating the outcome of their chosen solution to see if the process needs to be repeated (D'Zurilla & Nezu, 1990).

An alternative problem-solving style is that of impulsive- careless, which involves active attempts by the problem-solver to formulate pathways to solve their problems. However, these pathways are often narrow in scope, impulsive, hurried, incomplete and less successful than those carried out by rational problem-solvers. Typically, a person with this style of problem-solving considers fewer solutions to their problems and are impulsive, choosing to go with the first solution that springs to mind and is careless when monitoring the outcomes of their efforts (D'Zurilla et al., 1990).

The final style, problem-solving avoidance is considered the most dysfunctional of the three styles. This problem-solving style is characterised by negative and often dysfunctional behaviours for example, procrastination, passivity, dependency and inaction. As such, an individual with an avoidance style tends to avoid or delay attempting to solve it, wait for it to resolve itself or even goes as far as to attempt to shift reasonability of the problem from themselves to another (Maydeu-Olivares et al., 2000).

Consistent with this model, successful student problem-solving outcomes are largely determined by two related, but partially independent processes, problem orientation and problem-solving style. As presented in Figure 2.1, effective problem-solving involves a

positive orientation which results in a rational problem-solving style (i.e. viewing problems as a challenge, solvable and having self-efficacy in one's own ability to solve problems). As the model suggests, when initial problem-solving outcomes are poor or unsatisfactory, effective problem-solvers will repeatedly start the process until they achieve their desired outcome. On the other hand, dysfunctional problem-solving is the result of a negative problem-solving orientation (i.e. avoidance, impulsive), poorer problem-solvers more likely to give up during the problem-solving process, do nothing or attempt to skirt the responsibility of the problem onto someone else.
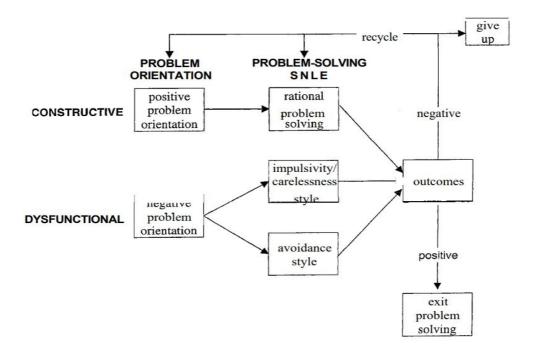
Figure 2.1 Representation of the social problem-solving process based on the D' Zurilla et al. Problem-solving model (2002).

2.7.2. Problem Solving and Academic Achievement

As problem-solving is considered a coping strategy which increases an individual's competence and adaption, a greater problem-solving ability should increase a students' chances of experiencing academic success. A number of studies support the role of effective problem-solving using this theory (Maydeu-Olivares, Rodríguez-Fornells, Gómez-Benito, & D'Zurilla, 2000; D'Zurilla & Nezu, 1990; D'Zurilla, 1990; Baker, 2003).

For instance, an early study that examined the relationship between student problem-solving ability and GPA in a group of first year students revealed that problem-solving ability could successfully predict students end of year GPA (D'Zurilla & Nezu, 1990). Approaching a group of undergraduate students in their first semester in a North American university, D' Zurilla and Nezu (1990) distributed a copy of their problem-solving measure (Social Problem-Solving Inventory) (SPSI) based on their problem-solving framework, while student GPA scores were collected from academic school records. Analysis revealed that those students who reported higher levels of problem-solving ability, in particular a greater tendency to positively approach their problems at the start of the school year, also recorded higher GPA's at the end of the year. Further examination of the relationship between each of the problem-solving styles factors and student GPA revealed that the problem-solving style of decision making displayed the largest significant relationship with student GPA. This suggests that a positive problem-solving orientation is a greater predictor of student GPA; with students who actively approach rather than attempt to avoid problematic situations more inclined to report

higher GPA's. A particularly important aspect of the problem-solving process in the prediction of GPA appears to be the factor of decision making assessed by the SPSI, with students who are better able to judge the success of their problem-solving decisions recording higher GPA scores.

The relationship between problem-solving ability and HE students' GPA has also been demonstrated to be significant, even when controlling for students' prior academic achievement in high school (D'Zurilla & Sheedy, 1992). Approaching a group of undergraduate students during their first semester, D' Zurilla and Sheedy (1992) distributed a copy of the SPSI to each student and obtained permission to collect their GPA's at the end of the school year in addition to the GPA scores students entered HE with. Analysis highlighted that even when controlling for prior academic ability, student problem-solving was a significant predictor, able to account for 3.7% in the variance in GPA. On this occasion however, student problem-solving skills were the significant predictor, whereas problem-solving orientation shared no significant relationship. As such, problem-solving approach, using the social problem-solving framework as a significant predictor of GPA in HE students.

Problem-solving has also been revealed to predict GPA in education systems outside of the USA, for example in the context of the Catalan education system, in a HEI based in Barcelona (Rodriguez-Fornells & Maydeu-Olivares, 2000). Aiming to replicate the previous study conducted by D'Zurilla et al., (1992), Rodriguez-Fornells et al. (2000) made use of the Social Problem-Solving revised scale (SRSI-r), a revised measure of the SPSI which allows for a more detailed assessment of an individual's problem-solving

ability by adding sub-scales which assess solution implementation. In total, 263 HE students in their first year completed the problem-solving measure and allowed researchers access to their GPA's and their prior final high school GPA. Overall findings supported the importance of problem-solving, with student problem-solving scores able to predict a small but significant additional 2.7% of the variance in GPA over that offered by prior achievement in high school. Considering the five problem-solving factors assessed, positive problem-solving orientation and rational problem-solving presented the largest positive correlations with student GPA. Conversely, the dimensions of negative problem-solving, avoidance style and impulsiveness and carelessness displayed significant negative correlations with GPA. Despite the low level of variance explained by problem-solving in this study, in keeping with problem-solving theory, greater problem-solving ability was predictive of higher GPA scores.

A more recent study conducted within the UK has revealed that student problem-solving ability can act as a better predictor of HE student GPA than intrinsic motivation, while also demonstrating that student problem-solving ability develops within HE (Cassidy & Giles, 2009). Examining the impact of achievement motivation and problem-solving ability upon student GPA (using the Cassidy-Long Problem-solving questionnaire, 1996), Cassidy and Giles (2009) recruited 235 undergraduate HE students who were in their first year of participation. To participate in this study, students were required to complete the questionnaire measures on two occasions, once when they were in their first year and again a second time when they had entered second year. Structural equation modelling (SEM) highlighted that problem-solving ability, in particular the dimension of problem-solving self-efficacy as measured in year one and year two was a significant predictor of GPA across each year of the students' degree program. In fact, problem-solving was able

to account for a greater level of variance in GPA than that offered by student intrinsic motivation. Further, acknowledging a limitation noted in the previously motioned problem-solving studies, students completed measures of problem-solving and motivation on two occasions which was able to highlight that positive student problem-solving behaviours (approach and confidence) developed significantly from students first year to their second year, while the negative problem-solving behaviour of avoidance displayed a decline. Students' reported levels of problem-solving ability developed significantly from year one to year two, perhaps as a function of HE participation.

In line with the SPM, research evidence supports the theory that students who report greater problem-solving ability also demonstrate higher GPA scores in the context of HE (D'Zurilla & Nezu, 1990; D'Zurilla & Sheedy, 1992). Of particular importance to higher GPA appears to be the dimensions of positive and rational problem-solving. That is to say, students who approach their academic programs in a positive, rational manner while having the confidence to construct, deliberate and apply their effective problem-solving skills, are more likely to experience academic success in the form of a higher GPA. Conversely, those students who report that they are more inclined to avoid their problems, approach them with lower levels of self-efficacy and make use of impulsive and careless problem-solving styles are less likely to report higher GPA scores (Rodriguez-Fornells et al., 2000). Evidence offered by Cassidy and Giles (2009) suggests that not only can problem-solving be a better predictor of GPA than that offered by motivation across each year of students HE participation, students problem-solving ability can also develop from first year into second year. With this in mind, higher levels of problem-solving ability and the adaptation which accompany effective problem-solving should act as a predictor of academic growth.

2.7.3. Problem-Solving and Academic Growth

The literature concerning problem-solving reviewed so far has demonstrated that students who report a positive approach and greater problem-solving abilities in the first year of HE are more likely to experience greater psychological well-being and report higher GPA scores. Nonetheless, the variance accounted for by problem solving in these studies has been rather modest. Previous research has suggested that adaptive problem-solving may take a greater time to emerge than was previously allowed for in these studies (i.e. 3-4 months) and as such, student problem-solving ability might act as a better predictor of student GPA across time. (Baker, 2003; D' Zurilla & Sheedy, 1991). While research supports the provision of problem-solving facilitating greater adjustment overtime (D' Zurilla, 1990), support for this assertion in the context of education, is limited, with there being little information available concerning the nature of problem-solving over the course of a students' participation in university (with the exception of Baker, 2003; Cassidy & Giles, 2009). With this in mind, as students progress through their degree program and they encounter a greater number of problems they will be required to develop their problem-solving abilities (Vaez & Laflamme, 2008). However, research examining if student problem-solving develops during a students' participation in HE, and the extent to which this development influences academic growth is as yet poorly understood.

There is some evidence which suggests that problem-solving can develop as a function of HE participation (Cassidy & Giles, 2009; Baker, 2003). For example, Baker (2003) approached a group of 104 undergraduate students in their first year in a HEI based in the

U.K. Students were asked to complete measures of social problem-solving (the Cassidy & Long Problem-Solving Questionnaire, 1996), motivation (intrinsic or extrinsic types), perceived stress and adjustment to university in their first year. Students annual GPA scores were collected at the end of each of their three years of HE participation to examine the associations between each factor.

Baker's (2003) findings illustrated that those with greater levels of adaptive problem solving also reported higher average GPA'S in their first year. This trend continued across the course of the students' HE participation, with the dimension of problem-solving approach measured in year one, a significant predictor of final year GPA recorded three years later. In other words, those students who reported a stronger sense of self-confidence when approaching a problematic situation in first year, recorded higher marks in their first year and subsequent years of HE participation, actively approaching problems rather than attempting to avoid them (Baker, 2003). Also emerging from the data, was the importance of problem-solving ability in relation to student motivation. A significant relationship was displayed between problem solving and intrinsic motivation, in so far that greater problem-solving ability predicted student intrinsic motivation. Problem-solving ability measured in first year was able to account for a greater level of variance in GPA measured at the end third year (7%) than that measured in year one with GPA and previous studies, supporting the theory that effective problem-solving may take more than a few months to develop, perhaps emerging over a period of years.

While the study did not examine the role of problem-solving in the prediction of academic growth, it does however demonstrate the importance of problem solving on academic

achievement across time in HE. Of additional interest, students whom were better equipped to solve problems also reported higher levels of another adaptive quality with regards education, such as intrinsic motivation. This study also highlights that greater levels of problem-solving can predict higher GPA scores over the duration of a typical three-year degree program in the UK. Higher problem-solving ability was also associated with greater levels of intrinsic motivation which also directly predicted GPA (Baker, 2003). Given that Baker (2003) found evidence to support the trend that the relationship between student problem-solving ability and GPA develops in strength over the duration of students' degree program, it is expected that problem-solving ability could act as a significant predictor of student academic growth in the current investigation.

In light of the literature discussed, it seems only reasonable to suggest that superior problem-solving, marked by a greater tendency to approach one's problems rather than attempting to shy away from them, could act as a predictor of student academic growth in HE. Nonetheless the current study will be one of the first examples of research to examine this association in the context of HE.

2.8. Optimism

In addition to motivation and problem-solving, psychology has also long maintained the importance of optimism and how positive expectations about the future can have a significant impact on the present. Optimists are individuals who generally hold more optimistic rather than pessimistic expectations for the future (Carver, Scheier, & Segerstrom, 2010). Consistent with these beliefs, optimists have typically been regarded

as being more likely to experience a greater number of positive outcomes across a diverse range of situations including; enhanced coping, adjustment, goal obtainment, well-being in times of adversity and immune functioning (Scheier, Carver & Bridges, 2001; Carver & Scheier, 2002; Nes & Segerstrom, 2006; Segerstrom, 2007; Carver et al., 2010).

Research examining optimism has branched out into two dominant theories; dispositional optimism, which concern an individual's attributions of previous negative events and explanatory style optimism which concerns an individual's overall expectancies for the future (Peterson & Seligman, 1984; Carver, Scheier, Segerstrom, 2010). Research over the last three decades has produced a substantial body of evidence which demonstrates that optimism can be a powerful predictor of positive educational outcomes including, GPA, student engagement, effort, and educational retention (Scheier & Carver, 1985; Solberg Nes, Evan & Segerstrom, 2009; Rand, Martin, Shea, 2011). Further, optimistic students tend to also report greater levels of persistence and confidence when faced with challenge (Hoy, Hoy, Zurz, 2008; Krok, 2015), benefit from more supportive social networks (Nes & Segerstrom, 2006), report superior psychological adjustment, and an overall greater level of life satisfaction than those students who identify as being pessimistic (Solberg et al., 2009; Rand, Martin, Shea, 2011).

In light of this, the behavioural patterns which accompany an optimistic outlook could be beneficial in predicting student academic growth. Nonetheless there are gaps in current knowledge regarding the association between optimism and its relationship to academic performance, in particular, its influence on academic growth (Carver & Scheier, 2014).

2.8.1. Defining Optimism

Optimism is considered an individual difference which reflects the extent to which an individual holds a generalised expectancy that they will experience positive outcomes in life (Scheier & Carver, 1992; Feldman & Kubota, 2015). As such, optimism involves very generalised hopes and expectations about the future, and doesn't account for an individual's personal control in effecting these outcomes (Scheier, Carver, & Bridges, 1994).

As optimism focuses on an individual's expectancies for the future, optimism shares a close association with historic expectancy-value models of motivation (Carver, Scheier, & Segerstrom, 2010). Expectancy value models theorise that behaviours reflect an individual's pursuit of desired goals, and the expectancy that goals can be obtained (Carver & Scheier, 2014). The greater the value a goal has to an individual, the more effort they are likely to put in to achieving it, whereas, expectancy is the level of confidence the individual has that the goal can be attained (Higgins, 2007). Those who hold the expectancy that they can reach a goal are more likely to put greater motivational effort into achieving it, whereas those who doubt that they can reach their goals maybe more likely to expend lower effort, withdraw effort, or may even fail to attempt to reach their goals at all (Carver et al., 2010). Expectancies of success or failure are applicable across multiple situations and affect both narrow and more general outcomes. For example, a student may be confident they will do well in a forthcoming examination (narrow) but doubt that they will be successful in attaining their degree (more general) as

such, expectancies have been demonstrated to share an association with goal-directed behaviour (Carver & Scheier, 2014).

Optimism can be measured in two ways; one method involves asking an individual whether they expect mostly good or bad things to happen to them in the future (dispositional) while the alternative approach (attribution) stems from the belief that an individual's expectancies of the future are shaped by their interpretations of the past (Carver et al., 2010; Forgeard & Seligman, 2012). While both these approaches are argued to measure optimism, research concludes that there is only a modest association between the two and as such they are not considered interchangeable (Peterson & Vaidya, 2001).

2.8.2. Dispositional Optimism

Dispositional optimism was developed from the research of Scheier and Carver (1992). Their model of optimism is based on the expectancy value model of goal pursuit, whereby an expectation that more good things than bad will happen in the future. This then leads to increased effort by individuals towards the pursuit of goals which they consider important to them (value) as they feel confident that they can attain them (expectancy) (Scheier, Carver & Bridges 2001). As such, dispositional optimism is seen as a major predictor of two types of behaviour, a) continuing towards success and b) giving up and turning away (Scheier & Carver, 1985). Dispositional optimism can have a wide range of applications, ranging from narrow and well-defined situations (e.g. I will pass this examination) to moderately broad context (e.g. I will fail this module) to even the broadest of context (e.g. I will obtain my degree). As such, optimism and pessimism are

considered broad and generalised versions of confidence and doubt pertaining to overall life, not just a specific context (Carver et al., 2010). According to this model, an optimist should therefore be more confident when approaching a desired goal and persist to a greater degree when faced with adversity. This framework has been confirmed, with optimistic expectancies leading to increased engagement and continued effort and persistence, whereas negative expectancies have been shown to predict a lack of engagement and giving up (Nes, Segerstrom & Sephton, 2005).

One of the most commonly used instruments to assess dispositional optimism is the Life Orientation Test (LOT) or its successor the Life Orientation Test Revised (LOT-R) (Scheier, Carver & Bridges, 1994). As could be expected, this measure consists of a set of statements (e.g., "in general I am optimistic about my future') to which individuals respond by indicating the extent of their agreement or disagreement on a multi-point scale. Higher score to this scale represent higher levels of optimism (Scheier, Carver & Bridges, 1994).

2.8.3. Explanatory style

Explanatory style offered by Peterson and Seligman (1984) stems from their seminal work on learned helplessness, which argues that an individual's optimism levels are based on the attributions they hold regarding previous negative events. Thus, this model is based on three dimensions, a) internal or external style, which is the degree to which an individual ascribes previous negative outcomes as a result of personal failing, or the failings of others (e.g. it wasn't my fault I failed, that lecturer didn't understand my work

or, I didn't write it clear enough for them to understand; b) stable or unstable; this is how an individual sees the negative outcomes they have experienced across time (I never do will in that topic verses I haven't done well this time, I'll do better next time round); and c) pervasive, negative failings can be regarded as either global or specific (e.g. overall, I'm just not intelligent enough to get where I need to be versus, I have done poorly on this occasion, but it is a one off).

Accordingly, individuals who are considered optimists are those who are more likely to attribute negative events as a result of external (low internality) factors, which are unstable across time (low stability) and specific to particular events (low Globality). For example, an optimistic student who does poorly in an exam would be more inclined to blame the outcome on the person marking the work, rather than themselves, chalking it down to a bad, one-off experience and believe it to be a reflection of their ability in just one subject rather than their overall success in their degree.

Several methods of assessing explanatory style optimism exist including psychometric measures such as the attribution style questionnaire (ASQ) which is designed to assess an individual's attributions for six negative and six positive hypothetical events (Peterson, Semmel, Von Baeyer, Abramson, Metalsky & Seligman, 1982) or the Attributions Questionnaire (Peterson & Villanova, 1988). Both of these scales provide empirical methodology for studying attribution style optimism consistent with the Seligman et al (2001) model.

As discussed, while both of these approaches are used to assess optimism, theory and research on each approach has developed independently which is understandable considering one model is based on examining previous negative events, while the other is concerned with the general expectancies regarding the future.

Research findings confirm that these approaches assess different constructs, for example, Peterson (2000) notes that while the majority of studies available have rarely included more than one measure of optimum, those which have assessed both dispositional and explanatory style optimism, note relatively low correlations between expectancy and dispositional scales of optimism in a student cohort (Scheier & Carver, 1987; Hull, Mendolia, 1991; Hjell, Busch & Warren, 1996). So, despite dispositional and expectancy style optimism relating to conceptually similar outcomes, they are not considered interchangeable (Carver et al., 2010). Carver et al. (2010) also suggests that when selecting a preferred measurement approach, the decision should be based on whether either attribution or expectancies stance is considered a fundamental element, or the aspect more susceptible to therapeutic change.

With this in mind, the current review will focus on research which has considered the association between optimism as measured as a disposition; student GPA and pro-education behaviours. This seems like the most suitable approach given that academic growth and development may be more likely attributed to a students' expectations of academic success in the future, and how they look forward, rather than remaining focused on how they attribute their previous failings. With this in mind, an expectancy of more

positive, than negative future outcomes and the tendency to a higher standard for longer are qualities which could be predictive of academic growth.

2.8.4. Optimism and Academic Achievement

Research on optimism has demonstrated that higher levels of optimism are an important factor in the prediction of HE students' academic achievement (Smith & Hoy, 2007; Solberg Nes, Evan & Segerstrom, 2009; Rand, Martin, Shea, & 2011). Solberg Nes et al (2009) examined a group of HE students' dispositional optimism levels and concluded that they were meaningfully linked to higher levels of motivation, greater levels of adjustment at the end of first year and lower instances of drop out (Solberg Nes et al., 2009). Approaching (n=2,189) students during their first year in HE, respondents were asked to complete four measures; two designed to assess optimism (Life Orientation Test-Revised- LOT-R and the Academic Optimism measure), a measure of academic motivation and a measure of psychological distress, while academic performance was measured using student first year GPA. Overall, the study's findings supported the importance of optimism in an HE context, as students who reported higher levels of optimism were more likely to have continued with their course and still be registered at the end of first year, report higher levels of motivation, lower levels of distress and higher GPA scores at the end of their first year. Further examination of this process through the use of SEM analysis revealed that the influence of optimism on student retention was mediated through its relationship with motivation, GPA and psychological adjustment. Thus, student optimism predicted motivation, academic performance (GPA) and educational persistence in HE at the end of the students first year.

In addition to demonstrating a significant association between student optimism levels and GPA as measured at the end of first year, Solberg Nes et al. (2009) were able to reveal that optimism could predict future academic success, even when traditional predictors of student GPA were controlled for (in this case previous standardised test scores). Further, students who report higher levels of optimism, also displayed greater levels of motivation and greater educational persistence, suggested by their higher likelihood of remaining enrolled in comparison to their low optimism peers.

An additional longitudinal study by Chemers Hu & Garcia (2001) suggests that student optimism can support the development of student academic achievement as measured through narrative evaluation in students participating in HE (Chemers, Hu & Garcia, 2001). Approaching a group of first year students who were attending HE in North America Chemers et al (2001) asked students to complete a range of measures, namely, academic self-efficacy, optimism, stress, adjustment, health and academic expectations, while student academic performance was collected from school records at the end of students first semester. Rather unusually, academic performance at this particular university was measured through the use of narrative evaluations by lectures, rather than the typically used grades or GPA approach. As such, Chemers et al. (2001) converted common key words (e.g., outstanding, excellent, good, satisfactory) from the students' narrative reports at the end of the academic year, into a quantitative score ranging from 1 to 5. At the end of students first year, a follow-up questionnaire was distributed with students asked to complete measures of self-evaluated academic performance, academic expectations, stress, health and adjustment on a second occasion. Upon completion of these final measures, analysis of the relationships between variables and student academic performance was conducted using SEM.

Results confirmed the significant role student optimism levels had upon their academic performance, with optimism directly and indirectly predicting student academic performance through its effects on stress. More optimistic students were more likely to regard their studies as a challenge rather than a threat, which was linked to higher academic expectations. These expectations directly predictive of higher achievement. An additional finding was that students who reported higher levels of optimism also reported greater levels of academic self-efficacy, which was also directly predictive of academic performance.

Despite these positive outcomes, there have also been occasions where studies have failed to demonstrate a relationship between optimism and academic performance in HE. For example, Rand (2009) examined the associative relationship between student optimism, hope, GPA and psychological stress, and concluded that optimism failed to predict student GPA. Approaching a group of 345 students who were in various years of their degree program, participants completed measures of optimism, hope and goal attitude, while student achievement was measured using end of year GPA. Results concluded that optimism offered no unique influence upon GPA. It did however, have a significant association with goal attitude, which was used to assess students' attitudes towards goals, with higher levels of optimism associated with more adaptive, focused and less avoidant coping styles. These results suggest that there could potentially be a relationship between optimism and problem-solving approach or avoidance. While the lack of a positive association between optimism and achievement could be considered unusual, Rand (2009) theorises that it could have been a consequence of optimism relating to more generalised beliefs about the world, not the specific academic goals set by students' participating in HE. Given that academic growth may require specific beliefs for example;

I will do well in this exam/ coursework assessment, rather than more generalised expectations (e.g. I will do well in my degree), it is as yet unclear whether optimism shares a significant relationship with academic growth.

Additional research has also suggested that higher levels of optimism may not always be helpful in terms of predicting academic achievement (Hall, Perry, Ruthig, Hladkyj, Chipperfield 2006; Haynes, Ruthig, Perry, Stupnisky & Hall, 2006). In one example, Haynes et al. (2006) were interested in examining the association between optimism and GPA in a group of first year students they deemed over-optimistic (students who reported high optimism levels but low levels of perceived success). Approaching a group of 162 first year students during their first month of HE, participants were asked to complete measures of optimism (LOT, Scheier & Carver, 1987) perceived control, academic attributions and perceived success at four points throughout their first year. At the end of their first year, student GPA's were collected from school academic records. Results confirmed that overly-optimistic students performed academically to the same level or poorer than their less optimistic peers. In fact, students who reported higher levels of optimism were more inclined to endorse maladaptive attributions to explain their academic performance, and as such achieve GPA scores similar or even lower than their pessimistic peers at the end of the year.

While these findings contradict those dominant within the literature, it is possible that due to the generalised nature of optimism, the factor may share little to no association with student academic growth in the current study. Nonetheless, given previous research conclusions linking optimism to adaptive behaviours namely goal attitudes, the

relationship between optimism could be medicated thought alternative factors namely problem-solving and motivation as previously discussed.

2.8.5. Optimism and Academic Growth

Considering the research studies which have examined the influence optimism has upon the development of student GPA overtime, the majority have largely focused on school aged children, and have resulted in mixed conclusions (Rand, 2009; Rand, Martin & Shea, 2011; Tetzner & Becker, 2015; Tetzner, & Becker, 2018). One example which investigated whether optimism levels worked to help primary school aged children cope better during parental separation, concluded that there was no significant relationship between optimism, self-esteem and end of year GPA (Tetzner & Becker, 2015). Nonetheless, a similar study conducted amongst students attending secondary school found opposing evidence (Tetzner & Becker, 2018). In fact, findings indicate that higher levels of optimism were predictive of both short and long-term GPA outcomes in a group of 6,010 female secondary school students (Tetzner & Becker, 2018). Using data from a longitudinal German study (longitudinal Learning Process study; Schnabel, Alfed, Eccles, Koller, & Baumert, 2002) Tetzner et al (2018) were able to track the GPA scores and optimism levels of 7th grade students over a period of six months. Analysis highlighted that those students who reported higher levels of optimism also reported higher GPA's in their Math, English and Physics assessments. Follow-up six months later provided evidence that those students who reported higher levels of optimism continued to achieve higher GPA scores that their less optimistic peers. Of further interest, similar to the research findings of Hayes et al (2006), the positive influence of optimism upon

GPA appeared to plateau, whereby relatively higher than average levels of optimism failed to have any significant effect upon GPA outcomes. As such, while average levels of student optimism may be beneficial in the prediction of student academic growth, higher levels may fail to have any additional significant impact.

One of the few research examples which has examined optimism longitudinally in students attending HE, supports the role of optimism in predicting greater overall academic performance in terms of increased GPA and higher levels of student motivation (Solberg Nes et al., 2009). In this study, 2,189 first year students were asked during their first few weeks of university to complete standardized measures of motivation, and optimism, while GPA scores were collected at the end of their first year from academic records. Firstly, examining the influence student optimism had upon retention, those students who reported higher levels of optimism were less likely to leave their course and drop out of their first year of university. Secondly, student optimism shared a positive relationship with motivation scores, students who held higher optimism levels also reporting higher levels of motivation. Finally, higher levels of optimism were significantly associated with significantly higher GPA scores recorded at the end of the academic year. Optimism also proved to be a significant predictor of higher GPA scores one year later. A limitation in the context of this investigation, Solberg Nes et al. (2009) failed to account for any subsequent changes in student optimism levels, by solely measuring student optimism once at the start of the academic year, as such limiting its ability to offer insight into the role of optimism in predicting academic growth and if optimism develops during participation in HE.

2.9. Rationale for study one

As this chapter has discussed, research concerning the antecedents of academic growth in students attending HE has been limited, however a strong body of literature has highlighted a number of contextual and psychological factors namely, SES, family environment, motivation, problem-solving ability and optimism which have been demonstrated to predict GPA scores and adaptive pro-educational behaviours and attitudes which, through implication could be conducive of academic growth in students attending HE. With this in mind, the first aim of study one is to examine the correlational relationships between each of these factors and academic growth in students participating in a degree program in the UK. A second aim is to observe psychological growth and the relative stability of the psychological factors of motivation, problem-solving and optimism during students' participation in HE. A third aim is to examine if psychological growth, considered development in student motivation, problem-solving approach and optimism, can predict student academic growth. Previous research has tended to examine these factors and their association with academic performance at a single period, however observing development and change in these factors and its subsequent effect on academic growth could provide additional support for the importance each of these factors has in predicting academic growth.

2.10.   Conclusion

This chapter has presented a review of the literature in relation to a range of contextual and psychological factors which have previously been demonstrated to predict student GPA, behaviours and attitudes associated with higher levels of academic performance and to a limited extent, academic growth in students participating in primary and secondary level education. The following chapter, study one will explore the extent to which the factors of SES, family environment, motivation, problem-solving and optimism can predict academic growth in students attending HE, and the nature of development of these three psychological factors in students' during their participation in HE.

3. Chapter Three: Study One – Exploring the Antecedents of Academic Growth

3.1. Introduction

This chapter presents the, aims, methods and results of study one. The chapter begins by introducing the research methods used to conduct Study One and details the participants, materials, and the statistical techniques used to test the research questions. The study's results section presents evidence of the associations between the contextual and psychological variables discussed and academic growth, followed by evidence of the psychological growth students experienced in motivation, problem-solving and optimism and its relationship to student academic growth. Finally, the chapter discussion presents the research conclusions, how they relate to previous literature and their impact and implications for those concerned with developing academic growth in HE students. Based on the research findings, recommendations and considerations for future research conclude the chapter.

3.2. Aims of Study One

This study has three primary aims:

1. To explore the associations between the contextual and psychological factors of socio-economic status (SES), family environment, problem-solving ability, motivation, optimism and academic growth in students attending Higher Education (HE).

2. To examine psychological growth, considered development of the psychological factors of motivation, problem-solving and optimism during a students' participation in HE is explored.

3. To investigate the predictive ability of psychological growth to predict student academic growth.

3.3. Methodology

3.3.1. Design

Given academic growth is the measurement of achievement change across two points, the study used a longitudinal survey design. As such, a group of students were followed from their first year in HE, up until their third-year in a typical three-year degree program offered across three UK institutions. Student participants were asked to complete a study questionnaire in their first and second year of study, which collected information on students' demographic profiles and their responses to standardised measures designed to assess a range of contextual and psychological factors. Students also offered consent for their annual GPA scores to be collected from academic records, for each year of their degree program. A timeline outlining the collection of students GPA'S and questionnaire data collection is presented in Figure 3-1.
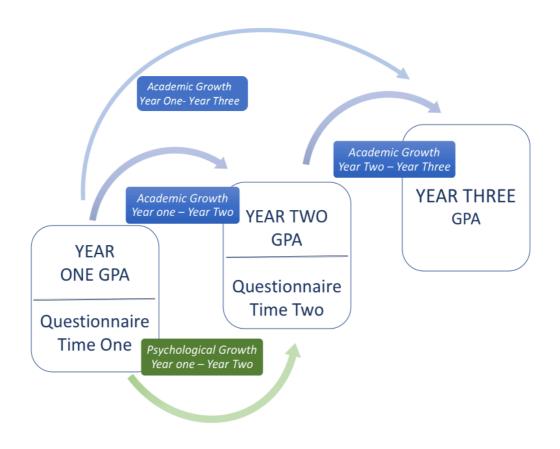
Figure 3-1 Timeline of questionnaire and GPA collection time points

3.3.2. Participants

In order to examine academic growth in a group of students attending HE, a large-scale dataset was created from questionnaire responses of students attending three HEI's based within the UK, which had been gathered to examine academic achievement. Participants were 646 students (214 male and 432 female) between the ages of 17 and 25 years who were enrolled on a BSc (Hons) Psychology degree program. Participants were asked to complete the questionnaire on two separate occasions, firstly in the second semester of their first year (Time One) and secondly in the second semester of their second year (Time Two).

3.3.3. Response Rates

Time One

At Time One, during week one and two of students second semester of year one, 1230 paper questionnaires were distributed at the end of lectures across three institutions, the University of Coventry, Northampton and West London. Of these, 976 (79.3%) usable questionnaires were returned from, Coventry (n=447), West London (n=319) and Northampton (n=210). At this point participants were; 694 females, 282 males; with a Mean =19.14, SD= 1.55.

Time Two

At Time Two, during week one and two of students second semester of second year, of the original 976 participants, 646 (66.2%) participants returned usable questionnaires which matched those from Time one. These 646 participants were from; the University of Coventry (240), West London (n=243) and Northampton (n=163) (432 females, 214 males; Mean =19.13, SD= 1.48).

The examination of academic growth concentrates on this group of 646 students and the academic growth they experienced over their three-year degree participation.

3.3.4. Institution Profiles

The study commenced in 2014, at which time institutions carried similar entry requirements for their students, with students expected to hold between 120 – 136 UCAS tariff points to successfully gain entry to each institutes Psychology (Hons) degree program. Each one of these institutions could also be considered a widening access

institution, operating under an Assess Agreement approved by the Office of Fair Access. This agreement is in place to ensure that HEI's act to ensure barriers are removed for people from groups which are under-represented in HE. This agreement is also to ensure that each institution supports those students enrolled to complete their studies, achieve the best they are capable of and support them into employment and further study. When the study began, each of these institutions offered their degree programmes to students at a similar tuition fee, ranging from £7,409- £8,000.

3.3.5. Materials

3.3.5.1. Overview of the Study Questionnaire

The study questionnaire consisted of two aspects, one to collect participants demographic information (contextual variables), while the other measured students' responses to a series of standardised psychometric measures. Students completed the demographic and psychometric aspect of the questionnaire in the first year of their degree program. In year two students completed the psychometric aspect of the questionnaire for a second time. Questionnaire responses were matched using student numbers.

3.3.5.2. Contextual Variables

The contextual aspect gathered information concerning students' socio-demographic characteristics such as; socioeconomic status, parental education and family size (number of brother's and sister's students had) are presented in Table 3.1.

Table 3-1 Demographical Measures

Demographic Measure	Measurement used
SES	NS-SES Classification System
Parental Education	Highest level of education each parent held
Family Size	Number of brother's and sister's students have

3.3.5.3. Socioeconomic Status

Participants were assigned an SES code using The National Statistics Socio-economic Classification system (NS-SEC). Participants answered two questions which asked them to state their; parents occupational title, and their parent's social relationship in the workplace (e.g. service relationship, labour contract, intermediate). These responses were then used to assign the participants to their respective NS-SEC group. The version of the system used in this study was the analytical option, and as such allows families to be organised into one of 8 analytical classes based on their employment level. These 8 classes can then be collapsed into three distinct classes or categories; 1) Managerial and professional, 2) Intermediate occupations, 3) Routine and Manual occupations. This three-class system allows for hierarchical organisation. The SES distribution of the 646 participants are presented in Table 3-2.

Table 3-2 Socio-economic status of participants (n=646)

Class	Occupational level	n	Percent
1	Managerial and professional	127	19.7%
2	Intermediated occupations	193	29.9
3	Routine and Manual occupations	326	50.1%

3.3.5.4.   Parental education

Participants were asked to report the highest level of education each of their parents held, with responses grouped into five categories in line with the UK's national qualifications framework, the distribution of which is presented in Table 3-3 below.

Table 3-3 Education level of participants parents (n=646)

Code	Parental education level	Mothers		Fathers	
		n	Percent	n	Percent
1	Left school prior to completion of GCSE's	276	42.7%	211	32.7%
2	GCSE's	149	23.1%	141	21.8%
3	A 'levels	58	8.9%	102	15.8%
4	Degree	92	14.2%	157	24|%
5	Post-graduate degree	71	11.0%	35	4.5%

3.3.5.5. Family Size

Participants family size was established by asking participants to report the number of brothers and sisters they each had. On average, participants family size consisted of the student, two siblings and two parents (Mean= 5.21, SD = 1.28) and was well distributed, with a number of students (n=10) reporting that they were an only child, while 74 students reported having 4 siblings or more.

3.3.5.6. Psychological Measures

In addition to assessing students' contextual characteristics, a range of standardised psychological measures were used to collect information regarding participants namely; family environment, levels of motivation, problem-solving approach and levels of optimism. Participants were asked to complete each psychometric measure in their first year (Time One), and to complete the motivation, problem-solving an optimism measures again when in their second year (Time Two). These measures are detailed in Table 3-4.

Table 3-4 Psychological measures

Factor	Measurement scale name
Family environment	Moos & Moos Family Environment Scale
Motivation	The Cassidy-Lynn Achievement Motivation Scale
Problem-solving approach	The Cassidy-Long Problem-solving Style Inventory
Optimism	The Life Orientation Test-Revised (LOT-R)

The Family Environment Scale (Moos & Moos, 1994). This is a 90-item scale which measures 10 first order factors of family environment; cohesion, expressiveness, conflict, independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, moral-religious orientation, organisation and control. The scales are scored from 1-5 so that a higher score indicates more experience of the specific factor within the family. The 10 first order factors can be grouped into 3 second order factors, 1) family relations (cohesion, expressiveness, and conflict); 2) personal growth (independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, and moral-religious orientation) and 3) systems maintenance (organisation and control). An example of an item used in this scale: "we feel it is important to be the best at whatever we do". Item responses are scored either 'true' or 'false', for each item so that a higher score indicates more experience of the specific factor within the family. Reliability levels in the current study; Family relations: (α=0.88); Personal growth: (α=0.84); systems maintenance (α=0.81).

The Cassidy-Lynn Achievement Motivation Questionnaire (Cassidy & Lynn, 1989). This is a 49-item scale developed particularly for researchers interested in achievement motivation. The scale contains 49 items which measures the 7 factors of achievement motivation outlined by Cassidy and Lynn (1989); work ethic, acquisitiveness, dominance, pursuit of excellence, competitiveness, status aspiration and mastery. Items are scored using a 5-point Likert response scale 1-5. A second order factor analysis allows for a two-factor solution of extrinsic motivation (Status aspiration, acquisitiveness and dominance; and Intrinsic motivation (work ethic, mastery, competitiveness and pursuit of excellence) (Cassidy & Lynn, 1989). The scale has shown high internal consistency in University student participants (Cassidy & Lynn, 1989) and individuals in full time employment

(Ward, 1997). An example of an item used in this scale: "I get a good sense of satisfaction out of being able to say I have done a very good job on a project". Reliability levels in the current study; Extrinsic motivation: (α=0.79); Intrinsic motivation: (α=0.88).

The Cassidy-Long Problem-solving Style Inventory (Cassidy & Long, 1996). This is a 28-item measure of problem-solving style which measures 6 factors; helplessness, control, creativity, confidence, approach style, avoidance style and support-seeking (Cassidy & Long, 1996). The scale is scored from 1-5 so higher scores on the scale indicate a problem-solving style where the person feels less helpless, more in control, more confident, more creative, and more likely to approach rather than avoid problems. The scale has been used in a number of studies (e.g. Cassidy & Dhillon, 1997; Baker, 2003) where it has been shown to be reliable and valid, as well as practically useful. A second order factor solution produces 3 factors; problem-solving self-efficacy (combining helplessness, control and confidence), approach style (combining creativity and approach), and avoidance (combining avoidance and support-seeking). An example of an item used in this scale: "I think up as many ways as possible to handle the situation". Reliability levels in the current study; Problem-solving self-efficacy: (α=0.83); Problem-solving approach: (α=0.78); Problem-solving avoidance: (α=0.76).

The Life Orientation Test-Revised (LOT-R) (Scheier et al., 1994). This scale was designed to measure optimism levels by assessing individual differences in generalised optimism versus pessimism. The scale consists of 10 items, 3 statements are described in a positive manner, while another 3 statements are described in a negative manner, and 4 of the scale's statements are non-scored items. The 3 positive items were used to measure

optimism. Participants responded to the statements by indicating the extent of their agreement along a 5-point Likert scale, ranging from "strongly agree" to "strongly disagree." An example of an item contained in the scale: "In uncertain times I usually expect the best". Reliability level in the current study (α=0.78).

3.3.6. Student Grade Point Average

Each academic year of degree participation, students were enrolled in six modules. Each of these modules consisted of coursework and assessment elements which were designed to assess their individual learning and understanding of course material. Students' performance in each of these elements was assigned a mark from 0 to a possible 100. At the end of each academic year the mean score of these six module marks was calculated to allow each student to have an annual end of year GPA for each year of their three-year degree program. Students were required to have achieved a grade point average score of at least 40% at the end of each academic year in order to proceed to the next year. For each of the three institutions who took part in this study, a students' final degree classification is based on a weighted average of the students second (25%) and third year (75%) GPA.

3.3.7. Measuring Academic Growth

This study makes use of a student 'gain' approach to calculate student academic growth. This approach involves measuring the difference between student GPA scores at two points in time, which has also been described as learning gain (McGrath et al., 2015). A

learning gain approach to measuring academic growth measures the distance travelled or learning acquired by students between two points in their academic participation (McGrath et al., 2015; OECD, 2013; Rodgers, 2007). In the context of the current study, this involved measuring the difference between student GPA scores between first and second-year, second and third-year and first and third year to assess levels of academic growth. This approach is summarised in Figure 3-2 below, were academic growth is represented by the distance between two measures of student academic achievement.
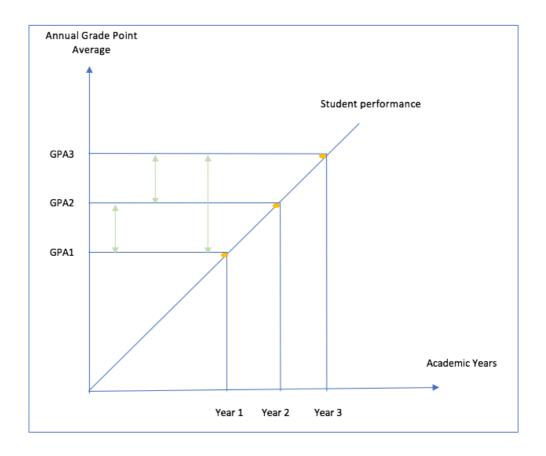
Figure 3-2 Measuring Academic Growth Using a Gain Approach

3.4. Procedure

During the spring terms of the academic year (February-March), students in their first year at university, were approached in lectures, tutorials and seminars and asked to participate in a study to explore the factors which predict academic development. All were provided with an information sheet, which explained the basics of the study, its procedure and a consent form. Those students who chose to participate then completed the study questionnaire which contained the measures as detailed above. At this time (T1) 976 completed questionnaires were returned. These same participants were approached again in the spring term of the second year of their degree and asked to continue their participation in the study by completing the questionnaire on a second occasion (T2). Student registration numbers were used to match completed questionnaires at (T1) and (T2) of which 646 of these matched. Student end of year GPA was obtained with the students consent at the end of year 1, year 2 and year 3 from school records. The data collection timeline is displayed in Figure 3.1 which also highlights the instances of when academic and psychological growth were assessed.

3.4.1. Overview of data analysis

In order to run the analysis required to answer the three research objectives, data was inputted into SPSS 23 (Statistical Package for Social Science) to create a data set which would allow for the following statistical procedures to be carried out. Primary analyses involved descriptive and inferential statistics, including frequencies, standard deviations and reliability confidents for the psychometric scales used. To investigate objective one,

which was exploring the relationship between the independent variables of SES, family environment, motivation, problem-solving and optimism reported at Time one and Time two and academic growth, the correlation between each variable and the estimation of academic growth was examined using Pearson's Product Moment correlations. To further examine the influence the study variables had upon predicting academic growth, hierarchical regression analysis was used. The software package AMOS 10 was used to run Structural Equation Modelling (SEM) to observe the unique relationships and influence each of the study variables had with one another and academic growth and to test the two theoretical models. To address objective two, which was to examine psychological growth in the psychological factors measured between Time One and Time Two, a t-test analysis was used. To address objective three, which was to explore the predictive ability of psychological growth to predict student academic growth, Pearson's Product Moment correlations was used in addition to hierarchical regression analysis and Structural Equation Modelling (SEM). Finally, while not an overall aim of the current study, a t-test analysis was used to explore any observable differences between two groups: students who completed the study by returning questionnaires at Time One and Time Two and those who failed to complete the study by only returning a questionnaire at Time One.

3.5. Results

3.5.1. Descriptive Findings

The means, standard deviations and ranges for each of the independent variables are presented in Table 3-5. As can be seen in Table 3-5, in general there was an increase in the mean scores for almost all of these variables from year one to year two. Problem-solving avoidance in year one mean: 2.39 (SD: 1.06), increased into year two: 3.36 (SD:1.37), problem-solving self-efficacy year one mean: 2.20 (SD: 0.79), increased into year two: 3.29 (SD:1.07), problem-solving approach also increased from year one: 1.54 (SD.77), into year two 2.44 (SD: 1.05). Intrinsic motivation increased from year one (mean in year one: 2.48 (SD: 0.92) to year two (year two: 3.33 (SD:1.16), as did extrinsic motivation (mean in year one: 2.55 (SD: 0.92) to year two: 2.69 (SD: 0.95). Optimism levels however decreased from year one (year one mean: 4.10 (SD: 1.06) to year two (year two mean: 2.89 (SD: 1.04).

Table 3-5 Means, SD and Ranges for Questionnaire Responses (n=646).

Variable	Mean	SD	Range
Time One Responses			
Family environment- Family relations	3.48	1.12	1-5
Family environment- Personal growth	3.33	1.11	1-5
Family environment- Systems maintenance	2.64	1.13	1-5
Problem-solving avoidance	2.39	1.06	1-5
Problem-solving approach	1.54	.77	1-5
Problem-solving self–efficacy	2.20	.79	1-5
Motivation-Intrinsic	2.48	.92	1-5
Motivation- Extrinsic	2.55	.99	1-5
Optimism	4.10	1.06	1-5
Time Two Responses			
Problem-solving avoidance	3.36	1.37	1-5
Problem-solving approach	2.44	1.05	1-5
Problem-solving self-efficacy	3.29	1.07	1-5
Motivation-Intrinsic	3.33	1.16	1-5
Motivation- Extrinsic	2.69	.95	1-5
Optimism	2.89	1.04	1-5
Academic Achievement			
Year one GPA	59.95		
Year Two GPA	60.71		
Year Three GPA	64.46		

3.5.2. Examining Levels of Student Academic Growth

To estimate students' academic growth, a gain approach was used, with students' consecutive annual GPA deduced from their previous year's GPA score (e.g. year 2 GPA minus year 1 GPA= academic growth from year 1 to year 2). As student participants had completed a three years undergraduate degree, this allowed academic growth over three levels to be observed; year one to year two, year two to year three and finally year one to year three. The average participant GPA scores for each year of the three-year degree program is presented in Table 3-6.

Table 3-6 Student Grade Point Average scores for each year of the three-year degree program (n=646).

	Year One Average	Year Two Average	Year Three Average
Grade Point Average	59	60	64

As displayed in *Table 3-6*, students' average GPA remained relatively stable from year one into year two, however student GPA displayed an increase from year two to year three. Overall, student average GPA grew from year one to year three by approximately 5%. In order to determine which level of academic growth would be examined in relation to students' responses to the study questionnaire, the next stage of the analysis involved conducting a correlational analysis between student gain scores from each of the three levels of growth and their final GPA score at the end of year three. As such, bivariate correlations were carried out to determine which levels of academic growth displayed the largest and significant relationship with the students' final GPA, as the larger the correlation between academic growth and GPA at the end of year three, the

better the indicator that students were in fact experiencing academic growth. The result of this correlation is displayed in Table 3-7.

Table 3-7 Correlations between each level of academic growth, GPA in year three and the questionnaire measures (n=646).

Variable	Final Year GPA	Growth Year 1- Year 2	Growth Year 2- Year 3	Growth Year 1- Year 3
Final Year GPA	1.0	-.15**	.63***	.20***
Mother's Education	.56***	-.07	.43***	.03
Fathers Education	.48	-.06	.04	-.05
Family Size	.08*	.01	.09*	.12*
Socioeconomic Status	-.07	-.01	-.13***	-.01
Family Growth	.53***	-.13**	.30***	-.01
Family Systems	.08*	.04	.01	.01
Family Relations	.22***	.01	.21***	.01
Optimism T1	.47***	-.23**	.31***	-.18**
Intrinsic Motivation T1	.22***	-.15**	.22***	.01
Extrinsic Motivation T1	.31***	.16**	.16**	.18**
Problem-solving Self efficacy T1	.12**	.09*	-.07	.06
Problem-solving avoidance T1	-.28***	.03	-.21***	-.07
Problem-solving approach T1	.28***	-.17**	.19**	-.12**
Optimism T2	.22***	-.28***	.21***	-.11**
Intrinsic Motivation T2	.71***	-.28***	61***	-.02
Extrinsic Motivation T2	-.07	.08	.04	.14**
Problem-solving Self efficacy T2	.66***	-.23***	.49***	-.04
Problem-solving avoidance T2	.01	-.14**	.07	-.08
Problem-solving approach T2	-.01	.13**	.05	.27***

*p<.05   **p<.01   ***p<.001

As displayed in Table 3.7, the correlations between three distinct levels of academic growth and students' GPA in their final year were considered. The level of academic growth students experienced from year one to year three shared a significant positive correlation with their final GPA score at the end of year three ($r(646) = .20$, $p => .001$).

Overall students' GPA scores increased from year one to year three. Next, the level of academic growth students achieved from year one to year two was correlated against their GPA scores at the end of third year, this level of growth displayed a significant negative correlation with students' final GPA in third year ($r(646) = -.15$, $p => .001$). This result confirmed the pattern displayed in table 3.7, students experienced negative growth from year one to year two, with the average student GPA score falling from year one to year two. As such, the association between academic growth experienced from year two to year three and students' GPA at the end of third year revealed the largest significant correlation from each of the three analyses ($r(646) = .63$, $p = >.001$). In consideration of this, examination of the association between the questionnaire responses and student academic growth focuses on academic growth experienced by students between year two and year three.

3.5.3. Relationship between the contextual and psychological factors and Academic growth

In order to examine the associations between the independent variables measured in the questionnaire and student academic growth experienced from year two to year three, the next stage of the analysis involved the use of Pearson Product Moment Correlation Analysis. This stage of the analysis was used to explore the significance and strength of the relationship between the study variables reported by students' in questionnaire one, completed in their first year (Time 1) and the variables reported by students in the second questionnaire, completed in their second year (Time 2) in relation to the academic growth they experienced from year two to year three. The results of this analysis are displayed in Table 3-8 below.

Table 3-8 Correlations between study variables reported at Time One and Time Two and academic growth from Year Two to Three (n=646)

	Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
1.	Academic Growth Year 2–Year 3	1																			
2.	Mothers Education	.43**	1																		
3.	Fathers Education	.04	.13**	1																	
4.	SES	-.09*	-.15**	-.35**	1																
5.	Family Size	.18**	-.04	.04	-.17**	1															
6.	Family Growth	.29**	.44**	.09*	-.03	.05	1														
7.	Family Systems	.02	-.04	.19**	-.12	-.02	-.04	1													
8.	Family Relations	.21**	.23**	-.03	.23*	-.24**	.47**	.01	1												
9.	Optimism T1	.31**	.29**	.09*	-.17**	.07	.34**	.11**	.07	1											
10.	Intrinsic Motivation T1	.22**	.15**	.03	.10**	.13**	-.05	-.03	.01	.22**	1										
11.	Extrinsic Motivation T1	.16**	.21**	-.13**	-.03	-.09*	.25**	-.04	.17**	.14**	-.03	1									
12.	Problem-solving Self-efficacy T1	-.07	.03	.12**	-.02	-.06	-.02	.09*	-.05	.02	-.13**	.32**	1								
13.	Problem-solving Avoidance T1	-.21**	-.03	-.08*	.17**	-.02	-.16**	-.12**	-.18**	-.22**	-.01	-.32**	-.09*	1							
14.	Problem-solving Approach T1	.19**	.21**	-.17**	.08	-.09**	.21**	.03	.13**	.06	.01	.10**	.07	.11**	1						
15.	Optimism T2	.21**	-.16**	-.03	-.20**	.19**	.03	-.07	-.03	.34**	.41**	.01	.03	-.28**	.01	1					
16.	Intrinsic Motivation T2	.61**	.37**	.09*	-.05	12**	.43**	.14**	.19**	.54**	.27**	.24**	.04	-.23**	.19**	.27**	1				
17.	Extrinsic Motivation T2	.36	-.12**	-.03	-.02	.26**	.05	-.09*	-.15**	.06	-.02	.01	.01	-.02	-.09*	.13**	.01	1			
18.	Problem-solving Self-efficacy T2	.49**	.46**	0.00	-.00	-.02	.37**	.05	.22**	.46**	.17**	.18**	.13**	-.28**	.19**	.07	.53**	-.05	1		
19.	Problem-solving Avoidance T2	.06	.05	-.02	-.00	-.06	-.03	-.10**	-.05	-.13**	-.07	-.11**	-.13**	.07	.16**	-.07	-.06	.05	-.08*	1	
20.	Problem-solving Approach T2	.04	-.19**	.09*	-.09*	.13**	-.05	-.02	-.21**	-.03	.05	.04	.12**	-.02	-.12**	.07	.05	.49**	-.09*	.16**	1

*p<.05   **p<.01   ***p<.001

As displayed in Table 3.8, there were several significant correlations between the variables of: mother's education, family size, family growth, family relations, optimism, problem solving-approach/ avoidance and intrinsic motivation in year one, in addition to optimism, intrinsic motivation, problem-solving self-efficacy as reported in year two and academic growth from year two to three of their degree program. These correlations suggest that several of these factors are significant predictors of student academic growth. These correlations ranged from small, medium to large in size, according to Cohen's d.

Firstly, considering the contextual factors which influenced academic growth, students' maternal education level shared a significant medium correlation with the level of academic growth experienced by students between years two and three (r (644) = .43 p <.001). This result demonstrates that student whose mothers held a relatively higher level of education experienced greater levels of academic growth. This relationship was not evidenced however when considering paternal education, (r (644) = .04 p = n.s), with father's level of education having no significant association with student academic growth. Socio-economic status, demonstrated a significant, small, negative, relationship with student academic growth (r (644) = -.09 p <.05), with lower levels of SES background having an adverse relationship upon academic growth. Family size displayed a small, but significant relationship with academic growth (r (644) = .18 p <.001), with students who came from larger families, experiencing greater levels of academic growth.

Second, considering the relationship between Family Environment and academic growth, two of the scales three sub-factors displayed a significant positive correlation. Firstly, personal growth, this sub-scale is designed to elicit the students' perception of

independence, achievement orientation and intellectual-cultural orientation within the family. As such, students' responses to this subscale shared a significant, medium relationship with academic growth (r (644) =.29 p <.001), with higher levels of personal growth associated with higher levels of academic growth, students who had grown up in a household which had emphasised these attributes are more inclined to experience academic growth. The second (FES) subscale, family relations, which concerns the family's cohesiveness, expressiveness and levels of conflict also displayed a relatively smaller positive association with academic growth (r (644) =.21 p <.001). Families where members were encouraged to develop their expressiveness, cohesion and resolve conflict shared a positive relationship with student academic growth. Family systems, a measure of the levels of organisation and control within the family environment shared no significant relationship with academic growth (r (644) =.02 p = ns)

In relation to students problem-solving ability in first year, problem-solving avoidance, this being a tendency to brush problems under the carpet rather than deal with them, shared a significant relationship with academic growth. Problem-solving avoidance had a negative influence upon student growth from year two to year three (r (644) = -.21 p= n.s). Problem-solving approach, this reflecting a positive attitude to problems and a tendency to tackle them head on had a small but significant positive association with academic growth (r (644) =.21 p= <.001). Students who reported that they were more likely to deal with their problems head-on, rather than avoid them experienced higher levels of academic growth. Problem-solving self-efficacy in year one, was revealed to have no significant relationship with academic growth experienced by students from year two to year three (r (644) = -.07 p= n.s).

Optimism levels reported by students in second year again shared a positive significant association with academic growth (r (644) =.21 p= <.001). However, the size of the association was smaller than that reported in first year. Intrinsic motivation reported in second year, again revealed the largest significant positive relationship with academic growth (r (644) =.61 p<.001). Extrinsic motivation as reported by students in second year demonstrated a medium relationship, but this relationship was non-significant (r (644) =.36 p= n.s). While non-significant in first year, problem-solving self-efficacy in second year demonstrated a medium significant relationship with academic growth (r (644) =.49 p<.001) with those students who reported higher-levels of confidence in relation to problem-solving experiencing higher levels of academic growth. Problem-solving avoidance (r (644) =.06 p= n.s) and approach (r (644) =.04 p= n.s) however had no significant relationship with academic growth.

3.5.4. Predictive ability of the Contextual and Psychological variables measured to predict Academic Growth

To further understand the predictive ability of the study variables to predict student academic growth from year two to year three, a Hierarchical Multiple Regression analysis (HMRA) was conducted (displayed in Table 3.9). Informed by the literature, the HMRA model consisted of four stages. Stage one (model one) of the analysis included the contextual factors of; father's education, mother's education, SES and family size. Stage two (model two) included the addition of family environment sub-scales of; family growth, family systems and family relations. Stage three (model three) included the addition of optimism, intrinsic motivation, extrinsic motivation, problem-solving efficacy, advance and approach as reported by students in their first year. Stage four,

(model four) the final stage of the regression model involved the addition of optimism, intrinsic motivation, extrinsic motivation, problem-solving efficacy, avoidance and approach responses from students when in their second year.

As illustrated in Table 3.8 the variables included in model one of the analysis were able to account for 23% of the final model's total variance with mother's education and family size the only significant predictors. SES was not a predictor at this stage. Model two variables combined were able to add an additional 3% in explanatory power, with family relations being the only significant predictor at this stage. Model three variables; optimism, intrinsic motivation, extrinsic motivation, problem-solving efficacy, advance and approach responses from year one, explained an additional 8% of the variance, however extrinsic motivation was not significant at this stage. The final stage of the model, student responses from their second year were added. These variables were able to explain a further 19% of the model's total variance. At this final step, extrinsic motivation and problem-solving avoidance were not significant predictors.

Overall the final model was able to account for 53% of the total variance of academic growth from year two to year three. The contextual factors of mother's education (β.27), family size (β.16), family growth (β -.15) and family relations (β.13) were all significant predictors of academic growth in this final model. The psychological factors of optimism (β.16), intrinsic motivation (β.43), problem-solving self-efficacy (β.23) and approach (β.09) as reported in year two were also significant predictors. Mother's education, intrinsic motivation and problem-solving self-efficacy as reported in year two reported

the largest beta meaning these factors were the most significant predictors of student academic growth in this model.

This model provided the basis for developing and testing a structural equation model.

Table 3-9 Regression analysis, The Predictors of Academic Growth from HMRA, Dependent Variable- Academic Growth Year Two – Year Three (n=646)

Variable	Model 1			Model 2			Model 3			Model 4			ΔR^2
	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β	
Fathers Education	-.110	.160	-.025	1.55	.16	-.04	.06	.16	.01	.07	.14	.02	.23
Mothers Education	1.78	.141	.45***	1.55	.155	.39***	1.34	.15	.34***	1.11	.15	.28***	
Socio-Economic Status	.04	.27	.01	-.25	.28	-.04	.19	.27	.03	-.11	.24	-.01	
Family Size	.90	.16	.21***	1.02	.16	.23***	.94	.16	.21***	.72	.14	.16***	.03
Family Growth				.24	.22	.05	-.11	.23	-.02	-.77	.19	-.15***	
Family Systems				.12	.17	.03	-.03	.17	-.01	-.13	.15	-.03	
Family Relations				.78	.21	.16***	.57	.21	.11**	.65	.17	.13***	
Optimism Year One							.69	.19	.13**	-.67	.19	-.13**	.08
Intrinsic Motivation Year One							.61	.21	.10**	-.43	.21	-.07*	
Extrinsic Motivation Year one							.27	.22	.05	.22	.19	.04	
Problem-solving Self Efficacy Year One							-.66	.26	-.09*	-1.05	.23	-.15***	
Problem-solving avoidance Year One							-.87	.19	-.16***	-.19	.18	-.04	
Problem-solving approach Year One							.99	.26	.14***	.39	.23	.05	
Optimism Year Two										.86	.20	.16***	.19
Intrinsic Motivation Year Two										2.09	.19	.43***	
Extrinsic Motivation Year Two										-.03	.19	-.01	
Problem-solving Self Efficacy Year Two										1.22	.19	.23***	
Problem-solving avoidance Year Two										.24	.12	.06	
Problem-solving approach Year Two										.52	.19	.09**	
ΔR^2		.23		*p<.05 **p<.01 ***p<.001	.26			.33			.53		

*p<.05   **p<.01   ***p<.001

3.5.5. Exploring the inter-correlations between independent variables

In order to explore the potential latent relationships between each of the study variables included in the hierarchical multiple regression presented in Table 3.8, a number of theorised models were tested using structural equation modelling (SEM) in AMOS 22. The model demonstrated in Figure 3.3 displayed the best fit statistics with a chi-square value of 3.80 with 2 degrees of freedom and was non-significant (p=.14). The comparative fit index (CFI), incremental fit index (IFI), goodness of fit index (GFI), and normed fit index (NFI) were all .99, and the root mean square error of approximation (RMSEA) was .03. The model displayed in Figure 3.3 demonstrated a good fit and was able to explain 46% of the variance in student academic growth experienced between year to and year three.

Observing the direct relationships highlighted in the SEM, intrinsic motivation at time two was the strongest predictor (β =.42) of academic growth experienced from year two to year three. Optimism at time two accounted for (β =.12) of the model's total variance, while problem-solving efficacy at time two was able to directly account for an additional (β =.17). Those students with higher levels of intrinsic motivation, optimism and self-efficacy in year two demonstrated higher levels of academic growth between years 2 and 3.

Of additional interest, was the inter-related relationships revealed between optimism and intrinsic motivation at Time 2, as demonstrated by the covariance highlighted in the SEM

(β = .35). As the direction of this relationship was positive, students reporting higher levels of optimism in their second year, also reported higher levels of intrinsic motivation. While optimism at Time two was a significant predictor of academic growth, (β =.12) the SEM revealed its influence upon academic growth as mediated by intrinsic motivation suggesting that on this occasion this relationship was more important.

This trend was again demonstrated through problem-solving self-efficacy's relationship with academic growth as mediated by intrinsic motivation. While itself a direct predictor of academic growth (β =.17), problem-solving's relationship with intrinsic motivation was more pronounced (β =. 39) demonstrating that those students with greater levels of problem-solving self-efficacy were also more intrinsically motivated, this type of motivation the most significant predictor of growth in the model tested.

Family growth, directly predicted academic growth (β =.05) however its relationship with problem-solving self-efficacy (β =.20) optimism (β =.14) and intrinsic motivation (β =.33) displayed a much larger impact. Students who reported having developed in a supportive, encouraging and nurturing environment, more inclined to exhibit greater levels of these three factors.

Finally, socioeconomic status demonstrated a small direct impact upon growth between year 2 to year 3 growth (β = -.03), however this relationship was mediated through optimism (β = -.19) and family growth (β =.07). Students from poorer backgrounds exhibited less academic growth, less encouragement to achieve from family and were less optimistic. Maternal education level was directly related to academic growth (β =.24),

however much larger relationships were observed between maternal education and problem-solving self-efficacy (β= .37), intrinsic motivation (β =.23) family growth (β =.45) and optimism (β =.18) all of which demonstrates the importance of maternal education level in the development of academic growth, while this was enhanced by increased encouragement to achieve, higher intrinsic motivation, greater self-efficacy when approaching problems, and a more optimistic explanatory style.
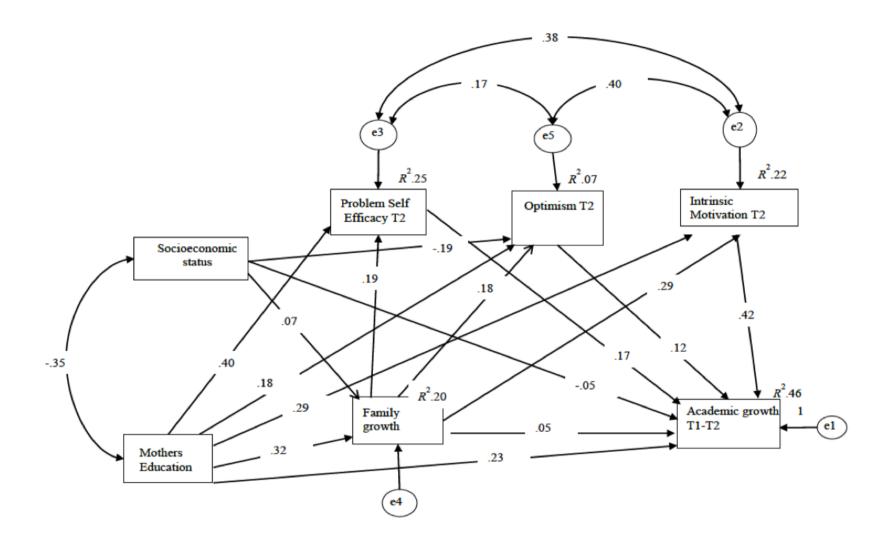
Figure 3-3 Path Model of Predictors of Academic Growth from Structural Equation Modelling

3.5.6. Psychological Growth

The majority of research which has involved the use of the psychological variables included in the current study and academic achievement in higher education has predominately relied upon student responses measured at a single point in time. As a consequence, this has limited the opportunity to explore how these variables may grow and develop during a students' participation in higher education.

As the current study's questionnaire was completed by students on two occasions, once when in first year and again in second year, this allowed for the examination of psychological growth, considered growth in motivation, problem-solving style and optimism from year one to year two to be examined. This level of psychological growth was measured by deducting year one values from year two values. As shown in Table 3-10 below, problem-solving self-efficacy, approach, avoidance, intrinsic and extrinsic motivation all displayed development from year one to year two, while optimism levels reduced.

Table 3-10 Psychological growth of study variables from Year one to Year two (n=646)

Variable	Year one		Year two		t-test	95% CI for Mean Difference		df
	Mean	SD	Mean	SD				
Optimism	4.11	1.06	2.89	1.04	25.36***	1.12	1.30	645
PS self-efficacy	2.20	.79	3.29	1.08	-22.35***	-1.19	-.99	645
PS approach	1.54	.77	2.44	1.05	16.56***	-1.00	-.79	645
PS avoidance	2.39	1.06	3.36	1.36	-.14.81***	-1.09	-/84	645
Intrinsic motivation	2.48	.92	3.33	1.16	-16.86***	-.94	-.75	645
Extrinsic motivation	2.55	.99	2.69	.95	-2.66**	-.25	-.04	645

*p<.05   **p<.01   ***p<.001

As shown in Table 3-10 above there were significant differences in the study variables students reported between year one and year two. Student levels of optimism declined significantly from year one to year two. Students problem-solving approach and self-efficacy both displayed a significant increase, while problem–solving avoidance revealed a significant decline. Considering student motivation, levels of intrinsic motivation increased form year one to year two, while extrinsic decreased, these changes were significant.

3.5.7. Relationship between Psychological Growth and Academic Growth

Given the importance developing academic growth is to students and HEI's, a positive relationship between psychological growth and academic growth would offer additional support for the importance of student motivation, problem-solving approach and optimism in the development of student academic growth. With this in mind these factors and students' contextual factors were entered into a Hierarchical Multiple Regression Analysis (HMRA), as shown in Table 3-11.

As shown in Table 3-11, this model was able to predict 46% of the variability in academic growth. The model was developed in three steps, at step one the students' contextual background was entered into the model, this step was able to explain 23% of the variance in academic growth, with mother's education level and family size variables being significant. In step two, family systems, relations and growth were added, these three variables were able to add an additional 3% to the model's total variance explained, with family relations the most significant. Step three of the regression analysis involved

entering the psychological growth factors, motivation, problem-solving style and optimism, with growth in intrinsic motivation, problem-solving self-efficacy and optimism all significant. This final stage of the model was able to predict an additional 20% of the variance in academic growth.

This regression analysis was then used to inform the construction of a second SEM model, this time exploring the relationship between psychological growth factors and academic growth as shown in Figure 3.4. This model demonstrated a good fit with a chi-square of 14.39 with 5 degrees of freedom and was non-significant ($p<.06$). The fit indices were strong (CFI=.99; RFI=0.99; NFI=0.99) and the Root Mean Square Error of Approximation (RMSEA) was 0.04. Over all the psychological growth model was able to predict 46% of the total variance in academic growth from year two to year.

Student contextual factors such as maternal education ($\beta = .33$) and SES ($\beta = -.05$) were maintained to have direct relationships with academic growth as was family growth ($\beta = .22$). Psychological growth, considered growth in intrinsic motivation demonstrated the largest relationship ($\beta = .35$) with academic growth. Also, while not as large, growth in problem-solving self-efficacy had a direct relationship with academic growth ($\beta = .35$) as did optimism ($\beta = .25$).

SEM modelling also allowed for the indirect relationships between growth in the study variables to be explored. Of particular interest is the indirect associations between optimism and intrinsic motivation ($\beta = .34$), problem-solving's relationship with

optimism (β = .19) and intrinsic motivation (β =. 12). This highlighted that these factors had a reciprocal relationship.

Table 3-11 Psychological Growth as a Predictor of Academic Growth (n=646)

Study variables	Model One			Model Two			Model Three			ΔR^2
	B	SE B	β	B	SE B	β	B	SE B	β	
Fathers Education	-.122	.163	-.028	-.163	.163	-.038	.042	.145	.010	.23
Mothers Education	1.778	.140	.445***	1.549	.154	.388***	1.385	.149	.347***	
Socio-economic status	-.010	.112	-.003	-.098	.113	-.034	-.076	.100	-.026	
Family Size	.899	.154	.204***	1.025	.159	.232***	.889	.141	.201***	.03
Family Growth				.253	.219	.49	-.601	.203	.118**	
Family Systems				.113	.176	.023	-.004	.156	-.001	
Family Relations				.763	.207	.152***	.610	.182	.121***	
Optimism Growth							-1.008	.163	-.216***	.20
Intrinsic Motivation							1.489	.154	.335***	
Extrinsic Motivation							-.208	.137	-.050	
Problem-Solving Self-Efficacy Growth							1.553	.155	.341***	
Problem-Solving Avoidance Growth							.223	.105	.066	
Problem-Solving Approach Growth							.336	.135	.082	
ΔR^2		.23			.26					.46

*p<.05   **p<.01   ***p<.001
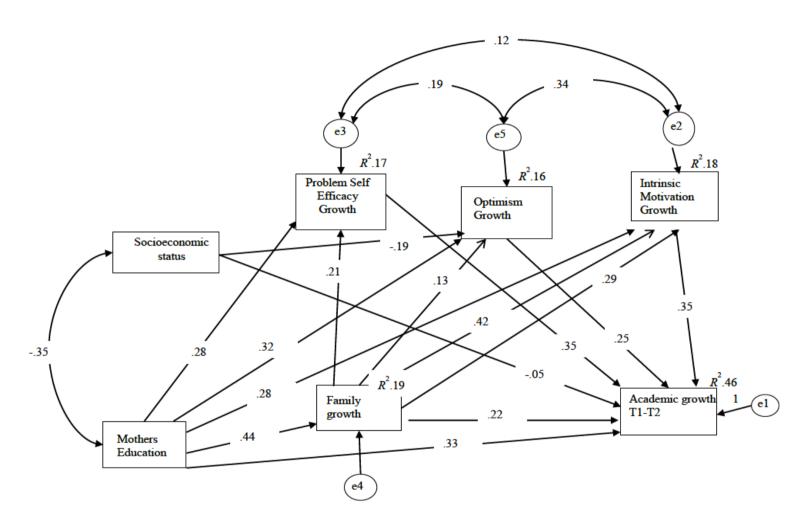
Figure 3-4 Psychological Growth as a Predictor of Academic Growth

3.5.8. Study attrition

While the primary aim of this research study was to examine the predictors of academic growth in HE students, it was perhaps of interest to note that at stage two of the study's data collection, 330 (33.7%) of the original student participants who returned a questionnaire when in their first year, failed to return a second copy of the study questionnaire when in their second year, and therefore were unable to take part in the finally analyse. Despite the reasons for participant attrition not being collected in this study, t-test analyses to compare the first-year responses of students who returned a questionnaire in year one and year two (n=646) and those who returned a questionnaire in year one only (n=976) offered insight into significant differences between the two groups. This analysis is presented in Table 3.12.

Table 3-12 Study Attrition Comparison of the study variables reported between Completers (n=646) and Non-Completers (n=330)

Unit of measurement	Variables	Returned Questionnaire Time One only (n=330)		Returned Questionnaires Time One- Time Two (n=646)		t-test	95% CI for Mean Difference		n
		Means	SD	Means	SD		Lower	Upper	
	Socioeconomic Status	2.32	0.67	2.31	0.78	.32	-.08	.11	974
Contextual Factors	Mother's Education Level	1.00	1.12	1.28	1.41	-3.09**	-.45	-.10	974
	Father's Education Level	1.21	1.28	1.48	1.31	-.3.11**	-.44	-.10	974
Year One Achievement	GPA	55.02	8.46	59.96	10.20	-7.56***	-6.21	3.66	974
Years	Age	19.14	1.67	19.13	1.48	.07	-.19	.21	974
Family Environment Scale	Family Growth	1.88	1.08	3.33	1.11	-19.49***	-1.59	1.30	974
	Family Systems	2.67	1.51	2.64	1.13	.42	-.13	.20	974
	Family Relations	3.08	1.25	3.48	1.12	-5.01***	-.55	-.24	974
Problem-solving style	Problem-solving Self Efficacy	1.76	1.08	2.20	0.79	-7.26***	-.56	-.32	974
Scale	Problem-solving Avoidance	2.60	1.65	2.39	1.06	2.40**	.04	.30	974
	Problem-solving Approach	1.54	0.77	1.75	1.07	3.46	.09	.32	974
Motivation	Intrinsic motivation	2.48	10.92	2.88	1.23	5.65***	.26	.54	974
Scale	Extrinsic Motivation	3.01	1.24	2.55	0.99	6.36***	.32	.61	974
Life Orientation Scale	Optimism	4.14	0.86	4.11	1.06	.39	-.13	.19	974

*p<.05   **p<.01   ***p<.001

3.5.9. Comparisons between students who returned One Questionnaire vs those who returned Two

As previously described, HE students who report relatively lower GPA scores and are less engaged with their studies tend also to report lower levels of optimism, intrinsic motivation and maladaptive problem-solving which have been linked to achievement (Vallerand, & Bissonnette, 1992; Robbins et al., 2004; Cassidy & Giles, 2009; Richardson et al., 2012). In order to explore if these relationships were present in the current study, differences between two groups: those students who returned completed study questionnaires at both (T1) and (T2), and those students who failed to complete a study questionnaire on both occasions were examined. As presented in Table 3.12 these two groups reported significantly different outcomes in the study variables and first year GPA.

Observing the contextual backgrounds of those who failed to complete the study questionnaire on both occasions (T1, T2), against those who did, both groups of students came from similar socioeconomic backgrounds. Using the NS-SEC three-class framework, both groups respective SES means, although differing slightly, placed them in the Intermediate occupation's category. To examine if this difference in SES mean were significant, a t-test analysis was run, which confirmed that the difference between the two groups were non-significant. Next, considering differences in the mean maternal education level of the two groups, students who failed to complete the study questionnaire on both occasions, reported having mothers who held a lower standard of education than those students who chose to continue the difference between these two groups were

significant. Again, considering the two groups paternal education level, those who failed to completed the study reported coming from families were the father had a lower standard of education than their peers who completed, the differences between these two means were also significant.

Further, those students who failed to complete the questionnaire on both occasions reported significant differences in their problem-solving ability for their completing peers. This was displayed in the significantly lower means they reported having in relation to problem-solving self-efficacy, this being the confidence an individual has when approaching a problem. These students also reported having higher levels of problem-solving avoidance, that is they were more inclined to express the use of avoidance tactics when confronted with a task. These between group difference were again reported in relation to problem-solving approach, which measured the student approach and creativity when faced with a task.

Students who failed to complete the study questionnaire on both occasions reported lower means in relation to intrinsic motivation, than those who remained in the study, differences between these two groups significant, while non-completers reported significantly higher levels of extrinsic motivation than those who remained in the study.

Finally, participation at time one allowed for collection of a single measure of grade point average at the end of their first year of participation. When comparing this measure of achievement against the achievement of those who chose to complete the study, revealed

a significant difference, those who chose not to continue scored significantly lower levels

of GPA at the end of their first year.

3.6. Discussion

The purpose of this research stage was to explore the antecedents of academic growth in students attending HE, and to identify factors that might provide the foundations for designing interventions to encourage the development of academic growth. More specifically, it sought to examine the concurrent associations between the contextual factors of, SES, family environment, parental education and the factors of motivation, problem-solving and optimism with the academic growth experienced by HE students. A second objective was to observe development in the factors of motivation, problem-solving and optimism developed during a students' participation in HE, and the impact development and change in these factors had upon student academic growth. It was hoped that the conclusions from this stage could provide valuable insight into the factors and processes underlying academic growth and serve to identify potential variables which might provide the foundation for designing interventions aimed to support and promote the development of academic growth amongst students attending HE.

Overall Study One has provided evidence for the importance of a combination of SES, mother's education level, family growth, problem-solving self-efficacy, optimism and intrinsic motivation in predicting student academic growth. Results from this stage illustrate that these factors accounted for 46% of the variance in the academic growth experienced in students from year two to year three.

This study represents one of the first examples of research exploring the predictors of academic growth in students attending HE. Whilst relatively few studies have examined the factors included in the current study in relation to academic growth, an extensive literature base has developed around exploring their association to static measures of academic achievement, namely GPA and a host of pro-educational adaptive behaviours and attitudes. As such, the research conclusions revealed in the Study One, relate in many ways to conclusions dominant throughout the literature which together can further develop our understanding of the factors which may encourage academic growth.

For instance, intrinsic motivation was the most significant predictor of academic growth included in the current study. Students who reported higher levels of intrinsic motivation in second year experienced greater levels of academic growth from year two to year three. The results of Study One support the limited number of research examples which has examined the influence intrinsic motivation has upon academic growth (Marcoulides et al., 2008; Murayama et al., 2013). Murayama et al. (2013) have previously highlighted that students who reported higher levels of intrinsic motivation during participation in secondary level education were more likely to experience higher levels of academic growth over a five-year period than their peers who were less intrinsically motivated. Evidence has long supported the role of intrinsic motivation as a crucial component to academic success (Robbins et al., 2004; Richardson et al., 2012). Previous meta-analysis conducted by Robbins et al. (2004) and Richardson and associates (2012) have highlighted the value motivational theory models such as, achievement motivation, academic goals and expectancies have in the predication of student GPA. Richardson and associates (2012) emphasised the importance of intrinsic motivation, performance/ academic goals and academic self-efficacy as the most

significant predictors of HE student GPA. Overall, the findings of the current study also suggest that intrinsic motivation is a significant predictor of student academic growth.

In addition to the direct relationship between motivation and GPA, greater levels of intrinsic motivation have also been associated with pro-educational behaviours and attitudes which are likely to be conducive to academic growth (Baker, 2004; Vallerand and Bissonnette, 1992; Vansteenkiste et al., 2005). To be motivated to begin and complete a task, purely for the pleasure it provides, is likely to positively influence student adjustment and study strategies (Vansteenkiste et al., 2005). Renewed interest in theories of motivation has emphasised the importance of focused, consistent effort has in the prediction of HE student academic achievement outcomes (Dweck, 2010; Richardson et al., 2012; Busato, Prins, Elshout, Hamaker, 2000; Pintrich & Groot, 1990). Higher levels of intrinsic motivation are associated with superior academic adjustment and lower instances of negative psychological well-being, both of which have well-established impacts upon student academic performance (Baker, 2004). Students who are motivated, particularly intrinsically, are regarded as having greater performance expectations, exert greater levels of effort, are more attentive during the learning process, and benefit from greater levels of psychological well-being (Vallerand & Bissonnette, 1992; Pintrich & Schunk, 2002; Bouffard-Bouchard, Parent, & Larivee, 1991; Elliott & Dweck, 1988; Vansteenkiste et al., 2005). The greater levels of intrinsic motivation present in the current study, could potentially allow students to be more attentive to their studies and devote greater attention towards academic pursuits, than their peers who reported lower levels of intrinsic motivation.

Previous investigations into students experiences of HE suggests that many students find HE to be a particularly stressful experience which requires students to adjust to a range of social, emotional and academic demands (Baker, 2004). Research exploring the role intrinsic motivation has in the development of academic achievement has also demonstrated that students who report higher levels of intrinsic motivation also benefit from greater levels of adjustment and lower levels of perceived stress (Baker, 2004). Baker (2004) asked 91- second year HE students to complete measures of motivation (AMS), psychological well-being (general health questionnaire GHQ), adjustment to university, perceived stress and gained permission to collect student GPA'S from school records. A series of hierarchical multiple regression analyses were performed and highlighted that higher levels of intrinsic motivation were associated with better adjustment to HE and were negatively associated with self-reported stress. The opposite relationship however was observed between levels of amotivation and lower intrinsic motivation scores which were associated with greater levels of self-reported stress and poorer adjustment to university life. Further, amotivation (a tendency to report low levels of both intrinsic and extrinsic motivation) was associated with lower GHQ scores, indicating lower levels of mental well-being. Despite a measure of student adjustment and well-being not being examined in the current study, it is reasonable to suggest that the indirect relationships evidenced by Baker (2004) could have given students in the current study an advantage settling into HE life and focusing on their academic studies, while experiencing lower levels of perceived stress.

Intrinsic motivation has also been demonstrated to predict the use of adaptive learning style (Busato, Prins, Elshout & Hamaker, 2000). As such, the use of direct and deeper learning styles associated with this motivational approach could have potentially

supported the development of academic growth in the current study. Learning styles are often considered a type of general strategy when approaching learning material, which can be characterised by four learning type styles; meaning directed, reproduction directed, application directed and undirected (Busato et al., 2000). Each of these learning styles have been associated with varying academic outcomes, with mean and application directed learning style considered the best in terms of achievement outcomes, while undirected learning styles, (i.e. lack of direction, interest and a feeling of ambiguity) shown to be a predictor of "academic risk", that is a student at risk of academic failure and more likely to drop out of an academic program (Busato et al., 1995; Busato et al., 1998; Busato et al., 2000). This theory has been confirmed by Busato et al. (2000) in a group of undergraduate students who were able to demonstrate that students who report higher levels of intrinsic motivation were also more likely to report higher levels of directed learning, which included greater structuring, self-regulation, construction of knowledge and concrete processing. In contrast, those with greater levels of extrinsic motivation were more inclined to report lower levels of regulation, co-operation and stimulation and higher ambivalence. As such, students who were more intrinsically motivated expressed deeper and more directed learning styles, which was a positive predictor of their academic achievement (Busato et al., 2000). The tendency to use self-regulated learning is likely to have a positive influence on student academic growth.

There was also evidence of a significant relationship between intrinsic motivation levels and problem-solving approach. Problem solving self-efficacy was predictive of intrinsic motivation, in other words, those students with confidence in their adaptive problem-solving, also tended to report higher levels of the motivational approach associated with

positive long-term outcomes and academic performance. To date there have being few studies exploring the relation between problem-solving and motivational orientations (Baker, 2003; Cassidy & Lynn, 1991). However, one research exception, Baker (2003) reports that those students who report higher levels of motivation and problem-solving ability tend to have a more self-determined profile, being more inclined to undertake extra academic behaviours (e.g. reading, extra studying) because they valued them intrinsically. This trend is evidence in the current study, with students who are more intrinsically motivated also have greater self-confidence in their problem-solving abilities. In light of this, a combination of problem-solving ability and intrinsic motivation are likely to help students successfully overcome challenges.

In keeping with this, problem-solving self-efficacy also acted as a direct predictor of student academic growth, as such, students who reported greater confidence in their problem-solving ability, experienced higher levels of academic growth. This is perhaps not surprising given the nature of student participation in HE, which is likely to involve students overcoming multiple personal and academic problems in order to experience academic growth. In accordance with social problem-solving theory (D' Zurilla et al, 1992) an individual's success at overcoming a problematic situation relies upon their ability to successfully identify, assess and formulate pathways which provide the required solutions. Students who proactively approach problems as challenges, rather than attempt to avoid them, are more likely to create additional pathways to reach their goals over time and to adjust their approach to overcome barriers to experience success (Baker, 2003; Vaez & Laflamme, 2008). In this way, students who reported greater levels of self-confidence when approaching a task or problem, and problem-solving approach, that is, viewing problems as challenges to overcome, also experienced greater

levels of growth, a pattern previously evident in terms of achievement performance (D'Zurilla & Sheedy, 1991; D'zurilla, & Nezu, 1990; Cassidy & Giles, 2009; Baker, 2003).

Greater problem-solving ability has previously been associated with lower levels of perceived stress and lower levels of worry amongst a student population (D' Zurilla et al, 1991; Belzer, D'zurilla & Maydeu-Olivares, 2002). D' Zurilla et al. (1991) approached a group of HE students (n=192) in their first year of participation, asking them to complete two measures, one measure assessed problem-solving (SPSI) while another was designed to assess perceived stress. The results confirmed that students who reported higher levels of problem-solving ability, reported lower levels of perceived psychological stress during their first year in HE. When considering the problem-solving dimensions which could account for the most variance in the observed problem-solving/ stress relationship, problem solving orientation (an individual's approach or avoid behavioural response) proved to demonstrate the most significant relationship. It is considered that adaptive problem-solving can help students navigate potentially stressful circumstances during the course of their studies, allowing them to concentrate greater focus on their academic pursuits, rather than becoming side tracked and impacted by negative emotions (D' Zurilla et al, 1991).

Problem-solving ability has been shown to share a negative correlation with mal-adaptive worry in a group of HE students (Belzer, D'zurilla & Maydeu-Olivares, 2002). While small amounts of worry may be considered normal and an adaptive response to a perceived threat, excessive, incontrollable worry has been identified as a central feature

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of Generalised Anxiety Disorder (GAD) which has been recognised as a mental disorder (DSM-V, American Psychiatric Association, 2013). Belzer et al (2002) examined the relationship between problem- solving ability and worry, approaching 353 students in their first year of HE participation. Participants were required to complete a measure of problem-solving (SPSI-r) a measure of worry (the catastrophic worry questionnaire) and a measure of trait worry (State/trait anxiety inventory-trait form). As expected, students who reported a greater tendency to experience trait anxiety also reported higher levels of worry, however, upon controlling for trait anxiety, students who were more inclined to report higher levels of negative and impulsive/ carelessness style problem-solving were more likely to report dysfunctional levels of worry. Students who tend to report negative thinking about their problems (avoid solving their problems head on) are more likely to experience higher levels of worry, which has the potential to influence their ability to focus on their academic work. With this in mind, greater levels of positive problem-solving orientation may protect students from experiencing excessive worry, helping them to approach rather than try to avoid problematic situations, behaviour which would help to minimise stress levels which could otherwise negatively influence academic growth.

Students who reported higher levels of problem-solving self-efficacy also reported more optimistic thoughts regarding the future. The more confident a student perceived their problem-solving ability, the more optimistic they tended to be. An optimism explanatory style, in which individuals hold positive thoughts, attitudes and expectations for the future, has previously been associated with an enhanced ability to balance multiple goals, and an ability to focus greater attention on problems and goals which are deemed most important (Solberg Nes et al., 2009; Rand et al., 2011;

Segerstrom, 2007; Geers et al., 2010). In other words, those students who have higher confidence in their problem-solving ability and are more optimistic, are more inclined to evaluate which goals are of particular importance to them and to devote their time and effort towards those goals.

Optimism was directly predictive of academic growth, the more optimistic a student was the higher the level of academic growth they experienced. Students who report higher levels of optimism tend also to make, external, unstable, specific attributions about past events (Peterson, Vaillant & Seligman, 1988). With this in mind, these students attribute negative past events for example failing an exam or getting a low assessment grade on external factors (e.g. harsh marking) and believe these negative instances reflect temporary situations, rather than a stable reflection of their personal abilities (Segerstrom, 2007). Indeed, optimistic students are more inclined to complete programmes of study and report higher levels of GPA (Solberg & Nes, 2009; Rand, 2011; Segerstrom, 2007; Geers et al., 2010). An optimistic outlook may provide students with the orientation necessary to better adjust to HE and remain buoyant when faced with challenge, throughout their program of study. Furthermore, optimism has been linked to better stress management and coping skills, these skills perhaps further assisting students to remain engage academically (Chemers, Hu, & Garcia, (2001).

Previous studies exploring the relationship between optimism and academic achievement have highlighted that those students who are more optimistic also benefit from higher levels of goal engagement and a greater overall sense of well-being (Scheier et al., 2001; Segerstrom & Solberg Nes 2006; Souri & Hasanirad, 2011). For

example, in keeping with optimism roots in motivational goal-expectancy theory, Segerstrom et al (2006) present evidence which demonstrates that students with higher levels of optimism are more inclined to pursue their goals with greater motivation, especially when encountering difficulties (Segerstrom et al., 2006). Segerstrom et al (2006) examined the relationship between student optimism, goal conflict and students' current goals, with correlational analysis revealing that optimism levels were associated with higher levels of goal conflict, and greater psychological well-being. More optimistic students held a greater number of conflicting goals than their less optimistic peers, but were able to better manage the potentially negative consequences associated with conflict goals than their less optimistic peers. The study concluded that this could be as a result of more students choosing to sacrifice resources, namely energy and time in order to pursue and achieve their goals, rather than disengaging from them (Segerstrom et al., 2006). It is reasonable to suggest that the ability to manage personal resources and remain focused on long-term goals are behaviours likely to positively impact levels of academic growth.

Socioeconomic status (SES) is considered to be one of the most enduring, well-established predictors of academic achievement and social mobility (Coleman, 1966; White, 1989; Sirin, 2005). On this occasion however, SES had a small direct influence upon academic growth, however its influence was mediated though its relationship with the factors of optimism and family growth. This conclusion offers support to previous findings of Coleman (1966), Sirin (2005) and Reardon (2011) who have previously demonstrated the depressive influence SES has upon academic achievement, and offers additional insight into SES's relationship with HE students' academic growth. SES position also displayed a modest, but significant correlation with parental education, this

relationship perhaps somewhat expected, the better educated the parent, the more likely they were to be reported in higher levels of SES. However, levels of maternal education also offered evidence of the differing behaviours and environments offered to students by high and lower educated mothers.

Indeed, while the education level of respondent's mothers displayed a significant direct influence upon student academic growth, it displayed a larger impact through its relationship with family environment, as demonstrated by family growth, a sub-facet measured by the family environment scale (FES). For instance, personal growth, (a measure of the respondent's perception of the direction and emphasis family place on personal growth; independence, achievement orientation and intellectual-cultural orientation) demonstrated a moderate relationship with maternal education, suggesting that higher educated mothers tended to offer students a more encouraging environment, with a greater focus on personal development, improvement, and emphasis upon academic achievement. As such, higher levels of personal growth demonstrated a significant association with student academic growth with those students who received greater encouragement from their mothers more inclined to experience academic growth. Previously, higher educated mothers have been attributed to holding greater academic expectations of their children and offering increased levels of encouragement (Fan, 2001), in the current study this relationship was also associated with academic growth.

The importance of the family environment was also evident in terms of family relations, an additional secondary facet of the FES, with those students who came from families

which displayed a higher degree of commitment, help and support towards one another, demonstrating a correlation with academic growth. Conversely, this relationship only appeared to be significant in terms of growth from year two to three, perhaps an indication of the increased importance a sense of support provides students during the final year of their degree programme. These conclusions confirming the important role a warm nurturing family environment has in the development of academic success (Duncan, Brooks-Gunn & Klebanov, 1994; Davis-Kean, 2005), on this occasion, in relation to academic growth.

3.6.1. Growth in Psychological Factors

As outlined in the literature review, the associations between the factors of motivation, problem-solving, optimism and achievement have tended to examine their influence at only a single point in time (Vallerand and Bissonnette, 1992; Baker, 2003; Vansteenkiste et al., 2005). While there has been a shortage of research examining the influence motivation, optimism and problem-solving have upon achievement over time, each of these factors have a well-developed intervention base which has demonstrated that they can be developed. As the current study was of a correlational design, it was possible to examine the natural development in motivation, problem-solving and optimism, and its subsequent effect on academic growth by using the difference in student responses to the study questionnaire from year one and year two, considered student psychological growth. Evidence of a direct relationship between psychological growth and academic growth offers additional support for the significant role these factors have in the prediction and development of academic growth.

Psychological growth in intrinsic motivation, problem-solving self-efficacy and optimism were able to account for 43% of the variance in student academic growth from second year to third year, further emphasising the significance that these factors have in predicting academic growth. Of these three constructs, growth in intrinsic motivation was the most significant factor in predicting academic growth. While previous research has explored the role of each of these factors in the formation of academic achievement, the nature of these psychological resources over time and especially in relation to academic growth, have been poorly understood. Previously, Marcoulides et al., (2008) revealed that besides some sifting in late childhood, levels of motivation tended to remain stable though adolescent, this research however demonstrates its potential to develop in early adulthood and over the course of one year in HE. Indeed, student intrinsic motivation demonstrated a significant increase from year one to year two, students becoming more motivated to perform a task for enjoyment rather than external reward, supported by the significant decline in extrinsic motivation reported.

It is theorised that problem-solving ability develops as students get older, move though the education system and have greater opportunities to foster their problem-solving skills, thus problem-solving may become more apparent over time (Baker, 2003; D'Zurilla, 1990). This was highlighted in the current study, with problem solving ability developing over the first two years of HE participation. As student problem-solving developed, students became more inclined to adaptively approach their problems head on, rather than avoiding them. Students problem-solving confidence when approaching problematic situations developed from year one to year two, with students reporting significantly higher problem-solving self-efficacy in year two. This offers additional support for the previous assertions of Cassidy and Giles (2009) who demonstrated that

problem-solving develops as a function of participation in HE, through experience and mastery.

Optimism in second year was a significant predictor of academic growth, however it must be noted that levels of student optimism showed a slight decrease from first year to second year. This could perhaps be a result of the increased pressure upon students to perform academically, between year 1 and year 2. Optimism is an important factor in predicting academic achievement and as demonstrated a significant factor in predicting academic growth. Optimism has also previously been linked to retention, intrinsic motivation and psychological adjustment in HE (Solberg Nes et al., 2009). Given the significance of optimism in the current investigation, future efforts to support and develop optimism in students attending HE could provide an initial starting point.

3.7. Study attrition

While not an initial aim, it was noted that a number of students failed to participate across all stages of the study by failing to return questionnaires in year two. A lack of engagement and attrition are a concern within HE (BIS, 2016; Vallerand, & Bissonnette, 1992). Despite not collecting the reasons students chose not to complete the current study, and attrition perhaps being an inevitable factor encountered in longitudinal research, on this occasion student responses in year one offered insight as to why some of the students who originally decided to take part in the study may have chosen not to continue.

Previously, it has been established that those students who report lower levels of intrinsic motivation, optimism and adaptive problem-solving, have had direct and indirect consequence upon academic performance in higher education (Richardson et al., 2012; Pictrich, & Schunk, 2002; Vansteenkiste et al., 2005; Baker, 2003; Cassidy, & Giles, 2009; Solberg Nes, Evan, & Segerstrom, 2009). In the current investigation, those students who failed to complete the study, achieved a significantly lower grade point average at the end of the first year of their degree program. This trend was also apparent across several of the study variables. For example, these students also reported having mothers who held significantly lower levels of education than their completing peers. Research involving family process models has demonstrated the indirect processes that link parent's education attainment influences on childhood attainment (Davis-Kean, 2005; Duncan, Brooks-Gunn & Klebanov, 1994; Conger et al., 2007). Low maternal education level has been determined to have an adverse effect upon achievement through parental behaviour and family environment factors. Mothers, particularly those with lower levels of education have been reported to experience greater levels of stress, this stress in turn leading to increased conflict between caregivers within the family, and an increase tendency to withdrawal warm and supportive behaviour from the child. This was evident in those students who chose not to continue, who also reported relatively lower levels of family growth (a measure of support and warmth within the family). Decreased parental support, warmth and lower involvement has been shown to increase the likelihood of internalising symptoms, increasing a child's risk of depression and anxiety, these factors having a negative influence upon academic performance (Conger et al., 2007). Further, low levels of maternal education are associated with adolescences educational behaviour and aspirations, highly educated mothers instilling more positive

academic aspirations and providing greater levels of support and encouragement towards education performance (Davis-Kean, 2005).

Significant differences between those who remained in the study and those who left continued in terms of student motivation. Students who chose not to continue reported lower levels of intrinsic, but higher extrinsic motivation than their peers who chose to continue. Intrinsic motivation, the motivation to perform a task for the inherent pleasure has previously been attributed to higher GPA attainment, particularly in HE (Robbins et al., 2004; Richardson et al., 2012; Cassidy, & Lynn, 1991; Vallerand & Bissonnette, 1992) and a range of positive study characteristics for example adjustment and engagement (Vansteenkiste et al., 2005; Busato, Prins, Elshout, & Hamaker, 2000). Extrinsic motivation however has been associated with lower levels of satisfaction, surface rather than deep learning and decreased persistence and risk of dropping out (Vansteenkiste, Simons, Soenens, & Lens, 2004; Vallerand, & Bissonnette, 1992; Busato, Prins, Elshout, & Hamaker, 2000). Problem-solving style also varied between the two groups, with students who failed to complete the study reporting a lack of confidence in their ability to solve problems, this perhaps explaining their increased use of problems solving avoidance. When considering these differences between students, it is possible to infer that some of these students' failure to complete the study may have been a result of them being less engaged academically.

3.7.1. Limitations

There were several factors in the current study which may have had implications upon its outcomes. While academic growth between each year of students' degree

participation was available, psychological growth was observed between student first and second year. Future longitudinal research may benefit from understanding the nature of psychological growth in students' final year of participation. Furthermore, given that motivation, in particular intrinsic was demonstrated to share a significant association with academic growth, perhaps future research exploring the nature of this relationship could make use of more detailed measures of motivation, for example those designed to access and measure motivation as described by Self-determination theory (Ryan & Deci, 1994). This could provide the opportunity to explore the nature of the intrinsic and extrinsic forces which underlay the development of academic growth in greater depth could provide educators and policy makers with greater insight into how these qualities could be nurtured with the aim of increasing student academic growth.

As this study required a large group of student attending HE to examine the influence contextual and psychological variables had upon academic growth, it relayed upon the participant of participants based across three differing HEI's. Despite these institutions requiring similar entrance grades and offering a similar degree program, it is important to be mindful that the current study did not control for institutional differences with respect teaching style, course content, teaching contact time or indeed the ethos of the school offering the degree, or participant ethnicity. As our understanding of academic growth continues to develop, it is possible that these factors may have influenced the findings in the current study and as such future research may benefit from tight controls of these factors.

3.8. Conclusions

Research findings from Study One provided evidence of the importance that support and encouragement toward achievement from a family member has in the prediction of student academic growth. Indeed, students who reported higher levels of encouragement from a family member also exhibited higher levels of intrinsic motivation, problem-solving self-efficacy and optimism; factors which were directly predictive of academic growth.

Of particular interest moving into Study Two, Study One has also demonstrated the impact student psychological growth, had in the prediction of student academic growth. Each of these factors, in particular optimism, could be described as a psychological resource (Hobfoll, 2002; Taylor, Widaman, Robbins, Jochem, Early et al., 2012; Kan, Kawakami Karasawa, Love, Coe et al., 2014). Hobfoll (2002) offers a general definition of resources, describing them as entities which are either centrally valued in their own right (e.g. self-efficacy, good mental health or family support) or are able to act as a means of obtaining centrally valuable goals (e.g. financial gain, recognition, better performance).

Exploring the relationship between the psychological resources and attributes students already possess and how they influence academic growth is an approach with aligns closely with the concept of growth research (Anderman et al., 2015; Dweck., 2015). A guiding principal of the growth movement is one which encourages students, educators and researchers to explore the factors which predict and enhance academic growth in all

students, not just those whose achievement levels are considered to be sub-par (Anderman et al., 2015; Dweck, 2015). With this in mind, rather than remaining immersed with the fundamental differences between groups of students who achieve initially high or low levels of academic achievement, turning our attention to the psychological resources and attributes students already possess which are inductive of academic growth could offer an additional means of instilling growth in a wider range of students.

Exploring the psychological differences which predict and support the development of growth is also an approach which fits closely to the movement of positive psychology. The positive movement advocates the importance of studying individuals and their strengths to better understand the factors, constructs, experiences and behaviours which work to their advantage and which could be further enhanced. Indeed, the field of positive psychology is concerned with subjective experiences, well-being and satisfaction with the past, hope and optimism for the future, and flow and happiness in the present. At the individual level, it is concerned with positive personal traits; interpersonal skills, perseverance, talent and wisdom which endorse success, while at the group level it is about encouraging civic virtue, responsibility and altruism (Seligman, & Csikszentmihalyi, 2000).

Central to the positive movement has been the factor of optimism which has been combined with the psychological theories of hope, self-efficacy, and resilience to create a synergising effect under the guise of Psychological Capital (Psycap) (Sheldon, & King, 2001). PsyCap has built upon each component's considerable empirical

foundations to emerge as a positive construct offering additional insight into a positive psychological state which has been associated with a range of adaptive outcomes, including that of academic performance (Luthans, Luthans, & Jensen, 2012). Given PsyCap's inclusion of optimism, if a positive relationship were supported between PsyCap and academic growth, it could provide a means of increasing the predictability of optimism as demonstrated in study one and offering an additional means of developing academic growth.

Conversely, research in how emotional competency can influence overall performance and functioning has taken form in emotional intelligence (EI), a type of social intelligence that involves the ability to monitor one's own and others emotions to guide actions and behaviour towards achieving goals. As such EI has been proposed to help bridge the gap between how individuals appraise and communicate emotion, and how they can use this emotion to better solve their problems, manage their performance and ensure optimal performance (Salovey, & Mayer, 1990).

Each of these resources have a developing intervention-based literature, which has repeatedly demonstrated their ability to be state-like rather than trait-like, which allows that they are open to development, and that this positive development can have a meaningful impact upon performance focused outcomes, namely, retention and higher GPA scores (Luthans, Avey, & Patera, 2008; Qualter, Whiteley, Morley & Dudiak, 2009; Schutte, Malouff & Thorsteinsson, 2013). As the current investigation moves forward, support for a positive relationship between the psychological resources of PsyCap, EI and academic growth would offer students, researchers and HEI's additional

means of developing academic growth and therefore the overall achievement of a wider number of students performing at differing academic levels.

With this in mind, inspired by the developing literature of EI and PsyCap and the significance psychological development had upon academic growth in from Study One, Study Two will examine the role of PsyCap and EI in the development of student academic growth and GPA; it is hoped that in doing so, Study Two will offer students, educators and HEI's an additional means of encouraging and developing academic growth in students attending H.E.

4. **Chapter Four: Literature Review-Part Two Supporting the development of Academic growth -A positive approach.**

   4.1. Introduction

This chapter presents a review of literature relating to Study Two in the current investigation. Given the importance of the psychological resources of optimism, motivation and problem-solving in predicting student academic growth in the previous study, Study Two sets out to examine the role the positive psychological resources of Psychology Capital (PsyCap) and Emotional Intelligence (EI) have in the prediction of student academic growth and GPA. Each of these factors are considered state-like rather than trait-like in nature, which allows that they are both open to development, with previous research demonstrating that this development can meaningfully impact performance outcomes (Luthans, Avolio, Avey and Norman 2007; Qualter, Whiteley, Morley & Dudiak, 2009; Schutte Malouff and Thorsteinsson, 2013). The chapter opens by introducing the need for positive psychology, a movement which notes the importance of exploring and enhancing and individual's strengths rather than attempting to rectify deficiencies. Continuing, the resources of PsyCap and EI are then discussed along with research which demonstrates their potential to influence academic growth. The chapter concludes by presenting the research aims of this the final study in the current investigation.

4.2. Psychology's previous focus on dysfunction

Psychology and psychological research has had an almost exclusive focus on models of pathology, damage, and all things dysfunctional (Seligman & Csikszentmihalyi, 2000). At the conclusion of World War II, Psychology as a science became one which was largely devoted to the healing of suffering, this however created a research imbalance, which failed to appreciate and explore human strengths and virtues and the idea that these strengths may provide the foundations for optimum functioning and overcoming previous adversities. As a result, unfortunately psychology and research concerning the factors and conditions which promote human flourishment have been scarce, with researchers having little understanding of how the average individual thrives and develops across everyday situations (Sheldon, & King, 2001).

This attitude has continued into the field of education, where conventional efforts to develop student achievement and academic outcomes have been approached and addressed by methods based on a deficiency model, with the assumption being that those students who do not progress at a satisfactory or similar rate to their peers, do so on account of certain deficiencies (Wingate, 2007). As such, attempts to address and develop achievement from this deficit framework have primarily relied upon generic learning or 'study skills' and a content-based approach, with the identification and development of students' technical and intellectual deficits having proved popular (Luthans, Luthans & Jensen, 2012; Luthans, Luthans, & Avey, 2014).

There are of course disadvantages to this approach. For example, efforts focused on examining and addressing dysfunction in students considered to be under-performing seriously impacts those students who are performing within and above expectations, as the methods used to address deficits lack inclusivity. Interventions and remedial classes designed to address educational concerns are often not attended by the students who gain to earn the most from them, but rather by those students who are performing to a relatively high level but who want to further enhance their performance (Durkin, & Main, 2002). Further, it is often remarked that students fail to recognise the relevance of generic learning courses to their subject or programme of study (Wingate, 2007; Drummond, Nixon, & Wiltshire, 1998). Indeed, many of these courses use a bolt on approach to address very specific issues (such as essay writing, presentation skills, or note taking), limiting the usefulness of these approaches to provide students with the wide range of transferable skills and attributes they are likely to require over the course of their educational experience.

Given the importance growth is to each and every student who attends HE, and the ability of each student to experience growth (Dweck, 2015) it is important to develop a means to support all students regardless of their backgrounds and previous academic performance to reach their academic aspirations (Anderman, Gimbert, O'Connell, & Riegel, 2015; Dweck, 2015; Blythman & Orr, 2002). An often-overlooked alternative involves building and developing upon the strengths and psychological resources students already possess (Luthans et al., 2012: Lopez & Louis, 2009). In fact, there is a developing literature concerned with improving and developing positive human functioning as evident by the movement of positive psychology, which has become an umbrella term for the study of positive emotions and character traits which are concerned with fostering an

individual's ability and potential to improve upon their overall functioning (Sheldon, &

King, 2001).

The following sections will provide an overview of the movement of positive psychology,

introduce two psychological resources which are open to development, namely PsyCap

and EI, the theory behind each and provide evidence supporting their potential to predict

and support the development of student academic growth and GPA. Finally, the chapter

will conclude by offering the research questions for this, the final stage of this

investigation.

4.3. Positive Psychology

Historically psychology as a discipline has maintained an almost exclusive preoccupation

with the negative aspects of human functioning and behaviour, and the treatment of

dysfunction (Sheldon, & King, 2001). While this research has made great advances in

understanding what goes wrong in individuals, and to a lesser extent how this wrong can

be remedied, these advances have come at the cost of exploring what is working and what

is right in those individuals without pathology (Gable, & Haidt, 2005). Decades of

sustained research on negatively orientated problems has meant that psychology had little

understanding of human strengths and how best an individual can be supported to

experience positive development. In light of this, at the turn of the century, social and

behavioural sciences were urged to play a greater role in articulating the actions and

behaviours which promote well-being, thriving and optimum performance (Seligman, &

Csikszentmihalyi, 2000). This renewed stance came at a time where it had become

increasingly clear that the thinking psychology had previously applied to explore the negative and problem-based aspects of well-being experienced by the few, were unable to account for the qualities and attributes that allowed the general population to thrive and live happy, satisfied lives.

As such, the movement which developed in response has been termed positive psychology and advocates the importance of studying ordinary individuals and their strengths to better understand the factors, constructs, experiences and behaviours which work to our advantage and that could be further improved. Indeed, the field of positive psychology is concerned with subjective experiences, well-being and satisfaction with the past, hope and optimism for the future, and flow and happiness in the present. At the individual level, it is concerned with positive personal traits; interpersonal skills, perseverance, talent and wisdom which endorse success, while at the group level it is about encouraging civic virtue, responsibility and altruism (Seligman, & Csikszentmihalyi, 2000). Through the systematic investigation of these experiences, positive psychology aims to develop our understanding of these concepts and to help to find an approach to encourage individuals to thrive in the face of adversity, promote and ensure health, well-being and the highest levels of performance including that of employment and education (Seligman & Csikszentmihalyi, 2000).

4.3.1. Psychological Capital

Drawing on the positive movement, research has flourished in the organisational psychology literature (Luthans, 2002). A key construct to emerge from these efforts has

been that of Psychology Capital (PsyCap), which has demonstrated the potential to influence individual and group performance across a range of contexts (Luthans, 2002; Luthans, Avey, Avolio, Norman, & Combs, 2006). When developing and defining PsyCap, Luthans et al. (2012) suggest the following inclusion criteria in order to set the construct apart from previous approaches. Firstly, they argued the need for PsyCap to be grounded in theory and empirical research, secondly, it had to possess valid properties of measurement, and thirdly, it was to be state-like (as opposed to trait-like) to allow each to be open to development. Given these attributes, it was proposed, that in theory, the study of these factors would offer researchers a means of better understanding individuals strengths and offer the potential to develop these strengths through the use of intervention and training practice (Luthans, 2012: Luthans, Avey, Clapp-Smith, & Li, 2008).

With this in mind, PsyCap was conceptualised and defined as a psychological construct encompassing an individual's positive psychological state of development, and characterised by four constructs determined to best fit the inclusion criteria; a) the confidence or self-efficacy to put in the necessary effort to succeed, b) the optimism and positive attributions that one will be successful, both now and in the future, c) the capacity to remain hopeful, persevering towards desired goals, all while d) remaining resilient when faced with adversity, and bouncing back with even greater resolve (Luthans, Youssef, & Avolio, 2007). Given this definition, the common aspect which runs through each of PsyCap's cognitive components is a motivational tendency to achieve and succeed in goal directed behaviour (Luthans, Avery, Clapp-Smith, Li, 2008).

As PsyCap makes use of established theories and approaches, the component of self-efficacy relies upon social cognitive theory, a framework proposed by Bandura (2012) which refers to an individual's confidence in their own personal abilities, to become motivated and act to establish high levels of performance. Consistent with previous research, and as demonstrated in Study One of this investigation, individuals with higher level of self-efficacy (in relation to problem-solving) typically have a greater expectation that they can control outcomes and based on personal judgements of their own abilities, that they will experience success. The inclusion of optimism also discussed in the previous chapter, refers to an individual's positive expectancy that generally good things will happen to them in the future (Scheier, Carver, & Bridges, 2001). Making use of Seligman et al. theory (Gillham, Shatte, Reivich, Seligman, 2001) of dispositional optimism, individuals with higher levels of optimism and greater expectancies for the future, tend also to be more motivated to pursue their goals and positively handle problematic situations (Gillham et al., 2001). Hope on the other hand is conceptualised as the positive motivational state that is based on a sense of successful agency, or goal directed energy and pathways, the creation of routes and means to achieve goals (Snyder, Shorey, Cheavens, Pulvers, Adams & Wiklund, 2002), in other words, hope constitutes the will and the way to success. Those with higher levels of hope have previously been remarked to be more inclined to make additional plans and backup solutions when approaching their desired goals as they are more inclined to foresee potential obstacles and as such react by creating multiple pathways in order to ensure they obtain their goals (Snyder et al., 2002). Finally, resiliency is characterised as positive coping and adaptation in the face of adversity (Masten, 2001). The ability to bounce back from adverse situations and return with even more vigour has its research roots in childhood psychopathology but has also been demonstrated to be linked to superior performance in times of uncertainty,

satisfaction and greater commitment in an adult population (Luthans et al., 2005; Luthans & Youssef, 2007).

Despite any perceived similarities which may be observed between each of PsyCap's four core constructs, each has its own extensive and diverse empirical background which has demonstrated their unique conceptual and psychometric independence and their significant influence on positive educational outcomes (Luthans, Norman, Avolio, & Avey, 2008). Indeed, further examination supports a convergent validity among these four capacities, which when combined demonstrates a shared underlying component between each of them which results in a synergised effect (Youssef & Luthans, 2007). As such, each capacity adds a unique variance. In fact, one of the key advantages to PsyCap is that when combined, PsyCap is said to be greater than the sum of its parts, offering a greater level of predictive validly than if each construct was to be examined independently (Carifio & Rhodes, 2002; Luthans, 2007).

Previous research studies have explored the relationships between one, or occasionally two of the components which make up PsyCap and their subsequent impact upon student academic performance. These studies have found a significant relationship, which could also, given their theoretical background, be argued to hint at their relationship to academic growth. Of particular interest to the current investigation is PsyCap's already established intervention base which has demonstrated that each of its core factors can be developed through short training sessions in a student population. Nonetheless, this literature is not without its limitations, for example, research examining the relationship between PsyCap, its components and academic achievement has tended to focus on this relationship over a

period of months rather than years, somewhat limiting what we understand about these relationships with academic achievement across student participation in HE.

With this in mind, the synergising effect of PsyCap, which includes the factor of optimism, revealed to be a significant predictor of academic growth in Study One, may help increase the overall predictive ability of academic growth. Further, this psychological resource may offer educators, policy makers and students an additional approach of enhancing student academic growth and in turn overall achievement. A greater understanding of how PsyCap can influence a range of positive outcomes in an educational setting offers support for its potential to influence academic growth.

4.3.2. Theoretical Background of Psychological Capital

As stated, the construct of PsyCap is a higher order-factor which makes use of four well-established positive psychological resources; hope (Snyder, 1995), self-efficacy (Bandura, 1997), optimism (Gillham, Shatte, Reivich & Seligman, 2001) and resilience (Masten, 2001) and the mechanisms these four constructs have in common (Luthans et al., 2012). There is also considerable empirical evidence which supports the use of each of these factors independently in the prediction of academic success. As such, understanding each of these construct's unique contribution to PsyCap theory offers additional insight into how each may converge to influence academic growth.

4.3.3. Hope

The importance of hope across everyday life has long been recognised. It seems almost intuitive that holding hopeful expectations for the present and the future would have a positive influence across a range of outcomes. Initial examination of the previous work of Snyder and colleges (2002) certainly helps reinforce this sentiment, with Snyder's theory of hope becoming widely recognised and supported by considerable research (Luthans, Norman, Avolio, & Avey, 2008).

Hope theory (Snyder, 1995) conceptualises hope as a positive motivational state, concerning the process of thinking about one's goals, derived from a sense of successful agency (goal-directed energy) and pathways (planning to meet goals) (Snyder, Irving, & Anderson, 1991). As such, Snyder proposed hope to be a cognitive (rather than emotional) motivational state consisting of three distinct, but interrelated factors of; agency (the motivational will-power), pathways (way-power) and goals.

Hope has been described as sharing a close relationship with optimism, perceived control, positive affect and positive expectancies for the future and as such, high levels of hope allows students to approach problematic situations with an outlook of success (Snyder et al, 2002). Previously, high levels of hope have been demonstrated to indicate an ability to produce a greater number of pathways to a desired goal, and the ability to motivate one's self to pursue one's goals, as opposed to becoming side tracked by other tasks, experience self-deprecatory thinking and negative emotions (Snyder et al, 2002). Through

this positive affect, hope influences behaviour and increases the probability an individual will achieve their desired goals (Conti, 2000).

The relationship between hope and performance across various domains has become well established, with hope levels associated with work performance, satisfaction and achievement test scores for primary school aged children (Luthans, Avolio, Walumbwa, & Li, 2005; Peterson & Luthans, 2003; Lopez, Floyd, Ulven, & Snyder, 2000). Specifically, there is evidence for a strong association between hope and GPA in high school aged children (Snyder, Irving, Anderson, 1991) and semester and overall GPA's in those students attending higher education (Curry, Snyder, Cook, Ruby, & Rehm, 1997; Chang, 1998).

In addition to its direct relationship with educational performance, hope has also been linked to a diverse range of valued adaptive behaviours and cognitions which support educational progress for example, feelings and beliefs about one's self, greater academic satisfaction, well-being and perceived quality of life (Magaletta & Oliver, 1999; Suldo, Shaffer, & Riley, 2008; Chang, 1998). As the current investigation involves exploring the usefulness of PsyCap in supporting the development of academic growth, understanding hope may provide a key resource in supporting these goals. The following section introduces hope theory as proposed by Snyder et al., (2002) and as incorporated into PsyCap theory along with an overview of its potential to influence academic growth.

4.3.3.1.   Conceptualising Hope

Previous to Snyder et al's development of hope theory (Snyder, Irving, Anderson, 1991), hope was often defined as a unidimensional construct which concerned an individual's perception that their goals could be met (Curry, Ruby, Rehm, Snyder & Cook, 1997). Snyder et al. (Snyder, Harris, et al., 1991) then expanded upon this model by proposing that goal-directed thinking consisted of two related, but distinct components; agency and pathways. Firstly, pathway thinking is an individual's capacity to think and create one or more ways to approach a desired goal. Secondly, agency thinking, involves an individual's ability to initiate and maintain cognitive thoughts and effort which move an individual towards their chosen goal. Through this approach, hope is conceptualised as the capability to create pathways to desired goals, and the ability to create the motivation, via agency thinking, to use those pathways to success (Snyder, 2002).
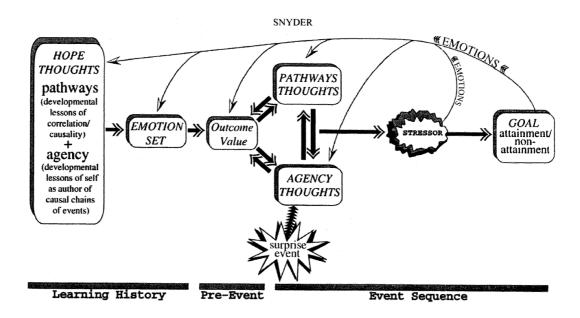
Figure 4-1 Hope Theory (Snyder, 1985).

For an individual to have high levels of hope, they must possess both agency and pathway thinking, as both are required for positive results. For instance, if a student was to hold high levels of agency regarding revising for a forthcoming test, regardless of how motivated they were to revise, if they failed to plan how they intend to approach their revision, they are unlikely to be successful and vice versa. As such hope posits that in order for an individual to successfully reach their goals, they must make use of cognitive processes (Curry et al., 1997).

4.3.3.2.   Hope and its Association with Academic Achievement

Curry et al., (1997) have previously reported that students hope levels were a better predictor of academic success in HE than that offered by students' previous academic achievement reported in high school. Examining the association between hope and achievement, Curry et al., (1997) Enrolled stratified random samples from two North-American student populations of students who were attending HE (athletics and non-athletic students) establishing two groups, male athletes (n=41) and female athletes (n=45). At the beginning of the study all participants completed a measure of the Hope Scale (Snyder, 1995) and allowed permission for their GPA's to be collected at the end of the semester. Natural athletic ability was rated by students' athletic coach. Upon analysis, those students who reported higher levels of hope, were consistently found to out-perform their peers reporting lower levels of hope, even when controlling for natural ability and previous cumulative GPA. In a subsequent follow up at the end of the season, levels of hope measured at the start of the session were significantly predictive of 57% of the variance in actual performance across the athletic season (Curry et al., 1997). Given

that hope level reflects an individual's goal directed thinking and behaviour, through its motivational nature, hope appears to be an important factor in the prediction of HE student academic performance.

In relation to long term academic outcomes, Snyder, Shorey, Cheavens, Pulvers, Adams and Wiklund (2002) conducted a 6-year longitudinal study which demonstrated the impact of hope upon the development of student GPA. Over the course of six years, a north American sample of students upon entry into HE were asked to complete Snyder's hope scale (1995) with participants subdivided into three groups, low, medium and high hope dependent on their responses. Results confirmed that students reported levels of hope were a predictor of annual GPA (r =. 21), even after controlling for prior entrance examination scores. In fact, students reporting greater levels of hope were more likely to have graduated, rather than being dismissed for their educational program over the study's six-year period. These findings were again supported in a sample of HE students in the UK, where hope was found to uniquely predict academic achievement over and above personality, intelligence and prior academic achievement (Day, Hanson, Maltby, Proctor & Wood, 2010).

An additional longitudinal investigation has established the role of hope across students participating in a four-year degree programme (Gallagher, Marques & Lopez, 2017). To examine the role of hope, self-efficacy and engagement upon higher education GPA, a north American sample (n=229) of students completed measures of these factors over a four-year period, while their prior educational attainment was controlled for by using their high school GPA. Of the reported measures, hope, self-efficacy and engagement were

associated independently with the number of semesters the student attended and their cumulative GPA at the end of their degree programme. However, hope was the only construct which was able to uniquely predict these outcomes consistently across all four years of students' participation, beyond student previous educational performance and the other psychological factors combined. These finding suggest that hope reported during students first year in HE plays a long-term role in the development of achievement, and that the targeting of hope may help provide students with the resources necessary to experience academic growth (Gallagher et al., 2017).

As such, previous longitudinal studies have established a connection between how hopeful students think about the future and their academic achievement. Holding higher levels of hope allows students to be motivated to create and move towards their goals, while also offering students the ability to create a greater number of pathways to reach these goals, which help them to overcome barriers along the way (Snyder et al., 1991). With this in mind, students who approach their academic studies with high levels of hope, should benefit from their ability to create multiple pathways to succeed in their educational goals, and create the motivational drive needed to pursue these goals (Snyder, 2002).

4.3.4. Resilience

Resiliency as it appears in PsyCap theory, is the tendency to protect oneself and overcome adversity, and as such has been defined as the ability to recover rapidly from difficult situations and to maintain the capacity to endure ongoing hardship (Masten, Obradovic

and Burt, 2006). As demonstrated in the PsyCap literature, students are likely to encounter a varied range of issues and difficulties linked directly and indirectly to their studies throughout their HE experiences such as, managing a work/study balance, coursework deadlines and money difficulties (Houghton et al., 2012). This stress may be most prevalent during the transition period to HE, when the student is adapting to new learning patterns, social demands, while perhaps living away from home for the first time (Cooke, Berwick, Barkham, Bradley & Audin, 2006). As such, there is a supported link between student reported stress levels and illness (Houghton et al., 2012). Combined, these difficulties may place increased pressure upon students, effecting their academic performance and their capacity to complete their studies (Allan, McKenna & Dominey, 2014; Andrews & Wilding, 2004).

Previously, the higher order construct of PsyCap has been demonstrated to have a significant relationship with student well-being, coping, satisfaction and happiness, this relationship in part explained by the inclusion of a resilience factor (Liran & Miller, 2017; Datu, & Valdez, 2016; Roche, Haar & Luthans, 2014; Riolli et al., 2012). However, research concerning resilience has traditionally been associated with at risk children, difficult adolescents and families experiencing dysfunction (Luthans et al., 2007), where the primary focus was on who was resilient and whether they were strong enough to continue with life given the adversity they had experienced (Masten, 2001). Nonetheless, given the growing popularity of the positive psychology movement and its subsequent inclusion in PsyCap theory, research in the field of resilience has developed our understanding of the construct's role in everyday individuals and across day to day activities, with Masten noting resilience as the "every-day magic...which has profound implications for promoting competence and human capital" (Masten, 2001, p.235).

This "everyday magic" has been demonstrated in individuals who are described as being better equipped to cope with stress, mistakes and setbacks, while becoming less emotionally distracted when faced with adversity, and instead remaining focused on how best to approach and overcome life's challenges (Luthans et al., 2014). From this proactive perspective, resilient individuals have been described as recognising adversity as an opportunity to grow, learn and develop (Bonanno, 2004, Luthans, 2002).

More specifically, resilience in the context of education has been reported to share an association with pupil's relatedness, sense of mastery and increased support from parents and teachers (Kim & Esquivel, 2011; Prince-Embury, 2011; Bryan, 2005). In contrast, its independent influence in the context of HE has been limited, however given its importance as part of PsyCap and its established theory, it could help HE students moderate the negative effects of academic and social stressors in their transition and pursuit of academic growth (Allan, McKenna & Dominey, 2014).

4.3.4.1. Conceptualising Resilience

Masten and Reed, (2002, p. 75) consider resilience as a "phenomenon characterised by patterns of positive adaptation in the context of significant adversity or risk". In the context of PsyCap this definition is expanded upon with resilience characterised as; a positive psychological capacity highlighting an ability to bounce back from adversity, uncertainty and failure, and broadened to include the ability to return with a greater level of vigour and resolve than was previously present (Luthans, Youssef & Avilio, 2007). Resilience, however does not imply invulnerability or immunity from stress (Garmezy,

1993; Layne, Warren, Watson & Shalev, 2007) or indeed, an absence of emotional distress (Luthar, Doernberger, & Zigler, 1993), simply it concerns an individual's ability to maintain competent functioning and continued effort when faced with difficult times.

Approaching resilience, Masten and Reed (2002) theorise resilience as an asset or measurable characteristic an individual or group process which predicts a positive future outcome. These resilience characteristics are far reaching and include; cognitive abilities, positive self-perceptions and emotional stability and self-regulation (Masten, 2001). In contrast, those factors which are deemed risk factors to an individual's resiliency are those which are likely to increase the probability of an undesirable outcome (Masten, 2002) and could include exposure to trauma, substance abuse or situations perhaps less obvious for example, experiences of stress, burnout and underemployment (Luthans et al., 2007). Given this, resiliency is not considered a minimal coping or a reactive process, instead in the context of PsyCap, it should be viewed as a proactive factor that allows an individual to spring away from adversity and to higher ground (Luthans et al., 2007).

4.3.4.2. Resilience and Academic Achievement

While there is substantial research focusing on resilience and its influence upon a broad range of negative life events such as, depression, disadvantage, distress and illness (Luthans et al., 2014), there has been relatively less focus upon academic outcomes, or indeed that of academic growth. Of the few examples which have been in the context of education, Martin and Marsh (2006) have demonstrated that resiliency levels are predictive of both educational and psychological outcomes; for instance, school enjoyment, participation in class and overall self-esteem, in high school students (Martin

& Marsh, 2006). In an effort to explore the ability of high school students to successfully deal with academic setbacks and challenges, Martin and Marsh (2006) examined the relationship between measures of resilience, self-efficacy, anxiety and academic engagement at the start and end of an academic semester. Students (n=402) between year 8 and year 10 completed a range of psychometric measures assessing their self-efficacy, control, planning anxiety, motivation and persistence at the start and end of the academic year. Conclusions demonstrated that resiliency was predicted by five factors; low anxiety, persistence, planning, control and self-efficacy. Further path analysis revealed that resiliency levels were predictive of three educational and psychological outcomes namely- enjoyment of school, class participation and general self-esteem over that predicted by the motivational and engagement factors underpinning academic resilience.

The value of resilience in predicting reading and writing literacy in addition to individual differences such as gender, race and internal locus of control were found to be significant in predicting academic performance from primary to secondary level education in a group of high school students (Cappella & Weinstein, 2001). Making use of a national longitudinal database, researchers revealed that from the majority of students, whom were at risk of continued low achievement during the transition from primary to secondary school level, a small number displayed resilience as demonstrated by improved reading and writing proficiency. Contextual and psychological factors were found to be protective, for example; an established locus of control, belonging to a majority ethnic group (Caucasian, on this occasion) SES background and finally parental education level. This research was able to demonstrate the importance of resilience in the development of academic achievement during the transition from primary to secondary level education.

4.3.4.3. Higher Education students' perceptions and value of resilience

Despite not directly linking resilience levels to GPA, Holdsworth et al. (2018) explored HE students' perceptions of resilience using semi-structured interviews. Thematic analysis revealed that students differed in their perception of resilience dependent on their year of study, with third year and postgraduate students having a more complex understanding of the term resilience. These students described the construct as a combination of concepts and associated capabilities, recognising it as the ability to bounce back, but also added that this would only occur if it was accompanied by emotional control and a greater understanding of these emotions. Further, older students were able to articulate that resilience was likely to involve the development of skills learnt from negative experiences. In contrast, younger students were more inclined to describe resilience in one sentence remarks, these students' perceptions of resilience focus more on copying and making it through adverse situations in the here and now, rather than recognising it as a learning experience and an opportunity to learn from it and develop skills to overcome future setbacks.

When Holdsworth et al (2018) asked students about the perceived value and importance of resilience in the context of success, first year students described a clear link between their resilience levels and their success at university, their responses restricted to a university context. For example, one student remarked '*Coming out of school straight to university you have to be resilient, otherwise I would have dropped out*' (undergraduate, first year). Students in later stages of their degree program were more likely to articulate that resilience offered value to all aspects of their lives including that of HE. These

outcomes suggest that resilience in the context of education can be developed through life experience and continued education, with students recognising the importance of resilience in terms of academic success and becoming more aware of its value as they progress through their degree programs.

Finally, when students were asked which attribute they thought helped them develop their resilience over their degree participation, one of the most prominent was goal-setting, with younger and older students recognising the importance of developing the ability to set both long and short-term goals, which helped them bounce back from failures. Students described that short-term goals were important in maintaining perspective in times of success and failure, while also making long-term goals appear more attainable. In contrast, long-term goals, such as completing their degree, reflecting upon the new knowledge they had grasped helped students to pick themselves up from setbacks such as low marks or difficulties in group work.

Educational attainment, and subsequent growth in HE is likely to be dependent upon a students' ability to manage and effectively cope with a range of daily stressful situations. Based on the available literature surrounding resilience, this positive resource could be of particular importance in helping support students to overcome negative experiences and setbacks allowing them to maintain a sense of well-being, particularly during the transition into HE.

4.3.5. Self-Efficacy

Underlying our capabilities to engage in tasks and actives is the confidence or self-efficacy we have regarding the probability we can complete them successfully. In a recent meta-analysis of 241 published studies regarding HE students' GPA, self-efficacy was regarded as the strongest correlate of GPA out of the 50 various constructs observed in the literature (Richardson et al., 2012). In the context of PsyCap, self-efficacy makes use of Bandura's (1986) established theory and conceptualisation (1986), with self-efficacy being a measure of one's personal beliefs in their "capacities to organise and execute a course of action required to attain designated types of performance" (Bandura, 1986 as cited in Schunk, 1995 paragraph 2).

Given its relationship to cognitions and behaviour, self-efficacy has established itself as a central factor in Social Cognitive Theory (SCT) and is argued to be the construct which best fits PsyCap's positive inclusion criteria (Luthans, Youssef, & Avolio, 2007). Indeed, self-efficacy has been widely recognised for its important contribution to educational psychology (Dinther, Dochy & Segers, 2011; Richardson et al., 2012), where extensive research has demonstrated how self-efficacy influences academic motivation, learning and achievement (Pajares, 1996; Schunk, 1995; Bandura, 1997).

Self-efficacy has also been shown to be a significant predictor of first year GPA and overall academic success (Bandura, 1977; Weiner, 1985; Locke & Latham, 1990; Chemers, Hu, & Garcia 2001; Valentine, DuBois & Cooper, 2004). While further research also supports a significant relationship between self-efficacy and student

learning behaviours, influencing persistence, positive self-talk, active participation and whether or not an individual will attempt to take on a difficult task (Zimmerman, 2000; Bandura, 1997; Schunk, 1995; 2003). Insight into the relationship reveals that students who hold low levels of self-efficacy are more easily convinced that their efforts to tackle an academic task will be futile, leading them to be less likely to attempt it and more inclined to experience negative symptoms such as stress. Conversely, those students with relatively higher levels are more likely to perceive a task as achievable, give effort and competence and as a result more liable to experience success (Bandura, 2001).

Given the perceived importance of self-efficacious beliefs to student motivation, learning and behaviour and GPA in those attending HE, it is conceivable that strong efficacy beliefs may encourage and support the development of academic growth.

4.3.5.1.   Conceptualising Self-Efficacy

Self-efficacy has found to be an integral component in terms of human motivation, learning and academic achievement (Dinther, Dochy, & Segers, 2011; Urdan & Pajares, 2006). Stajkovic and Luthans (1998 p. 66) define self-efficacy as the "confidence and conviction in personal abilities to mobilise motivation, cognitive recourses and actions necessary to successfully complete specific task within a given context". According to Bandura's self-efficacy approach, underlying our motivation to carry out any given task is the self-calculated probability that we believe we will be able to complete it successfully. In turn, it is these personal judgements which predict the probability an

individual will attempt a task, and the likelihood they will accomplish it successfully (Pajares & Graham, 1999).

After introducing self-efficacy Bandura (1977) then incorporated it into his SCT, wherein human behaviour is viewed as an outcome of a range of interrelated cognitive, affective and environment determinates (Bandura, 1986, 1997; Dinther et al., 2011). Self-efficacy is also said to influence an individual's thoughts and feelings, where those with weak levels of efficacy are more inclined to believe a task is more difficult to complete, leading to thoughts of failure, tension and helplessness (Dinther et al., 2011). On the other hand, those with high or modest levels of self-efficacy are inclined to see difficult tasks as personal challenges, motivating their personal agency (Schunk, 1991).

An individual's self-efficacy is said to be a product of four interrelated factors, observational learning, performance accomplishments, physiological reactions and actual experiences (Bandura, 1977; Bandura, 1997). Performance accomplishments refer to an individual's actual experiences of success and failure, successful experiences generating increased efficacy expectations, whereas failures decrease efficacy expectations, however the occasional failure is unlikely to significantly influence the efficacy of an individual with high beliefs. Learning experiences are based upon the observation of success and failure in others and are particularly relevant when the observed individual is similar to the observer (Schunk, 1987). Social and verbal persuasion are also effective influencers of efficacy, with encouragement that one can successfully complete a task building upon their confidence to approach and attempt their chosen goal while the physiological reactions, such as anxiety or excitement, offer physical cues which hint at their perceived

capabilities (Bartimote-Aufflick et al., 2016). These pathways have been supported within the context of HE students (Anderson & Betz, 2001).

4.3.5.2.   Self-efficacy and Academic Outcomes

Over the past two decades the construct of self-efficacy has received growing attention in the context of education. For instance, there have been several meta-analyses which have observed the relationship between self-efficacy and academic achievement. One such example saw Multon, Brown and Lent (1991) conduct a review of the literature concerned with examining the influence efficacy beliefs had upon primary and secondary aged students' academic achievement. Multon et al., (1991) identified 36 published and unpublished research studies which had included a range of performance measures (academic coursework, standardise achievement tests and cognitive skills) and a measure of self-efficacy. Research conclusions revealed that a students' self-efficacy shared a significant correlation with academic performance demonstrating an association between self-efficacy and multiple measures of academic achievement in younger students.

In the context of HE, Richardson's et al's (2012) meta-analysis of 241 recently published papers, again supported the role of self-efficacy, which was reported to be the strongest predictors of university GPA from almost 50 measures ranging from motivational factors to personality factors. Considering factors such as behaviours, motivational factors and self-regulatory learning and demographic factors of age, sex and SES, HE students self-efficacious beliefs demonstrated a large correlation to students HE GPA. These

conclusions supported those previously offered by Robbins et al (2004) who also demonstrated the importance of student efficacy in relation to academic performance.

Other researchers have focused upon the influence self-efficacy has upon well-established educational constructs such as motivational orientation and engagement (Pintrich & De Groot, 1990; Glynn, Brickman, Armstrong & Taasoobshirazi, 2011; Koh et al., 2010). Pintrich et al (1990) examined the role self-efficacy had in influencing motivational orientation, self-regulated learning, cognitive engagement and academic performance in 173 primary school children. In this study, pupils with a range of achievement levels were asked to complete a self-report questionnaire which included measures of each of the study variables, with their score in English and Maths classes collected at the end of the academic year. Higher self-efficacy beliefs were positively related to students' cognitive engagement and their academic performance. Students who believed they were capable were more inclined to use cognitive strategies such as self-regulation, elaboration and organisation when approaching academic work.

Assessing the five motivation factors of intrinsic motivation, self-determination, self-efficacy, grade motivation and career motivation; self-efficacy has demonstrated an independent ability to predict HE science students' GPA (n=680) (Glynn et al., 2011). Conducting a factor analysis to examine the usefulness of a novel standardised measure of motivation, the authors concluded that of each of the factors included in the scale, self-efficacy was a direct predictor of academic GPA and was significantly correlated with reported intrinsic motivation and self-determination, offering additional support of the role of self-efficacy in predicting HE GPA and levels of student intrinsic motivation.

Research has also examined the relationship between optimism and self-efficacy (both PsyCap factors) in relation to academic performance, stress, health and educational commitment in HE students. Results demonstrated that self-efficacy underpins each of these factors to help support students' academic achievement (Chemers, Hu & Garcia, 2001). Chemers et al., (2001) administered a battery of questionnaires containing measures of optimism and self-efficacy to 1,600 first year students, of which 373 useable responses were returned. Through the use of structural equation modelling (SEM) direct effects were observed between student self-efficacy, academic expectations and actual student GPA. Those students with greater levels of confidence in themselves also held greater expectations of their performance, these expectations and self-efficacious beliefs interacting to also predict end of first year GPA. There were also direct effects observed between optimism and self-efficacy, with highly optimistic students also tending to be more efficacious. There was also a significant relationship reported between self-efficacy and student health and stress levels, which was mediated by their evaluation of challenges. While these findings highlight the significant influence which self-efficacy has upon student performance, as self-efficacy was only measured at a single point, it offers little insight into how student self-efficacy develops during students' participation in HE.

In addition to demonstrating a direct influence on academic performance, feelings of efficacy have also demonstrated an ability to work on a broader level, by mediating related factors such as anxiety, negative emotions and coping (Pajares & Graham, 1999). Anxiety and negative emotions are often reported as being detrimental to academic progress and general wellbeing (Chemers et al., 2001). According to Bandura (1997) a high sense of efficacy allows individuals to perceive demands as challenges, rather than threats resulting in high efficacy individuals adopting a course of action designed to

overcome these challenges. Consistent with this, research has demonstrated efficacy beliefs offer protection from feelings of helplessness and anxiety (Betz & Hackett, 1983), and have been shown to promote performance by mediating math anxiety performance (Meece, Wigfield, and Eccles, 1990). Self-efficacy has been associated with effective problem solving and decision making, positive expectations for the future and also appears to mediate negative outcomes and experiences by offering students a psychological resource which manages stressors and setbacks.

4.3.6. Optimism

As discussed, PsyCap also contains the factor of optimism as previously defined in the literature review pertaining to Study One, with PsyCap also approaching optimism from a dispositional stance. Rather than reiterate this definition again, there are a couple of additional studies not previously included, which despite not addressing the relationship between optimism and GPA directly, can help develop our understanding of how optimism influences behaviours and attitudes conducive to academic growth.

4.3.6.1. Optimism and academic outcomes

Given the importance optimism is presumed to have across everyday situations, it is perhaps unsurprising that the construct of optimism has been demonstrated to buffer the potential negative impact of stress and intentions to drop out of education in students attending secondary level education (Eicher, Staerkle, & Clemence, 2014). It is thought that higher levels of optimism protect students from educational stress, (considered by

Eicher et al. (2014) to be a feeling of being overwhelmed by school demands) by offering students a psychological resource which allows them to believe they are more capable of overcoming stressful situations to experience success, in comparison to their less optimistic peers. In testing this theory, Eicher and associates (2014) approached a group of 4,312, 16-20-year-old students attending secondary education and asked them to complete measures of optimism, perceived stress, and a scale used to assess intention to drop-out. these students were followed over a four-year period to assess the relationship between these measures and their attrition levels. Overall, results confirmed that students who reported higher levels of optimism also reported lower levels of intention to quit their educational course and lower levels of perceived stress. While GPA and academic attainment were not tracked in this study, the authors suggested that given optimisms positive influence, higher levels of student optimism may act to protect students from the potential negative effects of educational stress across time, allowing them to remain focused upon their studies. In consideration of this it is therefore possible that optimism training could provide, students and educational programs attempting to medicate student stress and improve retention, a beneficial resource.

The usefulness of optimism as a coping resource has also been demonstrated in the context of HE, in a group of 236 undergraduate students in Australia (Perera, & McIlveen, 2014). Examining the role optimism plays in student adjustment engagement and coping during the transition to HE, Perera et al (2014) asked students during their first few weeks of their first year of university to complete measures of optimism (LOT), engagement, and psychological coping, while a follow up measure of academic adaptation was completed three months later. Conclusions supported the role of optimism in the prediction of superior psychological coping through the use of engagement strategies

during the transition into HE. As such, more optimistic students experienced better academic adaptation and superior adjustment three months into their first year of participation in HE.

Evidence from these two studies suggest that as well as sharing a direct association with student GPA, optimists are more inclined to experience better adaption during transition to HE, which is in part a result of their use of greater engagement coping strategies. While not focused on GPA directly, its arguable that the greater use of these strategies are likely to be indicative of student academic growth.

4.3.7. Psychological Capital

There is evidence to support the role of each of PsyCap's constituent parts in the prediction of student academic achievement and a host of behaviours and attitudes which are associated with improved academic outcomes. While PsyCap is a relatively recent concept, there are several examples of research which illustrate how PsyCap can predict student GPA and may act as a predictor of student academic growth.

4.3.7.1. PsyCap and Academic Achievement

An early research study which explored the potential influence of PsyCap in relation to university students' academic success in North America (n=95) concluded that PsyCap was indeed a significant predictor of academic performance, as measured by GPA

(Luthans, Luthans, & Jensen, 2012). Approaching 95 HE students, participants were asked to complete a standardized PsyCap measure (PCQ-24) and reported the average number of hours they devoted to their university work and also part-time employment, while student GPA was gathered from school department records. As hypothesized by the researchers, there was a significant positive relationship between the students' level of PsyCap and their GPA at the end of the academic semester, which through use of stepwise regression, demonstrated that PsyCap was able to explain almost 7% of the total variance in student GPA. Further analysis revealed that PsyCap was able to account for a greater level of variance in GPA than that predicted by the average hour's students had spent devoted to the study of university material (5%). These findings were the first to confirm that PsyCap's influence extends beyond organizational behaviour and into the context of education, successfully predicting academic performance. Based on their conclusions, the authors suggest two recommendations; that further research should be conducted to explore PsyCap's relationship with other adaptive student behaviours in more detail, perhaps making use of controlled experimentation, to isolate the impact PsyCap; and second, PsyCap development programs should be introduced to educational courses which could provide a means of supporting students in overcoming obstacles they may encounter when seeking to improve their academic achievement.

An additional study has explored the usefulness of PsyCap in predicting HE students' GPA, academic satisfaction and the use of coping strategies (Ortega-Maldonado, & Salanova, 2018). Given the number of potential stressors students can encounter over the course of their studies (study pressure, exams and degree completion), it was speculated that the resilience aspect of PsyCap would offer students a beneficial resource in terms of dealing with stress while continuing to perform to a high academic standard as measured

by their end of year GPA's, and would be predictive of means-focused coping strategies (the use of adaptive rather than maladaptive coping strategies). It was also thought that this relationship would mediate students' experiences of academic satisfaction, with higher levels of PsyCap and adaptive coping resulting in greater academic satisfaction. Testing these three assumptions, a group of Spanish students (n= 682) in either first, second or third year of study, across 29 different undergraduate programmes, completed the PCQ -24 and two additional standardised measures; one assessing their academic satisfaction, the other their use of coping strategies. Results modelled through path analysis in AMOS, highlighted that PsyCap was indeed predictive of student academic GPA, and had a significant indirect effect with student satisfaction and coping, with student satisfaction having a direct influence upon student GPA. While lending support for the relationship between PsyCap and GPA, this study also offers additional insight into the capability of PsyCap to predict students use of positive coping strategies such as acceptance, self-regulation and adaptive goal processes to support their academic aspirations.

4.3.7.2.   PsyCap and Academic Adjustment

Further research exploring the potential advantages PsyCap may provide has begun to investigate the relationship between PsyCap and higher education students' academic adjustment in HE students (Liran, & Miller, 2017). Academic adjustment is considered an important characteristic in terms of student academic success and overall general well-being, influencing a students' capacity to learn, their levels of motivation and their academic goals and the strategies they use to achieve them (Liran & Miller, 2017).

Exploring the influence of PsyCap in supporting students' academic adjustment, which was assessed by measuring; academic achievement, social adjustment, personal emotional adjustment and institutional adjustment, as the researchers expected, PsyCap proved to be a positive predictor of academic adjustment in 250 undergraduate students (Liran et al., 2017). Approaching students in their second and third year, to ensure participants had time to familiarise themselves with the course and the institution, those who took part were asked to complete a questionnaire which collected information on their PsyCap levels (PCQ-24), academic adjustment and demographic information, with student GPA collected at the beginning and end of the students second semester. Use of correlation and SEM analyses revealed that PsyCap was able to account for 74 % of the variance in academic adjustment, suggesting that PsyCap provides a holistic resource to students in terms of their academic adjustment. Considering the relationship between PsyCap and student GPA, there was a significant correlation between two facets of PsyCap; namely, hope and resilience, while no significant relationship was supported between self-efficacy and optimism (Liran et al., 2017).

In explanation for the varied ability of PsyCap's four components in predicting GPA, Liran et al. (2017) concluded it was due to the theoretical nature of the variables measured which resulted in PsyCap's mixed outcomes. For instance, hope and resilience are conceptualized as reflecting active extensions of life opportunities, and as such are based on factual achievements. In comparison, self-efficacy and optimism's explanatory style are deemed primarily subjective and as such, are perhaps linked to cognitions, rather than directly linked to factual experiences or outcomes such as GPA. Overall however, the research supports the presence of a significant relationship between PsyCap, GPA and academic adjustment, offering additional insight into the role PsyCap may play in

nurturing academic growth. The ability for students to trust their own abilities, be able to conceptualize their academic goals, be motivated to achieve and experience satisfaction in an educational context is likely to be of significant importance to them experiencing academic growth over their HE experiences.

4.3.7.3. PsyCap, Engagement and Motivation

In addition to GPA and adjustment, researchers have also begun to explore the potential relationship between PsyCap and other pro-educational behaviours such as engagement and intrinsic motivation, both of which have demonstrated a well-supported link to academic success (Siu, Bakker & Jiang, 2014). Investigating the association between PsyCap, student engagement and intrinsic motivation in a group of HE students, Siu et al. (2014) findings highlight the existence of a reciprocal relationship between PsyCap and student engagement, and that this relationship is mediated by intrinsic motivation (Siu et al., 2014). Approaching a group of 103 students attending HE in Hong Kong, and using a cross lagged-design, participants were asked to complete a measure of PsyCap at Time one (at the beginning of the academic year), while completing measures of student engagement intrinsic motivation at Time two (at the end of the semester). Results confirmed that levels of PsyCap were positively correlated with intrinsic motivation, and moderately correlated with student engagement. With the use of structural equational modelling (SEM), further analysis provided evidence supporting a reciprocal relationship between the three study constructs, with student intrinsic motivation acting to mediate the relationship between PsyCap and levels of engagement. These conclusions provide support for the motivational value of PsyCap (Luthans et al., 2007), with students who

were intrinsically motivated to study due to an interest in the topic, more inclined to engage in study related behaviour.

4.3.8. Emotional Intelligence

In addition to PsyCap, the importance of emotion, and how individuals inform behaviour through the use of emotional skills and competencies has attracted considerable attention in the form of Emotional Intelligence (EI). Beyond the advantages of better understanding one's self, a particular appeal of the concept of EI is the prospect of its development (Boyatzis, Stubbs, Taylor, 2000). EI has emerged over the past twenty years to become a central component in research exploring the function emotions have in relation to performance orientated behaviours and has attracted particular interest in academic literature (Furnham & Petrides, 2003; Zeidner, Roberts, & Matthews, 2004; Salovey & Grewal, 2005).

EI is a relatively new and developing field, which since its inception has managed to generate a considerable amount of controversy, with many researchers concerned by its lack of conceptual clarity and measurement issues (Zeidner, Roberts & Matthews, 2002). It is however generally accepted that EI concerns a type of social intelligence which involves the ability to monitor and discriminate one's own emotions and the emotions of those around them, and to use this information to inform one's thoughts and behaviours (Salovey & Mayer, 1990; Ciarrochi, Chan, Bajgar., 2001). As intellectual and social situations contain an element of emotional information, EI is said to act as an adaptive capability offering those proficient an advantage across their everyday life.

Research concerning EI is expansive with current theories including emotional expression and regulation, verbal and nonverbal appraisal in oneself and others, and the use of emotional information to problem-solving (Salovey & Mayer, 1990; Mayer & Salovey, 1993; Thomas, Cassady & Heller, 2017). Despite the ongoing debate concerning conceptualisation and measurement, which has somewhat delayed research progress, there are established links between EI and numerous positive outcomes, for instance mental health and social relationships (Davies, Stankov & Roberts, 1998; Mayer, Roberts & Barsade, 2008; Schneider, Lyons & Khazon, 2013). There is also developing evidence supporting associations between EI and student learning, academic achievement and ability to cope with life's challenges (Goleman, 1995; Schutte, Malouff, Simunek, McKenley, & Hollander, 2002; Petrides, Frederickson, and Furnham, 2004; Parker, Summerfeldt, Hogan, & Majeski, 2004; Parker, Creque, Barnhart, Harris, Majeski, et al., 2004; Perera & DiGiacomo, 2013). For example, high levels of EI have been found to predict HE students' academic performance in the form of GPA and retention levels during their first year (Schutte et al., 1998; Parker, Summerfeldt, Hogan, & Majeski, 2004). There is also evidence for a relationship between EI and enhanced interpersonal skills, EI offers students the capacity to better manage stress, social integration and better academic adjustment (Perera, & Di Giacomo, 2015). These findings suggest several adaptive qualities which could pertain to the development and support of students as they seek academic growth.

Despite this growing evidence, research examining the relationship between EI and academic achievement has until now tended to focus upon students in their first year of HE, specifically during the transition into HE, with little being known in relation to EI's influence over the course of HE participation, or its association with academic growth.

Nonetheless, given the established literature on EI's association with HE students GPA and its developing intervention base, if a significant relationship were to be discovered between EI and academic growth, it would offer educators and those interested in supporting its development a valuable additional means of developing academic growth. With this in mind the following sections will describe the two dominant theories of EI, and discuss research studies which demonstrate the role EI could have in the prediction of student academic growth.

4.3.8.1. Conceptualising Emotional Intelligence

Emotional intelligence is considered a form of social intelligence which concerns an individual's ability to monitor their own and others emotions and to use this information to guide thinking and behaviour (Salovey & Mayer, 1990). Historically, emotion and intelligence have typically been viewed in opposition to one another, with emotion often being considered an unwanted distraction and a symptom of disorganised cognitive activity (Shaffer, Gilmer, & Schoen, 1940; Mayer, Salovey, Caruso, & Cherkasskiy, 2011). More recently, theories in the realm of individual differences and general intelligence have begun to recognise the potential contribution that emotions, and our understanding of them can offer us when attempting to navigating everyday social interactions, cognitive functioning and the development of student academic achievement (Thorndike, 1920; Salovey & Mayer, 1990; Petrides, Frederickson, & Furnham, 2004).

Contemporary concepts exploring the association between emotion and intelligence can be traced back to the work of Thorndike (1920) who highlighted the value of emotion in

his theory of social intelligence. This theory divides intelligence into three distinct facets namely, the ability to understand and manage ideas (abstract intelligence), concrete objects (mechanical intelligence) and people (social intelligence). Thorndike initially defined social intelligence as "the ability to understand and manage men, women, boys and girls- and act wisely in human relations" (Thorndike, 1920, p. 228). As such, the concept was conceptualised as the ability to navigate complex social relationships by perceiving one's own and others emotive states, and to act towards others in a positive manner accordingly (Mayer & Salovey, 1993). Rather than view emotions as cognitions requiring repression, social intelligence recognised emotion as a value attribute, informing both thoughts and behaviour.

Today the value of emotion and how it can contribute to an individual's behaviour and functioning across multiple contexts is recognised in the form of Emotional intelligence (EI). Similar to Thorndike's theory (1920), EI theory posits that emotions provide us with vital information for making sense of our inner thoughts and feelings and offer a fundamental advantage when navigating social circumstances (Mayer et al., 1999). Thus, those individuals who are able to employ higher level cognitive processing to distinguish internal and external emotional information, use this information to guide their thoughts and behaviours have been consider at an adaptive advantage in interpersonal and intrapersonal situations (Abe, 2011).

There is however a lack of agreement as to how EI should be conceptualised which has resulted in measurement issues and at times conflicting and inconsistent research conclusions which are discussed within the literature (e.g. Davies, Stankov, & Roberts,

1998; Epstein, 1998; Zeidner, Roberts & Matthews 2002). Generally, EI is defined as the ability to perceive, use, understand and manage emotion (Salovey & Mayer, 1990). From this perspective, the construct is viewed as a cognitive ability; individuals who are self-aware of internal and external emotional prompts, engage in more complex and in-depth processes regarding their and others emotional concepts and use this information to inform their behaviour moving forward (Mayer, Salovey, & Caruso, 2008) However, in the quest to design a measurement tool for EI, research branched out in two directions; one which felt EI could be best measured using psychometrics; the other attempting to measure EI through maximum-performance tests. While both were under the assumption that they were measuring the same construct these two differing approaches have only added to the construct's conceptual confusion (Pérez, Petrides, & Furnham, 2005). As such, the EI literature is keen to highlight significant distinctions between EI theories most prevalent conceptualisations, this division based upon measurement (Petrides & Furnham, 2001).

Firstly, ability EI (or cognitive-emotional ability) is described by Mayor and Salovey (1997) as an individual's actual ability to perceive, use, understand and manage emotion. From this perspective, the construct is viewed as a cognitive ability, individuals who are self-aware of internal and external emotional cues, use this information to engage in more complex and in-depth processes regarding their and others emotional concepts and use this information to inform their behaviour (Mayer, Salovey, & Caruso, 2008). There are however a number of drawbacks when using this conceptualisation, for example, ability EI has been argued to be inconsistent with current models in psychology. Furthermore, there are also issues when attempting to create a means of measuring ability EI,

particularly when devising test items which are both relevant and objectively correct or incorrect responses to emotional inquiries (Petrides & Furnham, 2001; Petrides, 2011).

In contrast, according to Trait EI, EI is defined as a personality trait or a constellation of emotion-related self-perceptions and dispositions which are located within the lower levels of personality hierarchies (Petrides & Furnham, 2001). These dispositions and self-perceptions reflect an individual's thoughts and feelings regarding their perception, regulation and expression of emotional-related information and is linked to self-control, motivation and optimistic dispositions (Perera & DiGiacomo, 2015; Petrides, 2011). Despite the use of the term intelligence, trait researchers are keen to emphasise their approach is unrelated to traditionally defined intelligence (cognitive ability, or G), but instead aims to offer insight into the personality facets which relate to affect (Mavroveli, Petrides, Rieffe & Bakker, 2007). Trait EI has several advantages over that offered by ability; first it acknowledges the subjective nature of emotions; second, it links the construct of EI to established theories of psychology (individual differences; personality) rather than treating it like as a novel entity and; third, trait EI is not linked to a specific test or assessment, but rather it offers a framework from which data from any EI questionnaire can be interpreted (Petrides, 2010).

As trait EI is considered a personality trait, rather than a cognitive ability, it has been demonstrated to share a significant relationship with well-established theories and measures of personality, for example Eysenck's Big Three and Big Five personality dimensions (Petrides, Pita, & Kokkinaki, 2007). Nonetheless, trait EI has been argued to offer unique discriminant validity over and above measures of personality, having

demonstrated the ability to highlight personality factors said to embody affect and emotion-related facets of personality (Petrides et al., 2007). As such, Trait EI is not considered too distinct from personality constructs, but rather part of them (Petrides et al., 2007).

Given the advantages of Trait EI and its ease of use, the approach has been well received within the research community and enjoys widespread empirical support and consistently replicated evidence across a range of areas (Petrides, 2010). Over the past twenty years an impressive body of research has found that Trait EI affects, directly and indirectly a wide range of variables in an educational context. With this in mind, while both approaches recognise and agree that EI concerns two broad components; the awareness and management of one's own and others emotions, trait and ability EI measures of EI are conceptually, methodologically and empirically independent, with research consistently highlighting their independence through correlational investigation (O'Connor & Little, 2003).

4.3.8.2. The relationship between Emotional Intelligence and Academic Achievement

An initial meta-analysis examining the contribution of trait EI to students' academic achievement has supported a significant relationship between EI and student GPA (Perera et al., 2013). Given this was to be the first review of literature pertaining trait EI's influence upon academic achievement, the study authors proposed four novel theoretical rationales which they considered could link EI to academic achievement through existent

mechanisms. First, the association could be explained by way of the 'w' factor first described by Web (Perera et al., 2013) who believed that performance in an academic setting was primarily the function of a willingness to perform or achieve. Willingness to achieve was said to reflect intelligence, skills and self-motivation. As such, those students who report higher levels of EI could be expected to perform to a higher level than their low EI peers because they are more inclined to engage in academic goal setting and expend greater effort in achieving their goals. Second, trait EI may influence academic achievement as a result of EI's relationship to self-regulation, and a greater tendency to sustain academic goal approach behaviour (e.g. studying, preparing for exams) with higher EI students being less inclined to display reckless behaviour and be tempted by short-term gratification. Third, the relationship could be the product of EI's influence upon neuroticism and emotional regulation, neuroticism having previously been linked to student stress, anxiety and negative emotions. Relatively high EI students were expected to better manage their emotion and thus be less likely to suffer from impairment caused by negative emotions. The Fourth, and final pathway proposed between EI and achievement would be EI's influence upon personality. Given the importance of group activities and collaborative learning in education, higher levels of EI would support socially desirable behaviours and an affective personality, this in turn would encourage greater levels of expression and interaction with peers and offer them a significant social advantage.

With these four rationales in mind the researchers (Perera et al, 2013) explored the literature which had examined trait EI and academic performance (e.g.; GPA, standardised test results, subject attainment). In doing so they were able to isolate a total of 40 primary studies which included 48 independent studies (12 of which were

unpublished dissertations), 74 effect sizes and a total sample size of 10,292 students of secondary and HE level. Results confirmed a moderate significant relationship between EI and academic performance revealing that trait EI may offer a modest yet important attribute in the context of HE. An additional point of interest was the moderating effect of age upon EI's association with academic achievement. It was observed that every one year added to the average sample age, predicted a decrease in the observed relationship. Perera and associates (2013) commented that this trend may suggest that the social adaptive tendencies associated with higher levels of EI may be less important in HE, which may rely more heavily upon autonomous learning than that experienced by students in primary and secondary education. Nonetheless, the meta-analysis was able to demonstrate a significant relationship between EI and HE academic performance and despite not testing them, it also outlined four theoretical pathways which may link the construct to academic performance and the development of academic growth.

Despite the aforementioned interest in the relationship between EI and academic performance, research examining the mechanisms between the two has been limited to date. Of the exceptions, one study has tested a conceptual model which linked EI to academic achievement both directly and indirectly via a range of constructs previously linked to positive educational results, namely; perceived social support, engagement coping and academic adjustment during the students transition into HE (Perera, & DiGiacomo, 2015).

Approaching a group of students (n= 470) during their first week of HE Perera and DiGiacomo (2015) set out to explore the nature of the relationships between EI, perceived social support, engagement coping and adjustment during the transition from secondary

school to HE. Perera and DiGiacomo (2015) anticipated the relationship between EI and student GPA would be mediated with the study variables in a number of ways. Firstly, EI would foster academic adjustment with those students reporting higher levels of EI more self-motivated to engage in academic tasks and more capable of expressing self-control by off-setting any stressors experienced during their transition. Secondly, relatively high levels of EI would protect against mood deterioration under stressful conditions, thus protecting students' psychological adjustment. Thirdly, being able to manage their emotions effectively would also allow students to engage more readily with their courses academic content. And finally, greater levels of EI would enable students to be more freely expressive amongst their peers, and enable them to identify, develop and maintain supportive relationships amongst their peers. While the variables of, adjustment, social support and engagement coping had previously been linked to trait EI this was the first occasion they had been investigated in the context of transition to HE and GPA (Petrides, Pita & Kokkinaki, 2007; Kong, Zhao & You, 2012; Jacobs, Sim & Zimmerman, 2015). SEM revealed four significant indirect pathways between EI and the variables of interest. The relationship between EI and student GPA was found to be mediated by perceived social support. Those students who held higher levels of EI were able to create more supportive social networks, this positively influencing their first year GPA. EI also shared an association with academic adjustment, this relationship mediated via engagement coping, those students who were able to effectively manage stressful situations in their lives, better able to adjust to academic life by taking part in academic activities, preparing for their exams and assignments, this not surprisingly linked to higher GPA.

In all, Perera and DiGiacomo, (2015) demonstrated several mechanisms which mediated the previously reported relationship between EI and academic achievement. EI not only

shared a direct significant relationship with student GPA, but this relationship was mediated through its association with academic adjustment, psychological adjustment, engagement coping and perceived social support. Given its relationship with these adaptive educational factors, EI may offer support to students not only as they transition into HE, but as they judge and traverse various expectations and demands over the course of their participation.

4.3.8.3.   EI and transition to Higher Education

There is additional evidence which supports a relationship between EI and HE students' GPA during the transition to HE (Parker, Hogan & Summerfeldt, 2004). In this instance, first year undergraduate psychology students (n=372) were approached during their first month of classes and recruited to take part in a study regarding personality and academic success. Those who chose to take part, completed self-reports on EI (EQ-i) and gave consent for their GPA to be collected from department records at the end of their first year. Initial analysis investigating the relationship between EI and student academic achievement revealed a non-significant relationship, however, this changed when students' achievement scores were used to group students into cohorts based on their academic success, namely, academically successful and academically unsuccessful. Those students in the successful group were considered those who had achieved a GPA of 79% and above (18% of the total sample), while academically unsuccessful were those who scored 60% or below (17% of the total sample). While this scoring may seem an unusual cut-off in measuring academic success, the method of grouping was selected due to this particular university's (Ontario university) practice which asks those students

scoring 59% or below in their second year to withdraw from study. Overall correlations between EI and the total samples first-year university GPA were surprisingly low or non-significant. However, when the relationship between GPA and EI was examined after students were arranged into successful and unsuccessful groups, results revealed that successful students reported significantly higher levels of EI than their academically unsuccessful peers, (even though these two groups did not differ in high school GPA, course load or age) with the EI factors of intrapersonal, stress management and adaptability demonstrating the largest correlations. This study offers evidence for a significant relationship between EI and academic GPA in HE students with very different levels of achievement.

These results highlighted the importance of the EI sub-factors (intrapersonal, adaptability and stress management) in predicting GPA and the transition to HE. The intrapersonal dimension of the EI measure used in the study assessed students' ability to understand their feelings as well as their ability to use this information to guide behaviour. The dimension of stress management involves a student ability to successfully manage stressful situations in a calm adaptive manner, while the adaptability factor measured students' skills in adapting to change, identifying problems and making use of realistic coping strategies. One limitation noted by the study authors was that the relationship between EI and GPA was only tracked for a single year, however if the significant relationship reported between GPA and the three pro-educational behaviours in year one continued over a students' degree participation, it could be conducive to those students aiming to experience academic growth.

4.3.8.4.   EI and Student Retention

It seems only sensible to suggest that students who persist in their studies are more likely to experience academic growth. Alternative research has examined the role of EI in supporting HE student retention (Parker, Hogan, Eastabrook, Oke, & Wood, 2006). Approaching a group of 1,270 university students, EI was assessed (again at Ontario university), to examine its relationship to student retention, namely those students who persisted with their studies into second year and those who failed to finish first year. Results confirmed that EI was predictive of HE persistence, with those students with higher levels of EI, particularly the facets of interpersonal, adaptability and stress management more likely to complete their studies than those students who reported lower levels of EI. It was proposed that higher levels of EI offered students a resource when it came to settling into a new environment, with EI supporting students in making new relationships at HE while adapting and maintaining their previously existing friendships. This enhanced tendency to be able to create and maintain supportive social relationships could offer students an additional advantage over the course of their degree participation (e.g. taking part in group work, making friends in different modules, establishing study groups) and support the development of academic growth. However, given the literatures reliance of examining the relationship between EI and academic achievement at a single point in time, little is understood about how EI can predict student academic growth and GPA across time.

4.4. Rationale for Study Two

This chapter has described the literature pertaining to the final stage of this research investigation. The emerging theoretical prospective of positive psychology has brought research which explores the factors that encourage individuals to flourish and develop to the forefront of psychological study (Seligman & Csikszentmihalyi, 2000). Central to the positive movement has been the higher-level construct of PsyCap, which combines the constructs of hope, self-efficacy, resilience and optimism to achieve a synergising effect (Luthans, 2007). Alongside PsyCap, there has been renewed interest in EI, and research exploring how emotions can be understood, focused and developed to enhance performance (Perera and DiGiacomo, (2015). As a result, increasing evidence supports the role of EI and PsyCap in the prediction of student GPA (Parker, Hogan, Eastabrook, Oke, & Wood, 2006; Perera and DiGiacomo, 2015).

Given their positive theoretical bases, a key characteristic shared between PsyCap and EI is their state-like, rather than trait like attributes, which implies, that with applied effort, each is readily open to enhancement and development, rather than fixed, finite qualities (Luthans et al., 2012). Supporting this assertion, research has demonstrated that PsyCap and EI can be targeted and developed through the use of short, focused training sessions in an academic context, and that development in student PsyCap can have a meaningful impact on academic performance (Luthans, 2007).

Nonetheless, there are a number of limitations within the available literature, in particular in relation to the relationship between PsyCap, EI and academic growth. Further, the

majority of studies to date have focused on the influence each of these factors has on student GPA as measured at a single point in time (most often first year). Combined, these elements limit what we know about the role PsyCap and EI play in the development of student academic growth and how each factor can act to predict student GPA across time.

With this in mind, inspired by this developing literature and the significance psychological development had upon academic growth emerging from Study One, Study Two sets out to investigate the potential associations between the psychological resources of PsyCap, EI, student academic growth and the prediction of GPA in final year. Evidence of a positive relationship between PsyCap, EI and academic growth would offer an additional means of developing student academic growth.

4.4.1. Research Aims of Study Two

With this in mind, Study Two has three research objectives;

1. To explore the associations between the psychological factors of PsyCap, EI and academic growth in students attending HE.
2. To examine psychological growth, considered development of PsyCap and EI from Year One to Year Two during a students' participation in HE.
3. To explore the relationship between PsyCap and EI in the total number of questionnaire responses from Year One and Year Two and student GPA in year in three.

5. Study Two- Examining the role of PsyCap and EI in the prediction of Academic Growth and GPA

5.1. Introduction

This chapter presents an overview of the research methods as well as the findings from Study Two. The chapter begins by introducing the research methods used to reach the study aims and details the participants, materials, and the statistical techniques used to test the research questions. In the results section, Step One provides evidence of the associations between PsyCap, EI and academic growth. Step Two examines student psychological growth in PsyCap and EI. Step Three explores the relationships between student EI, PsyCap and student GPA in third year. The chapter discussion presents the research conclusions, how they relate to previous literature and their impact and implications for those concerned with developing academic growth in HE students. Based on the research findings, recommendations and considerations for future research conclude the chapter.

Research aims

Study Two has three aims;

1. To explore the associations between the psychological factors of Psychological Capital (PsyCap), Emotional Intelligence (EI) and academic growth in students attending HE.

2. To examine psychological growth, considered development of PsyCap and EI from Year One to Year Two during a students' participation in HE.

3. To explore the relationship between PsyCap and EI in the total number of questionnaire responses from Year One and Year Two and student GPA in year in three.

5.2. Methodology

5.2.1. Design

To address each of the research aims, Study Two made use of a longitudinal survey design. This offered the opportunity to examine the relationship between PsyCap, EI, academic growth and student GPA in final year. As such, a group of students were followed from their first year of participation up until their third and final year of their undergraduate degree. An online questionnaire was distributed to student participants initially during their first year and once again when they were in their second year of participation. This questionnaire collected information regarding participants demographic profiles and their responses to standardised measures designed to access their PsyCap and EI levels. In order to examine the associations between students' responses to the questionnaire in their first and second year and their subsequent academic growth and final year GPA, with students' consent, participants annual GPA scores were collected from academic records. A schedule of when questionnaire data and participants GPA was collected is presented in Figure 5-1.
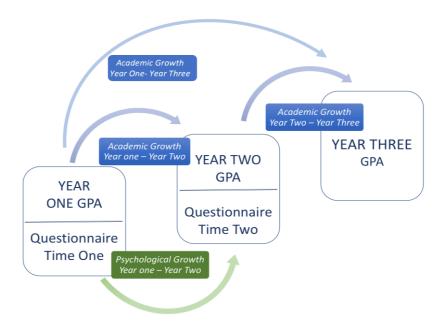
Figure 5-1 Data and GPA collection schedule

As presented in Figure 5-1. students were approached in the first semester of their first year and the first semester of second year and asked to complete the study questionnaire. Matching participants year one and year two questionnaires offered the opportunity to examine the relationship between academic and psychological growth in EI and PsyCap. Student GPA was accessed from school records which offered three annual GPA's for each participant and allowed three levels of academic growth to be examined.

5.2.2. Recruitment procedure

A large-scale sample of university students was sought within Ulster University. A group of 145 students enrolled in their first year of the BSc Hons Psychology degree were targeted, with the online survey programme QUALTRICS used to distribute the study questionnaire. Students received an email from the chief investigator, which provided them with an information sheet and a consent form, both of which they were

advised to read in full. This email also contained a link to the study questionnaire which enabled those who wished to engage in the study to submit their responses at their own convenience using QUALTRICS. To increase the studies response rate, the study questionnaire was also reproduced in paper format, with students approached by the primary researcher in lecture rooms, tutorials, seminars, independent study groups and laboratory classes. This recruitment strategy greatly enhanced participant engagement and was repeated when approaching students for a second occasion when they were in their second year of their degree.

5.2.3. Institutional profile

Participants for this study were enrolled at Ulster University. Ulster University, the provinces largest University, is located in Northern Ireland (NI) and offers degree programs across multiple campus. The university has a well-established widening access profile, operating under an access agreement approved by the Office of Fair Access. This agreement is in place to ensure that HEI's act to ensure barriers are removed for people from groups which are consider under-represented in HE, and actively seek to attract and retain students who the Department for Education would describe as "the most able but least likely" to progress into higher education (DEL, 2011). At the times of recruitment for this study, full time fees for undergraduate study were set at £4,030 per year.

Participants in the current study were enrolled in the BSc (Hons) Psychology degree. In order to participate in this program, students enrolling were required to hold a minimum of 120 UCAS tariff points at point of entry. Historically, the degree has been three years in length, however more recently it has begun to offer students an optional placement or sandwich year in year three, which extends the traditional degree to four years in total. Through this placement year, students gain the opportunity to complete a work placement in a sector with close links to their programme of study, with the overall aim of enhancing student employability. Since this current study commenced, the preference to partake in a placement year has become increasingly popular amongst students.

5.2.4. Response rates and Participants

Students were approached to complete the questionnaire on two occasions, firstly, during the first semester of their first year in HE (Year One) and, on a second occasion, during the first semester of their second year of participation (Year Two) (a copy of this questionnaire can be found in Appendix 2). The annual GPA's for participants were collected from academic records at the end of each academic year of their participation in HE.

First year Response Rate (Time One)

Of the 145 first-year students who were approached to take part in this study (Year One), 131 completed the study questionnaire, however, 9 of these students withdrew

from the degree programme before the end of Year One and 1 participant was required to repeat their First Year. Overall this resulted in a total of 121participants who returned a questionnaire in Year One and who had an Annual GPA score recorded for each of the three years of their degree. These students were 18% (n=22) male and 82% (n=99) female, ranging in age from 18 to 52 years (Mean= 22.19, SD = 5.86).

Second Year Response Rate (Time Two)

In Year Two, 78 questionnaires were returned by students. However, 1 of these students withdrew for their degree programme before completing Year Two and an additional 3 students were required to repeat Year Two. With this in mind, overall there were of total 74 participants who returned questionnaires in Year Two and who had GPA scores recorded for their third year. These participants were 18% (n=13) male and 82% (n=61) female. Participants average family size at this stage consisted of the students, having one sibling and two parents (Mean= 4.474 SD = 1.28) and was well distributed, with a number of students (n=18) reporting that they were an only child (n=11) and students reported as having 3 siblings or more

5.2.5. Analysis Strategy

To address each of the three research aims for Study Two, student responses were analysed in three steps which are outlined and described below:

5.2.6. Step One: Examining the relationship between Psychological Capital, Emotional Intelligence and Student Academic Growth.

Step one addressed the first aim of the research study which examined the relationships between student PsyCap, EI and student academic growth. Similar to Study One, this involved examining the relationship between participants responses to the study questionnaire in Year One, their matched questionnaire responses in Year Two and student academic growth. This involved the statistical techniques of Pearsons product moment correlations and hierarchical multiple regression analysis.

5.2.7. Step Two: Exploring Psychological growth in Psychological Capital and Emotional intelligence from Year One to Year Two

Step two of the analysis addressed the second research aim which was to explore student psychological growth in the factors of PsyCap and EI from Year One to Year Two. Similar to Study One, this involved making use of matched questionnaire responses from students who completed the study questionnaire in both Year One and Year Two during their participation in HE. Considering the responses retuned by students, 51 questionnaires matched from Year One to Year Two. These participants were 18% (n=9) male and 82% (n=42) female, ranging in age from 18 to 49 years old (Mean= 22.76, SD = 6.74) in Year One. This stage involved the use of t-test analysis.

5.2.8. Step three: Examining the relationships between Psychological Capital, Emotional Intelligence and student GPA in year three.

Step three of the analysis involved exploring the relationships between the total number of questionnaires returned in Year One and student GPA in Year Three and the total number of questionnaires returned in Year Two and student GPA in Year Three. With this in mind there were 121 questionnaires returned in Year One with corresponding Year Three GPA scores in academic records. These students were 18% (n=22) male and 82% (n=99) female, ranging in age from 18 to 52 years old (Mean= 22.19, SD = 5.86).

In Year Two there were a total of 74 participants who returned questionnaires in Year Two and who had GPA scores recorded for their third year. These participants were 18% (n=13) male and 82% (n=61) female, ranging in age from 19 to 50 years old (Mean= 23.49, SD = 7.95). This step of the analysis involved the use of Pearson product moment analysis.

5.3. Materials

5.3.1. Overview of the Study Questionnaire

The study questionnaire consisted of two sections; section one collected participants demographic information, while the other measured students' responses to a series of standardised psychometric measures.

5.3.2. Demographic Measures

A number of items at the beginning of the questionnaire were used to collect the demographic characteristics of participants, namely their; gender, age, numbers of brothers and sisters.

5.3.3. Psychometric measures

In addition to assessing demographic characteristics, a range of standardised psychological measures were used to collect information regarding participants EI, PsyCap. These measures are detailed below, along with the internal consistency achieved for each scale in the current study.

Emotional Intelligence: This was measured using *The Trait Emotional Intelligence Questionnaire – Short Form* (TEIQue-SF) (Petrides, Frederickson & Furnham, 2004). The scale comprises of 30 statements and provides valid, reliable and rapid assessment of individual differences in global trait EI (Petrides, Pita, & Kokkinaki, 2007; Petrides, & Furnham, 2006; Coope, & Petrides, 2010). The TEIQue-SF includes 2 items from each of the 15 facets of Emotional Intelligence, which can be groups to explore the four trait EI factors; well-being, self-control, emotionality and sociability. Participants respond to each item on a seven-point Likert scale anchored at 1 for 'completely disagree' and 7 for 'completely agree'. A global trait EI score is calculated by summing up the item scores and dividing by the total number of items. Total scores can range between 30 and 210 (or 1–7 when normed), with higher scores indicating higher trait EI. The four sub-scales of the TEIQue-SF are derived through sum scoring questionnaire items: (well-being= 6 items); Self-control= 6 items); (emotionality= 8 items) and sociability= 6 items), while

the remain 4 items contribute to global EI scores only. Examples of items included in the scale are; Expressing my emotions with words is not a problem for me, and; I usually find it difficult to regulate my emotions. Cronbach's alpha for global trait EI scores in this study were 0.87.

Psychological Capital: This consists of measures of Optimism, Hope, Self-efficacy and Resilience and was measured using a combination of the following scales.

Optimism: *The Life Orientation Test-Revised* (LOT-R) (Scheier et al., 1994) consists of 10 coded items, 3 statements described in a positive manner, 3 statements described in a negative manner, and 4 non-scored items. The 3 positive items were used to measure optimism. A total score was calculated by finding the sum of the three items, with total scores ranging between 3-12. Participants responded to the statements by indicating the extent of their agreement along a 5-point Likert scale, ranging from 1 "strongly agree" to 5 "strongly disagree." Examples of items used in this scale included, and; In uncertain times, I usually hope for the best; I am always optimistic about the future. The internal reliability (Cronbach's alpha=.78) and test-retest reliability (r=.68 over a four-week interval, r=.60 over twelve months, r=.56 over twenty-four months, and r=.79 over twenty-eight months) for the unidimensional use of the LOT-R has been shown to be adequate. This scale had a reliability coefficient of (α = .72) in the current study.

Hope: *The Adult State Hope Scale* (Snyder et al, 1996) was used to measure hope and is an 8-item measure of the two defining characteristics of hope, i.e. (a) agency (goal-directed energy) and (b) pathways (planning to meet goals). Combining both these sub-

scales result in a total Hope score. Examples of items included in this scale include; I energetically pursue my goals, and; I meet the goals I set for myself. Participants responded to the statements by indicating the extent of their agreement along a 5-point Likert scale, ranging from 1 "strongly agree" to 5 "strongly disagree." This scale had a reliability coefficient of (α = .83).

Self-efficacy: *The Generalized Self-Efficacy Scale* (GSES) (Schwarzer & Jerusalem, 2010) was used to measure self-efficacy and is a 10-item measure of self-efficacy as proposed by Bandura (1977). A total GCSE score It reflects an optimistic self-belief in various domains of human functioning. Examples of items included in this scale; I can always manage to solve difficult problems if I try hard enough, and; I am confident that I could deal efficiently with unexpected events. Each item refers to successful coping and implies an internal-stable attribution of success. Cronbach Alpha in this study was (α =.85).

Resilience: *The Brief Resilience Scale* (BRS) (Smith, Dalen, Wiggins, Tooley, Christopher & Bernard, 2008) is a 6 item self- report instrument which measures the ability to bounce back from stress on a Likert scale from 1 = Strongly Disagree to 5 = Strongly Agree. A score is determined from the average of all six responses. The BRS is scored so that a higher score indicates greater resilience.

Examples of items included in the study; I tend to bounce back quite quickly from hard times, and; I tend to take a long time to get over set-backs in my life. In the current study, the scale demonstrated a good internal consistency (α =.91).

5.3.4. Student Grade Point Average

Each academic year of their degree participation, students were enrolled in six modules. Each of these modules consisted of both coursework and assessment elements which were designed to assess their individual learning and understanding of material covered in the module. Students' performance in each of these elements was assigned a mark from 0 to a possible 100. At the end of each academic year the mean score of these six modules marks was calculated to allowing each student to have an annual end of year GPA for each year of their three-year degree program. Students were required to have achieved a grade point average score of at least 40% at the end of each academic year in order to proceed to the next year. A students' final degree classification at Ulster University is based on a weighted average of the students second (25%) and third year (75%) grade point average. With students' consent, at the end of each academic year, once marks had been released from exam boards, student GPA scores were accessed from academic records held in their school office.

5.4. Measuring Academic Growth

Consistent with study One, this study made use of a student 'gain' approach to calculate student academic growth. This approach involves measuring the difference between student GPA scores at two points in time, which has also been described as learning gain (McGrath et al., 2015). A learning gain approach to measuring academic growth measures the distance travelled or learning acquired by students between two points in their academic participation (Rodgers, 2007; OECD, 2012; McGrath et al., 2015). In the

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context of Study Two, this involved measuring the difference between student GPA scores between first and second-year, second and third-year and first and third year to assess levels of academic growth. This approach in summarised in Figure 5.2 below, were academic growth is represented by the distance between points A and B in student academic achievement.
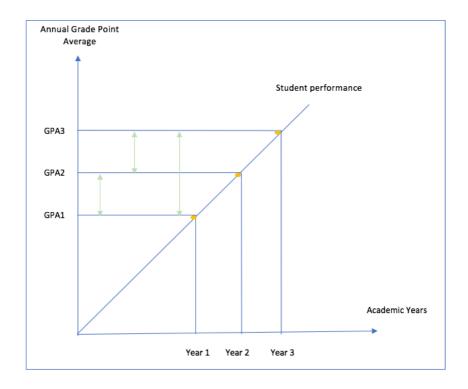
Figure 5-2 Measuring academic growth using a student gain approach

As students achieved a grade point average at the end of each year of their higher education participation, this allowed for three distinct measures of academic growth to be observed; year one –year two; year two – year three; and year one – year three.

5.5. Data analysis

In order to run the analysis required to answer each of the three research aims, data was input into IBM SPSS 23 (Statistical Package for Social Science) to create a data set which would allow for the following statistical procedures to be carried out. Primary analyses involved descriptive and inferential statistics, including frequencies and standard deviations. To investigate whether the study variables were related to academic growth, the relationship between each variable and the estimation of academic growth was examined using Pearson's Product Moment Correlation. T-Test analyses were used to assesses whether differences between student responses in first and second year differed significantly. To examine the efficacy of PsyCap and EI to predict academic growth a hierarchical multiple regression analysis was conducted. To examine the relationship between student GPA in year three and PsyCap, EI in Year Two and Year Three, Pearson's Product Moment Correlation was used.

5.5.1. Ethical approval

Following the successful application of ethical approval from Ulster University's School of Psychology Research Ethical Committee in January 2014, recruitment commenced. Three key ethical issues were considered for this research study, both of which are outlined below.

5.5.2. Informed consent

Perspective participants were initially sent an email invitation from their school office to take part in the study during the spring months of their first year of participation in their degree program and again when in their second year. This email also provided students with an information sheet and a consent form. The information sheet provided the reader of the nature of the study and explained the planned procedure. It made clear that participation was voluntary and gave them an assurance of confidentiality in respect of all information given by participants, this information sheet also contained a link to the study questionnaire. Paper versions of the study questionnaire were also used to collect participant responses. These questionnaires were identical to the online version and contained the information sheet, consent form and details of the research team. By taking part, participants also offered consent for their annual GPA's to be assessed from their school office. Contact details of the research team were provided on the information sheets. There were no objections regarding participation in the study.

5.5.3. Confidentiality

Through the information sheets provided, and again through the completion of the questionnaire, respondents were assured that all the information they provided would be treated as confidential and that as such confidentiality would be maintained throughout the handling and storage of data in accordance with data protection requirements (2000). Completed questionnaires were stored on a secure database on a password-protected hard drive, to which only the research team held the passcode. As an additional measure of

confidentiality, participants completing the study questionnaire identified themselves using their student identity numbers rather than their names, with this number used to match successive questionnaires and yearly GPA from school records.

5.5.4. Withdrawal rights

The information sheet provided to participants, informed students of their right to withdraw from the study at any time, whether before, during or after the questionnaire had been completed. Participation in the study was voluntary so all rights were held by the participants. Over the course of the study no participants requested to withdraw.

5.6. Results

5.6.1. Descriptive Statistics

When approached in their first year, 121 students returned completed questionnaires, with student identification numbers which matched academic school records. These students were 18% (n=22) male and 82% (n=99) female, ranging in age from 18 to 52 years old (Mean= 22.19, SD = 5.86). Participants average family size consisted of the student, one sibling and two parents (Mean= 4.54 SD = 1.35) and was well distributed, with a number of students (n=28) reporting that they were an only child and (n=21) students reported as having 3 siblings or more.

When students were approached again in their second year, 51 students returned completed questionnaire which matched with questionnaires returned in Year One. These participants were 17% (n=9) male and 81% (n=42) female, ranging in age from 18 to 50 years old (Mean= 22.76, SD = 6.74). Participants average family size consisted of the student, one sibling and two parents (Mean= 4.56, SD = 1.34) and was well distributed, with a number of students (n=11) reporting that they were an only child and (n=9) students reported as having 4 siblings or more.

5.6.1. Parental education

Participants were asked to report the highest level of education each of their parents held, with responses grouped into five categories in line with the UK's national qualifications framework, the distribution of which is presented in Table 5-1

Table 5-1 Education level of participants parents in Year One (n=121) and Year Two (n=74)

Code	Parental education level	Year One (n=121)				Year Two (n=74)			
		Mothers	%	Fathers	%	Mothers	%	Fathers	%
1	Prior to completion of GCSE's	20	17%	25	21%	13	18%	22	30%
2	GCSE's	67	55%	67	55%	47	64%	41	55%
3	A 'levels	19	16%	17	14%	8	11%	8	11%
4	Degree	11	9%	10	8%	5	7%	3	4%
5	Post-graduate degree	4	3%	2	2%	1	1%	0	0%

5.6.2. Study Variable Means and standard deviations

The means, standard deviations and ranges for each of the study independent variables are presented in Table 5.2. As can be seen in table 5.2, in general there was an increase in the mean totals of PsyCap (year one mean: 50.12 (SD: 15.19), increased to year two: 53.12 (SD:13.93)), Optimism (year one mean: 5.91 (SD: 2.95), increased to year two: 6,02 (SD:2.71)), hope (year one mean: 17.81 (SD: 6.74), increased to year two: 19.83 (SD:2.71)), self-efficacy (year one mean: 24.62 (SD: 7.60), increased to year two: 24.51 (SD:7.95)), and resilience (year one mean: 1.74 (SD: .68), increased to year two: 2.33 (SD:.61)), from year one to year two. Total mean EI also increased, however this increase was marginal (year one mean: 143.18 (SD: 20.08), increased to year two: 144,25 (SD:22.48)).

Step One: Examining the relationship between Psychological Capital, Emotional Intelligence and Student Academic Growth.

Step one of the analysis addresses aim one of the research study by examining the relationships between student PsyCap and EI reported in Year One and Year Two and student academic growth.

Table 5-2 Mean and Standard Deviations for study variables returned in Year One and Year Two

Variable	Mean	SD	*N*
Year One Responses (n=121)			
Psychological Capital Total Year 1	50.12	15.19	121
Optimism	5.91	2.95	121
Hope	17.81	6.74	121
Self–efficacy	24.62	7.6	121
Resilience	1.74	.75	121
Emotional Intelligence Total Year 1	143.18	20.08	121
Emotionality	39.36	6.89	121
Self-Control	25.69	4.97	121
Well-being	31.37	5.63	121
Sociability	27.99	4.91	121
Year Two Responses (n=51)			
Psychological Capital Total Year 2	53.12	13.94	51
Optimism	6.02	2.71	51
Hope	19.83	5.25	51
Self–efficacy	24.51	7.95	51
Resilience	2.33	.61	51
Emotional Intelligence Total Year 2	144.25	22.48	51
Emotionality	39.92	7.01	51
Self-Control	25.55	5.72	51
Well-being	30.73	6.61	51
Sociability	28.24	4.61	51

5.6.3. Examining academic growth

The first aim of Study Two was to examine the relationships between EI and PsyCap and student academic growth, the next stage of analysis was to estimate student academic growth using a student gain approach.

As illustrated in Table 5.3, students experienced negative academic growth, represented by a decline in mean student GPA from Year One to Year Two. On average, in Year One students recorded an average GPA of 70.15, which declined on average -8 marks into Year Two, with students recording an average score of 62.49 in Year Two. Estimating academic growth between Year Two and Year Three, on average students experienced an increase in GPA from 62.49 in Year Two to 64.46 in their Third Year, an average growth of 2.97. On average, students as a group experienced negative academic growth from Year One to Year Two, and positive academic growth from Year Two to Year Three.

Table 5-3 Student Grade Point Average for year of degree Participation

	Year One Average	Year Two Average	Year Three Average
Grade Point Average	70.15	62.49	64.46

5.6.4. Correlations between Emotional Intelligence, Psychological Capital and academic growth

The next stage of analysis involved examining the correlations between the EI and PsyCap levels reported by students and student academic growth. As the study questionnaire had the largest number of responses in Year One, associations between EI and PsyCap reported in Year One and student academic growth across each of the three years degree programme were examined using Pearson Product Movement Correlations (Table 5.4).

Observing the correlation between student GPA in Year Three and student academic growth from Year Two to Year Three, there is evidence to support the presence of a significant positive correlation (r (121) = .39**, = >.01). Overall students experienced positive academic growth from year Two to Year Three. Next, considering student academic growth from Year One to Year Three, this level of growth displayed a significant positive relationship with student GPA in Year Three, (r (121) = .26*, = > .05), nonetheless, this correlation was lower in size than that from year Two to Year Three. As illustrated in Table 5.4 there was no evidence to support a significant relationship with student academic growth from year One to Year Two.

Table 5-4 Correlations between each level of academic growth, GPA in Year Three and the questionnaire responses from students in Year One (n=121)

Variable	GPA Year Three	Growth Year One-Year Two	Growth Year Two-Year Three	Growth Year One-Year Three
GPA Year Three	1	-.02	.39**	.26*
Age	.04	-.19*	.20*	-.04
Gender	.03		.13	-.09
Family Size	-.05	-.10	.05	-.05
Mother Education	-.05	-.03	-.18	-.20
Father Education	-.27	.14	-.03	.16
Psychological Capital Total Year One	-.10	-.15	-.01	-.09
Self-efficacy Year One	-.09	-.10	.10	-.07
Optimism Year One	-.08	-.19*	.07	-.14
Hope Year One	-.07	-.04	-.07	-.08
Resilience Year One	-.04	.14	-.05	.05
Emotional Intelligence Total Year One	.12	-.17	.13	-.09
Emotionality Year One	.22*	-.15	.10	-.08
Self-Control Year One	.01	-.13	.08	-.08
Well-being Year One	-.03	-.14	.13	-.05
Sociability Year One	.01	-.12	.04	-.05

*p<.05 **p<.01

Considering student total PsyCap levels as reported in Year One and student GPA recorded in Year Three, there was no evidence to support a significant relationship on this occasion (r (121) = -.10 p= n.s). Considering the correlations between each of the PsyCap sub-facets: Self-efficacy (r (121) = -.09 p= n.s), Optimism (r (121) = -.08 p= n.s), Hope (r (121) = -.07 p= n.s) and Resilience (r (121) = -.04 p= n.s), there was no evidence to support a significant correlation between each of these factors as reported in Year One and Year Three GPA.

Examining the correlation between student EI in Year One and Year Three GPA, there was no evidence to support a positive relationship between these two factors (r (121) = .12 p= n.s), nonetheless there was evidence to support a positive significant relationship between the EI sub-facet of Emotionality and Year three student GPA (r (121) = .22 p= .05). Student Emotionality as reported in Year One was a positive predictor of GPA in Year Three.

Considering correlations between student PsyCap in Year One and academic growth from Year One to Year Two, the sub-facet of Optimism shared a significant negative association with this level of academic growth (r (121) = -.19 p= .05). Students who reported higher levels of Optimism in Year One experienced lower levels of negative academic growth. Student age also displayed a significant negative correlation with academic growth from year One to Year Two (r (121) = -.19 p= .05).

Considering correlations between EI reported in Year One and student academic growth from Year One to Year Two, there was evidence of a negative relationship between these two factors (r (121) = -.17 p= n.s). Students who reported higher levels of EI in

Year One, experienced lower levels of negative academic growth from Year One to Year Two.

Observing the correlation between each of the study variables as reported in Year One and student academic growth from Year Two to Year Three, on this occasion there was no evidence to support a significant correlation between PsyCap, EI and student academic growth.

The next step of the analysis involved examining the relationship between PsyCap and EI levels reported by student who returned matched questionnaire responses in Year One and Year Two, given that this is the period which students experienced the greatest levels of academic growth, the next stage was to focus on the associations between students' responses from Year Two and academic growth from Year Two to Year Three. (Table 5.5)

Table 5-5 Correlation Matrix – Independent Variables: Demographic factors, Emotional Intelligence Yr1 and Yr2, Psychological Capital Yr1 and Yr2. Depended Variable Academic Growth Yr2 to Yr3.

	Growth Yr 2 to Y3	Family Size	Gender	Age	Mothers Education	Fathers Education	PsyCap Total Yr1	PsyCap Self Efficacy Yr1	PsyCap Optimism Yr1	PsyCap Hope YR1	PsyCap Resilence Yr1	Emtional Intelengence YR1	Emotionality Yr1	SelfControl Yr1	Wellbeing Yr1	Socialbility Yr1	PsyCap Total Yr2	PsyCap Self Efficacy Yr2	PsyCap Optimism Yr2	PsyCap Hope Yr2	PsyCap Resilence Yr2	Emtional Intelengence Yr2	Emotionality Yr2	SelfControl Yr2	Wellbeing Yr2	Socialbility Yr2
Growth Yr 2 to Y3	1																									
Family Size	0.09	1																								
Gender	0.13	0.15	1																							
Age	0.38**	-0.01	0.00	1																						
Mothers Education	-0.18	-0.24	-0.06	-0.20	1																					
Fathers Education	-0.03	-0.03	0.15	-0.18	.53**	1																				
PsyCap Total Yr1	0.11	-0.06	-0.04	0.16	0.02	0.01	1																			
PsyCap Self Efficacy Yr1	0.20	0.00	-0.09	0.17	-0.11	-0.02	0.90**	1																		
PsyCap Optimism Yr1	0.20	-0.13	-0.03	0.17	0.06	0.16	.75**	0.58**	1																	
PsyCap Hope YR1	-0.06	-0.06	0.04	0.10	0.13	-0.02	.86**	0.60**	.55**	1																
PsyCap Resilence Yr1	-0.25	-0.04	-0.02	-0.12	0.15	-0.08	-0.03	-0.23	-0.04	0.10	1															
Emtional Intelengence YR1	0.24	-0.08	0.01	0.20	0.18	0.16	.67**	0.56**	.59**	.61**	-0.24	1														
Emotionality Yr1	0.13	-0.04	0.14	0.21	0.01	0.08	.56**	0.46**	.47**	.54**	-0.20	.84**	1													
SelfControl Yr1	.281*	-0.10	-0.24	0.17	0.14	0.18	.63**	0.60**	.55**	.49**	-0.25	.82**	.54**	1												
Wellbeing Yr1	0.20	-0.08	0.16	0.07	0.16	0.18	.53**	0.40**	.61**	.46**	-0.20	.84**	.64**	.61**	1											
Socialbility Yr1	0.11	-0.04	-0.18	0.10	0.19	0.01	.59**	0.50**	.37**	.61**	-0.16	.72**	.42**	.62**	.51**	1										
PsyCap Total Yr2	0.19	0.04	-0.17	0.23	-0.07	0.01	.64**	0.61**	.53**	.52**	-0.25	.58**	.47**	.57**	.40**	.53**	1									
PsyCap Self Efficacy Yr2	0.15	0.00	-0.27	0.24	-0.12	-0.06	.62**	0.62**	.47**	.47**	-0.20	.45**	.35*	.50**	0.26	.54**	.93**	1								
PsyCap Optimism Yr2	0.24	0.19	0.02	0.20	-0.12	0.15	.53**	0.46**	.52**	.45**	-.30*	.51**	.44**	.52**	.36**	.30*	.66**	.46**	1							
PsyCap Hope Yr2	0.15	-0.01	-0.06	0.12	0.06	0.03	.52**	0.45**	.42**	.47**	-0.21	.61**	.51**	.50**	.50**	.46**	.89**	.71**	.53**	1						
PsyCap Resilence Yr2	0.13	0.09	0.08	0.09	-0.01	-0.01	-0.10	-0.08	-0.06	-0.11	0.06	-0.13	-0.18	-0.12	-0.11	-0.19	0.14	0.00	0.20	0.16	1					
Emtional Intelengence Yr2	.36*	0.01	-0.09	0.14	0.14	0.09	.47**	0.42**	.48**	.38**	-.30*	.74**	.58**	.72**	.58**	.57**	.64**	.50**	.62**	.64**	-0.12	1				
Emotionality Yr2	.31*	0.05	-0.04	0.18	0.17	0.09	0.26	0.21	.29*	0.23	-0.12	.56**	.50**	.51**	.40**	.37**	.32*	0.24	.39**	.31*	-0.15	.81**	1			
SelfControl Yr2	.32*	0.01	-0.20	0.18	0.04	0.07	.51**	0.46**	.55**	.39**	-.30*	.60**	.42**	.72**	.47**	.45**	.61**	.513**	.64**	.51**	-0.09	.85**	.55**	1		
Wellbeing Yr2	0.22	0.06	0.00	0.04	0.08	0.15	.43**	0.37**	.50**	.34*	-.30*	.73**	.63**	.61**	.72**	.40**	.59**	.38**	.62**	.67**	-0.04	.85**	.61**	.68**	1	
Socialbility Yr2	.35*	0.00	-0.24	0.11	0.08	-0.09	0.24	0.28*	0.16	0.18	-.28*	.44**	0.17	.51**	0.20	.66**	.54**	.49**	.40**	.48**	0.10	.68**	.42**	.57**	.36**	1

*p<.05   **p<.01   ***p<.001

As displayed in Table 5.5, there were several significant correlations between students' questionnaire responses and student academic growth from Year Two to Year Three of their degree program, which suggests several of these factors are significant predictors of student academic growth. These correlations ranged from small, medium to large in size, according to Cohen's d.

Considering the contextual factors which influenced academic growth, students' age displayed a significant positive association with academic growth experienced between Year Two and Year Three (r (51) = .38** p <.01), highlighting that relatively older students experienced greater levels of academic growth. While approximately 73% of the (n=51) students included in this stage of the analysis were 21 years old or younger in Year Two, the remaining 23% of students age ranged from 21 years old up to 50 years old. On this occasion, there was no evidence to suggest a significant relationship between student gender and academic growth in the Study Two (r (51) = .13 p = n.s)

Considering maternal and paternal education levels, on this occasion, there was no evidence to support a significant relationship between students' mother or father's education level and their subsequent academic growth between year 2 and year 3 (r (51) = -.18 p = n.s) and (r (51) = -.08 p = n.s) respectively.

Turning attention to the psychological construct of PsyCap as reported in year 1, on this occasion there was no evidence to support a significant relationship between student PsyCap levels and their subsequent academic growth between year 2 and year 3 (r (51) = .11 p = n.s), which was also the case for each of PsyCap's sub-factors; optimism (r (51)

= .20 p = n.s), resilience (r (51) = -.25 p = n.s), hope (r (51) = -.06 p = n.s), and self-efficacy (r (51) = .20 p = n.s). Overall it would appear than on this occasion, there were not significant relationships between each of these factors as reported in Year One and student academic growth between Year Two and Year Three in Study Two.

Considering student responses to each of these factors when in Year Two, and their relationship to student academic growth between Year Two and Year Three, similarly to the relationships observed in year one there was no evidence to support a significant relationship between student PsyCap levels as reported in year two and their subsequent academic growth between Year 2 and Year Three, (r (51) = .19 p = n.s), which was also the case for each of PsyCap's sub-factors; optimism (r (51) = .24 p = n.s), resilience (r (51) = .13 p = n.s), hope (r (51) = .15 p = n.s), and self-efficacy (r (51) = .15 p = n.s). These conclusions fail to support a significant relationship between PsyCap levels as reported by students in Year Two and the academic growth they experienced from Year Two to Year Three.

Observing the relationships between student total EI as reported by students in Year One and student academic growth experienced between Year Two and Year Three, there was no evidence to support the presence of a significant relationship on this occasion (r (51) = .24 p = n.s). There was however evidence to support a positive significant relationship between the EI sub-factor of self-control in Year One (r (51) = .28* p = <.05) which demonstrates that on this occasion, students who reported higher levels of emotional self-control in Year One, experienced higher levels of academic growth. Student EI as reported in Year Two and academic growth experienced between Year Two and Year

Three, displayed a significant positive relationship with student academic growth from Year Two to Year Three (r (51) =.36* p = <.05) with those students who reported higher levels of EI in Year Two experiencing higher levels of academic growth from Year Two to Year Three. The EI factors of sociability (r (51) = .35* p = <.05), self-control (r (51) = .32* p = <.05) and emotionality (r (51) = .31* p= <.05) all shared small but positive significant relationships with student academic growth from Year Two to Year Three. As such, students who reported higher levels of these factors in their second year of HE also reported higher levels of academic growth.

5.6.5. Predicting student academic growth

Given the significant associations demonstrated above between EI and academic growth from Year Two to Year Three, to further understand the predictive ability of the study variables to predict student academic growth from Year Two to Year Three, a Hierarchical Multiple Regression analysis (HMRA) was conducted (see Table 5-6). PsyCap was excluded from this analysis as it was not found to share a significant correlation with student academic growth (Table 5.5).

Informed by the literature, the HMRA model consisted of three stages. Stage one (model one) of the analysis included the contextual factor of age. Stage included the addition of total EI as reported in Year Two. The result of this analysis is displayed in Table 5.6.

The variable of age included in model one of the analysis was able to account for 14% of the final model's total variance, which was also significant. Model two, inclusive of the variable of EI as reported in Year Two was able to account for an additional 10% of the total model's variance. Overall the model was able to account for 24% of the total variance of academic growth from Year Two to Year Three. Student age (β.33) and EI levels (β.31) reported in Year Two were both significant predictors of student academic growth from Year Two to Year Three with student age emerging as the significant predictor.

Table 5-6 Regression analysis of the predictors of academic growth, dependent variable academic growth from Year Two to Year Three

Variable	Model 1			Model 2		
	B	SE B	β	B	SE B	β
Age	.298	.105	.376**	.263	.101	.332*
Emotional Intelligence Year Two				.073	.030	.310*
ΔR^2			14.			24.

5.6.5.1. Step Two: Exploring Psychological growth in Psychological Capital and Emotional intelligence from Year One to Year Two

Similar to Study One, the next stage of the analysis was to examine if students experienced psychological growth, considered growth from Year One to Year Two. It was hoped that evidence of psychological growth in EI would offer additional support for the role of EI in the prediction and development of student academic growth.

Psychological growth was measured by deducting Year One values from Year Two values. As shown in Table 5.7.

Total EI displayed development from year one to year two (Year One: M=143.2, SD=22.31) (Year Two: M=144.25, SD= 22.48), however this development was small and as such not significant on this occasion. Indeed, the EI factors of Self-Control two (Year One: M=25.57 SD=5.40) (Year Two: M=25.55, SD= 5.71) and Well-being two (Year One: M=31.01, SD: 5.04) (Year Two: M=31.01, SD= 6.53) experienced a decline from year one to year two. The change of these psychological factors from year one to year two, suggests a tendency for these capacities to develop and change at least moderately during HE participation.

Despite PsyCap not demonstrating a significant relationship with academic growth (as displayed in Table 5.5), psychological growth in PsyCap was examined in order further understand how this construct may develop during students' participation in HE. Total PsyCap displayed a significant increase from Year One to Year Two (Year One: M=46.67, SD=12.89) (Year Two: M=53.12, SD=13.94) t (50) = -4.10, = 0.005. Significant increases were also demonstrated in hope in Year One and year Two (Year One: M=16.73, SD=5.42) (Year Two: M=20.15, SD=5.25) t (50) = -4.45, = 0.005 and resilience (Year One: M=1.74, SD=.74) (Year Two: M=2.33, SD=.61) t (50) = -4.46, = 0.005.

Table 5-7 T-test analysis of Psychological growth of EI and PsyCap from Year One to Year Two (N=51)

Variable	Year One		Year Two		t-test	95% CI for Mean Difference		df
	Mean	SD	Mean	SD		Lower	Upper	
Emotional Intelligence Total	143.23	22.31	144.25	22.48	-.45	-5.54	3.50	50
Emotionality	39.66	6.90	39.91	7.01	-.26	-2.20	1.69	50
Self-control	25.57	5.40	25.55	5.71	.03	-1.15	1.19	50
Well-being	31.01	5.04	30.73	6.53	.43	-1.07	1.66	50
Sociability	27.67	5.47	28.23	4.61	-.97	-1.75	.61	50
Psychological Capital Total	46.67	12.89	53.12	13.94	-4.10***	-9.64	-3.26	50
Hope	16.73	5.42	20.15	5.25	-4.45***	-4.98	-1.89	50
Self-efficacy	22.71	6.86	24.51	7.59	-1.97	-3.64	.03	50
Optimism	5.49	2.79	6.12	2.71	-1.67	-1.40	.13	50
Resilience	1.74	.74	2.33	.61	-4.46***	-.85	-.32	50

*p<.05 **p<.01 ***p<.001

5.7. Step three: Examining the relationships between Psychological Capital, Emotional Intelligence and student GPA in year three.

Year One Questionnaire responses and GPA in Year Three

To address the third aim of Study Three which was to examine the relationship between student PsyCap, EI and GPA recorded in year three, the analysis was approached in two stages. Stage One involved examining the relationships between PsyCap, EI and third year GPA according to the total number of questionnaires returned in Year One.

To reiterate, in Year One there were 121 questionnaires returned in Year One with corresponding Year Three GPA scores obtained from academic records. These students

were 18% (n=22) male and 82% (n=99) female, ranging in age from 18 to 52 years old (Mean= 22.19, SD = 5.86). Participants average family size consisted of the student, one sibling and two parents (Mean= 4.54 SD = 1.35) and was well distributed, with a number of students (n=28) reporting that they were an only child, and (n=21) students reported as having 3 siblings or more. With this in mind the following analysis examines the relationship between the Year One questionnaire responses and the GPA's in Year three of this group of 121 students.

Considering students responses to the psychometric measures, the means, standard deviations and ranges for each of the studies measures are presented in Table 5.8. As can be seen, student PsyCap levels (mean: 50.12, SD:15.19) which consist of: Optimism (mean: 5.91, SD:2.95); Hope (mean: 17.81, SD:6.74); Self-efficacy (mean: 24.62, SD:7.60) and Resilience (mean: 1.74, SD: .75).

Student EI (mean: 143.18, SD:20.08) which consisted of the sub-facets of Emotionality (mean: 39.31, SD:6.71) Self-control (mean: 25.69, SD:4.97); Well-being (mean: 31.37, SD:5.63) and Sociability (mean: 27.99, SD:4.91).

Table 5-8 Mean and Standard Deviations for study variables returned in Year One (n=121)

Variable	Mean	SD	Range	N
Psychological Capital Total Year 1	50.12	15.19	22-88	121
Optimism	5.91	2.95	3-12	121
Hope	17.81	6.74	8-32	121
Self–efficacy	24.62	7.60	10-40	121
Resilience	1.74	.75	1-4	121
Emotional Intelligence Total Year 1	143.18	20.08	30-210	121
Emotionality	39.36	6.89	7-49	121
Self-Control	25.69	4.97	7-49	121
Well-being	31.37	5.63	7-49	121
Sociability	27.99	4.91	7-49	121

5.8. Relationship between student questionnaire responses in year one and academic GPA in Year Three

Observing the relationships between student responses to the questionnaire measured in year one and student GPA in third year, on this occasion the only variable which displayed a significant relationship with third year GPA was the EI facet of Emotionality which demonstrated a significant relationship with student GPA in year one and year three ($r (121) = .19$ $p <.05$) (see Table 5.9). In order words, students who reported being more able to perceive and express emotions and use to use this insight to develop and sustain close emotions were more likely to report a higher GPA in their third year.

Examining the relationship between the constructs of PsyCap and EI, EI and PsyCap were demonstrated to share a positive relationship, with students who reported higher levels of EI also more inclined to report higher levels of PsyCap and vice versa (Table 5.9).

Correlational analysis revealed that this relationship was significant (r (121) = .47 p <.001). Considering each of EI and PsyCap sub-scales, PsyCap' s optimism and EI's well-being demonstrated the largest, positive, significant relationship (r (121) = .58 p <.001). Students who reported higher levels of optimism were also more likely to report greater levels of EI well-being in their first year. Further evidence also supports the presence of a significant relationship between the PsyCap facet of optimism and EI's self-control (r (121) = .43 p <.001. Students who reported higher levels of optimism were also more inclined to report higher levels of emotional self-control. PsyCap's self-efficacy also demonstrated a significant relationship with EI's self-control, (r (121) = .48 p <.001), with students who reported higher levels of emotional self-control also reporting higher levels of self-efficacy.

Table 5-9 Correlation matrix- Relationships between Student PsyCap and EI in Year One and Student GPA in Year Three

	GPA Yr3	Family Size	Gender	Age	Mothers Education	Fathers Education	PsyCap Total Yr1	PsyCap Self Efficacy Yr1	PsyCap Optimism Yr1	PsyCap Hope YR1	PsyCap Resilence Yr1	Emtional Intelengence YR1	Emotionality Yr1	SelfControl Yr1	Wellbeing Yr1	Sociability Yr1
GPA Yr3	1.00															
Family Size	-0.06	1.00														
Gender	0.06	0.11	1.00													
Age	0.05	-0.07	-0.11	1.00												
Mothers Education	0.01	-0.01	-0.05	-0.18	1.00											
Fathers Education	-0.11	-0.07	-0.02	-0.14	.61**	1.00										
PsyCap Total Yr1	-0.09	-0.02	0.11	0.13	-0.15	-.21*	1.00									
PsyCap Self Efficacy Yr1	-0.09	-0.03	0.05	0.15	-0.16	-0.15	.92**	1.00								
PsyCap Optimism Yr1	-0.08	-0.02	0.15	0.05	-0.09	-0.05	.72**	.56**	1.00							
PsyCap Hope YR1	-0.07	-0.03	0.12	0.13	-0.13	-.27**	.92**	.73**	.56**	1.00						
PsyCap Resilence Yr1	-0.04	0.17	0.00	-0.12	0.08	-0.12	.24**	0.05	0.18	.30**	1.00					
Emtional Intelengence YR1	0.11	-0.13	0.12	0.17	-0.12	-0.08	.47**	.42**	.52**	.39**	-0.17	1.00				
Emotionality Yr1	.20*	-0.08	0.10	0.18	-0.09	-0.05	.29**	.24**	.30**	.28**	-0.12	.77**	1.00			
SelfControl Yr1	0.01	-0.06	-0.04	0.15	-0.09	-0.03	.47**	.48**	.49**	.34**	-0.18	.78**	.38**	1.00		
Wellbeing Yr1	-0.02	-0.12	0.16	0.06	-0.12	-0.06	.43**	.34**	.58**	.36**	-0.08	.82**	.50**	.59**	1.00	
Socialbility Yr1	0.01	-0.09	0.00	0.02	-0.06	-0.11	.29**	.29**	.28**	.23*	-0.17	.69**	.38**	.49**	.46**	1.00

*p<.05   **p<.01

5.9. Step three: Examining the relationships between Psychological Capital, Emotional Intelligence and student GPA in year Three- Part Two

Stage two of the analysis involved exploring the relationships between student EI and PsyCap as reported in Year Two and student GPA recorded in Year Three. To reiterate in Year Two, questionnaires were returned by a total of 74 participants who returned questionnaires in Year Two and who had GPA scores recorded for their third year. These participants were 18% (n=13) male and 82% (n=61) female, ranging in age from 19 to 50 years old (Mean= 23.49, SD = 7.95).

Considering students responses to the psychometric measures, the means, standard deviations and ranges for each of the independent variables are presented in Table 5.11. As can be seen student PsyCap levels (mean: 51.09, SD:13.65) which consist of: Optimism (mean: 5.88, SD:2.50); Hope (mean: 19.49, SD:5.16); Self-efficacy (mean: 23.45, SD:7.54) and Resilience (mean: 2.29, SD: .58).

Student EI (mean: 142.33, SD:21.81) which consisted of the sub-scales of Emotionality (mean: 39.67, SD:6.96) Self-control (mean: 25.05, SD:5.52); Well-being (mean: 30.41, SD:6.54) and Sociability (mean: 27.73, SD:4.46).

Table 5-10 Mean and Standard Deviations for study variables returned in Year Two (n=74)

Variable	Mean	SD	*N*
Year One Responses (n=79)			
Psychological Capital Total Year 2	51.09	13.65	74
Optimism	5.88	2.50	74
Hope	19.49	5.16	74
Self–efficacy	23.45	7.54	74
Resilience	2.29	.58	74
Emotional Intelligence Total Year 2	142.33	21.81	74
Emotionality	39.67	6.96	74
Self-Control	25.05	5.52	74
Well-being	30.41	6.54	74
Sociability	27.73	4.46	74

5.9.1. Relationship between student questionnaire responses in Year Two and academic GPA in Year Three

Observing the relationships between student responses to the questionnaire measures in Year Two and student GPA in third year, on this occasion there was no evidence to support the presence of a significant relationship between PsyCap (r (74) = -.06 p= n.s) and EI (r (74) = .53 p= n.s). reported in Year Two and third year GPA.

Nonetheless, despite not being an aim of Study Two, of potential interest to future research in the field, in a pattern similar to responses in Year One, Student EI and PsyCap reported in Year Two were demonstrated to share a positive relationship,

students who reported higher levels of EI also more inclined to report higher levels of PsyCap. Correlational analysis revealed that this relationship was significant (r (74) = .63 p <.001). Considering each of these higher factors sub-scales, PsyCap' s hope and EI's well-being demonstrated a large, positive, significant relationship (r (74) = .63 p <.001). Students who reported higher levels of optimism were also more likely to report greater levels of EI wellbeing in Year Two. PsyCap's optimism demonstrated a significant relationship with EI's well-being (r (74) = .61 p <.001), with students who reported higher levels of optimism also reporting higher levels of self-control. The PsyCap facet of self-efficacy and EI's sociability (r (79) = .50 p <.001) was also demonstrated to share a significant relationship. Students who reported higher levels of confidence in their own abilities were also more inclined to reported higher levels of emotional self-control.

Table 5-11 Correlation matrix- Relationships between Student PsyCap and EI in Year Two and Student GPA in Year Three

	GPA in Year 3	Family Size	Gender	Mothers Education	Fathers Education	Age	PsyCap Total Yr2	PsyCap Self Efficacy Yr2	PsyCap Optimism Yr2	PsyCap Hope Yr2	PsyCap Resilence Yr2	Emtional Intelengence Yr	Emotionality Yr2	SelfControl Yr2	Wellbeing Yr2	Socialbility Yr2
GPA in Year 3	1															
Family Size	0.10	1														
Gender	-0.01	0.20	1													
Mothers Education	-0.07	-0.21	-0.03	1												
Fathers Education	0.03	-0.03	0.08	.51**	1											
Age	-0.01	0.04	0.04	-0.20	-0.18	1										
PsyCap Total Yr2	-0.06	0.05	-0.13	-0.05	0.03	0.20	1									
PsyCap Self Efficacy Yr2	-0.05	0.03	-0.20	-0.09	-0.01	0.20	.94**	1								
PsyCap Optimism Yr2	0.10	0.13	-0.05	-0.09	0.17	.23*	.70**	.53**	1							
PsyCap Hope Yr2	-0.14	0.02	-0.01	0.06	0.01	0.13	.90**	.75**	.56**	1						
PsyCap Resilence Yr2	0.00	0.05	-0.03	-0.04	-0.05	0.04	0.17	0.07	0.22	0.14	1					
Emtional Intelengence Yr2	0.07	0.00	0.03	0.09	0.03	0.17	.63**	.51**	.60**	.64**	-0.06	1				
Emotionality Yr2	0.22	0.03	0.11	0.11	-0.02	0.20	.32**	.24*	.36**	.32**	-0.07	.81**	1			
SelfControl Yr2	0.03	0.01	-0.10	0.04	0.07	0.21	.62**	.53**	.63**	.54**	-0.05	.86**	.57**	1		
Wellbeing Yr2	-0.08	0.01	0.07	0.07	0.10	0.08	.58**	.41**	.61**	.63**	0.01	.84**	.57**	.69**	1	
Socialbility Yr2	0.06	-0.01	-0.19	0.01	-0.09	0.12	.54**	.50**	.41**	.48**	0.16	.68**	.41**	.50**	.41**	1

*p<.05   **p<.01

5.10. Discussion

Results emerging from Study One emphasised the significance psychological growth (considered growth in student motivation, problem-solving and optimism from Year One to Year Two) had in the prediction of academic growth. The purpose of the Study Two was to identify state-like factors that could provide the foundations for future interventions designed to enhance the development of academic growth. More specifically, Study Two sought to examine the associations between the psychological resources of PsyCap, EI and student academic growth. A second aim was to examine psychological growth, considered the natural development of student EI and PsyCap from students First to Second year, to explore if these factors developed from Year One to Year Two. A third aim was to examine the relationships between EI, PsyCap and student GPA in Third year to investigate how these factors serve to predict student GPA across time.

Overall, Study Two results suggest that EI is an important predictor of student academic growth experienced from Year Two to Year Three in HE. Overall student EI levels as reported in Year Two, inclusive of student age was able to explain 24% of the variance in student academic growth. As such these findings highlight the potential usefulness of EI predict student academic growth. These findings are consistent with previous research which has revealed EI as a significant predictor of GPA in students attending HE in addition to a host of adaptive pro-educational behaviours and attitudes namely, student retention, well-being, adjustment and engagement (Parker, Hogan & Summerfeldt, 2004; Parker, Hogan, Eastabrook, Oke, & Wood, 2006; Perera et al., 2013; Perera, & Di Giacomo, 2015; Datu, & Valdez, 2016).

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Adding to what we know about PsyCap's influence on student achievement, the current study lacked evidence to support a significant relationship between student PsyCap as reported in Year One and Year Two and student academic growth. This evidence which could be considered inconsistent with literature supporting the usefulness of PsyCap in the prediction student GPA (Luthans, 2007). Potential explanations for this finding are discussed in the sections which follows.

Step Two of the studies analyses examined psychological growth in the factors of EI and PsyCap, revealed that while student EI demonstrated development from Year One to Year Two, this level of growth was considered non-significant in the current study. This finding could suggest that while EI may develop over the course of students first and second years in HE, meaningful development may require assistance in the form of an EI training intervention. Given the importance of EI in the prediction of academic growth, the current investigations over all discussion session outlines in detail training sessions designed to develop EI.

Total PsyCap also demonstrated a significant increase from Year One to Year Two, with the sub-factors of hope and reliance displaying significant increases. Previous research has demonstrated that PsyCap as a construct is open to development (Luthans, Avey, Avolio, Norman & Combs, 2006; Luthans, Avey & Patera, 2008; Luthans, Avey, Avolio & Peterson, 2010; Li, Ma, Guo, Xu, Yu & Zhou, 2014; Barry, Woods, Martin, Sterling & Warnecke, 2016). While PsyCap was not demonstrated to be a significant predictor of academic growth, the relationship it shared with EI suggests that it may play an important role in the development of EI, however further research is required to examine the nature

of this relationship. Further, given PsyCap's relationship with intrinsic motivation Sui, Bakker & Jiang, 2014) demonstrated in Study One to be a significant predictor of Intrinsic motivation, the current investigations overall discussion section outlines in detail a training framework for the development of PsyCap which could over an additional potential means of developing student motivation.

Addressing a limitation prevalent through the research reviewed, whereby research has predominately exampled the relationships between EI, PsyCap and student performance over the period of several months, Step Three of the studies analyses examined the associations between PsyCap and EI as reported in Year One and student GPA in year Three. Results suggest there was no evidence to offer support for a significant relationship between EI, PsyCap and final year GPA in the current study.

The following sections discuss in detail findings emerging from Study Two, how they relate to findings within the current literature, how they progress what we currently understand and their consequences to those interested in developing student academic growth.

5.10.1. The relationship between Emotional Intelligence and Academic growth

This study represents the first example of research the researcher is aware of which examined the relationship between EI and academic growth in students attending HE.

Conclusions provide evidence of a significant positive association between EI levels reported in Second Year and academic growth experienced between Year Two and Year Three. As such, higher levels of EI were associated with higher levels of academic growth, with regression analysis demonstrating a model containing student EI was able to predict a significant level of variance of student academic growth.

5.10.2. Emotional Intelligence Factors of Influence

Whilst this study is the first study of its kind, findings relate in many ways to conclusions prevalent throughout the literature which can further develop our understanding of the relationship. The significant relationship demonstrated between EI and student academic growth is consistent with a previous meta-analysis conducted by Perera et al. (2013) which emphasised the importance of student EI in the development of student GPA and is consist with evidence supporting the importance of EI in an HE context (Lam, & Kirby, 2002; Petrides & Furnham, 2003; Parker, Summerfeldt, Hogan, & Majeski, 2004; Fineman, 2004; Zeidner, Roberts, & Matthews, 2004; Salovey & Grewal, 2005; Luthans, Avey, & Patera, 2008).

Contemporary concepts have begun to recognise the value of emotion and its contribution to behaviour and functioning across multiple contexts in the form of EI. EI theory posits that EI is the ability to perceive, integrate, understand and manage one's emotions (Petrides & Furnham, 2003). EI research has split off into two distinct perspectives, that of trait EI and ability EI. Trait EI is understood to be the constellation of behavioural and self-perceptions concerning an individual's ability to recognise, process and make use of

emotion-laden information (Petrides et al., 2004). Due to the relatively straight forward nature of measurement (with several measures available) trait EI has become the EI approach most frequently used in educational research (Petrides et al., 2004). EI theory suggests that those individuals with higher levels of EI are able to distinguish internal and external emotional information which offers them an adaptive advantage across everyday situations, by using this information to guide their thoughts and behaviour across interpersonal and intrapersonal situations (Salovey & Mayer, 1990; Abe, 2011). Each of EI's four sub facets measured in the current study in Year Two excluding well-being displayed a significant relationship with academic growth. As such these relationships highlight the importance of emotionality, sociability, self-control factors had upon student academic growth.

Given the significance of the relationship between the EI facet of self-control and academic growth in the current study, it would suggest that students perceptions of their ability to regulate emotion, manage stress and remain low on impulsivity play an import role in the development of academic growth. Previously, Perera et al., (2013) has proposed that the relationship between higher levels of EI and academic performance may be mediated by EI's influence on self-regulation and goal directed behaviour, with those students reporting higher levels of EI perhaps less inclined to display reckless behaviour and be tempted by short term gratification. The importance of the EI sub-factor of stress management has previously been demonstrated in relation in to HE student GPA (Parker, Hogan & Summerfeldt, 2004). The significance self-control had in predicting academic performance, suggests that the adaptive behaviours of being able to regulate stress and resist acting upon impulse over an extended period could provide students an additional advantage when seeking to develop academic growth. EI's ability to equip students with

the skills to better manage, resolve and overcome psychological stressors while allowing them a greater opportunity to engage at a deeper level with their academic study are behaviours which are likely to have a positive effect upon their levels of academic growth.

The sociability aspect of EI also demonstrated a significant association with academic growth. Sociability refers to a students' perception of being able to manage emotion in others, possess social awareness and to be assertive. The findings here are supported by recent conclusions offered by Thomas et al., (2017) who reported that students with higher levels of EI were more inclined to use social based coping when presented with a task or obstacle and as such, were less likely to rely upon maladaptive styles such as avoidance. Further, Perera (2015) provides evidence that EI's relationship with academic performance is mediated through its relationship with social support and better adjustment in HE, students with higher EI levels more likely to benefit from a greater number of supportive social networks which enable better adjustment to life in HE. Given the importance of group activities and collaborative learning in HE, higher levels of EI should in theory should support socially desirable behaviours namely greater levels of emotional expression and deeper interaction with peers, offering students a significant social advantage during their HE participation (Perera & DiGiacomo, 2015; Mayer & Salovey, 1993; Parker, Hogan, Eastabrook, Oke & Wood, 2006).

The EI factor of emotionality was also found to display a significant relationship with academic growth. Emotionality is said to reflect a student perception of emotional management, assertiveness and social awareness (Petrides, 2009). The importance of understanding one's feelings, has previously been demonstrated to be a significant

predictor of academic performance by (Parker et al., 2004), as such a better understanding of one's emotional state may offer students an additional advantage in the development of academic growth.

5.10.3. Student demographic factors and academic growth

As students typically experienced greater levels of academic growth between years two and three, and this level of academic growth shared the stronger correlation with students' final grades in third year, analysis of the relationship between the reported demographic factors, PsyCap and EI levels in year one and two were examined against academic growth at this period. As such, student demographic profiles which consisted of students' family size, mother and father's levels education, and age were examined in the context of academic growth, with student age on this occasion demonstrating the only significant association with academic growth. As such, the older the student the higher the correlation with academic growth. Students participating in HE have traditionally been of a similar age within cohorts. Given the introduction of widening access, the numbers of post 18-year-old students entering HE has increased but continue to be under-represented (BIS, 2016), as a result research examining the influence student age has upon academic outcomes continues to develop. Nonetheless, previous research examples suggest that older students are expected to adapt to university life more quickly than their younger peers, which is said to represent the importance of maturity and the behaviours which often accompany it, play a role in helping students adapt and better manage novel situations (Clifton, Perry, Roberts, & Peter, 2008). As such the findings of the current study complement those which have previously highlighted a link between student age

and GPA in HE (Etcheverry, Clifton, & Roberts, 2001; Clifton et al., 2008). The current study adds to the literature demonstrating a significant link and suggests that mature/ non-traditional aged students could be at an advantage when it comes to predicting academic growth.

5.10.4. The relationship between Psychological Capital and Academic growth

PsyCap is one of the most prominent theories to emerge from the first wave of positive psychology research which aimed to redress a systematic bias in the psychology literature (Seligman, & Csikszentmihalyi, 2000). Up until the early 2000's, psychology as a discipline had been predominantly focused on rectifying an individual's weaknesses and dysfunction, rather than understanding and supporting the factors, strengths and virtues that encourage optimum functioning (Luthans et al., 2007). As such Luthans et al. proposed PsyCap, a higher order construct composed of the four psychological resources of, hope, optimism, resilience and self-efficacy, which embody an individual's positive psychological state of development (Luthans et al., 2007, p.3). PsyCap is characterised by: a) having the confidence (Self-efficacy) to put in the necessary effort to succeed in challenging tasks; b) make and hold positive attributions now and in the future (Optimism); c) persevere towards goals and redirect paths to goals in order to experience success (hope); and c) when facing problems and adversity, bouncing back and even beyond to experience success (resilience). Given these qualities, PsyCap has been described and reflecting a developmental state of an individual becoming their "best self" (Luthans, Youssef et al., 2007, p.20).

To date, there is growing evidence to suggest that PsyCap is an important factor to the development of HE student GPA (Luthans, Luthans, & Jensen, 2012; Ortega-Maldonado, & Salanova, 2017) and pro-educational behaviours and attitudes namely, positive coping strategies, student satisfaction, engagement and academic adjustment (Siu, Bakker & Jiang, 2014; Datu, & Valdez, 2016; Ortega-Maldonado, & Salanova, 2017 Liran, & Miller, 2017). One prevalent feature within the research literature which has examined the association between PsyCap and academic outcomes is a reliance on exploring PsyCap's ability to predict static measures of achievement and educational outcomes, with little consideration given to the association PsyCap may have upon growth factors. This could be considered a disappointment given the emphasis PsyCap places on supporting the enhancement of personal attributes and the development of performance in the future (Luthans, Youssef et al., 2007). As such, this study represents the first example of research which has examined the influence PsyCap has upon the development of student academic growth. Nonetheless, there was no evidence to support a significant correlation between PsyCap reported in Year One or Year Two and student academic growth in the current study. It should be noted however that the findings of the current study are at odds with several previous studies which have examined the association between PsyCap and student academic performance (Vanno, Kaemkate, Wongwanich, 20014; Luthans, Luthans, & Jensen, 2012; Li, Ma Guo, Xu, Yu & Zhou, 2014; Liran & Miller, 2017) suggesting that further research may be necessary to explore the influence if any PsyCap has upon student academic growth.

Luthans et al (2012) assert that students who report higher levels of PsyCap could employ higher levels of hope, optimism, self-efficacy and resilience to their advantage across multiple situations for example settling into a new environment academic engagement,

overcoming obstacles and making friends, while Datu & Valdez (2016) emphases the role PsyCap has in the prediction of flourishing (satisfaction with one's life and purpose (Diener et al., 2010)) and positive effect. Previous research has also confirmed significant associations between PsyCap and; academic satisfaction, positive coping strategies, intrinsic motivation and student engagement (Avey, Reichard, Luthans, & Mhatre, 2011; Luthans, Luthans, & Jensen, 2012; Ortega-Maldonado, & Salanova, 2017; Luthans, 2007).

While there was no evidence to support a significant relationship between PsyCap and academic growth in the current study, this could in part be attributed to the limited sample size used to draw conclusions, with smaller sample sizes more prone to type II errors (Fan 2001). Typically, research examining the association between PsyCap, student GPA and a host of pro-educational behaviours has made use of groups of students >300 in size. Considering these examples, correlations have been in the range of r. 23 and r. 30 which would generally be considered small in size (Cohen, 1989). Given the positive association between optimism and academic growth in Study One, it is possible that further research making use of a greater sample size may confirm a significant correlation between PsyCap and academic growth.

5.10.5. Psychological growth in Emotional Intelligence and Psychological Capital

As discussed in Study One, psycho-educational research has predominately focused on associations between contextual/psychological factors and measures of achievement

measured and assessed at a single point in time. As EI has been demonstrated to predict the development of student academic growth and as such may offer educators and researchers an additional means of developing academic growth, the next steps in this process will involve designing and testing interventions training both of these skills in students. As such, this stage of analysis examined the psychological development of EI from first year to second year in the hope of offering insight into the natural development of the resource from Year One to Year Two. The mean scores for students' responses to the studies questionnaire (Table 5.6) highlighted that EI displayed development from year one to year two.

Total EI scores from Year One to Year Two demonstrated development, however this development did not reach significance in the current study. The individual EI factors of emotionality and sociability displayed non-significant growth from year one to year two, while the factors of well-being and self-control declined. Given the importance of these factors in relation to academic growth, their decline in year two is of particular concern.

Evidence determining EI's tendency to be state-like rather than trait-like is apparent in the growing intervention literature base which has revealed the constructs affinity to be open to development through the use of short, focused, class-room based training interventions (Zins, Weissberg, Wang & Walberg, 2004; Mathew, Zeidner & Roberts, 2007; Nelis et la., 2009). Despite this increased research attention, many of these EI training programs have not been based on an established theoretical EI model, and even fewer have undergone robust testing (Mathews et al., 2002; Mathews, Zeidner, & Roberts, 2007). Recognising this, more recent EI training programs have developed their

training programs based on a theoretical framework and have begun to employ the use of a control group (Nelis et al., 2009). Findings from these more recent research efforts have shown that EI can be successfully developed and enhanced after participation in four training sessions of two and a half hours offered over a period of one month (Neils et al., 2009). Further analysis has revealed that these positive changes remain significant six months after the training program has been delivered (Neils et al., 2009).

Given the current findings, EI offers a promising avenue for those interested in enhancing and encouraging academic growth. Perhaps the next step for those interested in developing student academic growth would be the design and application of intervention programs tailored to target growth in students attending EI.

Student PsyCap levels were demonstrated to develop significantly from Year One to Year Two. There is a developing body of literature which supports the idea that PsyCap embodies a state like (malleable) construct which is open to development rather than fixed across time (Luthans et al., 2007; Luthans, Avey, Avolio & Peterson, 2010). Indeed, in more recent years there has been growing interest in developing PsyCap as a means of increasing student well-being and academic performance (Li, Ma, Guo, Xu, Yu & Zhou 2014; Barry, Woods, Martin, Sterling & Warnecke, 2016). Typically, PsyCap development sessions have taken the form of online or face-to-face training session lasting from 2-3 hours in length (Luthans & Youssef, 2007). During these sessions, each of the four key constructs contained within PsyCap are developed by explaining the underlying theory, importance and relevance of each construct and how they can be used to one's advantage also everyday life (Luthans et al 2007). In the current study, PsyCap

factors of hope and resilience demonstrated significance psychology growth from Year One to Year Two.

Previously hope has demonstrated a capacity to develop in students attending primary level education as well as in HE (Lopez, Floyd, Ulven, & Snyder, 2000). Central to the development of hope is helping students identify clear and attainable goals, develop multiple strategies in order to reach their goals and help them remain motivated long enough to realise their goals (Snyder, 2000). Given the development of hope in the current study, it is not unreasonable to suggest that participation in HE involves students' continual identification of goals (i.e. identifying topics which could be included on examinations and setting a clear revision schedule), use of multiple pathways to reach their goal (for example, group study sessions or the use of flash cards) and small rewards (i.e. a good grade in a piece of coursework or recognition in class) in order to remain motivated. Nonetheless, despite training interventions successfully demonstrating hopes openness to development, (Lopez, Floyd, Ulven, & Snyder, 2000) to reiterate a previously described limitation, as research examining hope influence on student academic achievement has predominantly relied on the measurement of hope at a single point in time, what we know about its natural development in students attending HE is as yet limited.

The PsyCap factor of resilience also demonstrated significant development from Year One to Year Two. Research exploring resiliency in the context of HE is minimal and to date could be argued as having mostly overlooking resilience in favour of behaviours

considered to demonstrate resiliency i.e. retention, adjustment and academic achievement (Parker et al., 2004; Martin & Marsh, 2006; Tinto, 2010 Liran & Miler, 2017).

5.11. The relationships between Psychological Capital, Emotional Intelligence and student GPA in year three.

In response to research limitations this current study also explored the associations between student EI and PsyCap levels and student GPA in year three to examine their role in predicting GPA across the three-year degree period. As described in the corresponding literature review, research has examined the association between these factors over a short period of time, most typically over months rather than years. This has limited the insight we have of how each of these factors predict achievement across time (Petrides et al., 2004; Luthans et al., 2012; Perera et al., 2013; Luthans et al., 2014; Ortega-Maldonado et al., 2018). With this in mind, Study Two sought to examine the role EI and PsyCap reported in Year One and Year Two had in the prediction of student GPA in Year Three.

As described, EI and PsyCap have been demonstrated to share a significant relationship with student GPA (Petrides et al., 2004; Luthans et al., 2012; Perera et al., 2013; Luthans et al., 2014; Ortega-Maldonado et al., 2018). EI and PsyCap have both been linked to adaptive pro-education behaviours namely; academic adjustment, engagement, motivation and the transition to HE (Parker et al., 2004; Siu et al., 2014; Liran & Miller, 2017). Conversely, in the current study there was no evidence to support a significant relationship between student PsyCap reported in Year One or Year Two and student GPA

in Year Three. There are a number of explanations which could have contributed to this outcome.

Previous studies which have examined the relationship between PsyCap and student GPA have utilised considerably larger sample sizes than that of the current study. For example, a research study conducted by Ortega-Maldonado et al. (2018) exploring the relationship between student PsyCap and student GPA had a total of 682 participants, and while they found evidence to support a significant relationship between PsyCap and GPA, the relationship was considered modest in size (β.15). In addition, Ortega-Maldonado et al. (2018) found that while PsyCap shared a significant relationship with student GPA, the relationship it shared with levels of student satisfaction and coping were much larger in size, however even when PsyCap, coping and student satisfaction were combined, they were still only able to explain 5% of the total variance in student GPA.

While research included in the literature review accompanying the current study reported a significant relationship between student PsyCap and GPA, on reflection the magnitude of the relationships reported have been modest, as too has been the constructs ability to predict student achievement. This could reflect the vast social, economic, pedagogical and psychological factors which converge to influence academic performance (Robbin et al., 2004: Richardson et al 2012: Ortega-Maldonado et al., 2018).

5.12.   Relationship between EI and Academic Achievement in Year Three

EI encapsulates the ability to recognise, understand and discriminate emotional information in one's self and others and to use this information to inform behaviour (Mayer & Salovey, 1997). There is evidence that higher levels of EI have been associated with higher GPA's in those attending HE (Perera et al., 2013) and helping to smooth the transition for students progressing from secondary education into HE (Perera & DiGiacomo, 2015). Study Two has also provided evidence of the importance EI has in the prediction of student academic growth. Nonetheless, in a similar trend to that offered by PsyCap, student EI (as reported in Year One and Year Two) was unable to significantly predict student GPA in Year Three. The factors behind this finding could be two-fold; similar to research examining PsyCap's relationship with student GPA, research exploring EI and student performance has typically employed a much larger simple size than was sampled in the current study.

A recent meta-analysis into the relationship between EI and academic performance conducted by Perera and DiGiacomo (2013) revealed that while EI and academic performance shared a significant positive association, the relationship was modest-to-moderate in size, and was influenced by age and education level. Drawn on 48 independent studies with a combined sample of 10,292, Perera and DiGiacomo (2013) concluded the relationship between EI and academic performance was moderated by education level, the relationship between academic performance and EI weaker in students attending HE than in primary level education. Of particular interest to the current study, despite the aforementioned research demonstrating a significant relationship between EI and academic performance, given that EI represents an affective construct,

theorists posit that the construct should not share a direct link to academic performance (Mavroveli, Petrides, Shove, & Whitehead, 2008: Mavroveli & Sanchez –Ruiz, 2011). It is theorised that the link between EI and academic performance is as a result of its mediator effect with other constructs namely; the 'w' factor, self-control, emotional regulation and increasing collaboration in educational settings (Perera et al., 2013)

The 'W' factor first described by Webb (1915) represents a willingness to perform or achieve, which could be more closely described aligned to motivation rather than levels of skill or competence. In the current study student EI levels in both Year One and Year Two shared a significant relationship with optimism which is considered to contain a motivational element (Forgeard & Seligman, 2012).

The EI factor of self-control also displayed a significant relationship with student hope and optimism with students reporting higher levels of emotional self-control also reporting higher levels of hope and optimism. This relationship supports previous research which has demonstrated that students who report lower levels of EI were also more inclined to report higher levels of anxiety, which increases a students' tendency to focus on their affective state under stressful conditions (Petrides, Chamorro-Premuzic, Frederickson & Furnham, 2005).

In all, while a significant relationship between EI and academic performance was not evidenced in the current study, evidence of its relationship with academic growth suggests that EI could play a more significant role in the development of academic achievement.

One unexpected finding to emerge from Study Two is the presence of a significant relationship between student PsyCap and EI in both Year One and Year Two. There has

been limited research exploring the relationship between PsyCap and EI, and examples which have often employ varying measures of EI. Acknowledging this limitation, these studies support a significant correlation between the two constructs, however the mechanisms behind this relationship have as yet been poorly explained (Mellao & Monico, 2013; Mónico, Mellão, Nobre-Lima, Parreira, Carvalho, 2016; Saeed, Khan, Qadir & Khattak, 2017). Nonetheless, it is possible that students who report higher levels of PsyCap may use these capacities to develop their overall EI levels.

5.12.1. Limitations

It must be noted that this study was subject to limitations. One such example was the size of the final sample size. While the size of the final sample may have an influenced on the generality of its findings, they do however offer insight in to the potential patterns and trends underlying the study constructs and student academic growth attending HE in the UK. Further, reflecting a limitation often found in studies employing a longitudinal questionnaire design, to ensure the current studies questionnaire tool was not excessively long, it was inevitable that a number of variables and qualities which may be linked to academic growth namely; academic adjustment, sense of belonging, time spent studying, ethnicity, mental health and anxiety levels were excluded. Nevertheless, research exploring academic growth in its initial stages and the current investigation adds to what very little we previously understood of academic growth in students attending HE and acts as an initial venture into the topic. Indeed, as the findings from the current investigation highlight, multiple factors contribute to the prediction and development of academic growth. With this in mind, similar to research examining the factors which

prediction GPA, in order to develop our understanding of academic growth, research employing varying methodologies and constructs will be required.

5.12.2. Future research

These findings clearly have practical implications to those interested in supporting the development of academic growth in student attending higher education. The aim of this study was to determine if PsyCap and EI shared a significant relationship with student academic growth in a hope that these factors could be targeted for enhancement through intervention. As highlighted, EI acted to predict academic growth, suggesting that efforts to enhance student EI could develop academic growth. With this in mind, it is on the recommendation of the researcher that interventions and training sessions which target the development of EI could offer an additional means of developing student academic growth and an exciting avenue for future research. As such, previous examples of interventions and training sessions which have been demonstrated to enhance EI in the context of HE is presented in the final discussion chapter of this investigation.

5.12.3. Conclusion

Acknowledging the limited sample size, the findings from this study should act as incentive for further research, in particular research involving randomised control trials examining the efficacy of interventions designed to increase EI and their subsequent effect on student academic growth. As the incentive to develop the means of supporting and enhancing student academic growth becomes increasingly recognised, research focused on exploring approaches which protect and support its development will become fundamental. Insomuch the current findings present evidence which supports the importance of EI in the prediction of student academic growth. One of the primary reasons EI and PsyCap factors were examined in the current study was due to their pre-existing intervention base which had been usefully demonstrated in the context of HE. With this in mind, given the conclusions of the present study, development of EI could be a potentially useful method of developing academic growth in students attending HE and beyond.

6. Final Discussion

6.1. Introduction

Chapter six is the final chapter in the current investigation. The chapter opens by presenting the overall aims of the investigation and discusses the research findings. The chapter continues by offering serval recommendations for developing and supporting academic growth through intervention. The chapter concludes by outlining limitations of the study and identifying areas for future research.

6.2. Thesis Overview

The overall aim of the current investigation was to explore the factors which predict and support the development of academic growth in students attending HE in the UK. This aim was achieved using a longitudinal correlational design. Specifically, the research objectives were to:

1. To explore the associations between the contextual and psychological factors of socio-economic status (SES), family environment, problem-solving ability, motivation, optimism and academic growth in students attending Higher Education (HE).

2. To examine psychological growth, considered development of the psychological factors of motivation, problem-solving and optimism during a students' participation in HE is explored.

3. To investigate the predictive ability of psychological growth to predict student academic growth.

4. To explore the associations between the psychological factors of Psychological Capital (PsyCap), Emotional Intelligence (EI) and academic growth in students attending HE.

5. To examine psychological growth, considered development of PsyCap and EI from Year One to Year Two during a students' participation in HE.

6. To explore the relationship between PsyCap and EI in the total number of questionnaire responses from Year One and Year Two and student GPA in year in three.

In stage one of the investigation, associations between the contextual factors of SES, family environment, parental education and the psychological factors of motivation, problem-solving, optimism and their ability to predict academic growth were examined using correlations, multiple regressions and structural equation modelling. Results demonstrated that higher levels of intrinsic motivation, problem-solving self-efficacy and optimism in students second year were associated with academic growth between year two and year three. The contextual factors of SES, mother's education and family growth had a significant role in the development of problem-solving self-efficacy, motivation and optimism. Students who reported having a higher educated mother were also more inclined to develop in a warm, supportive and encouraging family environment report higher level of problem-solving self-efficacy, intrinsic motivation and optimism during their HE participation. Psychological growth, which was considered growth in intrinsic motivation, problem-solving-efficacy and optimism between students first and second year was also a significant predictor of academic growth, further suggesting the

importance and potential of developing student motivation, problem-solving and optimism as a means of developing student academic growth.

Inspired by findings from Study One, and reinforced by the importance of each and every student to experience academic growth (Dweck, 2015), Study Two explores the relationships between the positive psychological factors of Psychological Capital (PsyCap) and Emotional Intelligence (EI) in the prediction of academic growth In addition, to address a limitation dominate throughout the literature, the relationship between PsyCap and EI and GPA in Year Three was investigated to explore the role of these factors in the development in achievement across time. Both PsyCap and EI have a strong empirical literature based which has consistently demonstrated their role in supporting the development of occupational performance, social functioning, well-being and achievement in HE (Luthans et al., 2007; Perera et al., 2013; Perera, & DiGiacomo, 2015). Further, each of these factors have been conceived and developed through a research movement which aims to enhance the qualities, attributes and skills each individual has, offering a potential means of developing students with both high and low levels of initial achievement. Findings suggest that EI plays a significant role in predicting academic growth in students attending HE. With this in mind, efforts to develop and enhance student EI using established interventions should provide an initial starting point to those aiming to develop student academic growth.

Overall this research investigation has provided evidence to support a range of contextual and psychological factors which predict academic growth. In particular, it has served to highlight the important role, intrinsic motivation, problem-solving and optimism had in

the prediction of student academic growth. Moreover, the psychological resource of EI demonstrated a significant association with academic growth. Given the findings which have emerged from this study it is feasible to suggest recommendations for interventions and training sessions which would target and enhance these factors as they could offer a potential means of developing academic growth in students attending HE.

The following sections introduces and reviews recommendations for training interventions which have previously been demonstrated to develop and enhance the psychological factors emerging from the current investigation as significant predictors of academic growth.

6.3. Recommendations

6.3.1. Developing interventions to enhance student academic growth

One of the key aims of psychological studies is to determine the most significant predictors influencing behaviour, and then target those predictors via the development of an intervention. In the present study, several factors demonstrated a significant predictive relationship with academic growth and offer a potential intervention opportunity. While it is important to remain mindful that correlation does not mean causation, future research employing randomised control trails exploring the role each psychological factor has in the develop of academic growth. As such, the following passages review training interventions which have successfully been demonstrated to develop each psychological factor as a means of jump starting research examining how academic growth can be developed in students attending HE.

For example, student intrinsic motivation was highlighted to be a significant predictor of academic growth in Study One and as such it is the suggestion of this study that student intrinsic motivation should be the target of intervention.

6.3.2. Motivation intervention

A recent review examining the efficacy of a range of motivation based interventions demonstrated that motivation can successfully be developed in students attending HE and that subsequent developments have a positive effect of student academic outcomes (Lazowski and Hulleman, 2016). Lazowski and Hulleman (2016) identified 74 published and unpublished studies which had experimentally manipulated a motivational variable and measured an authentic educational outcome (e.g. GPA, persistence, engagement). This meta-analysis review chose to include motivational interventions designed around multiple frameworks including that of: attribution, self-determination and goal setting theory. Results confirmed that interventions designed to develop student motivation and influence performance outcomes were overall effective, demonstrating an average effect size of half a standard deviation (d= 0.49). Of further interest, an interventions impact did not vary significantly between the theoretical framework used, the age of the target audience (which included secondarily level and HE students) or the performance outcome variable measured. As such, conclusions from this meta-analysis suggest that a diverse range of motivational interventions which have conceptualising motivation using a wide range of theories and approaches can act to have a significant on influence student performance outcomes. Of the theoretical frameworks included in the study, several examples were highlighted as having the strongest empirical support (Lazowski &

Hulleman, 2016) specially, attribution retraining, growth mind-sets and goal setting all of which will now be reviewed.

6.3.3. Attribution retraining

Attribution retaining focuses upon influencing students' cognitive attributions with respect previous educational successes and failures. A key aspect of this intervention involves students undergoing training which encourages them to ascribe academic success to factors which are within their control (e.g. effort, persistence, skill) and that academic difficulties no matter how large can be overcome with persistent effort. In addition to increasing intrinsic motivation, several studies have demonstrated that attribution training interventions can increase, course grades, performance in exams, reduce levels of anxiety and enhance student GPA (Struthers & Perry, 1996; Hayes et al., 2006; Hall et al., 2007; Boese et al., 2013).

In one such example, Boese et al. (2013) approached 126 first year university students who were considered to be at risk of academic failure (due to low motivation levels and high failure avoidance) to take part in a short attribution retraining intervention. Students were first asked to complete measures of self-worth, casual attribution and achievement regulated cognitions. Following this, students were then split between a control and test group, with student in the test group watched a short video which showed two university students discussing what they thought the causes of poor academic performance were. Students then took part in a group activity were they discussed what they thought were the three main reasons for poor performance, with an instructor keeping a record of each

of the reasons described. At the end of the session the instructor used items off the list to describe the difference between desirable and undesirable attributions to the overall group (Boese et al., 2013). Findings demonstrated that this short attribution intervention was successful in changing the psychological mindsets of students who previously were previously at increased risk of academic failure.

6.3.4. Growth mind-sets

Interventions targeting student mind-sets tend to make use of Dweck's (2015) mind-set theory of intelligence, specifically that intelligence is a malleable construct rather than one which is fixed. As such, mind-set interventions are designed to target students' perceptions of their intelligence, with students encouraged to consider their personal intelligence as a construct open to development, rather than a fixed concept assigned at birth. Blackwell et al. (2007) have previously been successful in developing student motivation and academic performance using a mind-set intervention conducted over eight, one-hour sessions. Six out of the eight one-hour session in this intervention involved students (high school students on this occasion) being lectured on the latest mind-set research which informs students about how research concerning intelligence has begun to support the idea that intelligence and the brain continue to develop as an individual gets older. The final two sessions of the intervention then focus on developing students understanding that their brains and cognitive ability and that through continued effort, persistence and the use of use of appropriate learning strategies they are capable of developing their own intelligence and achieving higher achievement scores. Results of

Blackwell et al. (2007) intervention demonstrated the ability to increase student motivation and achievement outcomes in school aged children.

6.3.4.1. Goal Setting

The basic premise of Goal-setting theory (previously outlined in the motivation section of literature review one), is that the setting of clear, concrete goals in any given task can significantly improve performance outcomes (Latham & Locke, 2007). The clearer the goal, the more it encourages self-regulation, allowing the individual to direct attention towards goal-relevant activities, rather than activities which may distract them from their goals. As such, helping individuals establish clear and relevant goals increases enthusiasm, with personally important goals tending to increase goal-directed energy, while greater goal clarity can encourage persistence by reducing the likelihood of anxiety and frustration around achieving a particular goal (Morisano et al., 2010).

Encouraging goal setting in students attending HE has previously been demonstrated to play a prominent role in enhancing the development of motivation, and overall GPA scores (Morisano et al., 2010). The intervention used by Morisano et al. (2010) was adapted from the research of Peterson and Mar (2004), which involves an eight steps training program derived from Locke and Latham's goal setting theory (2007). The program takes the form of package, which, rather than targeting a single construct for enhancement, targets several for effective goal setting development over a single session. Further, this intervention has previously been delivered online and takes on average approximately 2.5 hours to complete. Each of the eight steps are described in Table 1 1.

Morisano et al. (2010) examined the effects of personal growth goals on the academic GPA of a group of 85 academically struggling undergraduate students. Using a randomised controlled trial design, participants in the trial group were asked to participate in a two-hour intervention session which they were told was designed to improve their goal-setting ability. During the intervention, students were asked to imagine and write about their ideal futures and the describe situations and expectations they had for the future. Participants were then asked to write down a series of goals and sub-goals which they thought would help them realise their ideal futures. Each of the goals students set had to be of personal relevance and related to either a state, trait or skill that each student wished to attain in the near future. Following up students 14 weeks after they had taken part in the intervention, Results confirmed that students who had taken part in the short intervention reported higher student GPA, and increase positive affect in comparison to those students in the control group (Morisano et al., 2010). Overall, this goal-setting based intervention is relatively fast, easy and cheap to deliver, and can has been proven to develop academic growth in first year students attending HE (Morisano et al 2010).

Table 6-1 Outline of Goal Setting Intervention

Step Number	Session details	Desired Outcome
Step One	In step one students are asked to free-write (for 5-10 mins) on the following topics; a) what they consider their ideal future, b) the qualities they admire in others, c) things they feel they could do better, d) their academic lives, e) things they would like to learn more about, and; f) habits they feel they could improve upon.	The primary goal of this step is to get students to imagine and consider a number of futures and to become aware of what their desired or 'dream' future may look like.
Step Two	Step two requires students to examine the output of their free writing in the previous	This step involves students clearly defining

	step and to outline six to seven specific goals that they could focus on in order to achieve each of their desired goals. For each of these goals' students are asked to provide an appropriate label for each, as these goals are built upon over the rest of the session.	and labelling specific goals which held value to them.
Step Three	Step three requires students to evaluate and rank each of their goals in order of importance, writing down the reasons why each is important and evaluate the time-frame they felt they could achieve each.	This step involves students prioritising their goals to ensure goal conflict is kept to a minimum and to raise students goal expectations and overall increases goal specific motivation levels.
Step Four	Students are asked to write about the impact achieving each of their goals would have upon their lives and the lives of those around them.	This step is considered to represent the consequence a goal may have and provide students with a cognitive source of motivation.
Step Five Step Six Step Seven	Step five, six and seven are concerned with helping students to develop and reach clarity concerning the plan they there were going to use to reach each of their goals. As such, complex goals required students setting much smaller sub-goals in order to realise and would help students overcome any preconceived obstacles. Students are required to set concrete benchmarks to guide them through their progress and to help them monitor their own progress.	These steps are centred on helping students identify potential obstacles that may impede their progress to their goals, and to help students create and maintain a means of following their goal setting progress.

| Step Eight | Step eight, requires students to evaluate the commitment they had to achieving each of their goals. Upon completing this stage, the intervention program has reached its end. | This final step represents a contract of personal commitment the student makes to themselves. |

Overall there are a wide range of motivational interventions making use of a wide range of motivational theories and approaches which have been demonstrated to increase student motivation (Lazowski and Hulleman, 2016). While only a few have been discussed here, each have been confirmed to have had a meaningful influence upon student motivation and achievement outcomes and offer an initial starting point for those interested in developing academic growth.

6.3.5. Problem Solving

Targeting and developing student problem-solving approach could present those interested a potential means of developing student academic growth. Previous interventions designed to enhance problem-solving approach using a social problem-solving framework offer insight into how this can be achieved and the potential outcomes which could be expected.

Problem solving training (PST) has previously demonstrated the ability to increase, develop and maintain problem solving approach across a diverse population (D'Zurilla & Nezu, 1990). PST is a cognitive-behavioural psychosocial intervention that aims to enhance an individual ability to respond and cope with minor and major problematic

situations (Nezu, Nezu & D' Zurilla, 2013). There are two major goals behind PST firstly; a) encouraging an individual to adapt a positive orientation towards a problematic situation they may be facing, e.g. acceptance, optimism and positive self-efficacy, and; b) develop effective and specific problem-solving behaviours, e.g.; emotional regulation, emotional management and structured problem-solving (Nezu et al., 2013). Problem-solving interventions designed around this framework act to improve an individual's problem-solving approach by targeting two vital problem-solving factors namely; problem-solving orientation and problem-solving ability. Overall PST has mainly been demonstrated to have improved problem-solving approach and help individuals afflicted by physical and psychological health problems, namely depression, emotional distress, anxiety and PTSD (D' Zurilla & Nezu, 2007) nonetheless there is at least one example which has demonstrated its success in students attending HE (Chinaveh, 2010).

Aiming to improve student quality of life and general well-being Chinaveh (2010) made use of an experimental design to deliver problem-solving training to a group of undergraduate students. Administering an initial battery of questionnaires to 456 students during their first two weeks of arriving at university, students were asked to complete the following measures; problem-solving (SPSI-r, D' Zurilla & Nezu & Maydeu-Olivares, 2004 and the Cassidy & Long, Problem-Solving Questionnaire, 1996), quality of life scale (WHOQoL-BREF questionnaire World Health Organisation 1998) and General Health questionnaire (GHQ-12 Goldberg, 1972). From this initial group of students, 79 students were selected to take part in the Problem-solving intervention based on their responses to the General Mental Health and quality of life scales (poor quality of life, low mental health and relatively poor social problem-solving scores), while a further 39 students who reported average scores on each of these scales were selected to be member

of a control group (a limitation of this study is that Chinaveh (2010) fails to describe the protocol students in the control group were subject too).

Chinaveh (2010) administered the problem-solving training intervention (PSI) over a period of 6-weeks, in 2-hour sessions which typically contained no more than 15 students in a single session. The 6 problem-solving sessions covered 6 topics. In the first session, the intervention instructor (an individual with an understanding of problem-solving theory, in this example a problem-solving researcher) outlined the contents of the intervention program which are presented in table 2.3 below.

Table 6-2 The six problem-solving sessions in Chinaveh's Problem-solving intervention

Sessions	Session Title
1	Enhancing problem solving capacity
2	Defining problems and setting realistic goals
3	Being creative and generating solutions
4	Predicating consequences and developing a plan
5	Trying out a solution plan and determining if it is successful
6	Additional examples

Each session adopted the following format. Session one involved the instructor presenting a lecture on problem-solving theory, explaining that students who perceive a problematic situation as one to be solved, rather than avoid tended to experience better outcomes. The instructor also encouraged students to believe that they are capable of coping with and solving their problems with effort. In session two, students were given a second lecture

during which they learned how to identify the signs and sources of a problem early on by gathering facts on problems and their causes using a purpose designed worksheet. In session three, the instructor explained and practiced the benefit of generating multiple solutions or responses to a problem. Students were asked to detail a response to a problem they had in mind by answering the following questions, "where should I start? What can I do?" And, "what should I be looking for?". During the fourth session, the focus was on student decision making, with students asked to make a list of goals they wished to meet and how they thought they could reach them, taking note of the advantages and disadvantages associated with each. Session five required students to monitor and evaluate the real-life success they had in solving their problems and emphasised the need to reward problem-solving effort and know when to seek help from others. In the sixth and final session, the instructor delivered a lecture advising students of examples of how these five problem-solving sessions could be applied in their academic lives.

To evaluate the success of the Problem–solving intervention to positive impact problem-solving approach, general health and quality of life, following the end of the intervention Chinaveh (2010) asked students in both the experimental and control groups to repeat the studies assessment measures for a second time. Comparisons between the two groups revealed that students in the experimental group had significantly improved their problem-solving approach from before the intervention and had significantly increased problem-solving abilities than those students in the control group. Further, before and after responses to the GHQ and the quality of life questionnaire, highlighted that students who had taken part in the intervention reported significantly increased quality of life and improved mental well-being than their peers in the control group.

This study offers an example of a problem-solving training intervention which has been successful in developing problems-solving ability in a group of students attending HE. This intervention offers a relatively cheap means of developing problem-solving in a student population in a moderately quick time frame. While the six training sessions used by Chinaveh (2010) were delivered one session per week, further research could examine the efficacy of training sessions delivered over a shorter period, or perhaps even delivered over the internet.

6.3.6. Optimism

Optimism was once considered a personality trait–like factor in that it was regarded to remains relatively stable across time (Meevissen, Peters, Hugo & Alberts, 2011). The current investigation alongside the previous studies reviewed in the introduction of this thesis have demonstrated that significant changes in optimism levels are possible (Segerstrom, 2006; Meevissen, Peters, Hugo, & Alberts, 2011). Questions remain however concerning how large of a change can be expected within an individual and how long this change can be anticipated to last (Carver, Scheier, & Segerstrom, 2010).

One optimism training example, coined best possible self (BPS) training intervention which is delivered over a two-week period has been found to significantly increase HE students' optimism levels (Meevissen, Peters, Hugo, & Alberts, 2011). BPS involves the use of positive future thinking technique based on the research of King (2001). As such BPS requires individuals to envision themselves in an imaginary future of their own design, in which all their aspirations and goals have turned out the best possible way.

Previously, individuals who have practiced writing down their BPS cognitions have demonstrated elevations in mood and general well-being (Peters et al., 2010). Meevissen et al. (2011) set out to examine the influence BPS training could have upon student optimism levels, positive affect and future expectancies. As such, the researchers approached a group of 54 undergraduate students studying in Holland and asked them to complete measures designed to assess their optimism levels (LOT), subjective probability (this measured students positive and negative expectancies for the future, e.g. "I will have health problems"), their optimistic explanatory style (Attribution Style Questionnaire) and a measure that rated student affect (e.g. the extent they fell a particular affective state in the present). Once these questionnaires were completed participants were invited to participate in the BPS training.

The BPS intervention involved participants being asked to visualise and write down as many aspects their best possible self should encompass in the future. Participants were given 20 minutes to reflect and write down phrases and sentences which they felt described their BPS across three domains, personal, relational and professional, and to start each sentence with the phrase; "in the future I will" in order to encourage the formation of obtainable goals and to ensure participants focused on positive rather than negative imagery. After participants had completed this task, they were then required to write a personal story which combined each of their earlier BPS statements into a detailed and coherent story. Following this step, students were then asked to reflect on this story for a period of five minutes. At the end of this session, participants were asked to complete the study measure for a second time, to measure initial effects. Over the next two weeks participants were required to spend five minutes, each day imagining their BPS and all the goals they had wrote down in the initial intervention task, while at the end of the two-

week period, students completed the study measures for third time to measure long term outcomes from the intervention.

Overall, analysis revealed that the BPS training intervention had been successful in increasing optimism initially and that the intervention lead to sustained increases in optimism over a two-week period. Moreover, increases in optimism were evident in people with initially high and low levels of optimism, meaning students who reported initially high and low levels of optimism benefited from the intervention, which suggests this approach could be a viable means of enhancing optimism levels in a wide range of students.

6.3.7. Psychological Capital

While PsyCap was not revealed to be a positive predictor of student academic growth in the current study, given the significant relationship it shared with EI, there is the potential that PsyCap may enhance the development of EI levels. With this in mind, future research exploring the nature of this relationship could benefit from understanding how each of PsyCap's facets are developed and enhanced.

The positive recourses of hope, self-efficacy, resilience and optimism, that make up a students' PsyCap have been proposed as a state like construct. This means that each of the core resources are considered more stable than for example a mood or an emotion such as happiness or pleasure, but not quite as fixed as a personality trait for example

extraversion (Luthans, Avey, Avolio & Peterson, 2010). Research studies which have examined the stability of PsyCap with-in individuals supports the assertion that PsyCap is a construct which falls somewhere between a state and trait which is, in consensus with the current investigation (Luthans et al., 2007). Luthans et al. have previously examined the variable nature of PsyCap in a group of HE students (Luthans et al., 2007). After controlling for internal consistency, examination of the test-rest reliabilities for the PsyCap questionnaire measure revealed a low reliability consistency of (0.52) in comparison to measures assessing student conscientiousness (0.76) or core self-evaluations (Luthans et al., 2007). As such, these findings were the first to suggest evidence that an individual's PsyCap resource may not a fixed construct, but one open to development.

In accordance, there is growing empirical evidence which demonstrates how short training sessions can develop the core PsyCap constructs in groups of students, and how this development can positively impact academic performance (Luthans, Avey, Avolio & Peterson, 2010; Luthans, Avey, Avolio, Norman & Combs, 2006; Luthans, Avey & Patera, 2008; Barry, Woods, Martin, Sterling & Warnecke, 2016). When developing the PsyCap construct, Luthans et al. have published a detailed training intervention model which addresses each of the four constructs which constitute PsyCap (see Figure 6-1) (Luthans, Youssef, & Avolio, 2007).
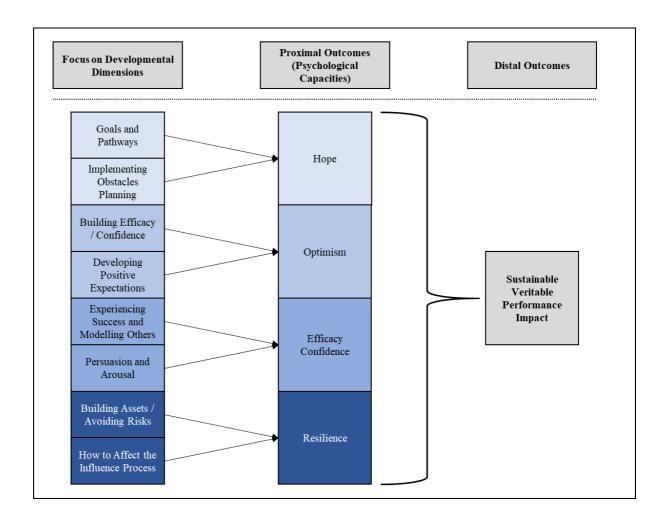
Figure 6-1 Psychological Capital Intervention (Luthans et al., 2007)

Overall, the PsyCap training intervention (PCI) devised by Luthans et al. (2007) was designed to meet three criteria, a) the training session is short and quick to minimise potential disruption (training intervention is typically delivered in two-hours), b) it is designed to influence each if the four core resources of PsyCap and c) it is designed to influence overall PsyCap levels through its integration of the theories and principles of each of the individual PsyCap resources. The PCI has typically been delivered by a single facilitator to groups of 20 students in a class room environment, who through a series of exercises and individual and group reflection aim to encourage the development of each of the PsyCap's core constructs. The exercises used are detailed below.

6.3.7.1.   Hope

Consistent with Hope Theory as proposed by Snyder (2000) the exercise designed to develop hope involves influencing an individual's goals, pathways and agency. Specifically, students are asked to generate academic related goals that they considered to be of personal value, reasonably challenging and had a clear beginning and end point. Though this exercise students generate sustained motivation by using goal components to increase levels of agency. Following this, students are asked to practice generating multiple pathways to their academic related goals, while also identifying potential obstacles they could encounter and have to overcome. After each student has completed the exercise by themselves, they then receive feedback from the rest of the group regarding the additional pathways they could use to achieve their goal, and the group is asked to suggest additional potential obstacles each individual may encounter when attempting to reach their goals, which they may not have anticipated independently. This aspect of the hope exercise stimulates students' pathway generation and ability to plan ahead for obstacles, a behaviour which reduces the potentially negative impact obstacles can have on a students' agency. At the completion of the hope exercise, students will have identified and defined a personally valued goal, be prepared to face obstacles and be ready to overcome these obstacles with a range of multiple pathways. Throughout this exercise and those which follow, students are to be encouraged to remained focused of the goal setting, pathway generation and overcoming obstacles, while exercising positive rather than negative self-talk.

6.3.7.2. Optimism

Building students efficacy involves creating pathways and planning to anticipate obstacles in the hope exercise encourages the development of their positive expectations. As highlighted in the literature, individuals who are confident that they can successfully create multiple pathways and overcome obstacles to reach their goals hold greater expectations of goal achievement (Luthans et al., 2007). The exercise designed to develop optimism recognises and draws on theories of expectancy-value orientation and positive attributional explanatory style from the literature, with the aim of encouraging students to foster realistic optimism. Students are encouraged to challenge negative expectations that relate to their goals not being reached, and the group are asked to suggest additional pathways to goal success, the anticipation of reaching their goals helping to develop expectations for success. As such, increased expectation for future success are said to increase students' optimism (Luthans et al., 2007).

6.3.7.3. Self-Efficacy

The development of student efficacy draws on the theoretical work of Bandura (2000), and focuses on developing students' sources of efficacy, which includes task mastery, modelling, social persuasion and psychological arousal. Students are asked to describe their goals to the group and answer questions about how they think they can be accomplished, with task mastery used by each student when designing pathways and pursuing their goals. By describing their goals and how they are going to achieve them to the group students are imagining a task mastery experience. Students are then encouraged

to engage with the group and become role models of the efficacy building process, this behaviour models goal success and through social persuasion and encouragement, students experience psychological arousal aimed at accomplishing their goals.

6.3.7.4. Resilience

Student resilience is developed by targeting the resiliency components as outlined by Masten (2001) namely; asset factors, risk factors and influence process. Assets are considered attributes that increase their levels of resiliency for example, a stable home life environment and a good education. Risk factors are considered attributes which may reduce the students' resiliency for example a lack of good supervision, or an abusive home. While influence processes involves changing students' negative perceptions of previous events. In this exercise, students are encouraged to change their perceptions of influence through the use of cognitive, emotional and behavioural processes. For example, students are asked to identify recent set-back within HE, which could range from major (such as failing an assessment) or minor (missing a lecture). Students are asked to write down their immediate reactions to their setback and individually and then within the group are asked to assess how realistically this setback was; in their control, out of their control and the options they had available to them at the time. In affecting students' perceptions of influence to build resiliency, cognitive processes are employed to frame setbacks in terms of their impact, control and options. In being more aware of the actual impact, control and options available to them when they encounter set-backs in HE, students are better able to bounce back from potentially adverse situations in future.

6.3.7.5. Effectiveness of the Psychology Capital Intervention

The PCI training model described above has been demonstrated to significantly increase PsyCap levels of a diverse population. For example, the PCI was first initially tested using a group of 242 HE students participating in the United States, where a 2-hour version of the training session was successful in developing PsyCap levels (Luthans et al., 2007). In this particular study, students were asked to complete the PsyCap questionnaire and were then randomly assigned to either a treatment group (n=153) or a control group (N=89). Students in the treatment group received the 2-hour PCI training, whereas those students in the control took part in a group decision making intervention. At the end of the intervention's session, those students in the treatment group reported a significantly higher PsyCap level from time 1 to time 2, while those students who took part in the control group reported no meaningful change in their PsyCap levels.

The PCI training has also been applied using a web-based intervention where it was successful in developing adults PsyCap levels (Luthans, Avey & Patera, 2008). In this example, Luthans et al. contacted 364 working adults via university email contacts to take part in an online "positive leadership training" session, with respondents ranging from non-management roles to first-level supervisors or higher. Participants were then randomly assigned to either a treatment group (n= 187) or to a control (n=177). All participants were set a web-link to an initial home page where they were asked to complete a measure of the PsyCap questionnaire and for their identification number they had been assigned for matching pre-and post-measures. Following this, participants were either directed to a 45-minitute version of the PCI training session or a decision-making

intervention that lasted for the same period of time. One week after completion of the training interventions, participants were again sent a link which took them to a second 45-minute session and three days after this final session participants were asked to complete the PsyCap questionnaire for a final time. Results confirmed that those participants who had taken part in the PCI showed a significant increase in their levels of PsyCap, whereas the PsyCap levels of the control group remained the same.

Overall, the PCI has proven to be effective in developing students and working adult's levels of PsyCap. The PSI training sessions are reasonably cheap to create and implement and can be delivered to groups of students in a classroom setting or through the use of web-based technology in as little as two hours.

6.3.8. Emotional Intelligence

The psychological resource of Emotional intelligence (EI) was also demonstrated to share a significant relationship with student academic growth and as such targeting and developing student EI may provide a means of developing academic growth. The development of Interventions designed to improve EI has increased in recent years and have proven to be particularly effective in; managers, children, students in HE and individuals reporting affective difficulties (Nelis, Quoidbach, Mikolajczak, Hansenne, 2009). Despite the increasing effort being put into creating EI interventions, in light of the aforementioned debates surrounding EI's definition, qualities and measurement, many of these interventions are subject to serious limitations which impact their effectiveness. For example, very few of the interventions discussed throughout the

literature have been based on a solid theoretical framework, while others have chosen to target only some EI facets (e.g. emotional indication but not management) and attempt to also develop non-EI skills (e.g. reduction of violence) (Nelis et al., 2009). Of particular concern, few of the EI interventions discussed in the literature have undergone rigorous testing, or the use of a control group, while almost all have evaluated their success directly after the intervention has been delivered, with little consideration given to their long-term success (Mathews, Zeidner, & Roberts, 2004).

There is however one exception which has been designed to mitigate these limitations and has been shown to be successful in developing the trait-EI of a student population, immediately and six months after the intervention's delivery (Nelis et al., 2009). This particular intervention is based on the four-branch model of EI which includes the EI facets of: a) perception, appraisal and expression of emotion; b) emotional facilitation of thinking; c) understanding and analysing emotions and d) reflective regulation of emotion.

The EI training consists of four of two and a half hours sessions over a 4-week period, with a one-week interval in between each session, is designed to allow students to apply what they have learnt in a real-world setting. As such, the sessions are designed to enhance these skills, in particular emotional regulation (interpersonal and intrapersonal) through the use of role playing, group discussion and short lectures delivered by a facilitator. The structure of these sessions will now be outlined below.

6.3.8.1. Outline of EI Training Sessions

Session 1: Understanding emotions

This session involves the use of role play to illustrate the importance of emotions and EI across everyday situations. A facilitator introduces themselves to the group and explains the importance of the sessions and the use of a personal reflective diary in which students should report daily at least one emotional experience. These emotional experiences are to be evaluated and analysed using the information students received in the EI training sessions. In this first session students are introduced to the key concepts of emotions and EI and how it can help them develop and maintain friendships and improve their overall performance. At the end of the session, a summary of the material the students covered in the session is discussed, while the importance of maintaining the reflective diary daily is reiterated.

Session 2: Identifying Emotions

In session two, with the help of a facilitator, students are encouraged to review their reflective diaries to the group by identifying one emotional experience they encountered over the past week. Students are then lectured on identifying emotions through the use of a three-door theory and practice framework outlined in Scherer's (2001) five components of emotion (i.e. physiological activation, cognitions and action tendencies). The session continues by teaching students how to read emotional content in others through their facial expressions using the METT program. Next the importance of effective communication is highlighted and students are encouraged to be empathic towards one another and how best to ask the right question in a given situation. As with the previous

session, students are reminded to continue to make use of their reflective diary and are presented with a summary of key aspects of the session before it closes.

Session 3: Expressing and Using Emotions

Session three begins with a refresh of the previous week's session and students are encouraged to discuss their homework for the week which was the continued use of the reflective diary. Next through the use of role play, students are asked to express emotions and to model positive responses to each emotional example. After the role play sequence is complete for each group member, students are lectured on the importance of positive emotions (e.g. gratefulness, happiness) and how they might go about improving each of these in themselves. The potential to use emotions to solve problems they may encounter every day is then discussed and the session closes with a summary of the session and the continued importance of the reflective diary.

Session 4: Managing Emotions

The final session of the intervention involves developing students' ability to manage their emotions. Students are introduced to a range of coping strategies and as a group discuss the effectiveness of each. Next role play is used to discuss and engage students on the topic of positive reappraisal. Positive reappraisals are a critical component of mindfulness and means-based coping and have been suggested as a means of helping an individual adapt to a stressful situation (Garland, Gaylord, & Park, 2009). The group is then briefed on a number of relaxation exercises they can practice and the session closes offering students an opportunity to ask the facilitator any questions they might have.

This EI training intervention designed by Nelis et al. (2009) suggests that some facets of student emotional intelligent may be effectively developed through the use of a relatively short classroom-based training intervention and that these improvements remain significant six-months after the interventions end. These findings have also found support more recently in a group of HE students in the UK (Pool, & Qualter, 2012). The positive results experienced through the use of the EI intervention training and the significant relationship between EI and academic growth presented in the current investigation, EI training my offer researchers a useful method of increasing academic growth.

The psychological interventions discussed above have a developing literature base which demonstrates how each construct can be successfully developed and enhanced, and how this development can have a meaningful impact of student academic outcomes, in particular achievement. While it was not within the reach of the current investigation to examine the efficacy of these each of these interventions to influence student academic growth, its hoped the evidence presented thus far will act to encourage future research in the field of academic growth.

6.3.9. Research Recommendations

Acknowledging limitations in the current investigation, there are a number of research suggestions which could be useful to those wishing to further examine the academic growth. Firstly, in recent years there has been increased interest in the influence a 'growth mindset' plays in the prediction and formation of academic growth (Dweck, 2015; Claro, Paunesku & Dweck, 2016; Broda, Yun, Schneider, Yeager, Walton, & Diemer, 2018; DeBacker, Heddy, Kershen Crowson, Looney & Goldman, 2018).

There have been numerous studies which have demonstrated that students tend to perform better and experience higher levels of growth when they hold a growth mindset (Dweck, 2000: 2015, Claro et al., 2016; Broda et al., 2018). There is also evidence to suggest that interventions designed to target student mindsets can successfully improve academic outcomes for disadvantaged HE students (relatively lower ses level students) first year GPA scores (Broda et al., 2018; Claro et al 2016; Broda et al., 2018). Given the growing evidence supporting a growth mindset and academic growth in school aged children (Claro et al., 2016), future research focused on developing growth mindsets in students attending HEI's within the U.K may provide a cheap, quick means of instilling academic growth in students attending HEI's in the U.K.

The development of clear theoretical models and interventions to enhance academic growth will be best severed by researchers working in collaboration to design, test and establish distinct constructs which make use of theoretically rich and widely accepted measures and scales. For example, there is a need to integrate motivational and cognitive models, as demonstrated by the vast number of overlapping models prevalent in the literature discussed within this thesis. Further, given the significance of student EI in the prediction of academic growth, ensuring consensus around how EI is theorised and measured will greatly encourage the development of an area which shows promise in developing academic growth.

Research Limitations

So far in this discussion chapter, an overview of the research objectives and the key findings emerging from the study have been presented. On the basis of this and the related literature, a number of suggestions which could form the framework of potential interventions have been posited. The closing sections of this chapter will now consider the limitations of the current investigation and its final conclusion.

A particular strength of the current investigation was the adoption of a longitudinal design which collected and analysed data at several time points. While an intervention was not within the scope of the current investigation, natural changes in motivation, problem-solving and optimism experienced by students between their first and second year of participation in study one, highlighted that development in these factors was also predictive of academic growth. As such, the natural development of these factors and its predictive relationship with academic growth, further supports the importance motivation, problem-solving and optimism plays in the prediction and development of academic growth. Despite this and consistent with correlational research studies, as the independent variables in study two of the current investigation were not manipulated and their natural development was only partial, this limits the ability to determine causality between EI and academic growth. Thus, it would be helpful for future studies to test the demonstrated relationship with an experimental design.

An additional limitation of this investigation concerns the final sample size of study two, whose response rate is noted with disappointment. Despite the researcher's best efforts to

enhance follow up recruitment, a combination of student attrition, students having to repeat failed years and the popularity of the degree's optional placement year, had a cumulative impact on the response rates for this aspect of the investigation and as such restricts the generality of Study Two's findings.

The use of self-report measures to obtain responses to psychometric measures used could also be considered a limitation, due to the potential introduction of social desirability responding in student responses. In addition, while the quantitative nature of this study was able to provide insight into the factors associated with academic growth, the use of a qualitative design has previously been demonstrated to highlight the thoughts and processes students undergo when aspiring to grow academically (Morisano et al., (2010) and as such, research of this nature could provide additional insight into the process students use to develop.

6.4. Conclusion

The aim of this overall investigation was to explore the predictors of academic growth in students attending HE in the UK. The results demonstrate that for the students included in this study, academic growth is predicted through a combination of contextual and psychological factors namely SES, family environment, mother's education and intrinsic motivation, problem-solving-self efficacy, optimism and EI. Researcher, students and HEI's interested in promoting academic growth and student achievement levels would do well to explore the efficacy of the interventions discussed in this chapter and how these factors can enhance the develop of student academic growth.

The topic of academic growth is an area that clearly warrants further research. Firstly, the period between when students' progress from second to third year is as yet an under researched area, however, findings from the current study demonstrate it is at this point in their participation of HE that students appear to experience the greatest levels of academic growth. Indeed, whilst a large level of the variance in academic growth was successfully predicted by the factors included in this study, research keen to explore this period of students' studies could employ a qualitative methodology to offer insight into the mind-sets and processes students use to experience academic growth.

This investigation has explored the role the contextual factors of SES, family environment, parental education and the psychology factors of Motivation, problem-solving, optimism, EI and PsyCap have in the prediction of student academic growth. Findings emerging from the current research study offer students, researchers, and HEI's an initial starting point for the development and trail of interventions designed to develop academic growth and subsequently overall achievement.

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