

Grit and self-efficacy between first and final year
undergraduate students.

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Declaration

I declare that his submission is my own work. Where I have read, consulted, and used the work of others I have acknowledged this in the text.

Signed: Edward Bickers

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Abstract

Abstract

Research has indicated that belief in one's own ability and perseverance for long term goals are crucial components to an undergraduate student in progressing through their course. Grit and self-efficacy are two aspects of psychology that have been widely researched, this study aims to explore differences in grit and self-efficacy between undergraduate students based on their year of study (first year or final year). Due to differing university programmes for first year undergraduates and final year undergraduates, these two groups were selected for analysis. An online form with a demographic survey, the Short Grit Scale (Grit-S), and General Self Efficacy Scale (GSE) were included and distributed to undergraduate students (N = 94) from a range of different Irish universities (N = 9). Analysis of the responses through use of an independent samples t-test and Spearman's correlation demonstrated self-efficacy was higher in final year undergraduate students than first year undergraduates. A weak positive correlation was found between grit and self-efficacy, and there was not a significant difference between year of study and grit. Following an evaluation of the strengths and limitations of the present study, the theoretical and practical implications of the results are examined, including recommendations for future research.

Introduction

Introduction

“In order to succeed, people need a sense of self-efficacy, to struggle together with resilience to meet the inevitable obstacles and inequities of life.” (Bandura, 1999).

Throughout stages of life people are faced with challenges and difficulties that are overcome with self-belief and perseverance. One such stage is university, and that of undergraduate students. First year students face many new demands and strains as they transition into college life. They encounter changes in personal responsibilities, decision making and accountabilities. Attending college is accompanied by many additional stressors, Grit and self-efficacy have been shown to have a critical role within educational motivation, persistence, and achievement. For a university student, these are factors critical for success within the academic sphere. (Sharkey et al., 2017).

Undergraduate students can often be generalised, it is an umbrella term; however, a first year student and a final year student have many differences. A first year student is often thought of as weak in self-regulated learning in their first year of college (Aguilera-Hermida, 2020). This may be because of a lack of knowledge or experience in the college setting, or the perseverance and self-motivation needed to exert one's best self. Conversely, final year students, through their prior experiences in the college setting would have a greater knowledge of the requirements in that area. The aim of the present study is to explore the relationship between undergraduate year (first or final), self-efficacy and grit. Research on self-efficacy and grit in college students has shown that they oppose negative impacts on academic performance such as setbacks whilst also positively influencing academic performance (Alhadabi & Karpinski, 2020). However, the mindset of a final year student is unlike that of a first year (Aguilera-Hermida, 2020). This implies that there could be a difference in the grit and self-efficacy level between the two years of study. This study may provide valuable information on the difference in self-efficacy and grit between first and final year undergraduate students. The results of this study may influence future insights into this area of educational psychology.

Self-Efficacy

Self-efficacy is defined as a person's belief that they can (or cannot) successfully organise and perform an action to achieve a desired outcome in a particular situation (Yancey, 2019). The belief is derived from Albert Bandura's Social Cognitive Theory (Bandura, 2005). It has a large influence on whether a student considers themselves capable or not, being an important psychological factor that affects academic motivation, persistence, and success (Thompson & Verdino, 2019). A person with high self-efficacy would likely persevere when faced with obstacles and failures (Van Dinther, Dochy & Segers, 2011). They can self-regulate their emotions better, by not getting overwhelmed and implementing control over potential threats they in turn have less apprehensive thoughts (Bandura, 2010). Those with a low self-efficacy consider themselves ineffective, visualising failure scenarios that undermine performance by focusing on what ability they do not possess and often imagining the worst-case scenario. This self-handicapping thinking is detrimental to a college student. In a time where increased need for self-regulation and isolation are assumed as normal with the ongoing Covid-19 pandemic, the self-efficacy of people can be negatively affected (Simón et al., 2021). The pandemic has increased stress, anxiety and insecurity worldwide amongst students. Self-efficacy acts as a mediator between these negative traits, and studies have shown that enhancing self-efficacy helps to decrease students' stress during Covid-19 (Wen et al., 2021).

Grit

Grit is a psychological trait that is believed by many to be an essential facet of success (Ruckno, 2020). It refers to "perseverance and passion for long-term goals" (Duckworth et al., 2007). The concept has become recognised as an alternate predictor for success amongst a range of areas, from students and teachers to the military (Duckworth et al., 2007) Because of the mindset those with grit have towards long term goals, there is a prevalent association with academic progression and

achievement (Kannangara et al., 2018). A person with grit has confidence and beliefs about progressing towards desired goals (Vela et al., 2018). Positive psychological concepts which are associated with grit are mindfulness, hope and life satisfaction, all of which clearly serve an undergraduate student (Vela et al., 2018). Those who engage in negative academic behaviours such as procrastination have been shown to have low grit (Siah et al., 2019). This is because procrastination counteracts the motivations and passion to achieve long term goals associated with grit by quicker attained gratification elsewhere (Siah et al., 2019).

Grit and self-efficacy

Grit and self-efficacy have been shown to often be intertwined with academic progression (Oriol et al., 2017). The personality trait of grit can help an individual to persist in hard times and is bolstered with self-efficacy. Self-efficacy can motivate a person to see themselves as competent for their long-term goals that are achieved through grit (Siah et al., 2019). Both grit and self-efficacy are predictors of various positive outcomes (Ion, Mindu & Gorbănescu, 2017). There are mixed reports of the two variables as to gender differences, with conflicting evidence as to gender difference in grit (Hodge, Wright & Bennet, 2018). Thompson & Verdino's 2019 study found that there were no differences in self-efficacy between gender. This stance was furthered by the recent 2021 study of Simón et al. who found no significant differences in general self-efficacy according to gender.

First and final year undergraduate students

College life is a time of increasing academic challenges and environmental adjustments (Sharkey et al., 2017). It is also accompanied by many other additional stressors, including larger academic loads compared with school, new financial responsibilities, and relationship conflicts (Brougham et al., 2009; Dusselier et al., 2005). For first year students, academic perseverance and efficaciousness are often

not at the forefront of their minds. Study findings have shown that first year students planned and spent less time on academics than socializing and work obligations in their first semester (Aguilera-Hermida, 2020). Contrast that with a final year student, where often it is their sole focus of the year to perform as best as possible academically.

Self-Efficacy and undergraduate students

Thompson & Verdino's 2019 study found that in an academic setting, students who lacked self-efficacy were more frequently encountering difficulty persevering and being successful students. With a sample (N = 180) (77 Male, 103 Female) college students, the study employed a descriptive and inferential design, conducting an analysis of variance (Anova) to investigate self-efficacy among community college students. Results found that self-efficacy affects academic motivation, persistence, and success in college students. Suggestions for future research included assessing self-efficacy in other populations or at a time they are contending with additional life obstacles, such as that of a global pandemic (Simón et al., 2021). College life is fraught with difficult tasks to overcome, a belief that one will be successful and tenacity to achieve this are of great importance (Alhadabi & Karpinski, 2020). Quantitative studies on self-efficacy and students have revealed that those who have notable self-efficacy in other responsibilities in their lives can lead to potentially high levels of self-efficacy in academia (Thompson & Verdino, 2019). Not only does self-efficacy play a predicting role in relation to students' achievement, learning and motivation but it also has a correlation with academic adjustment (Ayllón, Alsina & Colomer, 2019). This is an indicator as to how well a student can manage in times of unforeseen circumstances such as the current situation of remote learning. The most effective way of ingraining self-efficacy is through 'mastery experiences' (Badura, 2010). Successful experiences raise self-efficacy while unsuccessful ones lower it (Dorfman & Fortus, 2019).

Grit and undergraduate students

Students with grit are perseverant when faced with struggles, it is a characteristic that is desirable to the general population but is especially important in students. This is because of what grit encompasses: the ideas of resilience, conscientiousness, self-control and perseverance (Hodge et al., 2018). These concepts have been theorised as essential to academic success (Bashant, 2014). A 2018 study by Hodge, Wright and Bennett investigated the role of grit in determining engagement and academic outcomes for students. Using a sample of (N = 395) (345 Female 50 Male) Australian university students, the researchers employed a qualitative cross-sectional design, using the Grit Scale and a modified version of the Utrecht work engagement scale for schools (UWES-9S). Their results support the idea of a relationship between grit and age, suggesting that grit is a characteristic that develops over time, this indicated a possible research gap to be evaluated for differences in grit levels between first and final year undergraduate students. A recommendation for future research involved assessing for changes in grit in undergraduate students over time.

There is a negative association for students with grit, internet and mobile addiction, both are negatively correlated with academic progression (Maddi et al., 2013; Siah, 2019). Students with grit show lower levels of procrastination, as their perseverance controls their behaviour and enables them to delay the allure of immediate gratification. (Siah, 2019).

Grit, self-efficacy, and undergraduate students

Studies have shown that non-cognitive factors such as self-efficacy and grit can influence students' desired academic outcomes. In 2020, Alhadabi and Karpinski investigated grit, self-efficacy, achievement orientation goals and academic performance in university students using a sample (N = 258, 189 Female and 69

Male) from one American university. The researchers employed a quantitative, between groups cross-sectional design. The research used a modified self-efficacy scale to measure self-efficacy and Grit-S to measure Grit. Their results revealed that non-cognitive factors such as self-efficacy and grit can influence students' desired academic outcomes. The study supports the notion of grit's direct effect on self-efficacy and shows that the two also oppose negative influences affecting academic progress. Limitations to the research were that the sample was from a single university which influences the generalisability of the study.

Both variables contribute to a student's ability to persist in hard times (Siah, 2019). The first year of a college programme plays an important role in developing persistence (Allen et al., 2008). Students often use it as the base of developing skills useful for succeeding in college at the beginning, whereas there is an expectation that by the final year those skills are honed. A hierarchical goal framework created by Duckworth & Gross in 2014 found that grit and self-efficacy are among the most important variables that explain success in a person's life. The gap identified in the literature for the present studies found a lack of analysis of self-efficacy and grit together between two college year groups. The research questions being investigated are as follows:

Research Questions and Hypotheses

Research Questions

RQ1: Is there a difference in self-efficacy between first and final year undergraduate students?

RQ2: Will there be a difference in grit between first and final year undergraduate students?

RQ3: What relationship exists between grit and self-efficacy?

Hypotheses

H1: There will be a significant difference between the self-efficacy of undergraduate students based on year of study (first year or final year).

H2: There will be a significant difference between grit levels of undergraduate students based on year of study (first year or final year).

H3: There will be a significant interaction between grit and self-efficacy based on year of study for college.

The first hypothesis for this thesis is based on findings previously described in research by Hodge et al., (2018) who found that a person's grit can develop over time. The second hypothesis, that final year students will have higher self-efficacy than first year students is based on findings from research such as Aguilera-Hermida, (2020). A final year student has numerous years of study in that subject completed and is as such committed to earning their degree. A first year student, because it is their first year of study on the subject may not be as set on their path as the final year student.

This section has reviewed the three key aspects of the thesis – self-efficacy, grit and undergraduate students. In the section that follows, the design will be discussed.

Method

Design

A quantitative, between groups design was employed using a cross-sectional demographic survey with two scales. The variables for the correlation were grit and self-efficacy. The independent variable (IV) in the between groups analysis was year of study (undergraduate students in first year and final year). The dependant variables (DV) were grit and self-efficacy. Inferential statistics were used to determine whether self-efficacy and grit levels differ based on year of study in undergraduate students. This study also included a correlational design element, as the relationship between the dependant variables derived from the Grit-S and GSE.

Participants

Due to ethics, mandatory responding could not be implemented and as such incomplete questionnaires (N = 5) had to be withdrawn ("Code of Ethics | PSI", 2019). Participants in this study included 94 undergraduate students with 47 first year and 47 final year participants (See figure 2). 62 participants were female, 31 male and 1 preferred not to indicate their gender (see figure 1). Participants ages ranged from 18 to 58 years. The study used convenience and snowball sampling to recruit participants (N=94), (31 Males, 62 Females, 1 participant preferred not to indicate their gender) from first year (N=47) and final year (N=47). Participants were contacted through social media applications and asked to follow the link to complete the online survey. All individuals participated in the survey voluntarily.

Figure 1: Gender breakdown of participants.

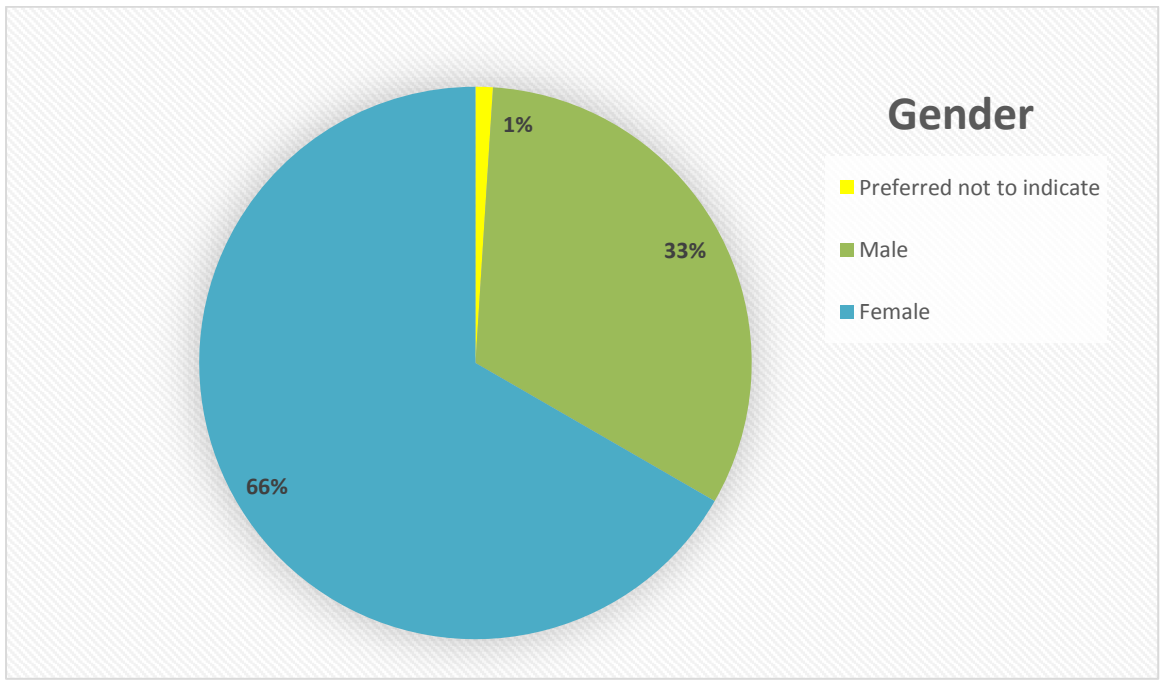
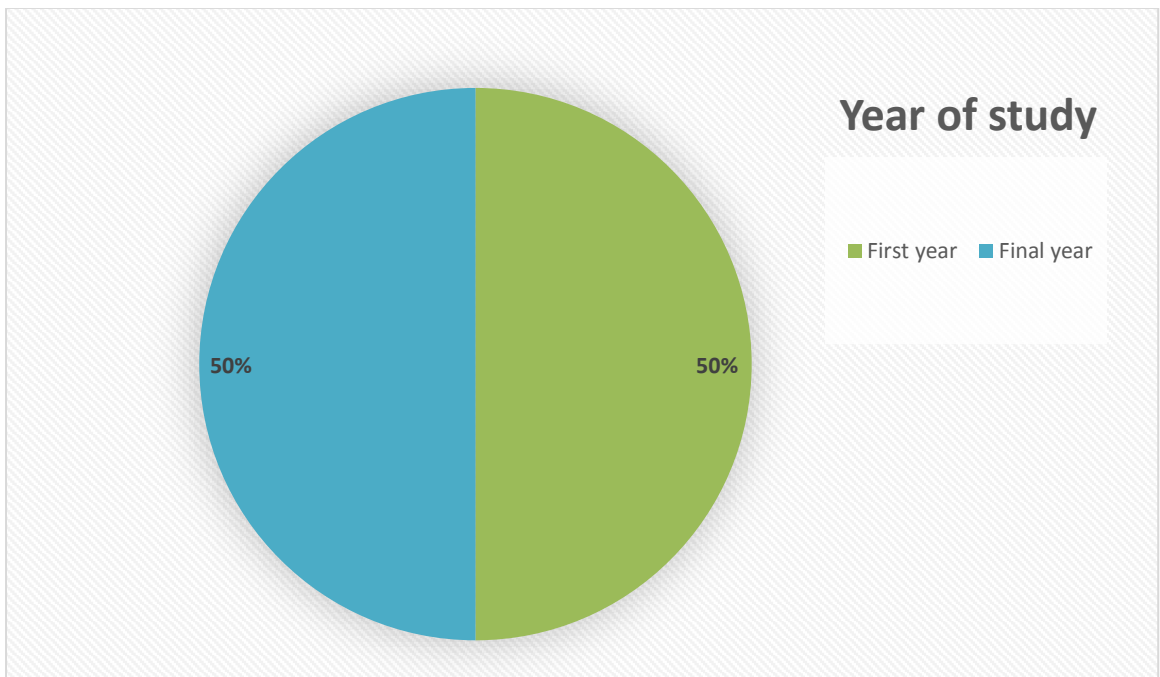


Figure 2: Representation of participants based on year of study.



Ethics

The treatment of participants was in accordance with the ethical standards of the Psychological Society of Ireland and the Department of Technology in IADT ("Code of Ethics | PSI", 2019). An application to the ethics board was submitted, and thus approved by the DTPEC (See Appendix H).

Materials

An information sheet (See appendix A) was used to ensure the participants understood their rights as a participant and understood the purpose of the research. A consent form (See appendix B) ensured that participants gave informed consent to participate in the study. A debrief (See appendix D) explained the purpose of the study to the participants and provided the contact information of the researchers should they wish to withdraw their information. The debrief restated the purpose of the research, displayed contact information of the researcher and supervisor and also provided psychological resources for the participants in the event they found the study distressing.

Additional materials included: The **short grit scale (Grit-S)** (Duckworth & Quinn, 2009) (See Appendix E) contains eight items and is designed to indicate a person's grit. The Grit-S contains two subscales – Consistency of Interest and Perseverance of Effort. Responses are given on a 5-point Likert scale (1 = Not like me at all to 5 = Very much like me). Mean scores on the two subscales are averaged (after reverse-coding) to create a grit score. Larger scores relate to higher levels of grit, the maximum score being 'extremely gritty' and the lowest 'not at all gritty' (Duckworth & Quinn, 2009). The scale has been found to be reliable, with Cronbach's alphas ranging from .73 – .79 for the Consistency of Interest subscale and .60 - .78 for the Perseverance of Effort subscale (Alhadabi & Karpinski, 2020; Duckworth & Quinn, 2009). The present study found that the Grit-S had a Cronbach's alpha value of .78, indicating acceptable internal reliability for Grit-S.

The **General Self Efficacy Scale (GSE)** (Schwarzer & Jerusalem, 1995) (See Appendix F) is a 10-item scale which measures an individual's level of self-efficacy. Participants respond to a series of statements on a 4-point Likert scale which ranges from (1 = Not like me at all to very much like me = 4). Larger scores reflect a high level of self-efficacy. The questionnaire had good internal consistency with a Cronbach's alpha of .80 (Rajabi, 2006). The present study found that the GSE had a Cronbach's alpha of .83, indicating good internal reliability for GSE.

Pilot study

A pilot study was conducted (N = 7) to identify potential problems which may affect the study. Any problems identified during the pilot study were adjusted before the final phase of data collection. The pilot study allowed the researcher to become familiar with carrying out the study and answer any questions participants may have. Minor changes were made to the demographic questionnaire, information sheet and debrief to ensure that the guidelines were easier to understand, that the participants understood the aim of the study and knew the length of time it would take. A change made to the demographic survey was replacing selecting an age range for their age to instead putting an exact age down. This was to open possibility for further examination of age as a factor. An explanation for 'bind' was put in brackets beside the word on item #9 of the GSE to enable better understanding of its meaning.

Procedure

A link to the Microsoft forms survey:

[https://forms.office.com/Pages/ResponsePage.aspx?id=e5V92hEVQkqy9Xj4R_jIeg1XrWjGqBdMjs1kcymdgLZUM1FZTINPVlpaRTU2TTU2UDVTSzNaR1dO](https://forms.office.com/Pages/ResponsePage.aspx?id=e5V92hEVQkqy9Xj4R_jIeg1XrWjGqBdMjs1kcymdgLZUM1FZTINPVlpaRTU2TTU2UDVTSzNaR1dOQy4u)

Qy4u was sent to all participants. All materials used in the study were included in the link. Individuals interested in taking part would open the link, read the information sheet, and generate a participant number for their own reference. They would then complete the demographic survey followed by the Grit-S and GSE. The questionnaires were followed by a debrief which included the researcher and supervisor's contact details. All participants were thanked for their participation.

Results

Results

Overview

IBM SPSS Statistics version 26 was used to conduct the independent samples t-test and correlational analyses for the current study, with a sample (N = 94). Preliminary analyses were conducted to check the assumptions of the correlations and independent t-test. Though linearity was achieved, normality was tested through a Shapiro-Wilk test and was violated. Therefore, a non-parametric Spearman's correlation was conducted.

Levene's tests for equality of variance was not violated for the independent t-test investigating for differences in grit and self-efficacy between year of study. This indicated it was possible to continue with the independent t-tests.

The independent (predictor) variable for the present study was:

Year of study – (first and final year)

The dependent variables for the present study were:

Grit scores (Grit-S)

Self-efficacy scores (GSE)

Descriptive statistics

Figure 3 displays a table of the minimum and maximum scores obtained from the questionnaires as well as the mean and standard deviation scores of the participants. There was an equal number of participants in both year of study groups.

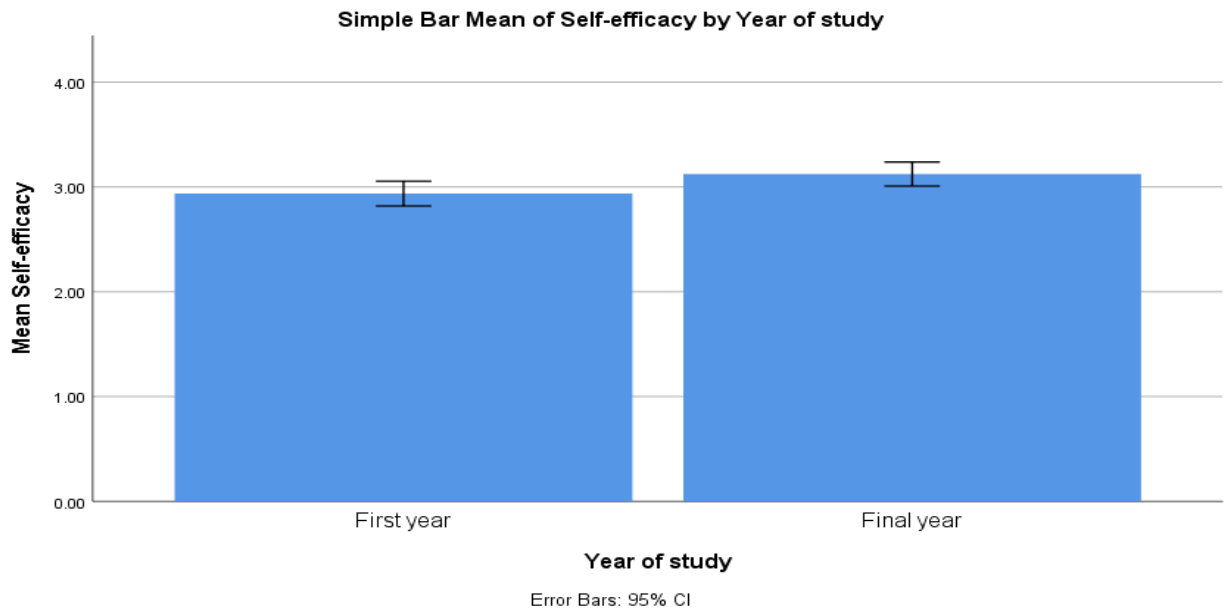
Figure 3: Table of mean and standard deviation scores for the variables and the minimum and maximum scores obtained.

<i>Variable</i>	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
<i>Self-efficacy</i>	94	1.89	4.00	3.03	.40
<i>Grit</i>	94	1.88	4.75	3.22	.61

Inferential Statistics

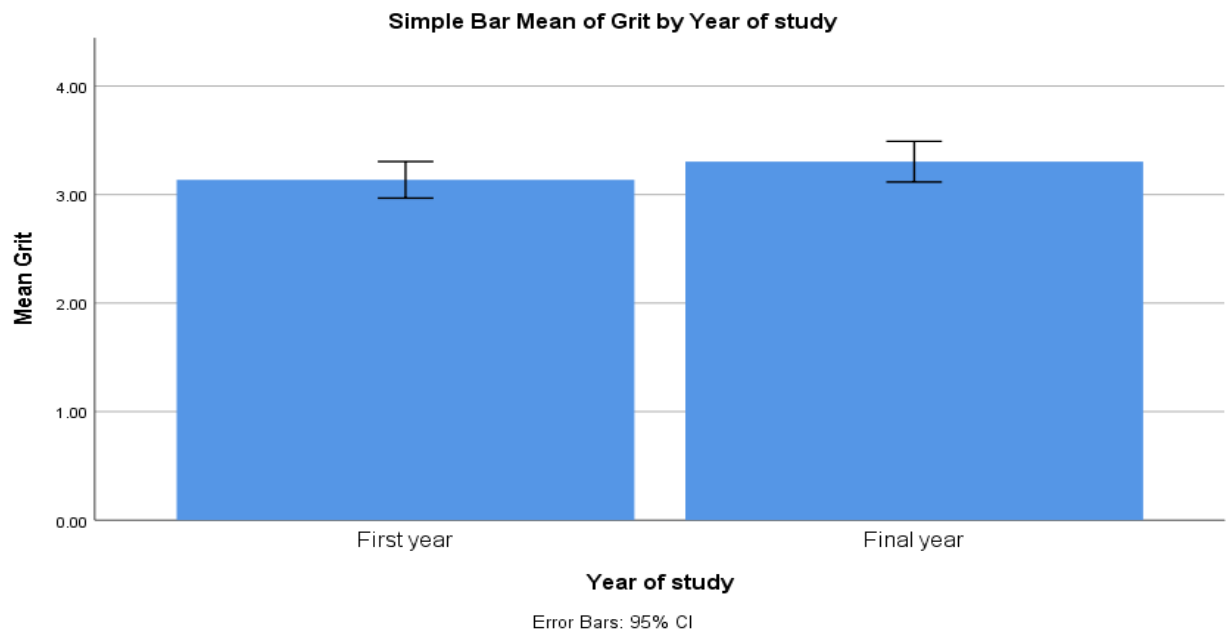
Hypothesis 1 stated that there would be a significant difference across the self-efficacy of first and final year students. An independent samples t-test was conducted to explore this hypothesis. There was homogeneity of variances, as assessed by Levine's test for equality of variances ($p = .664$) The results revealed higher mean scores in final year students ($M = 3.12$, $SD = 0.39$) than first year students ($M = 2.94$, $SD = 0.40$) this difference was statistically significant ($t(92) = -1.34$, $p = .025$, $d=0.455$) Figure 4 illustrates the differences, showing that the hypothesis was supported.

Figure 4: Mean GSE scores by year of study.



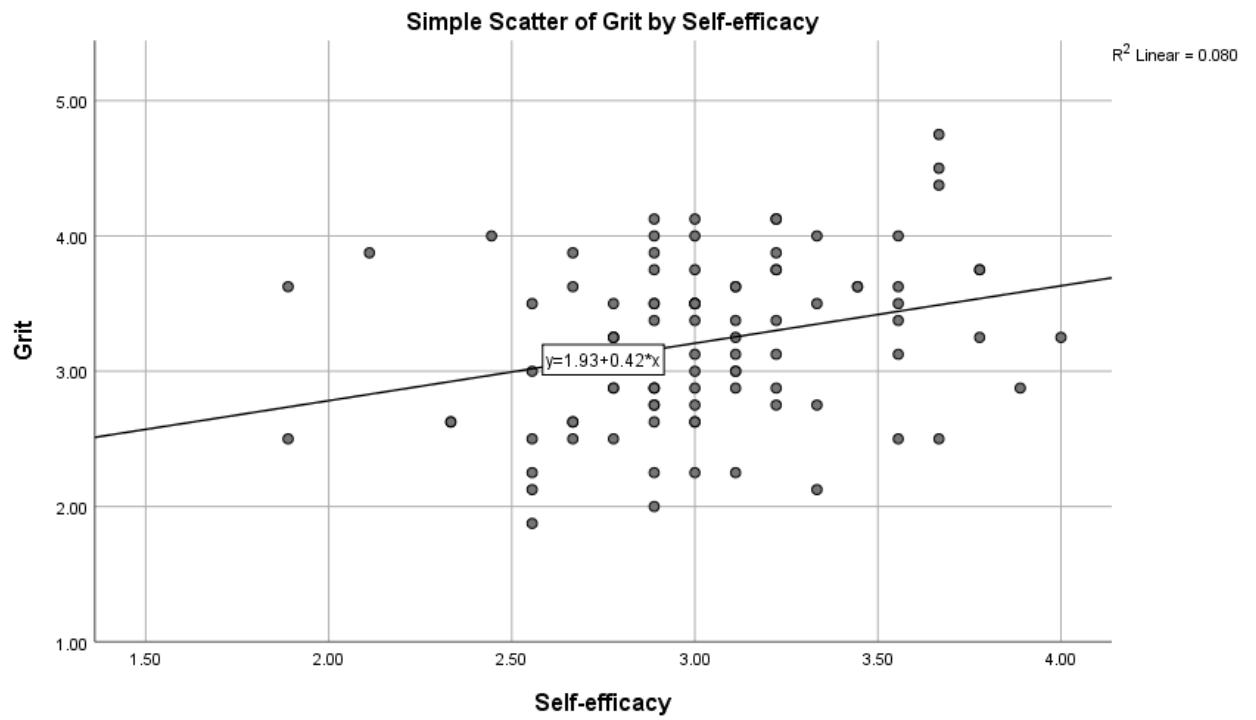
Hypothesis 2 stated that there would be a significant difference between the grit of first and final year students. An independent samples t-test was conducted to explore this hypothesis. There was homogeneity of variances, as assessed by Levene's test for equality of variances ($p = .702$). The results revealed higher mean scores in final year students ($M = 3.30$, $SD = 0.64$) than first year students ($M = 3.14$, $SD = 0.57$) this difference was not statistically significant $t(92) = -1.338$, $p = .184$. Figure 5 illustrates the differences, showing the final years with higher mean grit levels.

Figure 5: Mean Grit-S scores by year of study.



Hypothesis 3 stated that a relationship exists between self-efficacy and grit. A Spearman's correlation was conducted to explore this hypothesis. There was a statistically significant, weak positive correlation between grit and self-efficacy ($r = .294$, $n = 94$, $p = 0.04$). This supported the hypothesis.

Figure 6: Relationship between Grit-S and GSE



The results will now be discussed in the next section.

Discussion

Discussion

Overview

The current research aimed to investigate grit and self-efficacy levels between year of study (first and final year) in undergraduate students. It also investigated the relationship between the independent variables (Grit-S and GSE scores). Although previous studies have examined grit and self-efficacy in college students (Alhadabi & Karpinski 2020), no study had explored comparing first and last year of undergraduate degree using an Irish university sample.

Discussion of findings

It was hypothesised that there would be a significant difference in self-efficacy based on year of study. This hypothesis was supported, with final year students having statistically significantly higher self-efficacy than that of first years. This corresponds with previous research such as that of Aguilera-Hermida (2020), who found previous experiences and efficacy expectations contribute to self-efficacy. Aguilera-Hermida's study also found that, due to the change of college environment in their first year of study the undergraduates struggled to meet their goals and had low ability for self-regulation. The college environment requires students to believe they will be successful and in turn have greater self-efficacy, as they progress this becomes increasingly engrained in them (Thompson & Verdino, 2019). This research links to the 2016 study of Baier, Markman & Pernice-Duca where self-efficacy significantly predicted intent to persist amongst first year college students. The statistical analysis performed differed from the current study due to the involvement of other variables however the research design was also quantitative and cross-sectional. Unlike the use of the GSE in the present study, Baier, Markman & Pernice-Duca used the academic self-efficacy scale. Self-efficacy was found to be among the strongest predictor for intentions of students to persist through college semesters

(Baier, Markman & Pernice-Duca, 2016). Similar to the present study, the importance of self-efficacy in academic performance also indicates a reason as to why final year student self-efficacy is higher than that of first years as they have had to perform well in exams in order to progress through the years prior (Dinther, Dochy & Segers, 2011).

Hypothesis two stated that there would be a difference in grit based on year of study. This hypothesis was not supported. Previous research has theorised grit as essential to academic progression and success (Bashant, 2014). The resilience, conscientiousness, self-control, and perseverance for long term goals associated with grit as shown in the (2018) study by Hodge et al. were hypothesised as indicating a difference between the years of study but this was not the case in this study. However, this research also argued that grit provides little in the understanding of academic outcomes in college students (Hodge et al., 2018). The research was similar in that it was a cross-sectional study that used an online survey and was analysed through an independent samples t-test. Differences in the results may be due to the circumstances at the time of completion, in that the present study was conducted where students had to learn online because of the global Covid-19 pandemic whereas the 2018 Hodge et al., study surveyed students in expected circumstances (in person learning with no pandemic). The pandemic brings with it negative effects on students such as increased burnout, depression, and anxiety after changing from in person to online learning (Bolotov et al., 2021).

Hypothesis three stated that there would be a significant interaction between grit and self-efficacy. This hypothesis was supported and corresponds to previous research (Alhadabi & Karpinski, 2020). The correlation found was a weak positive one, this could be due to the limited sample size. Support for the hypothesis links to previous research by Alhadabi & Karpinski (2020) who found that grit's dimensions have a direct effect on self-efficacy. Grit has consistently been found to be positively correlated with self-efficacy (Usher et al., 2019; Oriol et al., 2017).

Strengths and limitations of the present study

Firstly, the study used valid and reliable questionnaires in the General Self-Efficacy and Short-Grit scales, both have been used in multiple published research papers (Simón et al., 2021; He et al., 2021; Alhadabi & Karpinski, 2020). The present research was also successfully completed during a pandemic, with both recruitment and research carried out online, thus enabling for comparison in further studies in the post Covid world. The study also contributes to what colleges need to investigate about students in different years of study. There has also been very little psychological research on self-efficacy and grit between year of study in college, and among an Irish sample. The study contained students from nine different Irish universities which is a strength for enabling generalisability towards the Irish student population.

Limitations were also present within this study. Due to ethics, mandatory responding could not be implemented, incomplete questionnaires (5) had to be withdrawn ("Code of Ethics | PSI", 2019). Self-reporting is another limitation, as it can bring about response bias. There were also more female participants than male participants. There were 62 female participants, 31 male participants and one participant preferred not to indicate their gender.

Theoretical and practical implications

This study contributes to research that the mindsets of students are different based on year of study. The current study builds on previous research into grit and self-efficacy, a gap in the literature was identified regarding grit and self-efficacy in undergraduate students based on year of study. Previous research has found that self-efficacy is a strong determining factor of a flourishing online educational experience (Aguilera-Hermida, 2020). With most colleges now operating entirely online it is imperative that students are instilled with self-efficacy. This contributes to the field of educational psychology. The main findings supported the hypotheses that year of

study predicts self-efficacy and that there is an interaction effect between grit and self-efficacy.

At the time this study was completed, the Covid-19 pandemic has forced many college campuses into a transition to remote learning, where classes are held online (Aguilera-Hermida, 2020). This presents a new variable of college experience for both first and final year students which could affect the determination, grit and self-efficacy of the students. Final year students may be better equipped for the transition, as they have self-regulated learning experience and have developed relationships with their peers already, as well as being academically focused (Aguilera-Hermida, 2020).

There are some practical implications from the results of this research, which are the value of the study has to university student services programmes. A 2019 analysis of completion in Irish higher education identified the incompleteness of first year as an issue (Pigott & Frawley, 2019). The findings provide insight to IADT's "First Year Matters" and "Final Year Matters – Moving On" programmes ("First Year Matters | IADT", n.d.; "Final Year Matters – Moving On", n.d.). Dinther, Dochy & Segers conducted an empirical review in 2011 of factors affecting students' self-efficacy in higher education found that educational programmes have the possibility to enhance students' self-efficacy. Findings could help contribute to those programmes. This research adds to evidence in favour of implementing the use of the Grit-S and GSE among other psychometric evaluations on students as a means to monitor progress outside of the traditional means such as grades and behaviour (Pigott & Frawley, 2019).

Future research

The current study provides direction for future investigation into grit and self-efficacy in a college setting. The research has been conducted during online, home learning amidst a pandemic. A longitudinal piece of research could be done to look at the first years from the present study to see if there have been changes to their grit or self-efficacy through their college years. Research could also be conducted on other students who attended college outside of a pandemic.

Future research could also look at mental health aspects such as stress or well-being in conjunction to grit and self-efficacy. Due to evidence of a correlation between the two dependent variables, it would be recommended to conduct a larger scale Manova to identify further where differences lie.

A suggestion for future research within the Thompson & Verdino (2019) study was for self-efficacy to be assessed in populations contending with additional life obstacles. This study data was collected and analysed during a global pandemic which, although varying in difficulty amongst students can often be a large hindrance on undergraduate life (Bolotov et al., 2021).

Conclusion

The potential for further research on grit and self-efficacy in higher education in Ireland has been fortified through the current study. Although there is plentiful research on grit and self-efficacy, the current study augmented research on differences in grit and self-efficacy between stages of progression among undergraduate students. A significant difference in the self-efficacy of final year undergraduates compared to first year undergraduates was identified. These findings highlight the importance of year specific university aids and further investigation into the mentalities of students in their first year. There was a weak positive correlation found between grit and self-efficacy, which corresponds with previous research on the two variables (Usher et al., 2019). Some findings from the present study differ to previous research findings, such as that there was no significant difference in grit among first and final year undergraduate students (Kannangara et al., 2018).

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Appendices

Appendices

Appendix A: Information sheet

Study title

Grit & Self-Efficacy in first and final year undergraduate students.

Purpose of the research

To investigate grit and self-efficacy in first and final year undergraduate students.

Invitation

You are being invited to consider taking part in a research study investigating grit and self-efficacy in undergraduate students. Please take time to read this information sheet carefully and discuss it with friends and relatives if you wish. Please ask the supervisor Irene Connolly (irene.connolly@iadt.ie) if there is anything that is unclear or if you would like more information before you make your decision to take part.

Do I have to take part?

You are free to decide whether you wish to take part or not. If you do decide to take part, you will be asked to answer yes to questions on the consent form which follows. You are free to withdraw from this study at any time and without giving reasons.

If I take part, what do I have to do?

If you agree to take part in this study, you will be asked to complete two questionnaires as well as a demographic survey. Completing these should take no more than 4 minutes of your time.

What are the benefits (if any) of taking part?

By taking part in this study, you will be helping an IADT 4th year student to complete his major research project. What are the disadvantages and risks (if any) of taking part?

The disadvantage of taking part in this study is the time taken to complete the questionnaires which should take no more than 4 minutes.

How will information about me be used?

The data collected will be added to a data set and statistically analysed in order to answer the research questions. The data collected may also be retained for use in future research studies.

Who will have access to information about me?

Your anonymity and confidentiality will be safeguarded both during and after the study is complete.

- At no point, will any identifiable information be collected from you.
- All data is stored securely in a soft copy format on a password protected computer.
- All data will be retained by the researcher for one year, should this dissertation be successfully published to an academic journal then your data may be kept for five years depending on the specific journal requirements.
- The data will be securely disposed of, through the deletion of any soft copies after 1 year or 5 years.

What will happen to the results of the study?

The results of the research study will be used to complete a major research project for a BSc (Hons) in Applied Psychology in the Institute of Art, Design and Technology (IADT). They will be published in this major research project report in the results section and will be discussed in the discussion section of the report. If you wish to receive a copy of the study in full you may contact details on the debriefing document, which will be provided to you upon completion of your participation in the study.

Who has reviewed the study?

This study has been approved by the Department of Technology and Psychology Ethics Committee (DTPEC) in IADT.

What if there is a problem?

If you have a concern about any aspect of this study, you may wish to speak to the researcher(s) who will do their best to answer your questions. You should contact Edward Bickers - N00172588@student.iadt.ie or his supervisor Dr Irene Connolly at irene.connolly@iadt.ie.

Thank you for taking the time to read this information sheet.

Appendix B: Consent Form

Consent form

Study title: Grit & Self- Efficacy in first and final year undergraduate students.

1.I confirm that I have read and understand the information sheet for the above study.

Yes

2.I understand that my participation is voluntary and that I am free to withdraw at any time.

Yes

3.I understand that data collected about me during this study will be anonymised before it is submitted for publication.

Yes

4.I agree to allow the data collected to be used for future research projects.

Yes

5.I am over 18 years of age.

Yes

6.Please enter your participant ID. Your participant ID consists of your initials followed by the last three digits of your phone number e.g. AB973.

Appendix C: Demographics

Demographic survey

7.What is your age?

8.Please indicate your gender.

- Male
- Female
- Prefer not to say

9.What university are you in?

10.What year of study are you in?

- First year
- Final year

Appendix D: Debrief form

Thank you very much for taking part in this research study.

The study in which you just participated in was designed to investigate self-efficacy and grit between first and final year undergraduate students.

If you have any questions about this study or you wish to have your data removed from the study at any stage, please contact me, Edward Bickers at the following email address: N00172588@student.iadt.ie. Alternatively, you may contact my supervisor, Dr Irene Connolly at IADT, at ireneconnolly@iadt.ie.

We thank you sincerely for contributing and assure you of the confidentiality and anonymity of your data.

If you have been affected by the content of this study in any way, the organisations below may be of assistance:

Aware: <https://www.aware.ie>

Samaritans: <https://www.samaritans.org/ireland/samaritans-ireland>

Appendix E: Short Grit Scale (Grit-S)

Short Grit Scale. Here are 8 statements that may or may not apply to you. Answer each question using a 5-point Likert scale ranging from 'Not like me at all' to 'Very much like me'. There are no right or wrong answers. Please be open and honest in your responding.

	Not like me at all	Not much like me	Somewhat like me	Mostly like me	Very much like me
New ideas and projects sometimes distract me from previous one.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Setbacks don't discourage me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been obsessed with a certain idea or project for a short time but later lost interest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a hard worker.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often set a goal but later choose to pursue a different one.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have difficulty maintaining my focus on projects that take more than a few months to complete.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I finish whatever I begin.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am diligent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix F: General Self Efficacy Scale (GSE)

General Self-Efficacy Scale. Below are 10 statements that you may or may not think are true about you. Indicate your opinion using the 4-point Likert scale ranging from 'Not true at all' to 'Exactly true'. There are no right or wrong answers.

	Not true at all	Barely true	Moderately true	Exactly true
I can always manage to solve difficult problems if I try hard enough.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If someone opposes me, I can find means and ways to get what I want.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy for me to stick to my aims and accomplish my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I could deal efficiently with unexpected events.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thanks to my resourcefulness, I know how to handle unforeseen situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can solve most problems if I invest the necessary effort.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can remain calm when facing difficulties because I can rely on my coping abilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am confronted with a problem, I can usually find several solutions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I am in a bind (difficult position), I can usually think of something to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No matter what comes my way, I'm usually able to handle it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix G: Reliability of scales

The following shows the Cronbach's alpha for the Grit-S and GSE respectively.

Grit-S

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.780	.778	8

GSE

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.832	.834	10

Appendix H: Ethics approval

6.15	Is there any realistic risk of any participant experiencing either physical or psychological distress or discomfort?		X	
6.16	I plan to use animals as part of my research study		X	
6.17	I plan to tell participants their results on a task or scale which I am using in my research.		X	
6.18	I am researching a sensitive topic which may cause some participants distress (such as, but not limited to, religion, sexuality, alcohol, crime, drugs, mental health, physical health, parenting, family relationships)		X	
6.19	One or more aspects of my study is designed to change the mental state of participants in a negative way (such as inducing aggression, frustration, sadness, etc.)		X	
6.20	My study involves deception or deliberately misleading participants in some way.		X	
6.21	My target population includes people who have learning or communication difficulties		X	
6.22	My target population includes patients (either inpatient or outpatient)		X	
6.23	My target population includes people in custody		X	
6.24	My target population includes people who may be experiencing an unusually high workload (such as teachers, medical professionals, etc.)		X	
6.25	My target population includes people who may feel under personal or professional pressure to take part in my research.		X	

Section 7: Declaration of an Amber Route project

I hereby declare that [all of / this aspect of (delete as appropriate)] my project involves no risk of physical, emotional, social or cognitive harm to participants; that I will obtain full informed consent from all participants and provide a full debrief afterwards (using the templates provided); that I will provide full anonymity and/or confidentiality to participants; and that my participants are not a potentially vulnerable population. In addition, I will ensure that all data which I gather is held in a manner which is compliant with GDPR, and will be deleted once it is no longer required (and definitely within 6 years of collection). At all times my study will be conducted in adherence to the ethical policies of the Psychological Society of Ireland and the British Psychological Society.

Student Signature: Edward Bickers Date: 30/11/20

Grainne Kirwan

Wed 02/12/2020, 15:06

Edward Bickers (Student); Irene Connolly

Reply all

Flag for follow up. Start by 31 March 2021. Due by 31 March 2021.

Label: student-delete1825 (5 years) Expires: 01/12/2025 15:06

Action Items



Dear Edward

Thank you for your Amber ethics application for the project entitled "Self efficacy and grit between first and final year undergraduate students"

I am pleased to inform you that your application has been approved and you can begin data collection when your supervisor advises that it is appropriate to do so.

Best of luck with your research

Grainne

Dr. Gráinne Kirwan CPsychol

Lecturer in Psychology

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Appendix I: Tests of normality

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Self-efficacy	.114	94	.004	.971	94	.037
Grit	.092	94	.047	.986	94	.423

a. Lilliefors Significance Correction

Appendix G: Independent T tests for grit and self-efficacy between year of study.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Self-efficacy	Equal variances assumed	.189	.664	-2.283	92	.025	-.18676	.08181	-.34924	-.02429
	Equal variances not assumed			-2.283	91.918	.025	-.18676	.08181	-.34924	-.02429
Grit	Equal variances assumed	.147	.702	-1.338	92	.184	-.16755	.12521	-.41622	.08112
	Equal variances not assumed			-1.338	90.979	.184	-.16755	.12521	-.41626	.08115

Appendix H: Correlational analysis between grit and self-efficacy

Correlations			Self-efficacy	Grit
Spearman's rho	Self-efficacy	Correlation Coefficient	1.000	.294**
		Sig. (2-tailed)	.	.004
		N	94	94
	Grit	Correlation Coefficient	.294**	1.000
		Sig. (2-tailed)	.004	.
		N	94	94

** . Correlation is significant at the 0.01 level (2-tailed).