A comparative study examining Perception of Emotional Intelligence and Perception of Cognitive Ability in regards to the Leaving Certificate point system.

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Abstract

Objective: There is a possible gap in the Leaving Certificate for understand, teaching and learning about emotional intelligence and could potentially improve test scores, because it is known that high levels of Emotional Intelligence associates with higher academic scores An assessment in the Leaving Certificate curriculum could accommodate for other forms of intelligence. This study's aim is to identify possible variables that predict Leaving Certificate points. Method: This study consisted of 50 participants who have acquired a Leaving Certificate qualification in the past two years were assessed. These individuals were assessed on their perception of cognitive ability, perception of emotional intelligence, age, gender, current employment status and current grades obtained. The age range of the participants were 18-21. Results: Males were found to have significantly higher Leaving Certificate results, there was not significant relationship between perceived emotional intelligence and Leaving Certificate points, which was hoped for. Conclusion: It is important for all to be aware of all the different variables that may play a role in an individual's Leaving Certificate results, as these variables may be precursors for future psychological research.

Contents

Chapter one: Introduction

According to Soufi and colleagues (2014), academic achievement is one of the most important but yet, challenging concepts of educational psychology it is comprised of several factors including mental characteristics and environmental factors. But what factors could possibly predict academic achievement? The current study examines individual's perception of cognitive ability, individual's perception of emotional intelligence, academic achievement at third level education, age and gender current grades achieved and current employment status.

1.1   What is the Leaving Certificate?

The Leaving Certificate is currently the final examination in the Irish secondary school system. It has been the same curriculum for the past 20 years. The department of health in 2016 gave €853 million for a new health and well-being programme, this highlights the popularity surrounding emotional intelligence and why it may have an effect on academic achievement. The leaving Certificate has come under criticism in the media recently for being a robust memory test, individuals have to retain a significant amount of information for a significant amount of diverse subjects and receive a score from 0 to 625 as a mark for their academic capability to gain access into possible further education. This could be suggested to have a preference for individuals who have higher cognitive abilities than others (Hen & Goroshit, 2014). The age of the individuals being assessed is usually 16-19 years old, an adolescent period researchers see as a significant

part of their life due to hormonal changes, life stressor such as relationships with family influence of peers and many more (Choudhury et al., 2006).

1.2   What is Cognitive Ability?

There are numerous definitions to try demonstrate an understanding for cognitive ability. Dettermin & Daniel (1989) addressed IQ as cognitive capacity and functioning as one's ability to learn, recall, apply think, reason and abstract, this was previously regarded as the equivalent of what we know as cognitive ability now. So, even when cognitive ability is still a relatively "new" paradigm, which has an intuitive appeal and rich literature surrounding the topic of IQ, it seems that it is still only surfacing in the realm of Cognitive Psychology.

Before the concept cognitive ability arose, there were multiple models trying to understand the field of intellectual ability. Simon and colleagues (1974) created a model now known as working memory. Working memory seemed to dominate the field of intellectual ability as a concept. Jacky au and colleagues (2014), they examined working memory and defined it as the ability to store and manipulate information for a short period of time, Working memory is an important predictor of scholastic aptitude and a critical underlying higher-order cognitive process, including controlled attention and reasoning (Jacky au et al., 2014). An extensive amount of research has examined the plasticity of working memory and how it can be trained and untrained, which is crucial for Leaving Certificate students who have to train their working memory for the series of tests. Transferring improved working memory to more general cognitive domains

arouse to more suited concept, such as fluid reasoning. Just like working memory, fluid reasoning can be trained or improved a study conducted by Jacky au and colleagues, (2014).

Cattell-Horn-Carroll theory believed individuals should be assessed with regards to all domains of cognitive abilities, but this proved to be problematic, there seemed to be too many abilities. What was then formulated was the combination of Cattell & Horns (Cattell, 1971; Horn, 1985, 1988) fluid reasoning and comprehensive knowledge theory of fluid and crystallized intelligence and Carroll's (1993) Three- Stratum theory, Cattell-Horn-Carroll theory was born thus an amalgamation of over 100 years of psychometric testing. Together there are 16 broad abilities that are; comprehensive knowledge, fluid reasoning, quantitative knowledge, reading and writing abilities, visual processing, auditory processing, and short and long term memory and more.

Jacobs& Rooden (2013) the Self Report Cognitive Abilities Subscale was based on the Cattel-Horn-Theory, the 3 abilities they provide in their assessment is Fluid Reasoning, Comprehensive Knowledge and Visual Processing, so why have the neglected 13 of the abilities that have fought so hard to be included in well-known batteries for intelligence? They conducted a pilot study investigating the 16 items and found that these 3 items are central to cognitive functioning in general (Carroll, 1993).

Fluid Reasoning arises early on in life and is applied by the child in any information retrieval process. Fluid reasoning is greatly influenced by another cognitive abilities such as numerical and complex spatial relations. When acquired, they stick to particular motor areas of the brain and become crystallised abilities, this shows the transformation from fluid to crystallised intelligence, according to McArdle and

colleagues (2002). Fluid reasoning advances rapidly through childhood and continues to grow through to early adolescence, but at a much slower rate until it reaches a limit and begins to decline. Fluid reasoning is found to be related to other cognitive abilities like working memory and executive functioning (Engle et al., 1999), due to it being such a broad ability of the cognitive domain this could be a factor of why it is included in the Self report Cognitive Abilities Subscale.

Fluid Reasoning is the deliberate but flexible control of attention to solve novel "on the spot" problems that cannot be performed by relying exclusively on previously learned habits, schemas and scripts, Cattell (1983) described it as a multi-dimensional construct, but its parts are unified in their purpose. Goswami, (1992) even went as far as saying fluid reasoning is an essential component of cognitive development. Fluid Reasoning has been positively related with mathematical achievement (Hambrick, 2003), and also has demonstrated significant relations with reading achievements (Evans et al., 2001). According to Goltfredson (1997) fluid reasoning accurately predicts performance in many domains of education- schools, colleges and cognitively demanding jobs.

Comprehensive knowledge is the depth and breadth of knowledge and skills that are valued by ones culture (Horn 1999). Different knowledge and skills seen as more important or less than other depending on the culture and learned practical and use information. The degree to which a person has learned or mastered practical knowledge or skills. Evans et al (2001) examined reading achievements and the Cattell Horn Carroll theory of cognitive abilities, and there was a significant relationship between comprehensive knowledge and reading achievement, maybe individuals scored higher on this due to their understanding of what they were being assessed on.

Weschler Intelligence Scale for Children third edition (WISC III; Weschler, 1991) which is known as the gold standard for assessing intelligence, only held 3 of the 16 CHC abilities, while the Stanford Binet- fourth edition (SB-IV; Thorndike, Hagan & Sattler, 1986) also a popular intelligence assessment, only held 4 of the 16 abilities has now been updated after the amount of supporting research around the Cattell- Horn-Carrol Theory and how includes more items from the theory "… Nearly all intelligence batter that are used with some regularity subscribe either explicitly or implicitly to the Cattell-Horn-Carrol theory" (Alfonso et al., 2005).

1.3   Academic Self Concept

Academic self-concept is one's knowledge and perceptions about one's academic ability, it stems from a vast psychological construct of the self-concept according to Hattie (1992). Bong and Skaalvic (2003) even extended this and suggested to consider Academic self-concept as a principal component of self-concept.

When self-concept was examined as a specific domain in relation to academic achievement there was a small significance between these two variables. However, when the researchers revaluated and retested a more specific topic such as academic self-concept there was a much larger significance between academic self-concept and academic achievement which Hansford & Hattie, (1982) suggested that self-concept is generally domain specific.

The ideation of what came first, academic self-concept or academic achievement has been ongoing for many years in the realm of academic psychology. According to

Guay and colleagues, (2003), academic self-concept has an effect on achievement, this is known as the self-enhancement model or the individual's mind-set. Gujame and Tiwari (2016) found that the relationship between mathematical, verbal, academic and general problem solving and overall understanding of their academic self-concept was so significant in relation to academic achieve it could not even be mediated by socioeconomic differences, this is exhibiting to break the socioeconomic boundaries and in turn support the self-enhancement model, making it, as Bong and Skaalic, (2003) pointed out not only a concept in the realm of academic psychology but a key component of Self-Concept, which is a huge concept regarded in psychology.

Marsh and Craven (1997) have a different outlook in the question of which comes first, academic self-concept or academic achievement. They believe academic self-concept and achievement are constantly feeding into one another, examining studies that adhere to self-enhancement approach that are statistically significant as well have a subsequently positive effect, this is known as the reciprocal model.

Marsh (2006) states that academic self-concept should not be seen as a single structure it is comprised of social psychological, physical and abilities, and that when all these are accounted for they have the highest effect on students' academic achievement. Wondimo, Ahmed and Brusna (2006) argue that academic self-concept indirectly plays an intermediate role for global self-esteem and academic achievement, however Marsh (1992) argues against this statement by saying Academic self-concept is not just a mediator role but plays a crucial part in academic achievement.

1.4   What is Emotional Intelligence?

Emotional Intelligence (EI) is a relatively new concept in the world of Psychology. Due to the amount of literature surrounding this topic, its popularity has grown significantly and has become a new paradigm in psychology**.** Salovey & Mayer (1990) described emotional intelligence as an affective regulation in oneself and others and understands how to use emotions or feelings to motivate, plan and achieve in one's life. Downey and colleagues (2008) described it as "A pure intellectual ability, related to a successful life". The concept of Emotional intelligence brings intuitive appeal and a new depth of understanding intelligence; it addresses emotional, personal social and survival aspects of intelligence (Druskat et al., 2013). Emotional Intelligence roots back to David Wechlser (1940). Who had the suggestion of non-intellective aspects of intelligence, "Non-intellectual general intelligence are not only admissible but necessary if the observations continue to be correct, we cannot be expected to measure intelligence without including non-intellective factors (Wechsler, 1943).

The cognitive perspective of emotional intelligence evaluates and quantify emotional intelligence as an intellectual factor, using objective tests, known as the performance model. Researchers examine possible psychometric tests while other's haven chosen the self-report measurement route, as a consequence of both psychometric and self-report there has been an established new meaning to emotional intelligence and what it is comprised of, both intellectual and personality factor, this is known as the mixed model of emotional intelligence. An emotional questionnaire created by Davies

and colleagues (2010) is a brief questionnaire based on the previous 33 items scale developed by Schutte & colleagues (1998) developed on the bases of Salovey's & Mayers (1990) concept of emotional intelligence. Salovey and Mayer's theory of emotional intelligence has been said to be twice as important as IQ according to Goleman, (1998). The theory is comprised of four branches, branch 1 is perceiving emotions, branch 2 is using emotions to facilitate thoughts, branch 3 is understanding emotions and branch 4 is managing emotions. The theory has been in question for its validity according to Becker, (2003), however Mayer and colleagues argued that the theory of emotional intelligence meets the criteria for traditional standards of intelligence, these are; the theory must be operalizational, shows similar patterns of correlation, should describe a factorially unified domain, should correlate with other intelligence and develop with age.

In relation to Davies and colleagues (2010) self-report brief questionnaire of emotional intelligence, perceived emotional intelligence is a core variable in validating the scale, if individuals perceive themselves as highly emotionally intelligent but in reality are not, can a self-report questionnaire be a valid psychometric measurement? Salovey et al., (1995) set out to examine the validity of the trait meta-mood scale, as a well-established measure of emotional intelligence and it showed adequate reliability across age groups, not only is perceived emotional intelligence a huge predictor of academic achievement, but also work ethic and overall life satisfaction.

Exams can infer stress and then in turn can be detrimental to exam assessments, Exam season, whether it be the Junior Certificate, the Leaving Certificate or college exams can be a predictor for stress, but does emotional intelligence control for this? Reza Miri and colleagues (2013) examine emotional intelligence and academic stress in

medical students, emotional intelligence is about predicting effective factors in people's lives whether it be educational or a profession, although this hypothesis was not supported, it can promote success, maybe individuals who are high in emotional intelligence are more invested and confident in their academic abilities and could lead to individuals resistance of stress.

As it has been found that individuals who are high among the emotional intelligence scale not only use stress as a promoter but also are found to be motivationally orientated and highly self-regulated according to Salovey & Mayor, this supports Pintrich and DeGroot's (1990) findings that individuals with higher levels of self-regulation predicted academic performance. "Individuals beliefs and emotions can impact their academic performance" (Anes & Archer, 1988; Nolen, 1988), even from early on researchers knew the importance of emotional intelligence on academic performance.

Parker and colleagues (2004) supports these findings when they examined academic achievement, and found it to be strongly associated with several dimensions of emotional intelligence. All these findings links to Leaper's (1948) suggestion that emotional thought contributes to logical thought, meaning that emotional intelligence may help to excel cognitive abilities or logical thought.

There are already examples of an emotional intelligence curriculum being utilised, this has been seen in Rhode Island, America (Pasi, 1997) and also Daniel Goleman (1998) studies have shown that emotional intelligence predicts higher job performance three times more that cognitive abilities. This study has been replicated over 500 times in corporations, governments, agencies, hospitals and schools.

1.5 Academic Self- Concept and Emotional Intelligence

Emotional intelligence is a structural model for the prediction of academic achievement and academic self-concept, according to Soufi and colleagues (2014). It is actually a component of Soufi and colleagues structural model for emotional intelligence, and when both paired in an experimental setting it is shown to have a significant effect on children's academic performance, from the above information one could infer that if emotional intelligence is developed and strong at a young age this may result in a stronger reciprocal model for young individuals in where academic self-concept and academic interact and promote growth in one another due to heightened emotional intelligence.

1.6 Gender and Academic Achievement

A meta-analysis conducted by Voyer and Voyer (2014), set out to evaluate gender differences across all levels of education, with regards to academic achievement. It was hypothesis that females will outperform males. Fortin and colleagues (2015) produced similar work examining an American setting where females are outperforming males at a young age, and according to Wolfe and Johnson (1995) this continues throughout in high school.

1.7   Second Level Achievement and Third Level Achievement

According to Wolfe and Johnson (1995) high school grade averages predict 25% of college grades. Bandura (1997) noted that individual's sense of control in an environment may affects their academic ability, early negative academic performance is likely to lesson an individual's beliefs in their ability to academically achievement. This theory supports the Wolfe and Johnson (1995) study as individuals who perform well early on have a heightened sense of control and possibly exceed in their later studies.

1.8   Rationale for the Study

There is a possible gap in the Leaving Certificate for understand, teaching and learning about emotional intelligence and could potentially improve test scores, because it is known that high levels of Emotional Intelligence associates with higher academic scores (Parker et al., 2004). An assessment in the Leaving Certificate curriculum could accommodate for other forms of intelligence. This has been seen in Rhode Island, America (Pasi, 1997). An emotional intelligence curriculum has been used across state schools, prisons and hospitals.

A lot of research has examined emotional intelligence and there has been a vast amount of literature examining cognitive ability, but not in the relation of the Leaving Certificate. These two predictor variables have somewhat support of previous research in how the Leaving Certificate still only takes into account cognitive abilities, while

emotional intelligence is rich with supporting literature, examining the difference between emotional intelligence training and it's outcomes compared to cognitive ability and it's outcomes is limited. There has been a lot of literature examining Emotional Intelligence and cognitive abilities but it has not been addressed by looking at both these variables in regards to the Leaving Certificate. Including age, gender, current employment tatus and current grades being obtained in the study may increase our current knowledge on the variables such as perceived emotional intelligence and perceived cognitive ability and Leaving certificate results being tested in relation to demographics, and in order to find out more about those variables, the basics such as potential demographical differences will be examined first.

The Leaving Certificate can be viewed as a robust memory test (Baird et al., 2014), which may have favouritism for individuals that have higher cognitive abilities, compared to those that may be emotionally intelligent but do not necessarily follow the criteria for higher cognitive abilities.

Daniel Goleman (1998) studies have shown that emotional intelligence predicts higher job performance three times more that cognitive abilities. This study has been replicated over 500 times in corporations, governments, agencies, hospitals and schools.

Applying these findings to the Leaving Certificate could possibly accommodate for other forms of intelligence and individuals could do better overall in the Leaving Certificate.

As both measurements being used are self-report measurements they must fit the criteria of the traditional standards for intelligence psychometric measurements, which includes, operational shows similar patterns of correlation, should describe a factorially

unified domain, should correlate with other intelligence but be differential and develop with age. Another criteria these measurements should abide by is that there is multi-items opposed to singular, which is present in both studies, also the use of criterion measures that appropriately match the specificity of the self-report obtained.

1.9 Aims

As there is very little literature that has explored the nature of this topic, the aim of this study is explorative and directional, there is literature supporting emotional intelligence and its positive affect on academic performance but never specifically to the Leaving Certificate. Due the Leaving Certificate being heavily dependent on cognitive abilities and the lack of understanding of emotional intelligence within the Irish school system.

Aim 1: Females will have higher Leaving Certificate points

Aim 2: Perceived cognitive ability will positively predict high Leaving Certificate points

Aim 3: Perceived emotional intelligence will not positively predict high Leaving Certificate points

Aim 4: Age will positively predict high Leaving Certificate points

Aim 5: Participants current employment status will positively predict high Leaving Certificate points

Aim 6: Participants current achieving grades will positively predict high Leaving Certificate points

Chapter 2: Method Section

2.1   Sample

The research sample that was obtained was a convenience, snowballing sample as it was shared on a social media platform through colleagues, friends, family and peers to gain as many participants as possible. The participants (N=50) who have acquired a Leaving Certificate qualification in the past two years were assessed. The age range of the participants were 18-35. 46 individuals who took the test did not meet the criteria of having done the Leaving Certificate within two years were excluded from the study. All participants took part in two questionnaires and one informative report. All anonymity of participant was assured. All participants had the option of withdrawing from completing the questionnaires at any time. Participation was completely voluntary. Nothing was given to them to reinforce participation.

2.2   Design

The design for this study was a cross-sectional, explorative, correlation design. The predictor variables included are cognitive ability, emotional intelligence, and gender, age at which the individual underwent the Leaving Certificate, college results if applicable and current employment. The criterion variable included in the study is the points the participants received from their Leaving Certificate. A multiple-regression analysis was utilized to assess the predictor variables relationship with the criterion

variable. As this was a correlational design there was no requirement for experimental or control groups. The study was approved by the research panel of National College of Ireland Ethical Committee.

2.3   Materials

The method of data that was used was an online Google questionnaire. This entailed a brief page prior to the questionnaires. What was required; asking the participants their gender and age at taking the Leaving Certificate, as there may be a difference in points received in the Leaving Certificate between older and younger participants as it may reflect the literature of cognitive development.

The first test that was administered was the Self-Report Measure of Cognitive Abilities (SRMCA) designed by Jacobs & Roodenburg (2013). This test was designed to indicate cognitive functioning in regards to the Cattell Horn Carroll (CHC) theory (1968). This theory assesses (1) fluid reasoning, (2) comprehensive knowledge and (3) visual processing. This test firstly, before review, underwent two pilot studies and was a 25 item scale. It was revised and retained 18 of the items from the original and 1 item was proposed by a reviewer. A 19 item report was formulated, which has a 7-point likert scale, 1 being extremely difficult to 7 being extremely easy. This was administered in regards to the aim of the study wanting to examine cognitive ability as a predictor variable in relation to the Leaving Certificate Points. It received a Cronbach's alpha value of .80. **See Appendix 1 for the items of the SRMCA**.

The second test that was administered to the participants was the Brief Emotional Intelligence (BEI) scale created by Davies et al, (2010). This is a 10 item shortened scale based on the Salovey and Mayer's (1990) concept of Emotional Intelligence. The scale was previously based on the 33 item scale developed by Schutte and colleagues (1998). The items included in this scale were evaluated from the previous EIS scale and determined which factors are most important in understanding emotional intelligence. After many trials of this test, results supported a 5 factor brief scale that can examine emotional intelligence adequately. These include two items per factor. The factors are (1) appraisal of own emotions, (2) Appraisal of other's emotions, (3) Regulation of own emotions, (4) Regulation of other's emotions and (5) utilization of emotions. All items are rated on a 5-point Likert scale, 1 being strongly disagree and 5 being strongly agree. It received a Cronbach's alpha value of .76. **See appendix 2 for the items included in the BEI scale.**

2.4   Procedure

An online platform was chosen to administer the test. Google forms was the tool chosen when designing the layout of both the Brief Emotional Intelligence questionnaire and the Self-report Measure of Cognitive Abilities questionnaires. There was a "cover sheet" with pertinent information with regards to the nature of the study and if participant has any questions to contact the researcher. **See appendix 3 for items included in the "cover sheet"**

A pilot study was conducted to investigate how long on average it will take participants to read the cover letter, accept the terms and conditions and complete the questionnaire, five individuals took part in the pilot study with the average time being 5-6 minutes. This timing provided important information that was mentioned in the information section of the cover sheet.

The data collection began in January and was opened to any person over the age of 18 who have completed the Leaving Certificate. The questionnaire remained online for three weeks until the desired amount of participants were acquired. 96 participants were obtained, however one of the criteria's for the study was that the individual must have done the Leaving Certificate within a two year frame from taking part in this test. All individual's answers were checked and 50 participants met the criteria out of 96.

2.5   Data Analysis

The statistical test that was used was a Multiple Regression Model. Multiple Regression is similar to a correlation only that correlation is extremely limited, because not every two variables in the world have a 100% direct 1 to 1 relationship, and multiple regression is multivariate. Multiple regression examines the correlation but, takes into account other variables that can predict a criterion variable. These predictor variables must have a theoretical or statistically knowledgeable understanding and a relationship with the criterion variable. This statistical test was chosen due to the variables that are under investigation. To examine the Leaving Certificate Points this is the criterion variable while the predictor variables include cognitive ability, emotional intelligence,

gender, and age at taking the Leaving Certificate, current age, current third level

academic achievement if applicable and current employment status.

2.6   Ethical Concerns

Possible ethical issues were that individuals may want to withhold information

about their leaving certificate scores because this is private information to them. A way

that this was addressed was to inform the participant that the information they share will

be private and confidential as there is no way it will be identifiable and let individuals

know they have the right to withdraw at any given time if they feel uncomfortable with

the topic at hand and will not be penalised for it. All ethical guidelines as prescribed by

the Psychological Society of Ireland and the ethics committee of the third level

institution were adhered to. Each participant could withdraw from the study at any

given time.

Chapter 3: Results Section

3.1   Reliability Statistics

The Brief Emotional Intelligence scale and Cognitive Abilities item scale were checking for reliability using Cronbach's Alpha analyse. Emotional intelligence found to be highly reliable upon checking the 10 items (a= .730). The cognitive ability scale comprised of 17 items similarly displayed high levels of internal consistency (a= .907) **(see table 1).** The two main variables in the study were found to be internally consistent were then computed into an overall variable by SPSS and will be used in the following sections for examining descriptive and inferential statistical analysis.

Table 1

Reliability Statistics for Independent and Dependent Variables

Variables	No. Of Items	Cronbach's Alpha
Perceived Cognitive Ability Scale	10	.730
Perceived Emotional Intelligence Scale	17	.907

3.2 Frequency and Descriptive Statistics

This study comprised a total of 50 participants (males: n=12, females: n=38). 3% of the participants are 18 years old, 19% year old category, 6% in the 26-33 year old category, 3% in the 34-40 year old category and 2% in the 41 years old and above category **(see table 2).** Histograms for overall scores on the continuous variables are normally

Table 2

Frequencies for the current sample of participants who done the Leaving Certificate on each demographic variable (N = 50)

Variable	Frequency	Valid Percentage
Gender		
Male	12	24
Female	38	76
Age		
18	3	6
19	19	38
20	26	52
21	2	4

HMYACLC		
1 year	16	32
2 years	34	9.9
Current Employment		
	32	64
F-T student P-T	10	20
employment		
	6	12
F-T student not employed		
	2	4
F-T employed		
P-T employed		
	5	10
CGA		
	9	18
Pass (40-49)		
	21	42
2.2 (50-59)		
	9	18
2.1 (60-69)		
	6	12
First (70+)		
Not Applicable		

* HMYACLC: How many years ago did you complete the Leaving Certificate, CGA:

Current grades achieved

In **table 3**, descriptive statistics including means and median for the Leaving Certificate points acquired by the participant's, perceived emotional intelligence and perceived cognitive ability. The Leaving Certificate descriptive statistics mean (394.5) and the median (395) these are both similar to one another, predicting that they are normally distributed. The BEISTOTAL descriptive statistics was mean (37.38) and the median (38), also are similar to each other, predicting normally distributed data and the SRMCATOTAL score for descriptive statistics was mean (81.62) and median (82) which also predicts normally distributed data.

Table 3

Descriptive statistics of all continuous variables

	Mean (95% Confidence Intervals)	Std. Error Mean	Median	SD	Range
LCP	394.5(200-590)	13.94	395	98.54	200-590
BEIS	37.38 (35.88-38.88)	.745	38	5.27	14-48
SRMCA	81.62(76.68-86.56)	2.46	82	17.37	34-111

*LCP: Leaving Certificate Points, BEIS: perception of emotional intelligence, SRMCA: perception of cognitive abilities

3.3   Inferential Statistics

Prior to the multiple regression analysis a preliminary correlation analysis was performed which is presented in **table 4**.

3.4   Correlation Analysis

Investigating aims 1-6

The relationship between Leaving Certificate and sex was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a strong positive correlation between the two variables, $r = .505$, $n = 50$, $p = .000$. This indicates that high Leaving Certificate points are associated with sex. The two variables shared 25% of variance in common. This indicates that high Leaving Certificate points is associated with sex.

The relationship between Leaving Certificate points and age was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a weak, negative correlation between the two variables, $r = -.06$, $n = 50$, $p = .343$. This indicates that Leaving Certificate points are negatively associated with age. The two variables shared .36% of variance in common. This indicates that Leaving Certificate points negatively associated with age.

The relationship between Leaving Certificate points and current employment was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a weak-to-moderate, negative correlation between the two variables, $r = -.32$, $n = 50$, $p = .011$. This indicates that Leaving Certificate points are negatively associated with current employment. The two variables shared 10% of variance in common. This indicates that Leaving Certificate points are negatively associated with current employment.

The relationship between Leaving Certificate points and current grades achieved was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a weak, negative correlation between the two variables, $r = -.05$, $n = 50$, $p = .364$. This indicates that Leaving Certificate points. The two variables shared .25% of variance in common. This indicates that Leaving Certificate points are negatively associated with current grades achieved.

The relationship between Leaving Certificate and perception of emotional intelligence was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a weak, positive correlation between the two variables, $r = .008$, $n = 50$, $p = .476$. This indicates that Leaving certificate points have a weak association with perception of emotional intelligence. The two variables shared .01% of variance in common. This indicates that leaving certificate points have a weak association with perception of emotional intelligence.

The relationship between Leaving certificate points and perception of cognitive ability was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a weak, positive correlation between the two variables, $r = .186$, $n = 50$, $p = .098$. This indicates that Leaving Certificate results have a weak association with perception of cognitive ability. The two variables shared 3.5% of variance in common. This indicates that leaving certificate points have a weak association with perception of cognitive ability.

Table 4 (for displaying correlations between variables)

Correlations between all continuous variables

Variables	1	2	3	4	5	6	7
1. Leaving Cert Points	1						
2. Age	.51***	1					
3. Sex	-.06	.04	1				
4. Current Employment	-.32**	-.21	-.20	1			
5. Current Grades Achieved	-.05	.08	.15	.34**	1		
6. BEISTOTAL	.01	.23	.15	-.01	.07	1	
7. SRMCATOTAL	.19	.17	.13	-.22	.09		1

Note. Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

3.5   Multiple Regression Analysis

Investigation aims 1-6

Multiple Regression analysis was performed to investigate the gender, age, current employment, current grades achieved, perception of cognitive abilities and perception of emotional intelligence to predict Leaving Certificate points. Preliminary analyse were conducted to ensure no violation of the assumption of normality, linearity and homoscedasticity. Additionally the correlations between the predictor variables in the study were examined. All correlations were weak to moderate ranging between r=.33, p< .001 and r= .58 < .001. This indicates multicollinearity was unlikely to be a problem (see Tabacknick & Fidell, 2007). All predictor variables were statistically correlated with the Leaving Certificate points which indicates that the data was suitably correlated with the criterion variable for examination through multiple linear regression to be reliably undertaken.

Since no priori hypotheses has been made to determine the order of entry of the predictor variables, a direct method was used for the multiple linear regression analysis. The six independent variables explained 33.3% of variance in the Leaving Certificate points ($F(3, 43) = 3.58$, P=.006)

In the final model gender was the only significant predictor of Leaving Certificate points ($\beta = .47$, p = .001). This result indicates that gender may predict Leaving Certificate points.

Table 5

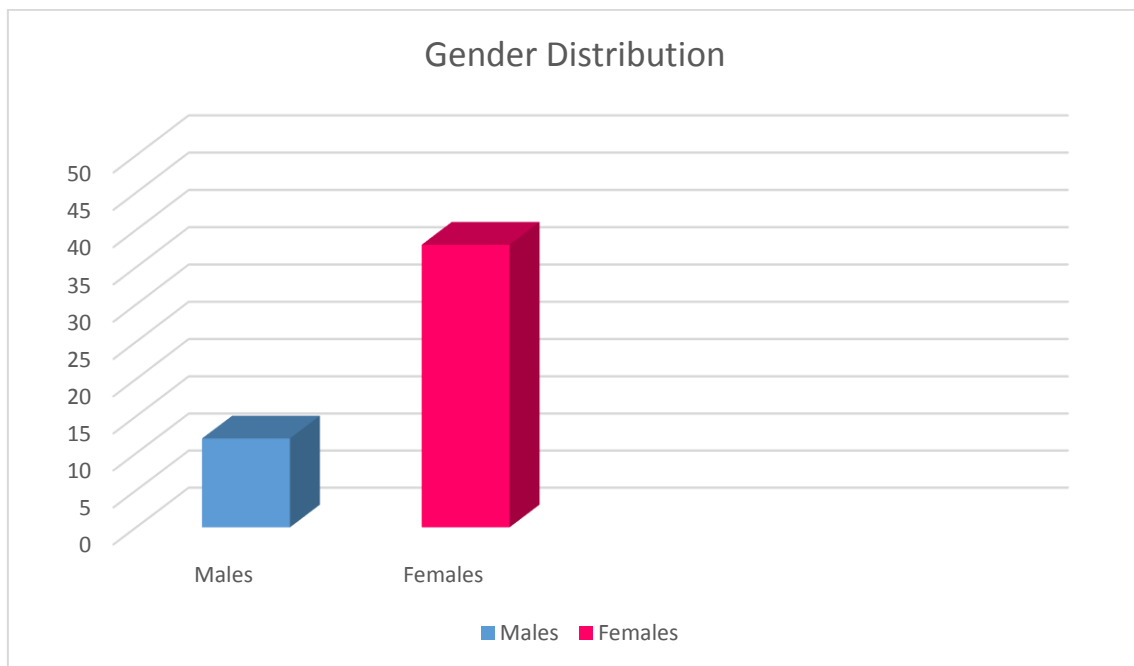*Multiple regression model predicting Leaving Certificate points*

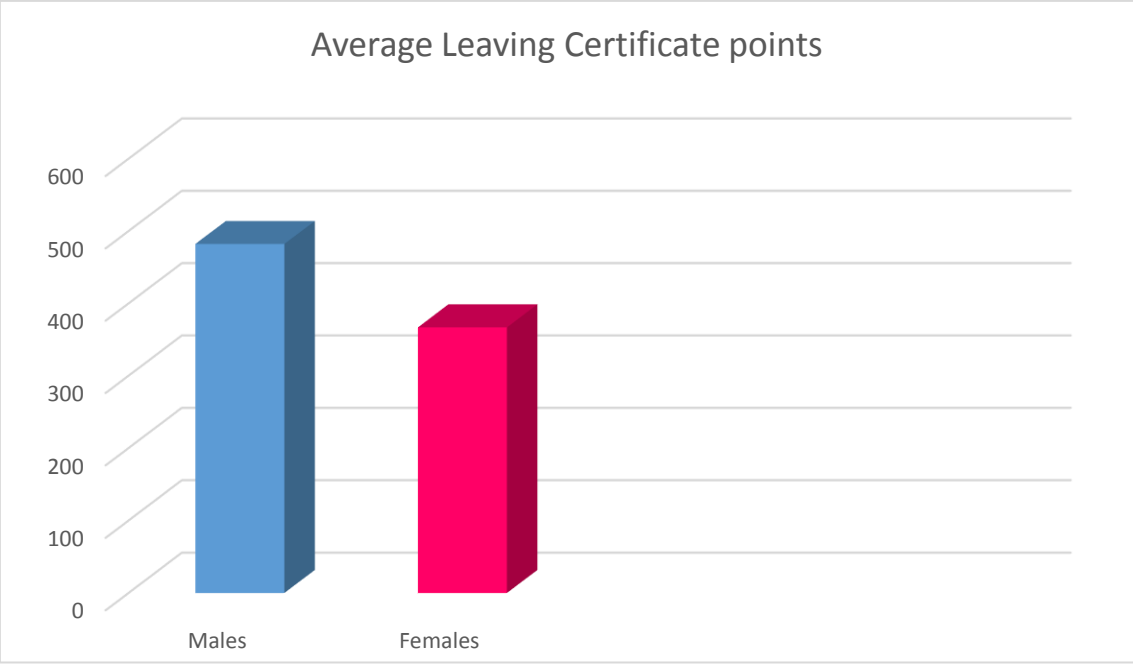|	R^2	*B*	*B*	*SE*	CI 95% (B)
Model	.577**				
Sex		.464**	105.9	30.30	44.81 / 167.02
Age		-.128	-18.6	19.45	-57.85 / 20.61
Current Employment		-.215	-24.6	16.72	-58.37 / 9.08
Current grades achieved		-.045	-3.9	12.23	-28.57 / 20.77
BEISTOTAL		-.042	-.78	2.43	-5.67 / 4.12
SRMCATOTAL		.109	.62	.74	-.88 / 2.12

Note. N = 398; Statistical significance: *p* < .05; **p* < .01; ***p* < .001

3.6 Independent Samples T-test

Investigating aim 1

An independent samples t-test was conducted to compare Leaving Certificate points between males and females. There was a significant difference in scores between the two groups of, $t(48) = -4.05$, $p = .000$, two-tailed with males ($M = 482.08$, $SD = 103.89$) scoring higher than females ($M = 366.84$, $SD = 79.85$). The magnitude of the differences in the means (mean difference = -115.24, 95% CI: -172.47 to -58.01) was large (Cohen's $d = 1.254$).

Average Leaving Certificate points

Chapter 4: Discussion section

There is a large amount of literature surrounding what actually predicts academic performance, however not a lot of research has been done examining the predictors of academic achievement with regards to the Irish Leaving Certificate, as most interest has been focused on other countries school systems and third level academic achievement.

The aim of this study was to examine what variables out of age, gender, third level academic achievement, current employment status, perceptions of emotional intelligence and perception of cognitive abilities and investigate if they significantly predicts Leaving Certificate points.

The questionnaires (the Brief Emotional Intelligence scale and the Self-Report Measure of Cognitive Abilities) used were tested for reliability using Cronbach's alpha, they proved to be internally consistent, meaning that they are reliable questionnaires and support the findings mentioned by Jacobs & Roodenburg (2013) and Davies et al, (2010).

When there was a significance relationship found Leaving Certificate points, a t-test was then revised and ran to see if there was a significant difference between males and females.

Aim one was the only aim with a strong literature background, suggesting that females tend to do better academically (Fortin et al., 2015; Voyer &Voyer, 2014), as it was supported by previous literature it was hypothesised that females have higher Leaving Certificate points than males. The findings, using an independent samples t-test

found to have a statistically significant difference however, it was found that males have higher Leaving Certificate points than females which fails to support hypothesis one. A possible explanation for this result could be due to the distribution within the sample, as there were significantly less males participating this may have skewed the findings, as those male individuals who participated may have achieved a Leaving Certificate above the norm and does not represent the sample general sample for males.

Including age and gender in the study increased our current knowledge on the variables such as perceived emotional intelligence and perceived cognitive ability and Leaving certificate results being tested in relation to demographics, and in order to find out more about those variables, the basics such as potential demographical differences were examined first.

Prior to carrying out the regression analysis a bivariate correlation analysis was conducted to ascertain the relationships between the independent variables and the dependent variable. This included aims one to six. Sex and current employment were the only two variables that had a significant correlation with high Leaving Certificate points, this correlation analysis supported the findings from the t-test, that gender is important within this study. Perception of cognitive ability and perception of emotional intelligence were the main variables being examined, the aim regarding perception of cognitive ability was not support. However, the aim regarding perception of emotional intelligence was found to be supported.

Aims two to six was all assessed using a multiple regression analysis as they were all exploratory in perceived emotional intelligence will not positively predict high Leaving Certificate points, age will positively predict high Leaving Certificate points

and will current employment status positively predict high Leaving Certificate points. The main focus of this study was to highlight the importance of perception of cognitive ability with regards to the Leaving Certificate and how it disregards emotional intelligence, so it was presumed that there would be a significant relationship between perception of cognitive ability and Leaving Certificate points, and there to not be a significant relationship between perceived emotional intelligence and Leaving Certificate points.

The aims were presented in such a way as they reflect a lot of topical literature, however because much of this literature did not examine perception of emotional intelligence and perception of cognitive ability they had to remain as explorative aims and not hypothesis'.

Perception of cognitive ability is one of the main interests of this study. Dettermin & Daniel (1989) illustrated the importance of cognitive ability, Jacobs & Roodenberg (2013) supports the importance and how relevant Dettermin & Daniel's statement is nearly 30 years onward. Cognitive ability and individuals perception of their cognitive ability, has been one of the main attributes of intelligence. Many studies have focused on the relationship between cognitive ability and academic achievement (Alfonso et al., 2005; Jacky au et al., 2014; McArdle et al., 2002; Engle et al., 1999; Goswani, 1992). Similarly, perception of emotional intelligence is another main variable of this study. Emotional intelligence, which is a relatively new concept and has dominated many discussions within psychology, has found to have a direct link with academic achievement and even more extensively, overall life success. The main aim of this study was to show that the Leaving Certificate heavily depends on cognitive ability, instead of emotional intelligence, ideally there was supposed to be a significant

relationship between perception of cognitive ability and Leaving Certificate points, and a there to be no significant relationship between emotional intelligence and Leaving Certificate points. However this was only partially supported.

Current grades achieved was the fifth aim, this was included to investigate the relationship between academic achievement from second level education to third level education, as it has been shown in previous literature that individuals who do well in second level education tend to continue with this success (Wolfe &Johnson, 1995), however this again, this aim was not supported in both the correlation analysis and the multiple regression analysis

Current employment was the sixth aim, this was included like age and gender just to increase our current knowledge of the variables at interest, such as perception of cognitive ability and perception of emotional intelligence with relation to Leaving Certificate points, seeing if individuals who are more applied to college, or individuals who go to college compared to those who are full time workers and seeing if that impacted their Leaving Certificate points, the preliminary correlation analysis revealed there was a significant relationship between current employment and Leaving Certificate, there was no significant results found in the multiple regression analysis. Implying that the more variables added to the analysis may have dulled the significance of this interaction between the two variables being examined.

Aim 3 was the only aim out of the six aims were supported, also there was statistical significance found in the-test, the preliminary correlation analysis and the multiple regression statistical analysis, gender was the main variable which was found to be statistically significant with regards to Leaving Certificate points.

4.1   Strengths and Limitations within the study

Some of the strengths, weaknesses and future direction will now be examined. The main strengths within this study include, the reliability of the questionnaires used. They were relatively short, straight forward and easy to understand, all these factors came together cohesively for quick and easy assessment. Future work examining these areas included that it would be cheap to reproduce and because of how straight forward and easy it is more individuals would be willing to participate.

The main problem with this study was the sample, or the lack of to be more precise, 96 individuals partook in the questionnaire phase, however 48 of these individuals did not meet the criteria, and these people were over the two year criteria for doing their Leaving Certificate. This left only 50 participants, this also did not meet the criteria for a multiple regression analysis, according to Stevens (1996) it must be 15 participants per predictor. This may have been the reason why very littles significance was found among the variables being tested. Ways of combating this would include, directing the study towards a younger sample those around the one/two year mark for when they did their Leaving Certificate, the problem may have been that the researcher shared the questionnaire on a social platform that aims towards her age group which is 3+ years since individuals have completed their Leaving Certificate.

The distribution within the sample was extremely ungeneralizable, there were more females than males and because of this the sample representing males did not generalise the average Leaving Certificate for males and it was way higher, which showed to be significantly greater to the females average.

Self-report measurements were used for this study. Individuals may perceive themselves as better as or worse than what they are. Individuals with low emotional intelligence may actually have performed worse on the cognitive ability questionnaire as emotional intelligence can be seen as how individuals perceive themselves and others around them, individuals who can confidently rate themselves as accurate as possible, this may reflect on high emotional intelligence. This gives implications for future work and supports the opening statement of how we should be focusing on improving individual's emotional intelligence among all age groups, but especially among the younger population as it has such important applications for succeeding in the future.

Another problem with regards to the sample was the technique used, it was a convenience snowball sampling. The problem with this could be possible sampling bias and that it does not represent the population at hand, for example, all individuals who partook in the Leaving Certificate up to two years ago.

4.2   Future Research

Undoubtedly, the number of limitations mentioned above could be considered and may improve the overall outcome of this study and possibly future research. An area that could be considered for future research is sample size and population distribution. This study only had 50 participants. Future studies could expand on the sample size in hopes of getting a variety and stronger results that reflect on the population. Future studies could involve different age groups. Maybe perception of individuals cognitive ability and emotional intelligence prior the Leaving and then after,

to investigate continuous or discontinued trend which would display a different

perceptions of how individuals see if the Leaving Certificate has any relation to

4.3   Conclusion

The Leaving Certificate is undoubtfully a robust test and may still need revision

to assess and to contribute to individual's emotional intelligence. In summary, this study

provides a brief snapshot of individual's Leaving certificate points and perception of

emotional intelligence, perception of cognitive ability, age, gender, current employment

and current grades being obtained. The results suggest gender is a significant predictor

of Leaving Certificate points. The results also suggested that males obtained higher

Leaving Certificate points than females. Aim 3 was the only aim that was supported,

this indicates that perception of emotional intelligence does not have a significant

relationship with high Leaving Certificate points. It was interesting that the minority

group (males) had a higher average than females. It is important for researchers,

practitioners and the general public to be aware of all the different variables that may

play a role in an individual's Leaving Certificate results, as these variables may be

precursors for future psychological research.

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Appendix

Appendix 1

Self-Report Measure of Cognitive Abilities Items. (SRMCA)

Fluid Reasoning Subscale

1. Come up with a solution to a problem never experienced before
2. Look at a problem from multiple perspectives
3. Anticipate outcomes
4. Come up with a strategy to solve a difficult problem
5. Use information I have learnt previously in a new context

Comprehension-Knowledge Subscale

1. Understand written instructions
2. Convey precisely what I am trying to say
3. Express a large vocabulary
4. Think of the correct name of an object
5. Display the extent of my general knowledge
6. Demonstrate my word knowledge (e.g., crosswords, scrabble)

Visual Processing subscale

1. Follow visual diagrams that come with "assemble yourself" products
2. Understand information presented in visual format
3. Visually estimate if something will fit (e.g., if leftover food will fit in a container, or if a bookcase will fit between other pieces of furniture)
4. Imagine how an object will look when it is completed (e.g., how a piece of furniture will look once assembled, or how a piece of clothing will look once it has been sewed)
5. Mentally rotate three-dimensional images in my mind
6. Imagine what an object would look like from a different angle
7. Determine if furniture will fit in a room just by visualizing it
8. Complete games that require visual skills (such as jigsaw puzzles or mazes)

Appendix 2

Brief Emotional Intelligence Scale Items (BEIS-10)

Appraisal of own emotion

1. I know why my emotions change
2. I easily recognize my emotions as I experience them

Appraisal of others' emotions

1. I can tell how people are feeling by listening to the tone of their voice
2. By looking at their facial expressions, I recognize the emotions people are experiencing

Regulation of own emotions

1. I seek out activities that make me happy
2. I have control over my emotions

Regulation of others' emotions

1. I arrange events others enjoy
2. I help other people feel better when they are down

Utilization of emotions

1. When I am in a positive mood, I am able to come up with new ideas
2. I use good moods to help myself trying to face with obstacles

Appendix 3

Perceptions of ability and emotional intelligence in relation to academic achievement.

You are being invited to participate in a research study about emotional intelligence and cognitive ability in regards to the Leaving Certificate. This research project is being conducted by Aoife Brady as part of the BA (Hons) in Psychology degree from the supervision of Dr. Rebecca Maguire. The objective of this research project is to see if the Leaving Certificate is affected by other factors, beyond cognitive abilities. The below study is quite brief and should take approximately 5 minutes.

There are no known risks if you decide to participate in this research study. The information you provide will help me understand and also help researchers, teachers and students about how valuable other forms of intelligence and ability might be when examining the Leaving Certificate. The information collected may not benefit you directly, but what I learn from this study should provide general benefits to the Irish schooling system. This survey is anonymous.

If you choose to participate, do not write your name on the questionnaire. No one will be able to identify you, nor will anyone be able to determine where you come from, or your age or where you attended school. No one will know whether you participated in this study.

Your participation in this study is voluntary. If you choose to participate, please tick the box below giving your full consent.

If you have any questions or concerns about completing the questionnaire or about being in this study you may contact me through my email address

x14323351@student.ncirl.ie.

* Required

Do you give your full consent to take part in this survey *

- Yes

- No

Perceptions of ability and emotional intelligence in relation to academic achievement.

* Required

How old are you? *

Your answer

What is your Gender? *

- Male

- Female

Did you complete the Leaving Certificate? *

- Yes

- No

If so, how old were you when you completed it? *

Your answer

How many years ago did you complete the Leaving Certificate? *

- 1 year ago

- years ago

- years ago

- 4 years ago +

- Not applicable

How many points did you get in your Leaving Certificate? (If applicable) *

[   ]

Your answer

What is your current employment status? *

- Full-time student and in part-time employment

- Full time student, not currently employed

- Full-time employed

- Part-time employed

- Neither in education or employment.

If answered " student or in education" to the above question what current grades are you achieving? *

- Fail (below 40)

- Pass (40-49)

- 2.2 (50-59)

- 2.1 (60-69)

- First (70+)

- Not applicable