

**Effect of gratitude on life satisfaction and perceived academic performance of  
psychology students**

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## Abstract

Much research has attempted to understand how we can live optimal lives and improve our overall life satisfaction. Due to the negative impact, negative emotions have on many individuals, there is a need to investigate possible strategies that may deliberately increase the level of positive emotions with the intention to improve overall life satisfaction. In this study, I used a mixed measures research design and recruited a sample of third years Psychology students to compare the effectiveness gratitude has on overall life satisfaction, which was conceptualized as a composite score of their self-reported levels of optimism, hope, gratitude, positivity, happiness, and interest sustainability. Second, the effect of their gratitude levels was also examined on their perceived academic performance. In order to achieve this, a gratitude application (the gratitude app) was used as a tool, by participants in experimental group B, to encourage participants to actively practice their gratitude (intervention) over seven weeks. All participants (control group A (n=24) and experimental group B (n=23) completed a questionnaire every three weeks, which gave us their baselines scores, middle scores during the intervention, and final scores after the intervention. The results indicated that gratitude had an effect on optimism, hope, interest sustainability, and perceived academic performance. Overall, the findings indicated that participants who used the gratitude app had an overall increase in their self-reported level of life satisfaction and perceived academic performance compared to those who did not use the gratitude app. This research indicates that gratitude is a promising strategy to use in order to increase levels of positive emotions and as a result overall life satisfaction.

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## Table of Contents

Abstract.....	i
Acknowledgements.....	ii
List of Tables.....	v
List of Figures.....	vi
Chapter one: Literature Review.....	1
Relevancy to New Zealand.....	2
Gratitude and Optimism.....	4
Gratitude and Hope.....	5
Gratitude and Positivity.....	5
Gratitude and Happiness.....	6
Gratitude and Interest Sustainability.....	7
Perceived Academic Performance.....	7
Chapter two: This Study.....	9
Aim.....	9
Research Design.....	10
Method.....	12
Setting.....	12
Participants.....	13
Procedure.....	13
Storage and Disposal of Data.....	16
Method Followed for Preserving Confidentiality and Anonymity.....	16
Chapter three: Measurement.....	17
The Life Orientation Test-Revised.....	17
The Adult Hope Scale.....	17
The Gratitude Questionnaire Six-Item Form.....	18
The Positivity Self Test.....	18
The Orientation to Happiness Measure.....	19
The New Short Grit Scale.....	19
Perceived Academic Performance.....	20
MANOVA.....	20
Mauchly's Test of Sphericity.....	20

ANOVA.....	21
Paired Samples <i>t</i> Test.....	21
Independent Samples <i>t</i> Test.....	21
Chapter four: Results.....	22
The Life Orientation Test-Revised.....	23
The Adult Hope Scale.....	26
The Gratitude Questionnaire Six-Item Form.....	30
The Positivity Self Test.....	34
The Orientation to Happiness Measure.....	38
The New Short Grit Scale and Perceived Academic Performance.....	41
Summary of the Outcome Measures.....	44
Chapter five: Discussion.....	45
Gratitude and Optimism.....	45
Gratitude and Hope.....	46
Gratitude.....	47
Gratitude and Positivity.....	47
Gratitude and Interest Sustainability.....	48
Gratitude and Perceived Academic Performance.....	49
Understanding the Individual's Role in Practising Gratitude.....	50
Chapter six: The Practical Importance of the Results with Regard to the Objectives.....	51
Objective one.....	51
Objective two.....	51
Objective three.....	51
Chapter eight: Strengths.....	52
Chapter nine: Limitations and Future Research.....	53
Chapter nine: Conclusion.....	54
References.....	55
Appendices.....	61

## List of Tables

Table 1: Between-Subjects Experimental Design.....	12
Table 2: Within-Subjects Factors for LOT-R.....	23
Table 3: Between Subjects Factors for LOT-R.....	24
Table 4: MANOVA <sup>a</sup> applied to LOT-R.....	24
Table 5: Mauchly's Test of Sphericity <sup>a</sup> applied to LOT-R.....	25
Table 6: Within-Subjects Factors for AHS.....	26
Table 7: Between-Subjects Factors for AHS.....	26
Table 8: MANOVA <sup>a</sup> applied to AHS.....	27
Table 9: Mauchly's Test of Sphericity <sup>a</sup> applied to AHS.....	28
Table 10: Within-Subjects Factors for GQ-6.....	30
Table 11: Between-Subjects Factors for GQ-6.....	30
Table 12: MANOVA <sup>a</sup> applied to the GQ-6.....	30
Table 13: Mauchly's Test of Sphericity <sup>a</sup> applied to GQ-6.....	31
Table 14: Tests of Within-Subjects Effects for GQ-6.....	32
Table 15: Tests of Between-Subjects Effects for GQ-6.....	33
Table 16: Group A Ratios for All Questionnaire Attempts.....	34
Table 17: Group B Ratios for All Questionnaire Attempts.....	36
Table 18: Within-Subjects Factors for OTHM.....	38
Table 19: Paired Samples Statistics of OTHM.....	38
Table 20: Paired Samples Correlations of OTHM.....	39
Table 21: Paired Samples Test applied to OTHM.....	39
Table 22: Between-Subjects Factors for NSGS and PAP.....	41
Table 23: Within-Subjects Factors for NSGS and PAP.....	41
Table 24: Group Statistics for NSGS and PAP.....	42
Table 25: Independent Samples Test for NSGS and PAP.....	42

### List of Figures

Figure 1: Number and age-standardised rate of suicide deaths, 2007–2016.....	3
Figure 2: Age-specific suicide rates, by life-stage age group (years), 2007–2016.....	4
Figure 3: Overall distribution of LOT-R in all three questionnaire attempts for all participants.....	23
Figure 4: Overall distribution of AHS in all three questionnaire attempts for all Participants.....	29

## Chapter one: Literature Review

Throughout the years, philosophers and psychologists have sought to fully understand life satisfaction and continue to seek ways of enhancing it (Guignon, 1999). The most common way of achieving 'life satisfaction' was to follow a sovereign principle. Thus, hedonism was introduced. Hedonism (Aristippus, 435-366 BCE) was a concept which aimed to maximize pleasure and minimize pain. Contrasting to hedonism, Aristotle's (384-322 BCE) theory of eudemonia suggested that personal virtues are key in achieving true happiness. Over the years psychologists have debated both concepts, often favouring one theory over the other, and suggesting that both theories work independently of each other. However, research suggests that both theories have evidence that support their claims (Ryan & Deci, 2000). In this research I seek to extend these ideas by using gratitude as a virtue to create or enhance positivity (pleasure), thus maximising positivity and minimizing pain which, in theory, will improve overall life satisfaction.

Further understanding of human nature is one of many reasons why life satisfaction is a common theme in empirical research. Upon investigating various research regarding this topic, it is clear that there is a significant relationship between life satisfaction and gratitude (Carmen, 2017). More specifically, it has been suggested that gratitude can predict life satisfaction (Toepfer, Cichy, & Peter, 2012). This study examines overall life satisfaction by representation of six factors of human nature; optimism, hope, gratitude, happiness, positivity, and interest sustainability, and investigates the relationship between life satisfaction, gratitude, and student perception of academic performance. I propose that gratitude is pivotal in an individual's level of life satisfaction and the more gratitude is expressed by an individual, the more optimism, hope, happiness, positivity, and interest sustainability they will have which will therefore increase their overall life satisfaction. I also believe that an increase of overall life satisfaction will improve their self-esteem, which is represented in this research by perceived academic performance.

Although gratitude is a common topic among researchers, there has been little agreement regarding the definition of gratitude. Some researchers claim gratitude to be a personal feeling of wonder and appreciation for life (Emmons & Shelton, 2002), while others believe gratitude to be an affective experience (Rosenberg, 1998), and some suggest gratitude is a skill of being able to recognise and respond with grateful emotion (McCullough, Emmons & Tsang 2002). There



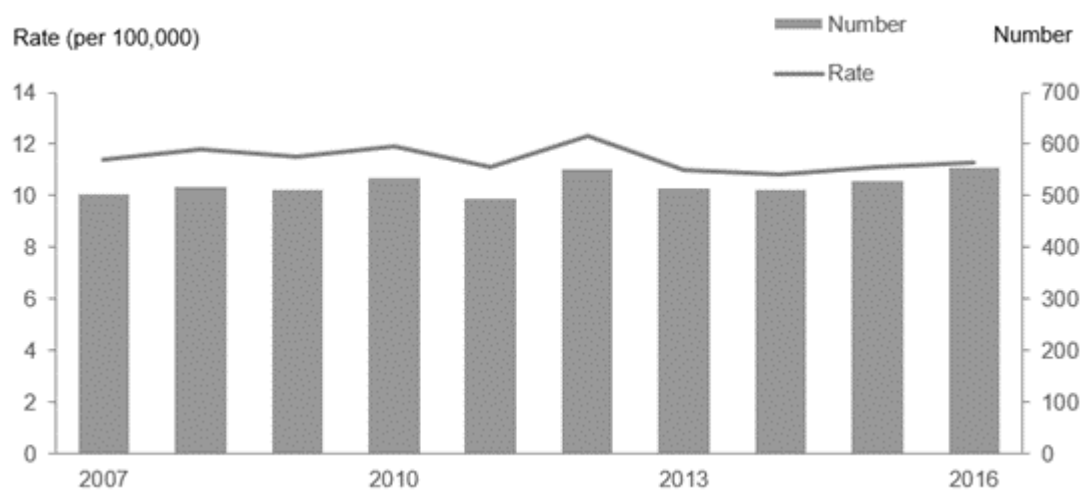
may be little agreement in the definition of gratitude, however there is a common understanding that gratitude has a significant effect on an individual's general life satisfaction and emotional well-being (Fincham & Graham, 2010). In this research gratitude is identified as striving to recognise positivity within daily life. Gratitude is more than an individual simply feeling 'thankful,' rather, gratitude is a force that compels an individual to search for, recognise, and identify what reflects positivity in their life. This idea aligns with McCullough et al., (2002) suggestion of gratitude being a skill.

Diener, Oishi, and Lucas (2003) believe life satisfaction to be a global understanding and evaluation of personal satisfaction in daily life. Diener, (1984) suggested that gratitude could lead to a higher level of life satisfaction because of its positive nature. The premise was that the high level of positivity drawn by the sense of gratitude should reduce the individual's level of negativity, thus improving their overall life satisfaction. The hypothesis for this research mimics that premise and seeks to extend it to the idea that if gratitude is able to improve overall life satisfaction then it could improve individual perception of academic performance, thus creating the idea that higher levels of life satisfaction positively impacts personal perception. Although personal perception often changes, personal perception has an important role in an individual's life. Personal perception/ self-esteem is the way in which an individual views themselves. Self-esteem has been thoroughly researched and has been found to have a strong correlation with psychological functioning in daily life (Kernis, 2005) as well as a strong correlation to depression (Sowislo & Orth, 2013). McCullough et al., (2002) found that individuals who displayed gratitude reported lower levels of stress and depression.

### **Relevance to New Zealand**

The New Zealand 2011/2012 Health Survey indicated that 14.3% of New Zealand adults (more than half a million people) had been diagnosed with depression at some time in their lives, and 6.1% of people had been diagnosed with anxiety disorders. Anxiety and depressive disorders are considered to be the second-leading cause of health loss for New Zealanders which accounts for 5.3%, while the leading cause, coronary heart disease, accounts for 9.3% of health loss (Mental Health Foundation, 2014). In 2016, 553 deaths were deemed as suicide in New Zealand. This equates to an age-standardised rate of 11.3 per 100 000 (*Figure 1*). The age group with the highest rate of suicides was 15- 24 years (16.8 per 100

000) and those between the ages of 25-44 years (16.3 per 100 000) (*Figure 2*) (Ministry of Health, 2016). There is hope that this research will establish gratitude as one strategy that the general public can use to improve their positivity, decrease their negativity, and therefore possibly reduce the likelihood of depression. This will be done by using gratitude as a tool within the participant's lives and measuring their overall life satisfaction.

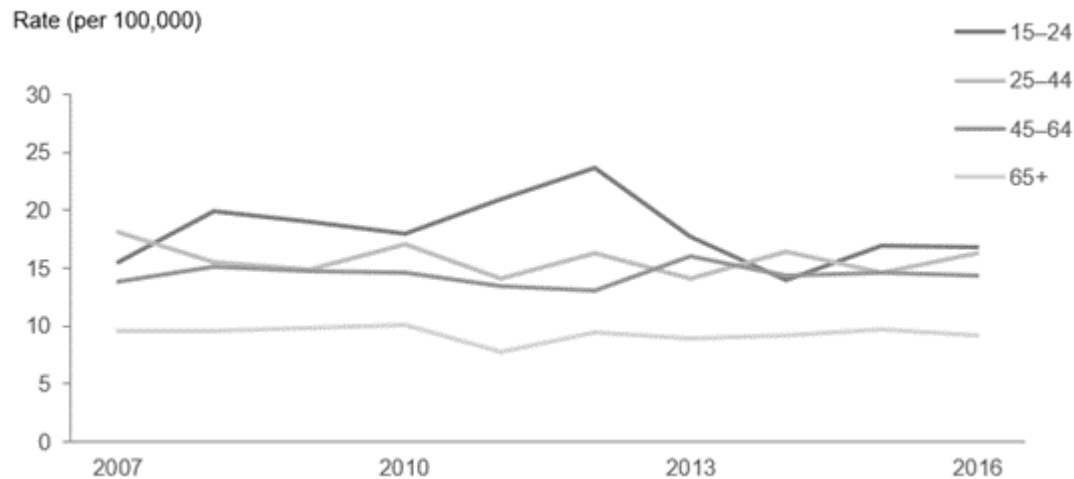


Note: Numbers that are similar across multiple years produce different rates due to changes in population size.

Rates are expressed per 100,000 population and age standardised to the WHO World Standard Population.

Source: New Zealand Mortality Collection (Ministry of Health, 2016).

*Figure 1.* Number and age standardised rate of suicide deaths, 2007-2016.



Note: Rates are expressed per 100,000 population.

Source: New Zealand Mortality Collection (Ministry of Health, 2016).

*Figure 2. Age-specific suicide rates, by life-stage age group (years), 2007–2016.*

### **Gratitude and Optimism**

Kassinove and Sukhodolsky (1995) understand optimism to be a positive expectation of future outcomes with the idea that positive outcomes will surpass negative events. Although hope and optimism are often misunderstood to have the same meaning, the distinction between optimism and hope is that optimism refers to the belief of positive future outcomes and has less focus on the pathways of achieving these possible outcomes. Hope, however, is considered to be more focused on the goals, the pathways to the goals, achieving, and maintaining the goals. Hope is more focused on the process rather than the outcome (Gallagher & Lopez, 2009). In an investigation to determine the effects gratitude has on people, it was found that people who displayed more dispositional gratefulness had higher levels of positive emotions such as life satisfaction, vitality, and optimism (McCullough et al., 2002).

Moreover, in another study, Liberman, Boehm, Lyubomirsky, & Ross (2009) found that participants who displayed more gratefulness for positive events reported higher levels of life satisfaction and optimism for future positive outcomes. In this research optimism will be measured using a ten-item Likert-type scale, the Life Orientation Test-Revised (LOT-R) (Appendix B) (Scheier, Carver, & Bridges, 1994)

which assesses how optimistic the participant is in the present as well as how optimistic they are about the future. We aim to understand how optimistic participants may feel in their everyday lives and how gratitude may affect those feelings, if it does at all.

### **Gratitude and Hope**

Hope has been defined as personal belief that one can be motivated to develop and use pathways which will enable them to achieve their desired goals (Snyder, Rand, & Sigmon, 2005). Recent literature found that gratitude is linked to many adaptive psychological outcomes including, increased life satisfaction, hope, and optimism (Froh, Yurkewicz, & Kashdan, 2009). In a recent study investigating the correlation between life satisfaction, forgiveness, gratitude, and hope, it was found that there is indeed a correlation between life satisfaction and hope. In fact, participants who were more hopeful than others expressed higher life satisfaction in comparison to those who were less hopeful. It was also found that participants who displayed dispositional gratitude had higher levels of life satisfaction and hope. The research concluded that there are strong positive correlations between these three variables (Szcześniak & Soares, 2011). In this research hope will be measured using a twelve-item Likert-type scale, the Adult Hope Scale(AHS) (Appendix B) (Snyder, Harris, Anderson, Holleran, Irving, Sigmon, Yoshinobu, Gibb, 1991) which questions personal perception of problem-solving-skills while assessing how hopeful the participants are in solving problems. We hypothesize that gratitude will improve participants' individual levels of hope and therefore improve their overall level of life satisfaction.

### **Gratitude and Positivity**

Positive emotions have rarely been a focal point of research. This may be due to the fact that psychological research often focuses on psychological problems and intervention methods for these problems rather than focusing on positivity. However, positive emotions have started to create interest in research because of the relationship between positive emotions and optimal well-being (Fredrickson, 2002). In a (2003) study which investigated the relationship between gratitude and subjective well-being, the Gratitude Resentment and Appreciation Test (GRAT) was used as a measure, which has ten more items than the scale (the Gratitude Questionnaire Six-Item Form) used in this study, and it was found that not only was

there a positive relationship between the GRAT and subjective well-being, but it was also found in two experiments that positive thinking and gratitude improved the participants' moods. Overall, the study confirmed the theory that gratitude is an effective trait pivotal to subjective well-being (Watkins, Woodward, Stone, & Kolts). In this research we hypothesize that gratitude will boost positive emotions, which will have an overall positive effect on life satisfaction and general well-being. This will be done by the use of the gratitude application (app) by participants in the experimental group (group B). Participants in group B will be instructed to use the app as often as possible (daily is preferred) throughout eight weeks. Participants will also complete the 20 item Positive Self Test (PST) (Appendix B) within the questionnaire, we believe that group B will have positive changes in their data compared to the control group (group A) who will not be using the gratitude app.

### **Gratitude and Happiness**

The definition of happiness seems to be ever-changing, it is often determined by age, and can mean something different for each generation. It has been suggested that people in the younger generations often associate happiness with the feeling of excitement, while the older generation often believe happiness to be a sense of peace. The idea behind this ever changing definition throughout the ages is that younger people are often content in the here and now, and are constantly focussing on what excitement the future may bring. This is often different for many people of the older generations, who have a higher focus on the present time, enjoying being in the moment (Mogilner, Kamvar & Aaker, 2010). Happiness has been considered to have positive correlations to an individual's overall well-being.

Previous research suggests that happy people are more likely to be more energetic, passionate, vibrant, and have an increased rate of engagement and sociability compared to less happy people (Csikszentmihalyi & Hunter, 2003); (Park & Peterson, 2006); (Peterson, Ruch, Beermann, Park & Seligman, 2007). In this research happiness will be measured using an eighteen-item Likert-type scale, the Orientation to Happiness Measure (OTHM) (Appendix B) (Peterson, Park, & Seligman, 2005) which seeks to find out how invested individuals are in their lives as well as how they view their life purpose. I hypothesize that gratitude will improve participants' individual levels of happiness and therefore improve their overall level of life satisfaction.

## **Gratitude and Interest Sustainability**

There is little research on the relationship between gratitude and interest sustainability. However, Howells (2012) believed that students who entered the classroom with an attitude of gratitude experienced higher levels of engagement, focus, and motivation towards learning. This was in contrast to students entering the classroom with a spirit of complaint, who were found to have limitations in their ability to think, concentrate, integrate information, or see value in learning. A recent study investigated the effects gratitude has on focus during learning and resilience when learning may present some challenges. Rather than using the gratitude journal like I did in this research, the intervention was text messages sent to the experimental group once or twice a week reminding the participants to practice gratitude throughout the semester. The control group did not receive any text messages.

At the end of the semester all participants were invited to complete a questionnaire and 84% of the participants in the experimental group completed the questionnaire while only 58% of the control group completed the questionnaire. The study results indicated that 44% students in the experimental group identified that they practiced gratitude at least three times per week and 40% students identified that they practiced gratitude less than once per week. Whereas 23% students in the control group identified that they practiced gratitude at least three times per week and 30% students identified that they practiced gratitude less than once per week. Participants who practiced gratitude at least three times weekly tended to report an increase in their level of gratitude, their ability to focus, and their ability to remain resilient in learning. There was only a slight increase in students who self-reported practicing gratitude less than once each week (Wilson, 2016). The research suggested that gratitude can have significantly positive effects on interest sustainability as well as resilience in learning, which I hypothesise will be identified in this research. For the purpose of this research, interest sustainability will be measured using the eight-item Likert-type scale, The New Short Grit Scale (NSGS) (Appendix B).

## **Perceived Academic Performance (PAP)**

Dienere, (1984) believed that gratitude can have positive effects on life satisfaction and that it could decrease negativity and increase positivity. An individual's general positivity links to many variables, one of which is their overall self-worth, how they perceive themselves. However, self-esteem is such a broad

term and can be difficult to fully dissect, and for that reason in this research I have decided to use PAP as a stem of self-esteem. PAP reflects how an individual views their academic achievement, indicating whether or not they view themselves as highly as an A+ student with a grade percentage between 90-100% and a GPA score of 9, or whether they view themselves as low as an E student with a grade percentage between 0-39% and a GPA score of 0 (based on the University of Waikato grading scale, 2016) (Appendix B). This is just one small aspect of their overall self-esteem, however it gauges some understanding of how positive or negative they can view themselves. The participants will be asked to select which grade represents how they view their academic achievement over the last five years (2014-2019). The GPA scores will be used in our data.

## Chapter two: This study

### Aim

The aim of this research is to investigate the effects of gratitude, by use of the gratitude journal (gratitude app) on overall life satisfaction and perceived academic performance of psychology students at the University of Waikato. The gratitude journal is a psychological measure often used within Positive Psychology. It is designed to promote daily gratitude by writing in a journal. In this research a gratitude app will be used as the journal. The vision for this research is to have a better understanding of the connection between gratitude, perceived academic performance, and overall life satisfaction; specifically, in areas of optimism, hope, positivity, gratitude, happiness, and interest sustainability. There are two main objectives for this research:

1. Does gratitude have an effect on overall life satisfaction, which is measured in this research by optimism, hope, positivity, gratitude, happiness, and interest sustainability.
2. Does gratitude have an effect on personal perception, which is measured in this research by perceived academic performance.

The objectives reflect this vision by using specific Likert-type scales: the Life Orientation Test-Revised (LOT-R) (Appendix B), the Adult Hope Scale (AHS) (Appendix B), the Gratitude Questionnaire Six-Item Form (GQ-6) (Appendix B), the Positivity Self Test (PST) (Appendix B), the Orientation to Happiness Measure (OTHM) (Appendix B), and the New Short Grit Scale (NSGS) (Appendix B), as well as a self-evaluation of academic performance, Perception of Academic Performance (PAP) (Appendix B) of psychology students, in order to investigate the effects of gratitude on psychology students' optimism, hope, positivity, happiness, interest sustainability, and perceived academic performance.

The six Likert-type scales and the self-evaluation of academic performance will form one main questionnaire. The LOT-R measures optimism in daily life, the AHS measures how confident participants are in problem-solving in their daily lives, the GQ-6 measures general gratitude, the PST measures positive emotions versus negative emotions in daily life, the OTHM measures overall balance between work and pleasure, the NSGS measures interest sustainability and perception of life value, and the self-evaluation of academic performance, PAP evaluates participants' perception of their academic achievement over the last five years (2014-2019)..



Gratitude will be the independent variable (IV) and each participant's second and third responses to the questionnaire (Appendixes C-I) will be the dependent variable (DV).

I hypothesize that gratitude will have a positive effect on overall life-satisfaction and increase positive emotions while decreasing negative emotions. Furthermore, I believe that gratitude will increase personal perception of academic performance.

### **Research Design**

Experimental designs seek to provide definitive conclusions about the relationship between the variables in the research hypothesis. In this research I used a mixed measures research design which included the between-subjects experimental design and the repeated measures design to conduct the experiment. The between-subjects design is appropriate to use in this research because it is a design that is used to compare two or more treatment conditions which include a different group of individuals in each condition (Between-Subjects Design, 2017). Two treatment conditions will be used in this research. The various participants will be divided into two groups, one in each condition of the independent variable (gratitude). Therefore, different participants will be used in each group will only take part in the experiment once. Only group B (experimental group) will be using the gratitude app along with the questionnaire, while participants in group A (control group) will only be taking part in the questionnaire. The repeated measures design is appropriate to use in this research because it takes data from the same individual over two or more-time period and assesses change over time (McLeod,2017) This research is a short longitudinal study that requires the participants in each condition to complete a questionnaire three times over eight weeks, in the first week, three weeks later, and finally three weeks after that. This will judge whether or not their data changes over time, specifically in group B after the use of the Gratitude app.

A major advantage of the between-subjects experimental design is that the differences found between the groups are more likely to occur due to the different conditions, rather than other treatment factors often associated with the within-subjects design (the same participant being measured more than once) such as; practice, carryover, or differing effects due to multiple treatment conditions. Another advantage of the between-subjects design is that there is a higher chance that participants will be able to participate in one of the various treatment conditions

compared to the chance of participants being able to participate in multiple treatment conditions (Between-Subjects Design, 2017).

A major disadvantage of the between-subjects experimental design is that there is no certainty that the results are due to the independent variable rather than the individual differences found in each group. Another disadvantage of the between-subjects design is that more participants are required in the study due to each participant being exposed to only one condition. In order to reduce the likelihood of the results being due to the individual differences within each group rather than due to the independent variables it is necessary to take certain steps such as:

- Having Equivalent groups
  - Using the same process to create the groups in order to create equal groups.
- Treatment conditions
  - There should not be any difference in the treatment conditions of each group except for the independent variable.
- Composed of equivalent individuals
  - Despite individual differences, each group needs to have similar individuals

(Between-Subjects Design, 2017).

A major advantage of the repeated measures design is that the same individuals are used in each condition, which reduces individual differences. However, in this research the participants won't be participating in each condition, there will a group of participants in group A who are different individuals to group B. Therefore, this advantage does not apply to this research. Another major advantage of the repeated measures design is that it assesses effect over time and is often more valuable to use the same individuals at multiple times, than using different individuals for each time period.

A major disadvantage of the repeated measures design is known as order effects. Order effects refers to the idea that as the participants are exposed to the same condition multiple times, they may become prepared for what to expect which may alter the results. In this research, the participants will be taking the same questionnaire each time, however the questionnaire is based on self-reflection. Self-reflection requires the participants to answer questions about their personal feelings. It would be counter-productive for the participants to alter their personal feelings.

Also, counterbalancing is a strategy that can be used to control order effects (McLeod, 2017).

In this research counterbalancing was used to eliminate order effects. Participants in both groups will be completing the questionnaire three times each. The order effects will occur equally in each group which will therefore balance out in the results. In order to reduce individual differences, I used randomization. Random allocation is often used in order to ensure that each participant has an equal possibility of being assigned to one condition or the other. Random allocation, in this research, was achieved by a first come, first serve basis, the first participants to respond to the recruitment of participation (Appendix A) were put into group B. The cut-off number of participants in group B was 23. The treatment conditions and participant selection are outlined in the methodology below.

Table 1

*Experimental Design*

<b>IV=gratitude</b>		
<b>Group A (control group)</b>		<b>Group B (experimental group)</b>
No use of gratitude app		Use of gratitude app
(24 participants)		(23 different participants)
<b>DV</b>	Questionnaire 2 response Questionnaire 3 response	Questionnaire 2 response Questionnaire 3 response

*Note.* IV= Independent variable, DV=dependent variables

**Method**

**Setting**

There was no specific setting required for this research. The participants were able to participate in this research anywhere of their choosing as long as they had an

internet connection necessary to complete the questionnaire and a device that gave them access to the questionnaire. For the select participants who used the gratitude app, they only required an initial internet connection for downloading the app onto their mobile device and then were able to use the app anywhere of their choosing.

## **Participants**

All participants were psychology students at the University of Waikato. Initially 175 third year students were recruited for this research. However, due to lack of response, the recruitment email (Appendix A) was made available on the psychology student online forum, PSYC Cafe, which made the participation in this research open to all psychology students at the University of Waikato.

A total of 47 psychology students participated in this research. 23 Participants were randomly allocated to group B and 24 participants were randomly allocated to group A. There were 21 males and 26 females. The ages of participants ranged from 18 and below, 19-25; 26-35; 36-45; 46-55; 56-65; 66+. The mode age group was 19-25.

The research focused on obtaining and understanding each participant's personal perception of their overall life satisfaction using six different Likert-type scales; The LOT-R (Appendix B) (Scheier et al., 1994), The AHS (Appendix B) (Snyder et al., 1991), The GQ-6 (Appendix B) (McCullough et al., 2002), The PST (Appendix B) (Fredrickson, 2009), The OTHM (Appendix B) (Peterson et al., 2005), and The NSGS (Appendix B) (Duckworth, & Quinn, 2009), as PAP over the last five years (Appendix B).

There was no necessity to personally identify the participants and the participants were anonymised with the use of Qualtrics Software.

Participation was voluntary.

## **Procedure**

The initial recruitment was done by the supervisor of this research. He sent the recruitment email (Appendix A), drafted by myself, to 175 third year psychology students who had attended a class taught by him. Due to lack of response, the recruitment email was then put up on the psychology student online forum, PSYC Cafe, at the University of Waikato. Along with information regarding the research

project, the recruitment email included the distribution link that the participants could click on which would direct them to the important information sheet (Appendix B) on Qualtrics. The participants were able to read through the important information regarding the research, what was required of them as participants in this research, and give their consent by answering the question “Do you agree to complete the questionnaire.” If they selected “yes” then the participants were directed to the questionnaire (Appendixes C-I), however if the participants selected “no” they were directed to the end of the questionnaire and were able to exit out of the webpage.

The participants were informed via the important information that they were able to leave the research at any time during participation and this was done by exiting out of the browser during the questionnaire or emailing me within two weeks of completing the questionnaire. The important information also gave a description of the gratitude app and if they were selected to use the app, what was required of them. Once completing the questionnaire, the participants were asked to confirm their completion via email to myself.

The questionnaire was completed a total of three times by each participant throughout the eight-week period, the initial attempt, three weeks after the initial attempt, and three weeks after the second attempt. One week after the initial attempt of the questionnaire, the participants were randomly divided into two groups; the control group (group A) and the experimental group (group B). The selection process was randomised by selecting participants for Group B based on the first 23 participants to confirm their participation via email. The participants were given one week to complete their first attempt at the questionnaire. Once the first week ended, I sent an email to the first 23 participants discussing information regarding the gratitude app. The participants were instructed to download the app and attempt to use it as often as once a day. The participants were required to complete the statement: “I am so happy and grateful for what? because why?”

I emailed the participants each week, using the emails they used when confirming their participation, encouraging them to continue using the app and explaining how important their participation was to this research. These emails were sent in the hope that the participants would be motivated to continue using the app daily, as it would hypothetically have a significant effect on the data. Three questions

were added to the questionnaire before the participants were asked to complete it for the second time. The questions added were:

1) This is your (please select) attempt at completing this questionnaire

- First
- Second
- Third

2) Have you been selected to use the gratitude app?

- Yes
- No

3) Please select the option that reflects how often you have used the app.

- Daily
- 4-6 times a week
- 2-3 times a week
- Once a week
- Never

The questions above were added to the questionnaire in order to differentiate between first, second, and third attempts, between app users and non-app users, as well as to gauge how often the app was being used by the app users. After three weeks the participants were sent an email requesting them to complete their second attempt at the questionnaire. Three weeks later, the participants were then sent another email requesting them to complete the questionnaire for their third and final time.

### **Storage and Disposal of Data**

Data was collected on Qualtrics and then analysed and archived electronically in numerical form for further analysis, for reference purposes.

### **Method Followed for Preserving Confidentiality and Anonymity**

No personal identifying information was necessary for this research and none was kept. Participants were aware that the questionnaire <sup>was</sup> anonymous and any information used on the app was only stored on their personal mobile device and was in no way connected to the research. The email addresses used were chosen by the participants and had no identifying information to them.

The only participant information that was retained was their age and gender.

Data was only discussed with the supervisor of this project, Dr. Robert Isler.

### **Chapter three: Measurement**

Data collection was undertaken by the use of Qualtrics, a survey software which allows complete anonymity. The data was stored on the survey software database which could only be accessed by the researcher(s) of each project. The data was then converted into SPSS, an analysis software. The data was grouped into first, second, and third attempts of the questionnaire (Appendices C-I), as well as app users, and non-app users.

Each scale within the main questionnaire used different measures to calculate the individual's responses in each questionnaire attempt.

#### **The Life Orientation Test-Revised (LOT-R) (Appendix B)**

The LOT-R scale had 10 questions that the participants needed to rate using the following guide:

0. Strongly Disagree
1. Disagree
2. Neutral
3. Agree
4. Strongly Disagree

Questions 1, 4, and 10 were scored directly using the guide, while questions 3, 7, and 9 were reverse scored. Questions 2, 5, 6, and 8 were not scored. The maximum possible score for LOT-R was 24. Participants scoring between 0-13 were considered to have low optimism and high pessimism, between 14-18 were considered to have moderate levels of optimism, and participants who scored between 19-24 were considered to have high optimism and low pessimism (Scheier et al., 1994).

#### **The Adult Hope Scale (AHS) (Appendix B)**

There were 12 questions in the AHS, which were responded to by the participants using a Likert-type scale with 8 response items below:

1. Definitely False



2. Mostly False
3. Somewhat False
4. Slightly False
5. Slightly True
6. Somewhat True
7. Mostly True
8. Definitely True

Summing questions 2, 9, 10, and 12 would equal the agency (motivation) score while summing questions 1, 4, 6, and 8 would equal the pathway (routes we take to achieve our goals) score. In order to find the total hope score, the four agency items and the four pathway items were summed (Snyder et al., 1991).

#### **The Gratitude Questionnaire Six-Item Form (GQ-6) (Appendix B)**

Participants were asked to respond to the six questions selecting one of the 7 response items (below) that felt appropriate to them.

1. Strongly Disagree
2. Disagree
3. Slightly Disagree
4. Neutral
5. Slightly Agree
6. Agree
7. Strongly Agree

In order to derive the total gratitude score, the mean of all items were calculated. Questions 3 and 6 were reverse scored. The GQ-6 has alpha scores between .82 and .87 which suggests that the scale has good internal reliability and there is evidence that it is positively related to optimism, life satisfaction, and hope (McCullough et al., 2002).

#### **The Positivity Self Test (PST) (Appendix B)**

The PST had 20 questions that participants had to respond to, taking into consideration how they had felt over the last two weeks, using the 5 response items below:

0. Not at all
1. A little bit
2. Moderately
3. Quite a bit
4. Extremely

In order to calculate the participant positivity ratio, positivity (P) was derived from summing questions 1, 4, 8, 11, 12, 13, 14, 15, 16, and 19, if they scored 2 or higher. Negativity (N) was derived from summing questions 2, 3, 5, 6, 7, 9, 10, 17, 18, and 20 if they scored 1 or higher. If they had a negativity total score of 0, then it was changed to 1 in order for successful division. P was then divided by N to calculate the P/N ratio. It has been suggested that a P/N ratio of 3:1 or higher is optimal, given our in-born negativity biases as human beings. Individuals at 2:1 are characterized as languishing and 1:1 as suffering (Fredrickson, 2009).

#### **The Orientation to Happiness Measure (OHTM) (Appendix B)**

The OTHM required participants to rate 18 questions using the guide below:

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree

All scores were calculated in order to determine the total orientation to happiness score (Peterson et al., 2005).

#### **The New Short Grit Scale (NSGS) (Appendix B)**

The NSGS required participants to rate 8 questions using the guide below:

1. Not at all like me
2. Not much like me
3. Somewhat like me
4. Mostly Like me
5. Very much like me

Questions 2, 4, 7, and 8 were scored directly while questions 1, 3, 5, and 6 were reverse scored. The total grit score was derived by calculating the mean score for the participant. The maximum total was 5, which is considered to be extremely gritty

while the lowest score was 1 which is considered to be not at all gritty (Duckworth & Quinn, 2009).

### **Perceived Academic Performance (PAP)**

The University of Waikato Grading Scale, 2016 (Appendix B) was used in the questionnaire and the participants were asked to select which range of grade percentages best described their academic achievement over the last five years (2014-2019). As seen in Appendix B, each range of percentages corresponds with a letter grade (eg. 90-94% corresponds with A+) as well as a GPA score (eg. 9). The range of percentages did not distinctly indicate where in that range the participant perceived their academic achievement and the letter grade did not indicate this either and would be difficult to test. The GPA score is a solid number from 0-9 and is only specific to the percentage range (eg. 90-94%) instead of an individual percentage within that range (eg. 92%). For these reasons, the GPA score was used in our data.

Once all scores had been calculated for each participant for all three questionnaire attempts, I then computed the data into SPSS and performed specific tests on the data. The tests used in this research were; The Multivariate Tests (MANOVA), Mauchly's Test of Sphericity, Analysis of Variance (ANOVA), the Paired Samples *t* Test, and the Independent Samples *t* Test.

### **Mixed ANOVA's MANOVA**

A mixed ANOVA had a between subject factor (gratitude app users vs non gratitude app users) and a within subject factor (Time 1, Time 2, Time 3). MANOVA allowed us to test hypotheses regarding the effect of one or more independent variable(s) on two or more dependent variables. This was useful in our research because we had one independent variable (gratitude app) and three dependent variables (questionnaire attempts). If the *p* value was less than 0.05 then we could establish significance within the data and thus reject the null hypothesis.

### **Mauchly's Test of Sphericity**

Sphericity is the condition where the variances of the differences between all combinations of related groups (levels) are equal. Violation of sphericity is when the variances of the differences between all combinations of related groups are not equal. Violation of sphericity can cause an increase in the Type I error rate. In order to reduce this violation, corrections were created to therefore produce a more valid critical F-value.

Estimating the degree of sphericity violation and applying a correction factor to the degrees of freedom of the  $F$ -distribution helped us correct the sphericity violation. If Mauchly's Test of Sphericity was statistically significant ( $p < 0.05$ ), we could reject the null hypothesis and accept the alternative hypothesis that the variances of the differences were not equal (i.e., sphericity had been violated).

### **ANOVA**

ANOVA helped us determine how the dependent variables differ from the independent variable. In this research we used the ANOVA test to determine how each questionnaire attempt differed between the groups.

### **Paired Samples $t$ Test**

The Paired Samples  $t$  Test can compare two means that are from the same individual. In this research this test focussed on the measurements taken under the two different conditions (IV). The purpose of the test was to determine whether there was statistical evidence that the mean difference between paired observations on a particular outcome was significantly different from zero.

### **Independent Samples $t$ Test**

The Independent Samples  $t$  Test investigated whether or not there was statistical evidence that the associated population means are significantly different. This was done by comparing the means of two independent groups. The null hypothesis ( $H_0$ ) states that the two population means are equal.

## Chapter four: Results

In this research our hypothesis is to determine whether or not gratitude, by use of the gratitude app, can have significant effects on overall life satisfaction. Life satisfaction was measured as a composite score of the normalised scores of six scales; optimism (LOT-R), hope (AHS), gratitude (GQ-6), positivity (PST), interest sustainability (NSGS), and general happiness (OTHM). I also aimed to determine whether or not gratitude can have significant effects on one's perceived academic performance (PAP). If significance is proven with the data, then I can establish that my hypothesis is correct

No data were missing from any participant. 47 participants entered the study. 23 were assigned to group B (experimental group), and 24 to group A (control group). No students exited the study before completion.

### Effect of gratitude on optimism

Figure 1 shows the effect of gratitude on optimism as measured by the LOT-R. for the three assessments, before, during, and after the gratitude intervention, which only the test group received. The control group did the questionnaire assessments at the same times as the test group but without the gratitude intervention. Visual inspection of Figure 3 revealed that after using the gratitude app for questionnaire attempts two and three, group B (the experimental group) scores are not only higher than group A, but their scores increased overall, while group A (the control group) scores may have increased after the baseline score (questionnaire attempt one) and then they plateaued.

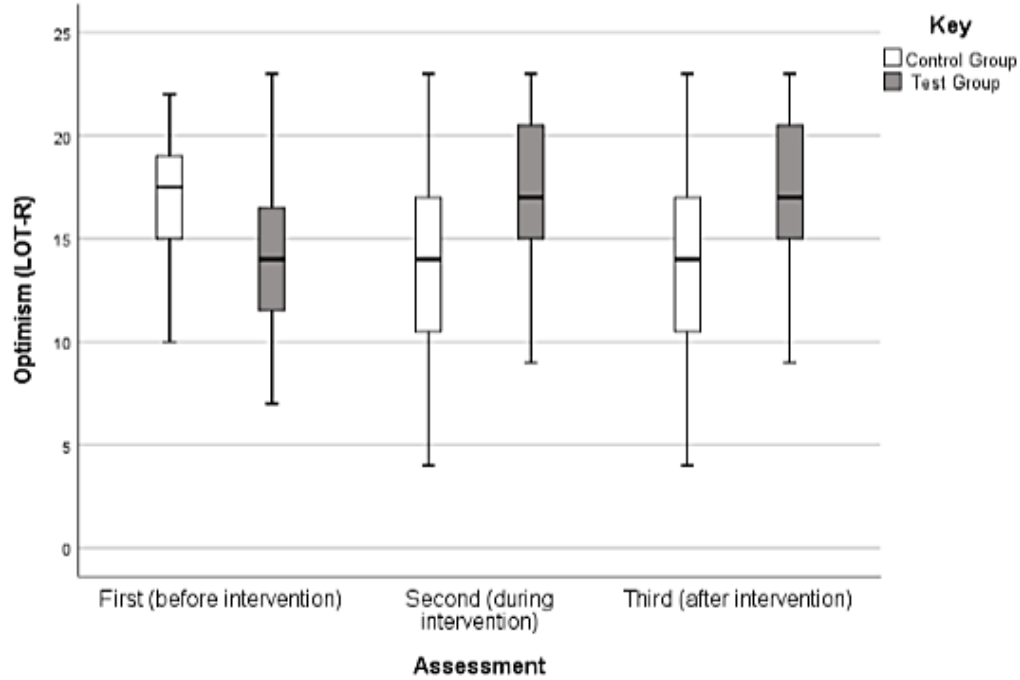


Figure 3. Mean optimism scores, including 95% confidence intervals, by Groups and Assessment times.

Inferential statistics using a mixed ANOVA on optimism with the between subject factor 'Gratitude' (test group vs control group) and the within subject factor 'Assessment times' (First vs Second Vs Third) revealed no significant effect for neither factor, Wilks' Lambda  $F(2,44)=.992$ ,  $p=0.130$ .

### The Life Orientation Test Revised (LOT-R).

Table 2

*Within-Subjects Factors for LOT-R.*

factor 1	Dependent Variable
1.00	Q1*
2.00	Q2*
3.00	Q3*

Q\*=Questionnaire attempt

Table 3

*Between-Subjects Factors for LOT-R*

	N
1.00	24
2.00	23

1.00= Group A  
2.00= Group B

Table 4

*MANOVA<sup>a</sup> applied to LOT-R.*

Effect		Value	F	Hypothesis		Sig.
				df	Error df	
factor1	Pillai's Trace	.036	.831 <sup>b</sup>	2.000	44.000	.443
	Wilks' Lambda	.964	.831 <sup>b</sup>	2.000	44.000	.443
	Hotelling's Trace	.038	.831 <sup>b</sup>	2.000	44.000	.443
	Roy's Largest Root	.038	.831 <sup>b</sup>	2.000	44.000	.443
factor1*	Pillai's Trace	.409	15.206 <sup>b</sup>	2.000	44.000	.000
Groups						

Wilks' Lambda	.591	15.206 <sup>b</sup>	2.000	44.000	.000
Hotelling's Trace	.691	15.206 <sup>b</sup>	2.000	44.000	.000
Roy's Largest Root	.691	15.206 <sup>b</sup>	2.000	44.000	.000

- a. Design: Intercept + Groups  
 Within Subjects Design: factor1
- b. Exact statistic

Table 5

*Mauchly's Test of Sphericity<sup>a</sup> applied to LOT-R.*

Within-Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser	Epsilon <sup>b</sup> Huynh-Feldt	Lower-bound
Factor1	.913	3.986	2	.136	.920	.979	.500

- a. Design: Intercept + Groups  
 Within Subjects Design: factor1

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

As seen in Table 4, there was a statistically significant difference in optimism based on the use of the gratitude app,  $F(2, 44) = 15.21, p < 0.05$ ;



Wilk's  $\Lambda = .591$ . Therefore, rejecting the null hypothesis and concluding that optimism was significantly dependent on gratitude ( $p < 0.05$ ).

Sphericity has not been violated ( $p = .136$ ) ( $p < 0.05$ ) as indicated in Table 5. Therefore,  $\chi^2(2) = 3.986$ ,  $p = .136$  ( $p < 0.05$ ) indicating that the variances of differences between the groups are equal, thus, rejecting the null hypothesis and concluding that the gratitude app has a significant difference on optimism.

### **The Adult Hope Scale (AHS)**

Table 6

*Within-Subjects Factors for AHS.*

factor1	Dependent Variable
1.00	Q1*
2.00	Q2*
3.00	Q3*

Q\*=Questionnaire attempt

Table 7

*Between-Subjects Factors for AHS.*

	N
1.00	24
2.00	23

1.00= Group A  
2.00= Group B

Table 8

MANOVA<sup>a</sup> applied to AHS.

Effect		Value	F	Hypothesis		
				df	Error df	Sig.
factor1	Pillai's Trace	.043	.994 <sup>b</sup>	2.000	44.000	.378
	Wilks' Lambda	.957	.994 <sup>b</sup>	2.000	44.000	.378
	Hotelling's Trace	.045	.994 <sup>b</sup>	2.000	44.000	.378
	Roy's Largest Root	.045	.994 <sup>b</sup>	2.000	44.000	.378
factor1*	Pillai's Trace	.052	1.204 <sup>b</sup>	2.000	44.000	.310
	Wilks' Lambda	.948	1.204 <sup>b</sup>	2.000	44.000	.310
	Hotelling's Trace	.055	1.204 <sup>b</sup>	2.000	44.000	.310
	Roy's Largest Root	.055	1.204 <sup>b</sup>	2.000	44.000	.310
Groups						

a. Design: Intercept + Groups  
 Within Subjects Design: factor1

b. Exact statistic

Table 9

*Mauchly's Test of Sphericity<sup>a</sup> applied to AHS.*

Within-Subjects Effect	Mauchly's W	Appeox. Chi-Square	df	Sig.	Greenhouse-Geisser	Epsilon <sup>b</sup> Huynh-Feldt	Lower-bound
factor1	.826	8.422	2	.015	.852	.901	.500

a. Design: Intercept + Groups

Within Subjects Design: factor1

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

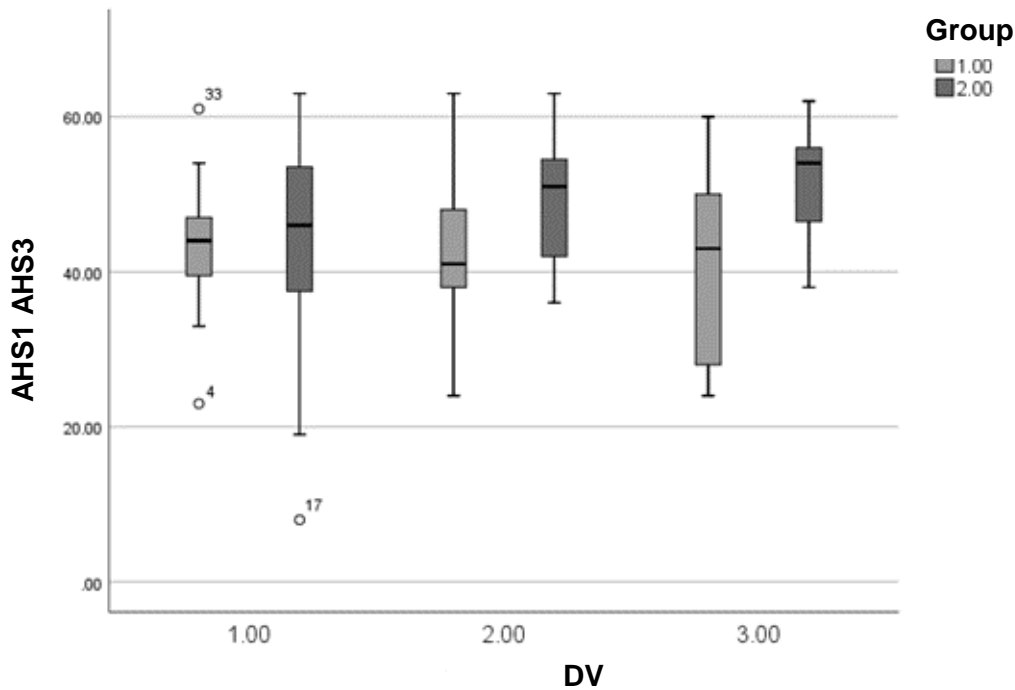


Figure 4. Overall distribution of AHS in all three questionnaire attempts for all participants.

There was no statistically significant difference in hope based on the use of the gratitude app,  $F(2, 44) = 1.20$ ,  $p < 0.05$ ; Wilk's  $\Lambda = .948$  as seen in Table 8. Therefore, we can conclude that hope was significantly dependent on gratitude ( $p < 0.05$ ).

Table 9 indicates that sphericity has not been violated ( $p = .015$ ) ( $p < 0.05$ ). Therefore,  $\chi^2(2) = 8.422$ ,  $p = .015$  ( $p < .05$ ) indicating that the variances of differences between the groups are equal and the null hypothesis is rejected. This concludes that gratitude has a significant difference on hope.

This conclusion can be seen in Figure 4. Although, there is little increase for group B it has a consistent incline from the first attempt of the questionnaire to the third attempt of the questionnaire, whereas group A has overall lower scores and there is less consistency than group B. Please note that the outliers were not removed from the data because we believe they are important and they do not negatively affect the data.

### The Gratitude Questionnaire Six Item Form (GQ-6).

Table 10

*Within-Subjects Factors for GQ-6.*

factor1	Dependent Variable
1.00	Q1*
2.00	Q2*
3.00	Q3*

Q\*=Questionnaire attempt

Table11

*Between-Subjects Factors for GQ-6.*

	N
1.00	24
2.00	23

1.00= Group A  
2.00= Group B

Table 12

*MANOVA<sup>a</sup> applied to the GQ-6.*

Effect	Value	F	Hypothesis			
			df	Error df	Sig.	
factor1	Pillai's Trace	.130	3.296 <sup>b</sup>	2.000	44.000	.046

	Wilks' Lambda	.870	3.296 <sup>b</sup>	2.000	44.000	.046
	Hotelling's Trace	.150	3.296 <sup>b</sup>	2.000	44.000	.046
	Roy's Largest Root	.150	3.296 <sup>b</sup>	2.000	44.000	.046
factor1*	Pillai's Trace	.111	2.755 <sup>b</sup>	2.000	44.000	.075
Groups						
	Wilks' Lambda	.889	2.755 <sup>b</sup>	2.000	44.000	.075
	Hotelling's Trace	.125	2.755 <sup>b</sup>	2.000	44.000	.075
	Roy's Largest Root	.125	2.755 <sup>b</sup>	2.000	44.000	.075

a. Design: Intercept + Groups  
 Within Subjects Design: factor1

b. Exact statistic

Table 13

*Mauchly's Test of Sphericity<sup>a</sup> applied to GQ-6.*

Within-Subjects Effect	Mauchly's W	Appeox. Chi-Square	df	Sig.	Greenhouse-Geisser	Epsilon <sup>b</sup> Huynh-Feldt	Lower-bound
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factor1	.941	2.683	2	.261	.944	1.000	.500
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a. Design: Intercept + Groups

Within Subjects Design: factor1

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Table 14

*Tests of Within-Subjects Effects for GQ-6.*

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Factor1	Sphericity Assumed	9.037	2	4.519	3.253	.043
	Greenhous e-Geisser	9.037	1.888	4.786	3.253	.046
	Huynh- Feldt	9.037	2.000	4.519	3.253	.043
	Lower- bound	9.037	1.000	9.037	3.253	.078
Factor1 *	Sphericity Assumed	7.279	2	3.639	2.620	.078
Groups						

	Greenhous e-Geisser	7.279	1.888	3.855	2.620	.082
	Huynh- Feldt	7.279	2.000	3.639	2.620	.078
	Lower- bound	7.279	1.000	7.279	2.620	.113
Error (factor1)	Sphericity Assumed	125.019	90	1.389		
	Greenhous e-Geisser	125.019	84.973	1.471		
	Huynh- Feldt	125.019	90.000	1.389		
	Lower- bound	125.019	45.000	2.778		

Table 15

*Tests of Between-Subjects Effects on GQ-6.*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	4500.093	1	4500.093	2347.168	.000
Groups	8.660	1	8.660	4.517	.039
Error	86.276	45	1.917		



Table 12 indicates that there was no significant difference in gratitude based on the use of the gratitude app,  $F(2,44) = 2.76$ ,  $p > 0.05$ ; Wilk's  $\Lambda = .889$ . Therefore, we can conclude that gratitude was not significantly dependent on the gratitude journal ( $p > 0.05$ ).

Table 13 shows us that sphericity has been violated ( $p = .261$ ) ( $p > 0.05$ ),  $\chi^2(2) = 2.683$ ,  $p = .261$  ( $p > 0.05$ ) retaining the null hypothesis and thus indicating that the variances of differences between the groups are not equal. This violation was corrected using the Huynh-Feldt Test as seen in Table 14.

Table 14 corrected the sphericity violation and therefore rejected the null hypothesis, thus indicating that the variances of differences between the groups are in fact equal,  $F(2.00,2.00,90.00) = 3.25$ ,  $p = .043$  ( $p < 0.05$ ).

Table 15 indicates that there are significant differences between the group scores of gratitude ( $F(1, 45) = 4.52$ ; ( $p < 0.05$ )). Therefore, it can be concluded that the gratitude app did have positive effects on the participant's gratitude. This contradiction to Table 12 may be due to the idea that the gratitude app reminded the participants in group B to think and focus on their gratifications and express them, while participants in group A may not have expressed their gratitude as often.

### **The Positivity Self Test (PSP)**

Table 16

*Group A ratios for all questionnaire attempts for PST.*

Group A	Q* 1	Q* 2	Q* 3
1	1:1	2:1	2:1
2	2:1	3:1	3:1
3	1:1	2:1	2:3
4	2:1	2:1	3:1

5	1:1	1:3	1:3
6	3:2	2:1	3:1
7	1:1	1:2	1:2
8	1:2	1:2	1:2
9	1:1	1:3	1:3
10	1:1	1:1	2:1
11	2:1	2:2	2:1
12	1:1	1:1	1:1
13	2:1	3:1	3:1
14	1:1	1:1	1:1
15	2:1	3:1	3:1
16	1:1	2:1	2:1
17	1:2	2:1	2:1
18	1:1	1:1	1:3
19	3:1	3:1	3:1
20	1:1	1:2	2:1
21	2:1	2:1	3:1
22	1:1	1:1	1:1

23	1:2	1:1	1:1
24	1:1	1:1	1:1

---

Q\*= Questionnaire Attempt

Table 17

*Group B ratios for all questionnaire attempts for PST.*

Group B	Q* 1	Q* 2	Q* 3
1	3:1	2:1	3:1
2	2:1	3:1	3:1
3	1:1	2:1	2:1
4	2:1	3:1	3:1
5	3:1	3:1	3:1
6	2:1	3:1	3:1
7	2:1	2:1	2:1
8	2:1	3:1	3:1
9	1:1	1:1	1:3
10	1:1	3:1	3:2
11	1:1	1:2	1:1
12	1:1	1:3	1:3

13	3:2	3:1	3:1
14	2:1	3:1	3:1
15	2:1	3:1	3:1
16	2:1	3:1	3:1
17	3:1	3:1	3:1
18	1:1	3:2	3:1
19	2:1	3:1	3:1
20	1:1	2:1	2:1
21	2:1	2:1	3:1
22	1:1	1:2	2:1
23	1:1	2:1	2:1

---

Q\*= Questionnaire Attempt

Table 16 indicates that 46% of participants in group A increased their positivity score (P) from their baseline score to their final score. There were only four participants in group A who had the possibility of decreasing their negativity(N) score (scoring above 1 for N during baseline), however, three achieved this and decreased their N score from their baseline score to their final score. Table 16 also indicates that 17% of participants in group A increased their N score from their baseline score to their final score. These results are in comparison to Table 17, which indicates that 65% of participants in group B increased their P score from their baseline to their final score. There was only one participant in group B who had the possibility of decreasing their negativity(N) score (scoring above 1 for N during baseline), and they achieved this. Table 17 also indicates that only 13% of participants in group B

increased their N score from their baseline score to their final score. Tables 16 and 17 indicate that overall, group A had a lower percentage (29%) of participants who scored at the optimal level (3:1) in their final score, compared to group B (57%) and group A had a higher percentage (25%) of participants scoring at the suffering level in their final score (1:1) than group B(4%). This suggests that positivity is dependent on gratitude.

### **The Orientation to Happiness Measure (OTHM)**

Table 18

*Within-Subjects Factors for OTHM.*

factor1	Dependent Variable
1.00	Q1*
2.00	Q2*
3.00	Q3*

Q\*=Questionnaire attempt

Table 19

*Paired Sample Statistics of OTHM.*

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Q1	59.4468	47	10.52907	1.53582
	Q2	61.2128	47	13.95480	2.03552
Pair 2	Q3	63.4681	47	14.33125	2.09043
	Q1	59.4468	47	10.52907	1.53582

Pair 3	Q2	61.2128	47	13.95480	2.03552
	Q3	63.4681	47	14.33125	2.09043

Table 20

*Paired Samples Correlations of OTHM.*

		N	Correlation	Sig.
Pair 1	Q1 & Q2	47	-.001	.997
Pair 2	Q3 & Q1	47	.034	.823
Pair 3	Q2 & Q3	47	.132	.377

Table 21

*Paired Samples Test applied to OTHM.*

Paired Differences						
95% Confidence Interval of the Difference						
Mean	Std. Deviation	Std. Error Mean	Lower	Upper	<i>t</i>	Sig. (2-tailed)

---

Pair	-1.76596							
Q1-Q2	17.4856	2.55055	-	3.3680	-0.692	46	.492	
1	6		6.89994	3				
Pair	-2.25532							
Q3-Q1	4.02128	17.4959	2.71877	-	9.1582	1.576	46	.122
2	5		1.11573	8				
Pair	-2.25532							
Q2-Q3	18.6389	2.71877	-	3.2172	-0.830	46	.411	
3	8		7.72793	9				

Table 20 demonstrates that there is no significant correlation between Q1 & Q2 ( $r = -.001$ ), Q3 & Q1 ( $r = .034$ ), or Q2 & Q3 ( $r = .132$ ). Table 21 indicates that there was no significant difference between pairs 1, 2, or 3 scores ( $t_{46} = -.692, p > 0.05$ ), ( $t_{46} = 1.576, p > 0.05$ ), and ( $t_{46} = -.830, p > 0.05$ ). This concludes that there was no significant difference between the pairs averages of happiness and therefore retains the null hypothesis.

However, based on data from Table 21 it is clear that on average, Q1 scores were -1.77 lower than Q2 scores (95% CI [-6.90, 3.37]), Q3 scores were 4.02 higher than Q1 (95% CI [-1.12, 9.16]), and Q2 scores were -2.26 lower than Q3 scores (95% CI [-7.73, 3.22]). This suggests that scores increased from the baseline score to the final score for participants in group B and therefore indicates that gratitude has positive effects on happiness.

## The New Short Grit Scale (NSGS) and Perceived Academic Performance (PAP).

Table 22

*Between-Subjects Factors for NSGS and PAP.*

	N
1.00	24
2.00	23

1.00= Group A  
2.00= Group B

Table 23

*Within-Subjects Factors for NSGS and PAP.*

factor1	Dependent Variable
1	MeanAcad
2	MeanGrit

MeanAcad= Mean score for PAP

MeanGrit= Mean score for NSGS



Table 24

*Group Statistics for NSGS and PAP.*

		N	Mean	Std. Deviation	Std. Error Mean
MeanAcad	1.00	24	4.9583	1.94691	.39741
	2.00	23	6.5072	.99427	.20732
MeanGrit	1.00	24	3.0139	.57718	.11782
	2.00	23	3.6377	.48109	.10031

Table 25

*Independent Samples Test for NSGS and PAP.*

		Levene's Test of Equality of Variances		t-test for Equality of Means					95% Confidence of the Difference.	
		F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
MeanAcad	Equal variances assumed	14.699	.000	-3.412	45	.001	-1.54891	.45399	-2.46329	-.63453
	Equal variances not assumed			-3.456	34.547	.001	-1.54891	.44824	-2.45931	-.63851

MeanGrit	Equal variances assumed	.335	.556	-4.016	45	.000	-.62379	.15534	-.93667	-.31091
	Equal variances not assumed			-4.031	44.168	.000	-.62379	.15474	-.93561	-.31198

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## NSGS

Table 24 shows us that participants who used the gratitude app had higher average NSGS scores ( $M=3.64$ ,  $SD=0.48$ ) than those who did not use the gratitude app. Table 25 demonstrates that there is a significant difference in interest sustainability based on the use of the gratitude app, ( $p<0.05$ ),  $t(44.17)=-4.03$ ,  $p=.000$ . Therefore, we reject the null hypothesis and conclude that interest sustainability was significantly dependent on gratitude.

## PAP

Results showed participants who used the gratitude app had higher average scores of PAP ( $M=6.51$ ,  $SD=0.99$ ) than those who did not use the app ( $M=4.96$ ,  $SD=1.95$ ), as seen in Table 24. Table 25 indicates that there is a significant difference in PAP based on the use of the gratitude app, ( $p<0.05$ ),  $t(34.55)=-3.46$ ,  $p=.001$ . Therefore, we reject the null hypothesis and conclude that PAP was significantly dependent on gratitude.

Therefore, based on these results, we can conclude that gratitude has significant effects on interest sustainability and perceived academic performance and that both variables are dependent on gratitude.

### Chapter five: Summary of the Outcome Measures

Optimism, hope, interest sustainability, and perceived academic performance all had significant differences based on the use of the gratitude app ( $p < 0.05$ ) as seen in Tables; 4,8, 24 & 25. Sphericity was not violated and the variances of differences between the groups were equal for optimism and hope (Tables 5 & 9). Therefore, it was concluded that optimism, hope, interest sustainability, and perceived academic performance were significantly dependent on gratitude.

Gratitude was not significantly dependent on the gratitude app ( $p > 0.05$ ) (Table 12) and the variances of difference between the groups were not equal (Table 13). The sphericity violation was corrected and the variances of difference between the groups were made equal (Table 14). The use of the gratitude app did have positive effects on gratitude and it was indicated that there were significant differences between the group scores of gratitude ( $p < 0.05$ ) (Table 15). This suggests that gratitude was dependent on the reminder to practice gratitude by use of the gratitude app.

Results showed that participants not using the gratitude app had a lower percentage (29%) of scoring at the optimal level of positivity to negativity ratio in their final scores, compared to those using the app (57%). Results also indicated that those not using the app had a higher percentage (25%) of participants scoring at the suffering level of positivity to negativity ratio in their final score, compared to those using the app (4%) (Tables 16 & 17). Therefore, we can conclude that positivity is dependent on gratitude.

Happiness scores increased from the baseline score to the final score for participants in group B, while group A happiness scores plateaued from their middle score to their final score (Table 21). These results indicate that happiness is dependent on gratitude.

Overall, we can conclude from the results that all six areas of life satisfaction used in this research; optimism, hope, gratitude, positivity, happiness, and interest sustainability, as well as perceived academic performance, are dependent on gratitude, thus accepting our hypothesis.

## Chapter six Discussion

Our aim in this research was to investigate the effects of the gratitude journal, by use of the gratitude app, on overall life satisfaction and perceived academic performance of psychology students at the University of Waikato. The objectives were to find out whether or not gratitude has an effect on overall life satisfaction (optimism, hope, gratitude, positivity, happiness, and interest sustainability), whether or not gratitude has an effect on personal perception (perceived academic performance), and whether or not gratitude can increase positive emotions and decrease negative emotions.

Upon reflecting on our results from this research, it is clear that gratitude, by use of the gratitude app, had various levels of significance on each factor of overall life satisfaction. To understand the importance of this outcome, it is necessary to compare the results of this research to previous research with similar aims. This understanding will be able to evaluate the validity of these findings, which in turn will confirm my hypothesis, that gratitude can positively affect overall life satisfaction and personal perception.

### Gratitude and Optimism

In previous research investigating the effects gratitude has on people, it was found that higher levels of optimism, vitality, and life satisfaction were expressed by people who displayed more gratitude (McCullough et al., 2002). Other research mirrors those results as well as our own results (Liberian et al., 2009). In this research it was established that optimism was significantly dependent on the use of the gratitude app. Participants in group B (74%) had an overall higher percentage of higher scores than group A (46%) in their second and third attempts of the questionnaire. Group B participants also had the highest score difference (13) between their baseline score (questionnaire attempt one) and their final score (questionnaire attempt three). Overall group B participants had more (5) complete increases of scores (scores increasing from the baseline score to the middle score (second attempt) and from their middle score to their final score).

According to research, the highest possible score for LOT-R is 24 and participants scoring between 19-24 are considered to have high levels of optimism and low levels of pessimism. Participants scoring between 14-18 are considered to have moderate levels of optimism while those who score between 0-13 are

considered to have higher levels of pessimism and lower levels of optimism (Scheier et al., 1994). The data indicates that 61% of Participants in group B are considered to have higher levels of optimism and lower levels of pessimism compared to a mere 13% of participants in group A. Group A had a higher percentage of participants (75%) who are considered to have moderate levels of optimism compared to participants in group B (65%). However, group A had the highest percentage (67%) of participants considered to have low levels of optimism and high levels of pessimism, with ten participants scoring 10 and below and one participant even scored 0 in their third attempt. Only 22% of participants in group B are considered to have lower levels of optimism and higher levels of pessimism. This suggests that participants using the gratitude app had higher levels of optimism and lower levels of pessimism compared to participants not using the app. The data verifies that optimism is significantly dependent on the use of the gratitude app.

### **Gratitude and Hope**

Previous research that has studied gratitude and hope have identified that that gratitude is linked to life satisfaction, hope, and optimism (Froh et al., 2009). It has been found that there is indeed a correlation between life satisfaction and hope. In another study focusing on the correlation between various positive emotions including hope and gratitude, it was clear from the results that participants who displayed dispositional gratitude had higher levels of life satisfaction and hope, concluding that there are strong positive correlations between these three variables (Szcześniak & Soares, 2011). Comparing those results to this research, there seems to be similarities. This research clearly indicates that hope is significantly dependent on the gratitude app (Table 8). This suggests that gratitude has a positive effect on hope.

The data reflected that, although group A had more complete increases (5) (increasing from baseline score to final score) than group B (4), group A had a higher percentage of final scores that were lower than the baseline score (67%) compared to group B (31%). Not only did Group B have a higher percentage of an increase of scores from baseline to the final score, but Group B also had the highest increase difference (55). The gratitude app was used by group B participants after the baseline score. The increase from the baseline score to the final score suggests that Group B participants became more hopeful after using the gratitude app. This

conclusion retains the hypothesis that gratitude can positively affect how hopeful an individual is.

### **Gratitude**

It was not necessarily surprising to find that there was no significant difference in gratitude based on the gratitude app (Table 12) because the gratitude app is only a tool used to write down grateful thoughts, it does not create or change grateful thoughts. However, being reminded of their gratifications and having to actively express their gratitude may have caused there to be a significant difference in the group scores of gratitude found in Table 14, this is reflected in the data. The data indicated that participants in group B had an overall higher percentage (52%) of an increase in scores from their baseline attempt to their final attempt compared to that of participants in group A (38%). Group B also had the highest percentage (78%) of participants having the highest gratitude average score (7) compared to those in group A (42%) while group A had the highest percentage (16%) of participants scoring the lowest gratitude average score (2) compared to those in group B (4%). Participants in group B also displayed a higher percentage (22%) of scoring the highest gratitude average score in both the second and third attempt of the questionnaire compared to those in group A (13%). This indicates that participants using the gratitude app displayed more dispositional gratitude than those not using the app.

### **Gratitude and Positivity**

According to Fredrickson (2009) a positivity (P) to negativity (N) ratio of 3:1 is ideal due to our negativity biases. Individuals with a 2:1 P/N ratio are considered to be languishing and 1:1 are considered to be suffering. Fredrickson suggests that all those who have a 3:1 P/N ratio or above are more aware and proactive towards their future. Boyes (2015) further explains that individuals who achieve the 3:1 P/N ratio have an overall more positive attitude which therefore positively affects their generosity, care towards others, creativity, dedication, insight, expansiveness, and clarity.

In this research, the data indicated that group B had a higher percentage (57%) of participants who scored a 3:1 P/N ratio in their final attempt, compared to participants in group A (29%). It was also found that there was only one participant in group B who ended with a 1:1 P/N ratio in their final attempt, compared to five

participants in group A. Group B also had an overall higher percentage (65%) of participants who increased their P/N ratio from the baseline score to the final score compared to group A (46%). This suggests that after using the gratitude app participants in Group B had a higher success rate in achieving the ideal P/N ratio and a less chance of languishing as explained by Fredrickson (2009).

These results indicated that gratitude has a positive effect on positivity and can aid in increasing an individual's P/N ratio. Gratitude may not completely remove an individual's negativity, however this research suggests that gratitude can minimise negativity and thus have a balanced ratio of positivity to negativity. These findings reflect those of Watkins et.al., (2003) who found that positive thinking and gratitude improved the participants' moods which confirmed the theory that gratitude is an effective trait pivotal to subjective well-being.

### **Gratitude and Interest Sustainability**

Previous research suggests that there is a positive relationship between interest sustainability and gratitude (Wilson, 2016). Wilson's research indicated that participants who practiced gratitude three times a week had an increase in their ability to focus as well as their ability to remain resilient in learning whereas participants who practiced gratitude less than once a week showed little increase in their focus and resilience in learning. This research accepted my hypothesis and found that interest sustainability was significantly dependent on the gratitude app ( $p < 0.05$ ) (Table 25). Furthermore, the data indicated that 74% of participants in group B had an increase in their scores after the use of the gratitude app, while a mere 46% participants in group A had an increase in their scores after the initial baseline score. The data also showed that group B had zero participants whose final score did not increase from the baseline score whereas 50% of students in group A had a lower final score than their baseline score, suggesting that their interest sustainability became worse over time.

The maximum score is 5 which is considered to be extremely gritty, while the lowest score is 1 and is considered to be not gritty at all (Duckworth & Quinn, 2009). The data indicated that 30% of participants in group B are considered to be extremely gritty after the baseline score compared to 4% of participants in group A. 33% of participants in group A are considered not gritty at all, compared to 0% of participants in group B. These results suggest that reminding participants to be grateful seems to factor into their interest sustainability, which reinforces the notion

that those who practice gratitude regularly tend to have higher levels of focus, engagement, and motivation towards learning (Howells, 2012).

### **Gratitude and Perceived Academic Performance (PAP)**

Table 25 indicates that there is a significant difference in PAP based on the use of the gratitude app. The data also demonstrated that group B had a higher percentage (65%) of participants who improved their PAP score from their baseline score to their final score compared to group A (17%). The data indicated that participants in group B had less chance (26%) of decreasing their PAP from their baseline score to their final score, than participants in group A (54%). The data also showed that four participants who were using the gratitude app rated their final PAP score as nine, the highest rank, and zero participants using the app rated their final PAP score as zero, the lowest rank. This is compared to one participant who did not use the app rating their final PAP score as nine and one participant who did not use the app rating their final PAP score as zero. This data strongly indicates that gratitude has significantly positive effects on perceived academic achievement and therefore the hypothesis is accepted. The data clearly indicates that the participants using the gratitude app were more likely to positively increase their PAP score while those not using the app were less likely to and were more likely to negatively decrease their PAP score. This conclusion suggests that self-esteem is dependent on gratitude, the more grateful an individual is, the higher the chance is for that individual to have a positive self-esteem, which supports Diener's (1984) premise, that gratitude can decrease negativity and increase positivity.



## **Chapter six: Understanding the individual's Role in Practising Gratitude**

All participants in group B reported to using the gratitude app daily as required and reminders for participants to complete the questionnaire at the required time were successful. This indicates that it is possible to maintain the use of the app within everyday life without difficulty. None of the participants indicated that they found it difficult to use the app, and perhaps the easy use of the app may be a factor as to why they were able to successfully use the app daily. When the 8-week period of data collection was complete, I received positive feedback from a number of participants regarding how much they enjoyed using the app and they believed the app had made positive changes in their lives. Many participants indicated that they were going to continue using the app after the study. One individual even went so far as to say that they had recommended the app to their friends because of the positive effect it had on him.

## **Chapter seven: The practical importance of the results with Regard to the Objectives**

**Objective one:** Does gratitude have a positive effect on overall life satisfaction, which is measured in this research by optimism, hope, positivity, gratitude, happiness, and interest sustainability.

My findings indicated that optimism, hope, and interest sustainability were all significantly dependent on gratitude. The use of the gratitude app had an overall positive effect on gratitude, positivity, and happiness. Therefore, it is concluded that gratitude does have a positive effect on overall life satisfaction.

**Objective two:** Does gratitude have a positive effect on self-esteem, which is measured in this research as perceived academic performance.

The results indicated that there was a significant difference in perceived academic performance based on the use of the gratitude app, which clearly supports the hypothesis that perceived academic performance is significantly dependent on gratitude.

**Objective three:** Can gratitude increase positive emotions and decrease negative emotions?

My findings showed that overall, participants who were using the app increased their optimism, hope, gratitude, positivity, happiness, and interest sustainability scores from their baseline score to their final scores. Participants using the app also had a higher chance of decreasing their negativity in the PST scale (appendix B) and were more likely to be considered as having optimal positivity to negativity ratios (Boyes, 2015) compared to those participants not using the app. Therefore, we can conclude that gratitude can increase positive emotions and decrease negative emotions.

## **Chapter eight: Strengths**

One of the key strengths in this study was the between-subjects design. The between subjects-design allowed me to actively compare results between the control group and the experimental group, which made it clear that there was a difference in the results between the groups. The gratitude app was accessible and easy to use, which allowed the participants in group B to participate in the research without difficulty. Another strength was that the repetition of the questionnaire every three weeks for eight weeks allowed for strong conclusions to be drawn from the baseline scores to the final scores for each participant. Furthermore, the lack of guidelines for using the gratitude app, along with the accessibility indicates that anyone can have the same experience outside of this research. Lastly, the use of the gratitude app mimics a gratitude journal which shows that practicing gratitude is not restricted to the use of the gratitude app and therefore indicates that anyone can practice gratitude with or without the app outside of this study.

## Chapter nine: Limitations and future research

One limitation of my study was that the questionnaire was not done in a controlled environment and I had no control over whether or not they would complete the questionnaires at the required time. Although, this was managed through weekly reminders and for some participants bi-weekly, I think it would have been more beneficial to this research for participants to complete the questionnaire in a controlled environment each time. This would guarantee all questionnaire completions at the required time.

Secondly, due to the participants' using the gratitude app on their own devices without any link to me, I had no control over how often the app was used by each participant and whether or not it was even used at all. This research may have also benefited from having the participants indicate through an online forum each time they used the app. This would allow for better monitoring of participants' use of the app.

Lastly, the characteristics of participants', age, sex, and ethnicity, were not taken into account and may have factored in the results. The research may have benefited by either only using one group of participants' who were the same age, ethnicity, and sex, or using the characteristics as dependent variables in order to limit the differences in results due to these characteristics.

Overall, my findings contribute to the growing evidence that suggests gratitude can have positive effects on overall life satisfaction (Diener, 1984). My findings are significant in reducing negativity, while increasing positivity, thus improving overall life satisfaction.

## **Chapter 10: Conclusion**

Using a between-subjects design (group A & group B), I investigated whether or not the practice of gratitude, by use of the gratitude app, had positive effects on overall life satisfaction represented in this research as; optimism, hope, gratitude, positivity, happiness, and interest sustainability, as well as perceived academic performance. After the use of the gratitude app for seven weeks, participants in group B showed significant differences in their results from their baseline scores to their final scores for optimism, hope, interest sustainability, and perceived academic performance. The use of the gratitude app had positive effects on gratitude, positivity, and happiness. Overall, the findings of this present study confirm the hypothesis that gratitude can have positive effects on overall life satisfaction as well as perceived academic performance.

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## Appendices

### Appendix A Introduction Email

Kia ora,

I would like to invite you to participate in my **Gratitude study** which is investigating the effects of gratitude on a series of emotions important to us all. Participating in this research may benefit you by increasing your positivity and overall life satisfaction. At the very least, you will learn about how research is conducted and it might give you a head start when it comes to conducting your own research at postgraduate studies.

In this research, you are only required to fill out a questionnaire online and some students may have the opportunity to use **the gratitude app**, which will be explained to you online before you need to agree to participate in the research. I will be sending you weekly emails to encourage your participation and see how you are doing. This type of research can have such positive implications for society and I encourage you to participate in this exciting research.

Below is the link to the Qualtrics questionnaire if you intend to participate: Before you start filling out the questionnaire on positive emotions there will be more info about the research process, which is completely anonymous and voluntary. Why not have a go? – you can only win..

[https://waikato.qualtrics.com/jfe/form/SV\\_a30qQLZ8Qs1dkX3](https://waikato.qualtrics.com/jfe/form/SV_a30qQLZ8Qs1dkX3)

Kind Regards,

Rebecca Clarkson, Master's student at the School of Psychology

## Appendix B

### Questionnaire

# Life satisfaction, gratitude, and perceived academic performance of psychology students

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#### Start of Block: Introduction

**IMPORTANT INFORMATION** Life Satisfaction, gratitude and perceived academic performance of psychology students.

Thank you so much for your interest in taking part in my Gratitude study, investigating how gratitude can benefit us. The survey should only take about 10-15 minutes (max) and will need to be completed three times over the course of eight weeks. You will receive reminder emails when to complete the survey. The questionnaire is anonymous and confidential. You will not be asked for your name, and we will not be able to link answers to participants. You may choose to leave the survey at any time, simply by closing your browser. Once you have submitted the survey we are unable to remove the data. Some of you will be randomly selected and asked (via email) to use the Gratitude app for seven weeks. The app is free and can be easily downloaded from the app store/play store on any smartphone. The icon is pink with a heart-shaped flower on it. It is easy to use and should theoretically only take two minutes to use each day. In the app you will be completing the sentence: "I am so happy and grateful for what? because why?" What you write will not be shared with anyone and can be as long or as short as you like. For the purpose of this research, it will be necessary to use this app and fill out the above sentence at least once a day. We will ask you if you have completed this easy task at the end of the eight weeks. We will emphasize that it is voluntary to have completed the task. Important: Please send me an email on [rkm22@students.waikato.ac.nz](mailto:rkm22@students.waikato.ac.nz) after you have completed the questionnaire so that we can contact you for the next steps of the research.

As an extra bonus, you will also get a summary of the research outcomes. I am sure you will find this a very useful learning experience. Thank you in advance, Rebecca Clarkson, Master's student at the School of Psychology. This research project has been approved by the Human Research Ethics Committee of the Faculty of Arts and Social Sciences. Any questions about the ethical conduct of this research may be sent to the Secretary of the Committee, email [alpss-ethics@waikato.ac.nz](mailto:alpss-ethics@waikato.ac.nz), postal address, Division of Arts, Law, Psychology and Social Sciences, University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240. You may

**also contact the supervisor of this project, Robert Isler via email:  
robert.isler@waikato.ac.nz.**

End of Block: Introduction

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Start of Block: Default Question Block

Do you agree to complete the questionnaire?

Yes (1)

No (2)

*Skip To: End of Survey If Do you agree to complete the questionnaire? = No*

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This is your (please select) attempt at completing this questionnaire.

First (1)

Second (2)

Third (3)

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Have you been selected to use the Gratitude app?

Yes (1)

No (2)

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Please select the option that reflects how often you have used the app?

- Daily (1)
- 4-6 times a week (2)
- 2-3 times a week (3)
- Once a week (4)
- Never (5)
- 

What age group are you in?

- 18 and below (1)
- 19-25 (2)
- 26-35 (3)
- 36-45 (4)
- 46-55 (5)
- 56-65 (6)
- 66+ (7)
- 

Gender

- Male (1)
- Female (2)
- Other (3)
- 

Q1-10 Optimism Scale- Please try answer all the questions.

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	a lot (1)	a little (2)	agree nor disagr ee (3)	little (4)	ee a lot (5)
In uncertain times, I usually expect the best. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's easy for me to relax. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If something can go wrong for me, it will. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm always optimistic about my future. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy my friends a lot. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's important for me to keep busy. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hardly ever expect things. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't get upset too easily. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Q29 Think back to the last two weeks. How would you rate your positivity at the moment?

- Extremely positive (1)
- Moderately positive (2)
- Slightly positive (3)
- Neither positive nor negative (4)
- Slightly negative (5)
- Moderately negative (6)
- Extremely negative (7)

Q30-49 Positivity Scale- Please try to answer all the questions.

Over the last two weeks,

	N ot at all (1 )	A litt le bit (2 )	Moderat ely (3)	Qui te a bit (4)	Extrem ely (5)
What is the most amused, fun-loving, or silly you felt? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is the most angry, irritate, or annoyed you felt? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is the most ashamed, humiliated, or disgraced you felt? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What is the most awe, wonder, or	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

amazement  
that you felt?  
(4)

What is the  
most  
disapproved,  
mocked,  
or  
disrespected  
you felt?  
(5)

What is the  
most  
disgust,  
distaste,  
or  
revulsion  
you felt?  
(6)

What is the  
most  
embarrassed,  
self  
conscious,  
or blushing  
you felt?  
(7)

What is the  
most  
grateful,  
appreciative,  
or  
thankful  
you felt?  
(8)

What is the  
most guilty,  
repentant,  
or  
blameworthy  
you felt?  
(9)

What is the  
most hate,  
distrust,  
or  
suspicion  
you felt?  
(10)

What is the  
most  
hopeful,  
optimistic,  
or  
encouraged  
you felt?  
(11)



What is the most inspired, uplifted, or elevated you felt? (12)

What is the most interested, alert, or curious you felt? (13)

What is the most joyful, glad, or happy you felt? (14)

What is the most love, closeness, or trust you felt? (15)

What is the most proud, confident, or self-assured you felt? (16)

What is the most sad, downhearted, or unhappy you felt? (17)

What is the most scared, fearful, or afraid you felt? (18)

What is the most serene, content, or peaceful you felt? (19)

What is the most stressed, nervous, or overwhelmed you felt? (20)

Q50-67 Good Life Scale- Please try answer all the questions.

	Strongly Disagree (1)	Disagree (2)	Neither agree nor disagree (4)	Agree (5)	Strongly agree (7)
I seek out situations that challenge my skills and abilities. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Life is too short to postpone the pleasure it can provide. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I love to do things that excite my senses. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regardless of what I am doing, time passes quickly. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

My life serves a higher purpose. (5)

Whether at work or play, I am usually "in a zone" and not conscience of myself. (6)

I have a responsibility to make the world a better place. (7)

I go out of my way to feel euphoric. (8)

For me, the good life is the pleasurable life. (9)

I am always very absorbed in what I do. (10)

I have spent a lot of time thinking about what life means and how I fit into its big picture. (11)

In choosing what I do, I always take into account whether it will be pleasurable. (12)

I am rarely distracted by what is going on around me. (13)

My life has lasting meaning. (14)

I agree with this statement: "Life is too short, eat dessert first." (15)

What I do matters to society. (16)

In choosing what I do, I always take into account whether I can lose myself in it. (17)

In choosing what to do, I always take into

account whether it will benefit other people. (18)

Q68-75 Short Grit Scale- Please try answer all the questions.

	Very much like me (1)	Mostly like me (2)	Somewhat like me (3)	Not much like me (4)	Not like me at all (5)
New ideas and projects sometimes distract me from previous ones. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Setbacks don't discourage me. (2)	<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. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a hard worker. (4)	<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	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

different  
one. (5)

I have  
difficulty  
maintainin  
g my  
focus on  
projects  
that take  
more than  
a few  
months to  
complete.  
(6)

I finish  
whatever  
I begin.  
(7)

I am  
diligent.  
(8)

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Q76 Self evaluation of perceived academic performance.

Please pick/choose your **perceived** academic performance so far over all completed courses.

- 95-100% A+ First Class Honors- GPA: 9 (1)
- 90-94% A+ First Class Honors- GPA: 9 (2)
- 85-89% A First Class Honors- GPA: 8 (3)
- 80-84% A- First Class Honors- GPA: 7 (4)
- 75-79% B+ Second Class Honors- GPA: 6 (5)
- 70-74% B Second Class Honors- GPA: 5 (6)
- 65-69% B- Second Class Honors- GPA: 4 (7)
- 60-64% C+ Pass- GPA: 3 (8)
- 55-59% C Pass- GPA: 2 (9)
- 50-54% C- Pass-GPA: 1 (10)
- 45-49% D Fail- GPA: 0 (11)
- 40-44% D Fail- GPA: 0 (12)
- 0-39% E Fail- GPA: 0 (13)

End of Block: Default Question Block

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