

**WHY WE SHOULD EXPECT SUCCESS:  
THE IMPACT OF INDUCING SELF-EXPECTANCY ON  
ACADEMIC PERFORMANCE**

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## ABSTRACT

Numerous studies have linked an optimistic disposition with highly beneficial outcomes to physical and mental health, as well as increased performance in the workforce and classroom (Seligman, 1998). The present study investigated the role that optimism plays in academic achievement. Participants were induced to be either more optimistic or more pessimistic via a score given to them after taking an optimism test. The score from this optimism test was fabricated to induce optimism or pessimism prior to SAT reading skill tests. The hypotheses were that individuals primed with optimism would perform better on the academic tests than the other conditions, and conversely pessimists would perform worse. Results were not in alignment with either hypothesis. However, correlations approached statistical significance; the more optimistic the individual was, regardless of inducement condition, the better they performed on the academic tests.

## CHAPTER 1: INTRODUCTION

“I think, therefore I am.” - *Descartes*

“Whether you think you can, or you think you can't - you're right.” - *Henry Ford*

It has been said that one's belief in one's own ability to accomplish a goal is relative to one's ability to achieve it. If this is true, then surely it is beneficial for an individual to believe in their abilities in a positive manner. As it turns out, positive thinking about future outcomes, or optimism, does appear to play an important role in whether an individual succeeds across a broad range of pursuits, from scholastics, to sports, relationships, and the workforce (Carver & Scheier, 2014). An optimistic outlook appears to buffer against many hindrances along the way such as depression, anxiety and post-traumatic stress disorder (J. L. Thomas, Britt, Odle-Dusseau, & Bliese, 2011). In this paper, we investigate the role that optimism plays in academic success by using both positive and negative self-expectancy to temporarily alter participant's dispositions with optimistic or pessimistic information that concerns themselves before they undergo academic reading skill tests.

There are two hypotheses. The first postulates that individuals primed with optimistic information concerning themselves will achieve greater accuracy at completing academic tests of reading comprehension and sentence completion, more so than will participants in a control or pessimistic condition. Secondly, individuals primed with pessimistic information concerning themselves will be less accurate at completing academic tests of reading comprehension and sentence completion, more so than will participants in a control or optimistic condition.

An abundance of evidence suggests that an optimistic disposition is highly beneficial in order to live a full life. As education is one of the most important facets in life, beginning from a young age and influencing many outcomes, improving optimism in this area seems like a natural place to begin. In this paper we delve into what it is that makes optimism so important and what it means for an individual to be an optimist or a pessimist. We also investigate whether optimism can be learned, and how it impacts physical as well as mental health. We also explore the impact optimism has in the classroom, how pessimism fits into the equation, and interrelated theories of optimism such as the placebo effect, expectancy effects, self-expectancy, and priming. We investigate these concepts to ascertain if one's disposition can be influenced or changed to positively or negatively affect academic outcomes.

### WHY IS OPTIMISM SO IMPORTANT?

Considering just how fundamental optimism is to this research, it makes sense to begin with explaining what optimism is and what makes it so important. Here, we also examine the key differences between optimists and pessimists.

Perhaps best defined by Scheier & Carver (1985), optimism is a cognitive construct that encompasses a generalized expectancy for positive outcomes. In other words, an individual with an optimistic outlook on average expects that events will play out in a hopeful or positive manner. The counterpart to optimism is pessimism which understandably is the opposite; negative expectation in regards to the future or success of something (Hystad & Bye, 2012).

Optimism has been identified to correlate with a plethora of beneficial effects such as increased longevity, better immunity and health, excellence in sports, the workforce, academics, and more (Seligman, 1998). Optimism also positively correlates with entrepreneurial success (Crane & Crane, 2007). Numerous studies have found a link between optimism and the use of

adaptive coping strategies as opposed to avoidant coping strategies when facing more stressful life events. These coping strategies allow the individual to approach problems in a more direct manner and usually enable them to persevere towards their goal in the face of obstacles. Those higher in dispositional optimism also appear to be able to use humour as well as positive reframing and coping acceptance strategies when they find themselves in situations they deem as uncontrollable (J. L. Thomas et al., 2011).

With so many positive qualities associated with an optimistic disposition and the quality of an individual's life greatly augmented by optimism, it is the endeavour of this research to further support optimism research by investigating the malleability of an individual's optimism in an academic setting, using the Learned Optimism testing procedure.

### OPTIMISM'S IMPACT ON PHYSICAL AND MENTAL HEALTH

Maintaining good physical health for many individuals is one of the most important things in life. Luckily, research suggests that holding an optimistic disposition is an excellent start to achieving this.

There is strong evidence that optimism positively correlates with better health, recovery, longevity, and immunity. For example, one study supporting this found that men with a more optimistic disposition had a faster recovery from undergoing coronary artery bypass surgery as well as a self-reported higher quality of life six months afterwards (Mahler & Kulik, 2000). A similar study by Rääkkönen, Matthews, Flory, Owens, & Gump (1999) found that individuals with an optimistic disposition also had reduced blood pressure throughout everyday life than those without.

Optimism has also been found to correlate with fewer symptoms of physical illness among university students (Scheier & Carver, 1985). In a longitudinal experiment by S C Segerstrom,

Taylor, Kemeny, & Fahey (1998), optimism appeared to bolster the immune system among first semester law school students by creating more T cells which is an essential immunoregulatory cell responsible for mediating reactions to infection. Lai (2009), found that Chinese adolescents with higher dispositional optimism reported lower levels of distress caused by daily life hassles.

At least for an elderly population of 65 to 80 year olds, optimism appears to influence well-being by promoting healthier choices such as abstaining from smoking, consuming alcohol more moderately and taking up regular physical activities such as brisk walking (Steptoe, Wright, Kunz-Ebrecht, & Iliffe, 2006). Healthier choices such as eating better foods and engaging in beneficial health behaviours mediate physical well-being as a result and are often referred to as protective health factors (Serlachius et al., 2015).

As can be inferred from these findings, an optimistic disposition tends to be an important predictor of good physical health and supports a strong immune system. These bolstering effects of an optimistic disposition while not directly relating to the components of this research, do highlight just how influential an optimistic disposition can be and the importance of further understanding optimism itself.

With good mental health also being fundamentally important for many individuals, it is fortunate that findings regarding physical wellbeing, are similarly reflected for one's psychological health (Segerstrom, 2006). For example, an optimistic disposition can lead to reduced post-traumatic stress for soldiers in war scenarios (Segovia, Moore, Linnville, Hoyt, & Hain, 2012). Relatively recent studies have also found an inverse relationship between optimism and suicidal ideation as well as other depressive symptoms (Conversano et al., 2010). One explanation for what mediates the correlation between poor physical health and pessimism is that *Explanatory Style*

influences the individual to act helplessly when the negative event occurs, instead of proactively seeking potential solutions, or doing their best to help the situation (Peterson, Colvin, & Lin, 1992).

Physical and mental health are an important piece of the puzzle but a small portion of the positive correlations that come with an optimistic disposition. As has been mentioned, this research aims to look at another fundamental benefit of optimism that begins for most people very early in life: education.

### OPTIMISM IN THE CLASSROOM

Optimism appears to also apply just as beneficially in an academic setting as others. Education often impacts many aspects of life and a quality education is correlated with receiving higher salary among other benefits (McGuire, 1952).

A study by Hoy, Tarter, & Hoy (2006) found that academic optimism in the classroom, at least at the high school level improved student achievement in spite of socio-economic disadvantage, previous achievement and school size. Academic optimism in this example is defined as a latent construct comprised of three factors; academic emphasis, collective efficacy and faculty trust in the parents and students. Academic emphasis is the importance that the education provider places upon the students to excel. Collective efficacy is the extent to which the teachers have faith in their own abilities as well as the abilities of other faculty members to effectively teach the students. Lastly, faculty trust in the parents and students is another important factor in the composite concept of academic optimism. These three components when combined form academic optimism that fosters improved performance among students.

Similarly, Beard, Hoy, & Woolfolk Hoy (2010), investigated the construct based around teachers' individual sense of academic optimism and found that academic optimism is still valid when tested as an individual, as opposed to collective, construct. In other words, an improvement

to student achievement can still be observed when only the teachers' optimism towards achievement is taken into account.

Various studies investigating the effect of optimism and pessimism on academic achievement have found that optimism correlates positively and pessimism correlates negatively with academic achievement (Harpaz-Itay & Kaniel, 2012).

These studies show that optimism is influential in improving grades in a broad context, that it's important not just for the individual to be optimistic, but for the teachers and other faculty members around that individual to be as well. They also illustrate that improving levels of optimism can improve performance in an academic setting from the expectation that the teacher has of the students. As will be explained in the Explanatory Style and Self-expectancy portions of this thesis, the present experiment similarly influences an individual's explanation for how they will perform on an academic test. Self-expectancy such as this has been linked to the idea that the expectation of others can change ones expectations of oneself to be in alignment.

## EXPLANATORY STYLE

Research points towards the major difference between optimists and pessimists being the way in which they explain positive or negative events that happen to them. This is usually referred to as Explanatory Style. The investigation of explanatory style was brought about due to decades of research in the area of Learned Helplessness. Most of the research in learned helplessness has dealt with animals in an effort to understand depression in humans. The earliest helplessness experiment placed dogs in two conditions: An uncontrollable condition and a controllable condition. Dogs in the uncontrollable condition were exposed to shocks that couldn't be avoided. Dogs in the controllable condition however, could control the shocks by way of jumping a simple hurdle. 24 hours after the initial phase of the experiment, dogs from the uncontrollable condition

were placed in a new shuttlebox that they could escape from via a simple hurdle jump. The uncontrollable condition dogs in this new controllable situation were passive and simply endured the shocks even when they could escape easily, indicating they had learned to be helpless. By contrast the dogs in the controllable condition continued to escape by jumping the hurdles (Peterson & Seligman, 1987). Recent research has stemmed from learned helplessness to investigate cognitive explanations for what makes human individuals helpless. Explanatory style is an important concept to understand in order to make sense of the Learned Optimism Test used in this experiment.

There are three main components of an individual's explanatory style. The first is the internal ("It's my fault") vs external ("it was someone else's fault"). The second is stable ("this will never end") vs unstable ("this will pass"), and the third is global ("this will impact everything I do") vs specific ("this was a once off") (Peterson & Buchanan, 1995). More recently, Seligman has reworked slightly and phrased these dimensions as *Permanence* (stable vs unstable), *Pervasiveness* (global vs specific), and *Personalisation* (internal vs external) (Seligman, 1998).

Permanence, refers to long lasting causes for bad events. For example, a pessimist might believe it's simply how the world is. Pervasiveness is the extent to which the event will impact all aspects of their lives. In terms of pervasiveness, a pessimist might believe that any poor work performance equates to poor performance in life in general. Lastly, Personalisation refers to an internal explanation that regards the self. For example, an optimist might believe that a negative event happened due to circumstances outside of their control, as opposed to thinking it was their fault. An individual that has a pessimistic explanation for all three, such as an internal, stable and global causality for a bad event is the worst explanatory style to use which will lead to negative outcomes for that individual (Peterson & Seligman, 1987).

These differences in how the individual explains the events they endure, enable the optimist to live a much more fulfilled and prosperous life than the pessimist (Lau, 2011). In the case of my experiment, participants are likely to have more optimistic explanations (e.g. “I usually do well on these kinds of tests”) about how they will perform on the test in the optimism condition and more pessimistic explanations in the pessimistic condition (e.g. “I’ve never been much good at reading comprehension”).

Personalisation is the most relevant part of explanatory style in terms of the present study, though, it is also important to comprehend permanence and pervasiveness in order to understand the Learned Optimism Test used in this investigation. In this experiment, individuals are primed with *personalized* optimistic or pessimistic information concerning themselves. The effect of presenting this personalized information to participants should induce a negative or positive explanation (within the individual) about how they will perform on the test. The activation of this positive or negative explanation prior to the test should improve (for the positive condition) or hinder test performance (for the negative condition).

## THE LEARNED OPTIMISM TEST

The test used in the present experiment was created with explanatory style taken into account. Each question is based around permanence, pervasiveness or personalisation. The Learned Optimism Test was used because it has been found to be reliable even when individuals are intentionally aware of what the test is measuring (Seligman, 1998). Scoring and calculations for the test can be found in the Method section.

The Learned Optimism Test is a relatively new creation that the present research uses in order to further establish it as a reliable measure for optimism. However, before discussing the Learned Optimism Test, two of its precursors will be discussed. Other research (Lai, 2009; Scheier,

Carver, & Bridges, 1994; Smith, Pope, Rhodewalt, & Poulton, 1989; Steptoe et al., 2006; Terrill, Friedman, Gottschalk, & Haaga, 2002) has used, a test with a very similar name – The Life Orientation Test (LOT), however this test isn't used in this study because of some issues with validity. To avoid confusion, "LOT" will only refer to Life Orientation Test in this thesis. The LOT works by generating an overall score of optimism and pessimism from two subscales consisting of four items each, of which four are optimistic (e.g. "In uncertain times, I usually expect the best"), and four are pessimistic (e.g. "If something can go wrong for me, it will") (Scheier & Carver, 1985). Although the LOT has been identified as an adequate means to measure levels of optimism and despite its widespread use in research into optimism and pessimism over the years, the validity has been questioned and it has been linked to potential confounds to do with neuroticism and negative affect (Smith et al., 1989). A revised version of the LOT, the Life Orientation Test-Revised (LOT-R) was created to resolve some of the issues of the test, and was found to correlate .90 with the original LOT (Scheier et al., 1994). However, even the LOT-R was found to be problematic with respect to validity. For example, Terrill et al. (2002) found that the LOT-R is unable to account for an individual faking answers on the test. This was accomplished by comparing two groups; a control group and a "fake good" group. In the "fake good" condition, participants were told to fake being more optimistic and as a result, they did score higher on measures of optimism than the control group.

The present experiment made use of the Learned Optimism Test, a new and promising way to measure optimism developed by Martin Seligman who is a prominent author, psychologist, and researcher in the fields of helplessness, pessimism and positive psychology. The Learned Optimism Test was designed as a means to measure optimism accurately. It is important in this type of research to obtain accurate data from individuals who might want to alter their responses

from reality; The Learned Optimism Test has been found to minimize, if not eliminate this type of error (Seligman, 1998). Due to the concerns with the LOT & LOT-R, the decision was made for this research to use the Learned Optimism Test in an effort to support the methodology, as at the time of this writing, it appears that other research has not yet embraced this testing procedure.

## BECOMING AN OPTIMIST

It is surely worth investigating how a pessimist can change their ways and start to reap some of the benefits that come with an optimistic disposition. Fortunately, current research suggests that optimism can be learned and a pessimistic worldview can be overcome, perhaps even permanently (Seligman, 1998). The research suggests that an optimistic disposition can be instilled through 5-minute daily sessions over the course of two weeks based around imagining one's best self as well as training individuals to develop a more optimistic mind-set through thought restructuring techniques such as Cognitive Behaviour Therapy (CBT) (Carver & Scheier, 2014).

If improvement can be observed from just 5 minute daily sessions over two weeks, then perhaps this change can be produced even faster. The present experiment aims to see if an improvement to optimism levels can be made from just one Self-expectancy inducement of an optimistic disposition in order to improve grades prior to a test in a comparatively short time frame.

A study by Fresco, Moore, Walt, & Craighead (2009) found that pessimists can become more optimistic using Self-Administered Optimism Training (SOT). Their experiment had a group of college students identified as having a pessimistic explanatory style. They completed a 10 minute daily course outlining how they could self-monitor their thoughts about the causes of negative events, with the instruction to brainstorm as many optimistic alternatives as possible. The participants recorded the process in a diary over 28 days. Compared to a control group, this simple

and inexpensive approach did help to lower depression symptomology for the SOT group. These results suggest that indeed, even pessimists can learn to be more optimistic.

Both of these approaches rely on a cognitive restructuring technique (CBT) and require at least a small time investment repeatedly. In this research, we attempt to simplify even further and answer the question, just how malleable is an individual's optimism? In particular, can a simple prime, such as suggesting that an individual is more optimistic or pessimistic than the norm, serve to improve or hinder an individual's success on an academic test?

### PESSIMISM: THE PROS AND CONS

Pessimism is a tendency to see the worst aspect of things or believe that the worst will happen. A pessimistic disposition often relates to negative outcomes for the individual, though it is not entirely without its usefulness.

Studies suggest that negative or pessimistic thinking can perpetuate and exacerbate anxiety and mental illness such as depression (Carver & Gaines, 1987). In fact, pessimistic thinking is a robust predictor for the development of depressive symptoms (Fresco et al., 2009). According to Seligman (1998), depression is brought about by the tendency to think negatively and is an extreme expression of pessimism. This differs greatly from the normal perspective of pessimism, which is commonly thought of as merely a symptom of depression (Teasdale, 1983).

Depression and anxiety disorders are among the most prevalent, pervasive, and debilitating conditions negatively impacting the lives of countless individuals worldwide (Topper, Emmelkamp, & Ehring, 2010). Depression in New Zealand is becoming more ubiquitous along with the rest of the world (Joyce, Oakley-Browne, Wells, Bushnell, & Hornblow, 1990).

If we can improve the level of optimism and in effect reduce pessimism in an individual, then potentially this can act as a kind of prevention for depression. This is especially true in an

area as important as the classroom and especially if this can be achieved from a young age. However, some research indicates there are potential benefits of at least a small amount of pessimism.

Sweeny & Shepperd (2010) found those who held a pessimistic disposition about how they would perform on a test also had lower expectations of themselves than did their optimistic counterparts. This led to the pessimistic participants experiencing less negative affect and disappointment when dealing with final scores on an exam. Another study by Satterfield (1997) found that law school students who were very optimistic, actually performed poorly against their pessimistic or neutral counterparts. This is contrary to their findings with other undergraduates as well as other research in support of the finding that high levels of optimism are usually always beneficial academically. This indicates that perhaps there is an ideal amount of optimism, a high level of optimism in a demanding or stressful course of study may be detrimental. Thinking that it's not urgent for too long, may just wind up having disastrous consequences.

Research suggests that a modicum of pessimism encourages critical thinking about all possible outcomes. This can mean that individuals are more alert to their surroundings and therefore potentially more present to possible dangers (S. P. Thomas, 2011). Although, high levels of pessimism are often linked with negative consequences to health. For example, Zenger, Glaesmer, Höckel, & Hinz, (2011) found that female cancer patients were at a greater risk of increased anxiety and depression if they were pessimistic, to the point that it was even better to hold a neutral disposition than a pessimistic one. However one study conducted very recently by Serlachius et al. (2015) found that a low level of pessimism may in fact be ideal for cardiovascular health in particular, though this was potentially mediated or confounded by Socio-economic status.

In spite of the few scenarios where pessimism seems advantageous, the research does suggest that at least a low level of pessimism may have a beneficial effect and that perhaps it is not always best to be optimistic.

## INTERRELATED THEORIES TO OPTIMISM

There are many interrelated theories that may affect people's behaviour that are related to this thesis, specifically, the placebo effect, expectancy effects, self-expectancy, and priming. Essentially, they all encompass the idea that an individual is influenced by their belief, or by the belief of others and will react accordingly. On top of this, they do not have to be consciously aware that they are being influenced in order for change to be elicited.

### THE PLACEBO EFFECT

The placebo effect can be described as the measurable, observable or felt improvement in health or behaviour that cannot be attributed to a medicated or invasive treatment the individual has undergone (Shukla, G. S., & Rai, 2015).

For example, patients given an inert medication (a placebo) who are told that the treatment will cure them of their ailment, will somehow through the power of their own cognitive capacities, usually improve whether they are cognizant of it or not. This happens despite the actual medication being tested to have zero medically curative effect. The *expectation* that the individual undergoing the treatment has that it will work can be powerful (Stewart-Williams & Podd, 2004).

Geers, Helfer, Kosbab, Weiland, & Landry (2005) found the subjective factors of placebos on optimists and pessimists. The optimists and pessimists were randomly assigned to 3 different groups. The three groups consisted of *deceptive-expectation*, *conditional-expectation*, and a *control* group. In each group, the subjects were required to ingest a pill containing an inactive substance. In the *deceptive-expectation* group, participants were told the pill would make them

feel unpleasant. In the *conditional-expectation* group, participants were told the pill would *either* make them feel unpleasant or have no effect. The *control* group were told the pill would have no effect. In alignment with their hypothesis, pessimistic individuals were more likely than optimistic individuals to follow a negative placebo expectation if the given expectation was deceptive as opposed to being conditional.

A similar study by Geers, Wellman, Fowler, Helfer, & France (2010) found that optimists are able to tolerate pain to a greater degree than pessimists. The experiment had individuals, pre-screened for dispositional optimism, place their hands into a container filled with crushed ice submerged in 4 °C water. This occurred after the experimenter told a placebo condition that they were testing a new topical local anaesthetic that supposedly offered powerful pain relief, even though in reality it was a placebo cream. Participants were informed to keep their hands in contact with the ice until it became unbearable, but could remove them at any time, after which they immediately reported their pain. Optimistic individuals felt less pain from this *cold pressor task* in a placebo condition than in a control group, indicating that optimism acted as a buffer against a negative placebo expectation.

The present investigation uses a fairly similar condition to the *deceptive-expectation* condition in the Geers et al. (2005) experiment. Much of why participants become more or less optimistic for the duration of the test will likely be due to a similar placebo effect. The key difference being that in the present study, the pessimism condition are given a negative expectation and the optimistic condition are given a positive expectation.

## INTERPERSONAL EXPECTANCY EFFECTS

Interpersonal expectancy effects are the idea that one's preconceived expectations about an individual can influence the way in which others address and converse with them, which in turn influences how they respond and behave (Rosenthal, 1994).

Interpersonal expectancy effects in the classroom can lead to what is known as the Pygmalion effect. This effect is a psychological phenomenon where the belief one holds regarding another often causes the given individual to exhibit changes in accordance with that belief (Jamieson, Lydon, Stewart, & Zanna, 1987). In an experiment demonstrating the Pygmalion effect, teachers who were instructed to expect certain students to be brighter, inadvertently, influenced those students to be brighter (Rosenthal, 1994). The students had been randomly assigned to a 'late bloomer' pool that had supposedly been psychologically tested for intelligence. Only the teachers were told the students were going to become brighter. This led to the students receiving more challenging content, and more response-outcome/learning opportunities which in turn caused those students to become brighter.

The Rosenthal experiment looks at whether an individual will change in response to an external belief held by another individual and could likely work well with optimism, which could be linked to academic optimism as demonstrated earlier in the study by Hoy et al. (2006). In the present study, the expectation is placed on the individual themselves which through mediation, is a possible way that interpersonal effects work.

## SELF-EXPECTANCY

Self-expectancy is the idea that individuals place expectations on themselves. The present research tests whether people are influenced, similar to interpersonal expectancy effects, when an individual places the expectation on themselves. Research shows that individuals who place

expectations on themselves, based on information they are given, are capable of eliciting changes in a similar way to interpersonal expectancy effects. For example, Dov Eden & Ravid (1982) had soldiers who were undertaking a 7-week clerical course undergo an experiment along these lines. In one group a psychologist directly informed soldiers that they had high success potential in order to induce them with high self-expectancy. In another group the instructors were informed that those soldiers had high success potential to produce the aforementioned Pygmalion effect. Soldiers placed in the high self-expectancy condition did learn much faster than those in the control group as well as soldiers who were placed in the Pygmalion effect group.

Similarly to the Eden & Ravid (1982) experiment, the present study also uses a direct way of inducing self-expectancy. Individuals are directly informed that they are more optimistic or pessimistic than average (regardless of their actual level of optimism).

Be it positive or negative these expectations such as self-expectancy or interpersonal expectancy effects are frequently self-fulfilling prophecies (Schulman, 1999). A self-fulfilling prophecy is the idea that our expectations change the way we respond and behave in such a way that brings about what we expect, even when it is driven subconsciously. This type of research indicates that it may be very important for an individual to place positive expectations on oneself.

#### WHAT IS PRIMING?

Priming can be defined as the activation of an individual's knowledge structure through exposure to a stimuli for either a short or long period of time (Wentura & Rothermund, 2014). This activation leads the individual to be more cognitively ready for the activation concept, such as a category, mind-set, emotion, or trait category. This study employs a self-expectancy technique that works similarly to how priming works to covertly alter participant's self-expectations and therefore their disposition to be optimistic or pessimistic for the duration of the experiment.

Concepts that are more frequently used or more recently primed come to mind more easily and thus, appropriately influence our worldly perceptions (Kassin, S. M., Fein, S., & Markus, 2008). Something as simple as a facial feature that perceivers associate with power or dominance (e.g. a strong jawline) can act as a prime, which leads those individuals to expect the person they are perceiving to behave in a feature-consistent manner. This consequently shapes the perceived person to lead a more successful life (Rule & Ambady, 2010). Research suggests that courts are more lenient on those who have a ‘baby-face’ when ruling verdicts (Rule & Ambady, 2010). In a similar way it may be that our reflection in a mirror influences how we perceive ourselves and consequently behave through a very unconscious priming mechanism.

Priming can be both positive and negative, the effect of which is moderated by what we are primed with. If we are primed with the concept of politeness, then we are likely to be more polite. Likewise, priming rudeness can cause rudeness (Kassin, et al., 2008). The experiment that primed the concepts of politeness and rudeness was achieved by having participants form grammatically correct sentences from 30 sets of scrambled words. For example (“they who respect see usually”). After taking the five minute long test, participants were told to meet the experimenter down the hall to take place in a second task. When the participants found the experimenter, they were immersed in conversation. Words in the scrambled sentence task had been placed to prime rudeness (“disturb, intrude, bold, bluntly”) and conversely, politeness (“yield, respect, considerate, courteous”). Individuals in the rudeness condition were more likely to break into the conversation than those in the politeness condition and control condition. Conversely, participants primed with politeness were less likely to disrupt the conversation (Bargh, Chen, & Burrows, 1996).

A recent experiment by In Den Bosch-Meevissen, Peters, & Alberts (2014) successfully primed participants to have an optimistic outlook by means of a scrambled sentence task. This was

accomplished by presenting participants with 15 strings of five words. Participants needed to use four of these words in order to complete a cohesive sentence. A control group was given this task with strings containing neutral words such as “rain” and “magazine”. An optimism condition however, was given strings of words that contained optimism-related words such as “hope”, “confidence”, and “optimistic”. To strengthen this priming effect the participants were instructed to read aloud the sentences they had formed and to do so in a timely fashion. In the present experiment, participants are explicitly informed that they are more optimistic (or pessimistic) than average and what it means for them to be so. This is to go a step further to test if simply the suggestion to the individual (as long as it’s believable) is powerful enough to prime an optimistic (or pessimistic) disposition.

Priming in the present study is accomplished using a fabricated test results page presented to the participant that indicates whether they are considered to be optimistic or pessimistic and is reinforced with a visual pie-chart representation to help them interpret the information before taking the SAT tests.

### AIMS OF THE CURRENT STUDY

The present study employs a priming technique and self-expectation in a novel way. This study covertly alters the participant’s disposition to be optimistic or pessimistic for the duration of the experiment. This is accomplished by having the participant read a page of information that informs them that optimism or pessimism is very common as well as some of the negative or positive information associated with holding that disposition. The initial information is designed to make the participant more likely to accept the fabricated optimism score they later receive. After undertaking the Learned Optimism Test which measures the participant’s real optimism score, they are informed that they either placed in a more optimistic or pessimistic than average,

depending on the condition they are placed in and irrespective of their actual optimism. And is reinforced with a visual pie-chart representation of the information. Participants then complete an academic test.

The hypothesis is that if individuals are grouped into an *optimism* condition and are primed with optimistic information concerning themselves, then they will receive higher scores on the SAT questions than the control group. Conversely, those in the *pessimism* condition should perform worse than both other groups. This thesis investigates whether an optimistic disposition can be instilled within an individual using a simple self-expectation technique, leading to achievement in a scholastic test. Lastly, this thesis aims to test the validity of the Learned Optimism Test as a measure of optimism and pessimism for future research.

## CHAPTER 2: METHOD

### PARTICIPANTS

120 participants (60 males, 60 females) were recruited from the University of Canterbury (UC) campus library and through the social networking website - Facebook. Participants recruited from UC received a chocolate bar as compensation. Each participant undertook the experiment through a website accessible at [www.fightfu.com/thesis/](http://www.fightfu.com/thesis/). As a further incentive, all participants were also placed in a drawing to win a \$200NZD voucher, chosen at random once the data had been analysed.

A total of 120 participants completed the experiment and were pseudo-randomly placed into one of three conditions, C (Control), O (Optimism) and P (Pessimism), as can be seen in TABLE 1. The optimism condition informs participants that they are more optimistic than average. Conversely the pessimism condition informs the participants that they are more pessimistic than average. The control condition is not informed with any information.

TABLE 1  
NUMBER OF PARTICIPANTS ACROSS EACH CONDITION

C (Control)	O (Optimism)	P (Pessimism)	Total
37	42	41	120

The Learned Optimism Test placed individuals into five categories ranging from very optimistic to very pessimistic. As can be seen in TABLE 2, there were 67 participants in *very pessimistic* range, 17 participants in the *moderately pessimistic* range, 27 participants in the *neutral* range, 5 participants in the *moderately optimistic* range and lastly, only 4 participants scored as *very optimistic*.

TABLE 2  
NUMBERS OF PARTICIPANTS IN EACH OPTIMISM RANGE

Very Pessimistic	Moderately Pessimistic	Neutral	Moderately Optimistic	Very Optimistic
67	17	27	5	4

In part due to the insufficient number of participants that fell into groups 4 and 5 and in part to simplify the data for analysis, very pessimistic and moderately pessimistic ranges were combined as Pessimistic. Very optimistic and moderately optimistic were also combined as Optimistic. As demonstrated in Table 3, this left three ranges; Optimistic, Neutral, and Pessimistic. There were 27 participants in the Neutral range, 9 participants in the Optimistic range, and 84 participants in the Pessimistic range.

TABLE 3  
NUMBER OF PARTICIPANTS IN COMBINED OPTIMISM RANGE

Pessimistic	Neutral	Optimistic
84	27	9

119 out of 120 participants were New Zealanders, the other participant identified herself as Australian. The dataset from the 1 outlying Australian was removed in order to increase the validity of the study by eliminating nationality as a potential confound. There were 59 females and 60 males with the 1 Australian female removed. Ages ranged from 17 to 66 with a median age of 28.5 and the mean age of 32.54. As shown in TABLE 4, education levels varied between secondary education, bachelors, and masters, with 79 participants completing or having completed a Bachelor degree, 3 participants having completed or completing a master's degree, and 38 participants completing or having completed secondary education.

TABLE 4  
NUMBER OF PARTICIPANTS ACROSS EDUCATION LEVELS

Bachelor	Master	Secondary
79	3	38

## MATERIALS

### SELF-EXPECTANCY MATERIALS

State of mind (optimism or pessimism) was primed via the experiment's fabricated study information page and fabricated test results page.

### FABRICATED INFORMATION PAGE

The optimism condition participants were informed that being optimistic was on average more common than being pessimistic (Appendix C1).

In the pessimism condition, participants were shown the opposite of the information presented in the optimistic condition; they were informed that pessimism was more common than optimism (Appendix C2), an example of which can be seen below in Figure 1. Those in the control condition were not shown any information – the website automatically directed the control condition participants to the Learned Optimism Test.

**Research on Pessimism**

*It is important that you carefully read this information before continuing.*

In recent years, research into pessimism has found that pessimistic individuals tend to live shorter lives and suffer from more health issues such as post-traumatic stress disorder and cardiovascular disease. A pessimist is also more likely to underperform in the classroom and on the sports field as well as in the workplace. The negative thinking patterns involved in a pessimistic mind-set are linked with mental health issues such as depression. Unfortunately, new research in the field of positive psychology surrounding pessimism suggests that New Zealanders are much more pessimistic than optimistic on average. In fact, roughly 3 out of 5 New Zealanders are overly pessimistic. This research is looking into why pessimism is so commonplace in the hopes that a method can be developed to change.

[Click here](#) to find out how you score for pessimism

Figure 1. Fabricated study information page with pessimism self-expectancy.

## THE LEARNED OPTIMISM TEST

The Learned Optimism Test (Appendix D) included 48 questions designed to measure how optimistic or pessimistic the participant was based on a variety of variables such as permanence, pervasiveness, and personalization as aforementioned (Seligman, 1998). A number of example questions from this can be seen in Figure 2.

**The Questions:**

1. The project you are in charge of is a great success.
  - I kept a close watch over everyone's work.
  - Everyone devoted a lot of time and energy to it.
2. You and your spouse (boyfriend/girlfriend) make up after a fight.
  - I forgave him/her.
  - I'm usually forgiving.
3. You get lost driving to a friend's house.
  - I missed my turn.
  - My friend gave me bad directions.

Figure 2. Learned Optimism Test example questions.

The overall optimism score is calculated in a fairly complex manner, here we will provide a key (Appendix E), as well as the basic formula for calculating an overall optimism score. Each question represents one of the 3 dimensions, permanence, pervasiveness, and personalisation. The questions ask an individual to vividly imagine the given scenario and to select which answer would most likely match their response. Each response's score is combined in order to generate an overall optimism score that ranges from very pessimistic to very optimistic (Szcześniak & Soares, 2011)

As shown in the scoring key (Appendix E), when broken down into their respective categories the questions in the test fall into Permanence Good or Bad (PmG, PmB), Pervasiveness Good or Bad (PvG, PvB) and Personalisation Good or Bad (PsG, PsB). There are eight questions

that measure each component which can be answered as either A or B and correspond with either an optimistic response (marked with a 1) or a pessimistic response (marked with a 0). Each question answered with a 1, is counted towards the score for that dimension.

For example, as can be seen in the scoring key, Permanence Good (PmG) questions are numbered 2, 10, 14, 15, 24, 26, 38 and 40. Each of these questions measures how permanent the individual thinks the event would be about a positive event (imagining themselves in that scenario). For example, in response to question 2; as can be seen in Figure 2 if an individual were to choose “I forgave him/her” instead of “I’m usually forgiving”, then they have chosen the more pessimistic reason in terms of permanence for a positive event which would give them 0 points towards PmG, conversely if they had chosen B “I’m usually forgiving” then they would have 1 point towards PmG because they chose the option that is more optimistic (Seligman, 1998). This same process can be applied for PvB, PmB and so forth. Then a total optimism score is calculated based on the optimism scores across all dimensions.

The formula is as follows:

$$\text{Total bad event score (TbS)} = (\text{PmB} + \text{PvB} + \text{PsB})$$

$$\text{Total good event score (TgS)} = (\text{PmG} + \text{PvG} + \text{PsG})$$

$$\text{Good minus Bad score} = (\text{TgS} - \text{TbS})$$

Good minus bad score essentially the total actual optimism score. If this is above 8, then the individual is *very optimistic*, if the score is from 6 to 8 the individual is *moderately optimistic*, a score of 3 to 5 places the individual in the *average* range, 1 or 2 in the *moderately pessimistic* range and lastly a score of 0 or below places the individual as *very pessimistic* (Seligman, 1998).

## FABRICATED TEST RESULTS PAGE

The test results page was unique per condition. The information in the test results page was fabricated for the purposes of this experiment and served to provide the participants with their fabricated optimism scores (not the real scores obtained from the Learned Optimism Test). In the optimism condition, participants were informed that they scored highly on optimism (Appendix E: 1). In the pessimism condition participants were informed that they scored highly on pessimism (Appendix E: 2), as can be seen in Figure 3.

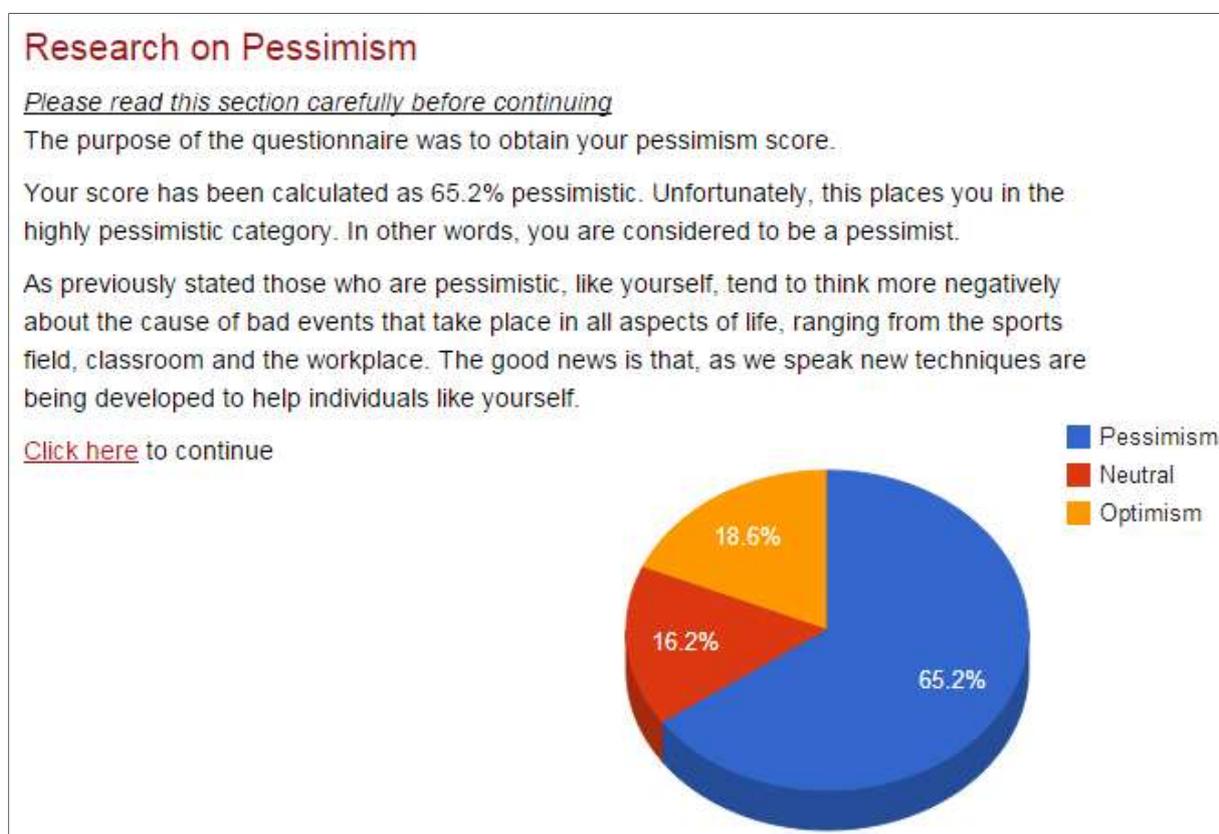


Figure 3. Example pessimism results page.

Those in the control condition did not see this page. The website instead redirected them to the academic tests page.

## ACADEMIC TESTS

Participants completed two tests. Both of these tests are components of the SAT (reading comprehension and sentence completion) which is a standardized test used commonly throughout the United States as a measure to gain entrance into higher education for undergraduate study. The first of these is a sentence completion test (Appendix F) with 12 questions similar to the examples in Figure 4:

**Sentence Completion**

1. Today Wegener's theory is \_\_\_\_; however, he died an outsider treated with \_\_\_\_ by the scientific establishment.

- A. *unsupported - approval*
- B. *dismissed - contempt*
- C. *accepted - approbation*
- D. *unchallenged - disdain*
- E. *unrivalled - reverence*

2. The revolution in art has not lost its steam; it \_\_\_\_ on as fiercely as ever.

- A. *trudges*
- B. *meanders*
- C. *edges*
- D. *ambles*
- E. *rages*

Figure 4. Sentence Completion example questions.

Participants also read an excerpt from a book authored by British scientist Jon D Bernal and answered questions relating to reading comprehension (Appendix G) with seven questions similar to the example below in Figure 5.

## Reading Comprehension

The extract is taken from a book written sixty years ago by a British scientist in which he considers the relationship between science and society.

The pioneers of the teaching of science imagined that its introduction into education would remove the conventionality, artificiality, and backward-lookingness which were characteristic; of classical studies, but they were gravely disappointed. So, too, in  
5 their time had the humanists thought that the study of the classical authors in the original would banish at once the dull pedantry and superstition of mediaeval scholasticism. The professional schoolmaster was a match for both of them, and has almost managed to make the understanding of chemical reactions as dull  
10 and as dogmatic an affair as the reading of Virgil's Aeneid.

The chief claim for the use of science in education is that it teaches a child something about the actual universe in which he is living, in making him acquainted with the results of scientific  
15 discovery, and at the same time teaches him how to think logically and inductively by studying scientific method. A certain limited success has been reached in the first of these aims, but practically none at all in the second. Those privileged members of the community who have been through a secondary or public school  
20 education may be expected to know something about the elementary physics and chemistry of a hundred years ago, but they

1. The author implies that the 'professional schoolmaster' (line 7) has

- A. no interest in teaching science
- B. thwarted attempts to enliven education
- C. aided true learning
- D. supported the humanists
- E. been a pioneer in both science and humanities.

Figure 5. Reading Comprehension example questions.

These SAT materials were acquired from [majortests.com](http://majortests.com). The Learned Optimism Test was recoded and adapted from the one available at the [stanford.edu](http://stanford.edu) website.

## PROCEDURE

Participants accessed the experiment at [www.fightfu.com/thesis/](http://www.fightfu.com/thesis/).

Participants were pseudo-randomly assigned to condition (pessimism, optimism, and control). Randomization was achieved via a computer program that checked for equal gender and participation rates in the three conditions.

The steps of the experiment were the almost identical for all participants. First, participants were in the pessimism and optimism conditions were presented with a fabricated study information page (tailored to each condition). Second, participants completed the Learned Optimism Test.

Third, participants (except the control group again) were presented with fabricated test scores in the test results page, tailored to each condition, however, participant's actual scores were recorded in the experiment for data analysis. Fourth, all participants completed SAT questions. Finally, participants were debriefed and thanked for their participation. The experiment took approximately 25 minutes.

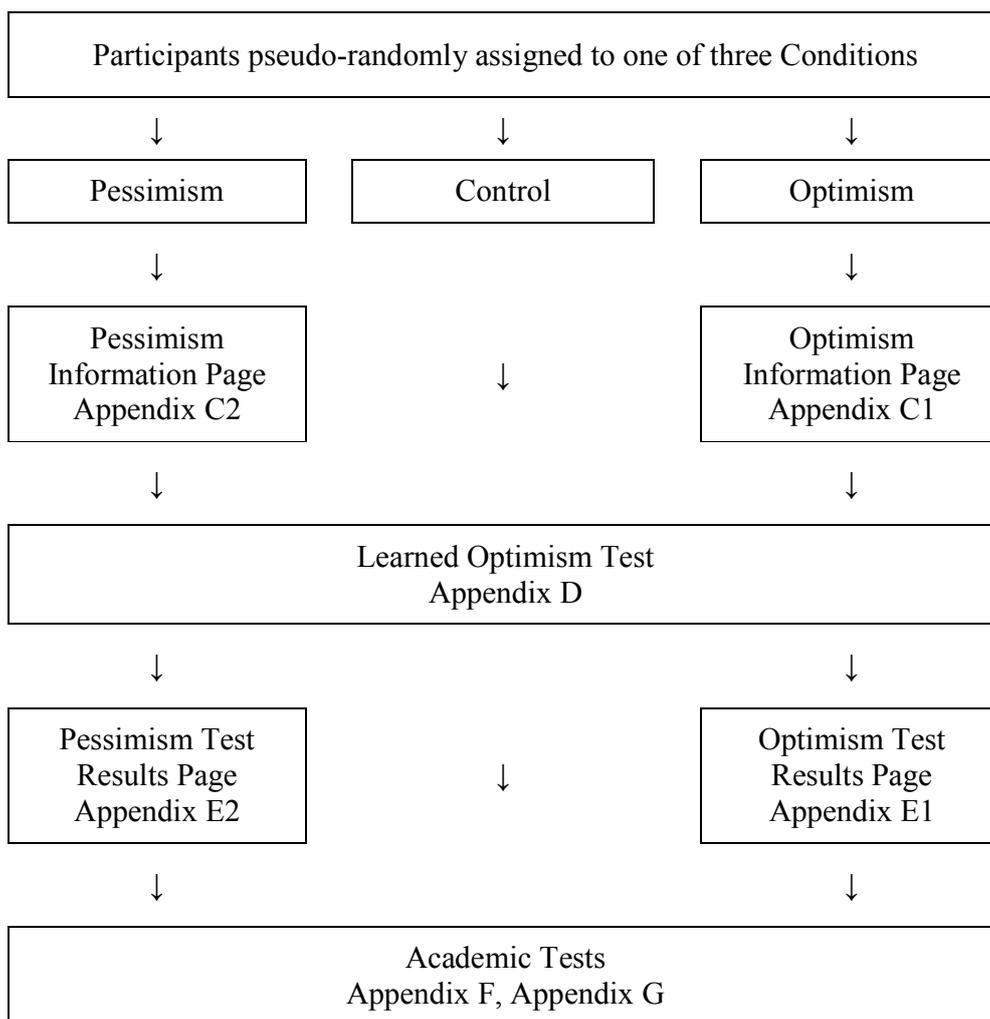


Figure 6. Visual summary of experimental procedure.

## CHAPTER 3: RESULTS

This study aimed to induce an optimistic or pessimistic disposition in a brief time period. The first hypothesis in this thesis predicted that individuals placed in the *optimism* condition who were primed with optimistic information concerning themselves would achieve greater accuracy on SAT reading comprehension and sentence completion tests than participants in the *control* (primed with no information) and *pessimism* (primed with pessimistic information) conditions. The second hypothesis predicted that individuals who were primed with pessimistic information should perform worse than both the *control* and *optimism* conditions.

### ANALYSES

The Good minus Bad score was used as the individual measure of optimism. This meant that the goal post was moved for each range. This variable was used in order to circumvent an issue with how Seligman's method of allocating ranges worked with this particular sample. All told, 55.5% of participants were identified as being "very pessimistic", 14.3% as "moderately pessimistic", 22.7% as "neutral", 5% were identified as "moderately optimistic" and only 4% as "very optimistic" according to Seligman's ranges. A quartile split was investigated to see if this would result in a more appropriate spread of the sample into categories of relative optimism. This effectively reduced the five initial ranges into four that better reflected relative optimism in the sample but, in the end, the actual optimism level (Good minus Bad score) was used as the best relative measure of optimism in the sample.

A pseudo-random allocation check was conducted using SPSS, to test that demographics such as *age*, *gender*, and *education* were evenly distributed across the priming conditions to ensure this would not bias further data analysis.

A One-way Analysis of Variance (ANOVA) was carried out in order to compare ages in the control, optimism, and pessimism conditions. This analysis revealed that there is no difference in age between the groups  $F(2, 116) = .166, p = .847$ . A Chi Square test of independence determined gender was also distributed as expected  $\chi^2 (2; N = 119) = .50, p = .78$ . The same was also true for education  $\chi^2 (4; N = 119) = 2.7, p = .611$ . These three analyses indicate that there is no relationship between the demographics and the conditions, so they are able to be ruled out as potentially biasing the data.

A One-way ANOVA was then conducted to discern if there was a difference in individual's real optimism scores as measured by the Learned Optimism Test across the three conditions (control, optimism, and pessimism), using the Good minus Bad score as the Dependent variable. No significant difference was found  $F(2, 116) = 1.48, p = .230$ , meaning there was no difference in actual optimism across the three conditions.

As can be seen in Table 5, and in Figures 7, 8 and 9, correlations were found between participant's scores on the SAT tests and their actual optimism levels identified by the Learned Optimism Test. Actual optimism correlated positively but non-significantly with sentence completion, reading comprehension and the two tests combined/overall scores.

TABLE 5

CORRELATIONS (AND ASSOCIATED P-VALUES) BETWEEN ACTUAL OPTIMISM AND SAT READING SKILL TESTS

	Sentence Completion	Reading Comprehension	Overall Scores	Actual Optimism
Sentence Completion	1	.597**	.929**	<b>.167</b>
Reading Comprehension		1	.852**	<b>.093</b>
Overall Scores			1	<b>.152</b>
				.069
				.316
				.099

\*\* . Correlation is significant at the 0.01 level (2-tailed). Bolded figures highlight the correlations with Actual optimism.

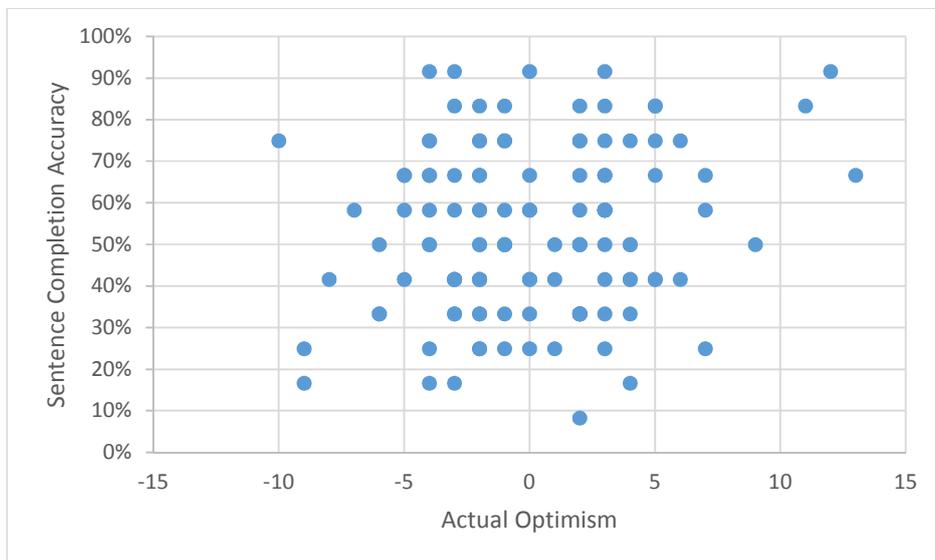


Figure 7. Scatter plot of Sentence Completion scores in relation to Actual optimism.

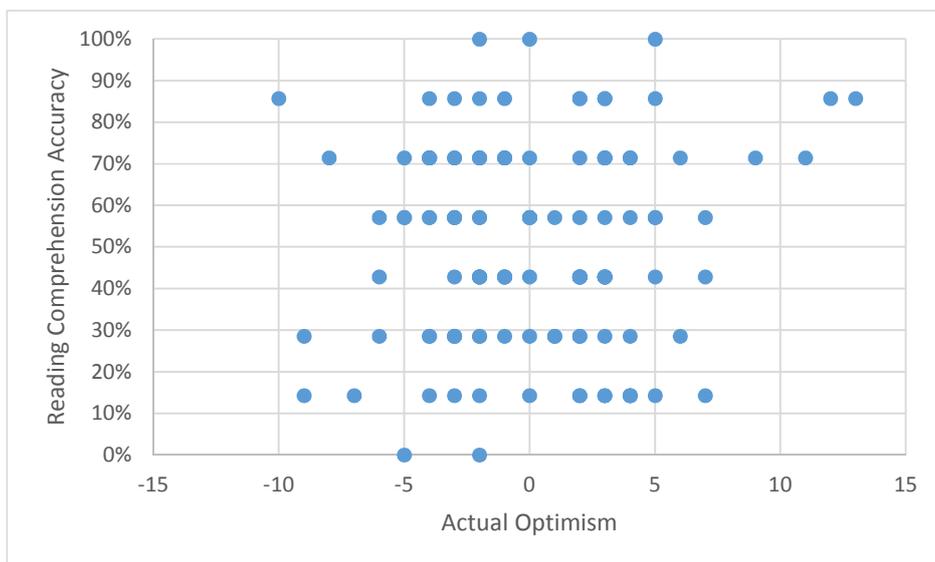
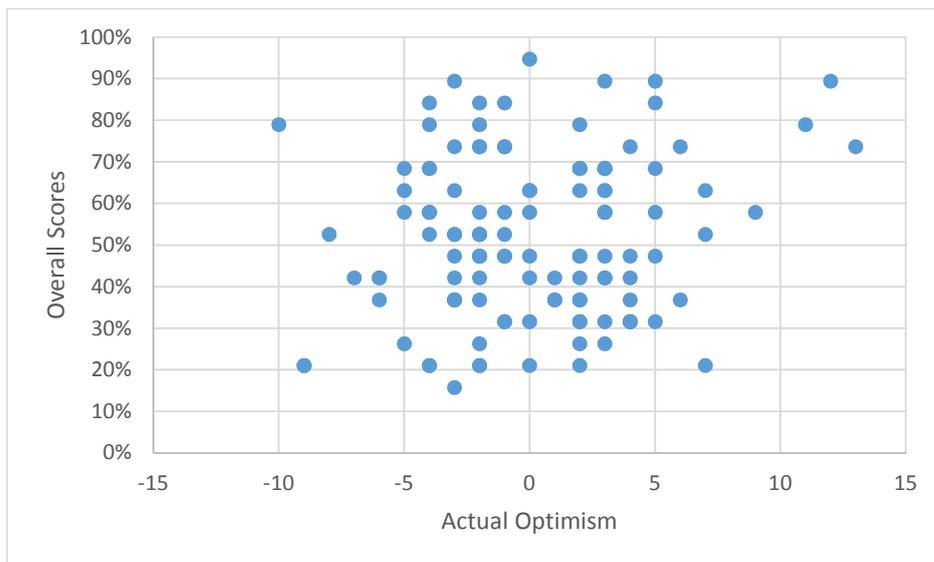


Figure 8. Scatter plot of Reading Comprehension in relation to Actual optimism.



*Figure 9.* Scatter plot showing Overall SAT scores in relation to Actual optimism.

Although the relationship between actual optimism scores and SAT performance was not statistically significant, the correlations for Sentence completion and Total scores were nearing significance. Thus, a One-way Analysis of Covariance (ANCOVA) was used with actual optimism score as the covariate. This analysis was run for each Dependent variable (reading comprehension, sentence completion and total score), with the manipulation group as the independent variable.

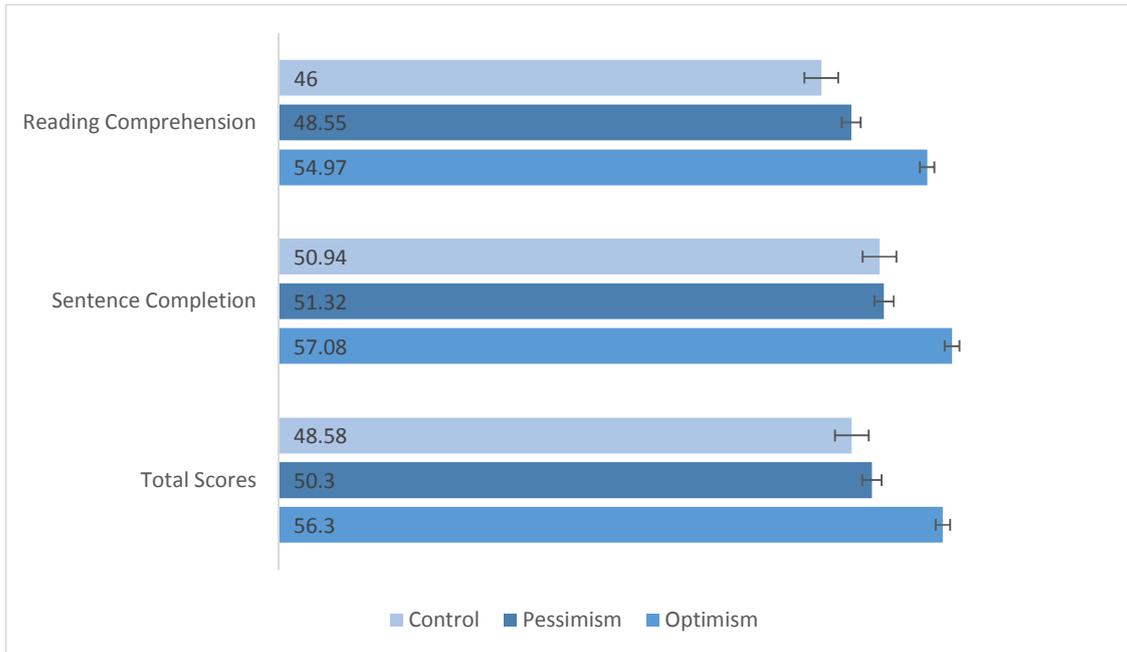


Figure 10. Means and standard errors across the three conditions and SAT tests.

No significant differences were found between conditions for Reading comprehension  $F(2, 113) = 1.46, p = .236$ . Sentence completion  $F(2, 113) = 1.41, p = .297$  or Total scores  $F(2, 113) = 1.79, p = .172$  (See Figure 10). Although no statistical differences were found, there was a clear trend for those in the optimism group to have a higher mean than the pessimism or control group.

## CHAPTER 4: DISCUSSION

This dissertation aimed to induce individuals with either an optimistic or pessimistic self-expectation in order to ascertain whether a positive or negative effect on academic performance would occur in a brief time period. Dispositions were first altered by having individuals read optimistic or pessimistic study information prior to undertaking the Learned Optimism Test (Seligman, 1998). Dispositions were also altered after taking the Learned Optimism Test, where participants were given falsified scores that informed them they had scored highly on measures for either optimism or pessimism, depending on their condition. Participants' real optimism scores were recorded for data analysis. Lastly, participants undertook an academic test. The academic test consisted of two reading skill tests taken from the SAT, a reading comprehension test, and a sentence completion test. The results of these tests were used to measure the impact of inducing an optimistic or pessimistic disposition through self-expectancy on academic performance. This thesis also aimed to test the learned optimism scale as a way to identify optimists and pessimists for future research to circumvent some of the problems found with the widely used Life Orientation Test (LOT) and Life Orientation Test-Revised (LOT-R) (Terrill et al., 2002).

Two patterns of results were hypothesized. Firstly, individuals primed with optimistic information concerning themselves would achieve greater accuracy on the SAT tests than both the control group and the pessimism group. Secondly, it was predicted that individuals primed with pessimism would achieve less accuracy than those in the optimism condition or the control condition.

Results were found to be in alignment (although non-significantly) with the first hypothesis. Participants placed in the optimism condition did achieve greater accuracy on both measures of the SAT reading skill tests (reading comprehension and sentence completion),

receiving on average 56.3% overall accuracy, as opposed to 50.3% accuracy in the pessimism condition, and 48.58% accuracy in the control group. Actual optimism scores also positively correlated with performance on the reading skill tests, regardless of self-expectancy inducing conditions. This finding is in alignment with previous research that optimism improves academic performance as supported by numerous studies (Carver & Scheier, 2014; Harpaz-Itay & Kaniel, 2012; Hoy et al., 2006).

Results for the second hypothesis were mixed and not statistically significant. Individuals primed with pessimism did perform worse on the SAT tests overall (51.3%) than those primed with optimism (56.3%). Contrary to the second hypothesis however, participants in the pessimism condition performed marginally, though not significantly, better than the control group, achieving 51.3% accuracy compared to control 48.58%.

## LIMITATIONS

One of the most problematic limitations to the study was the number of individuals who were identified by the *Learned Optimism Test* as being pessimistic versus optimistic. There were only 4 individuals identified as being “very optimistic” and only 5 as “moderately optimistic”. A total of 67 participants were identified as “very pessimistic”, whereas only 17 were “moderately pessimistic”. Even reclassifying Seligman’s original groupings for this sample did not nullify the problem of having so many participants identified in the pessimistic ranges. A participant pool largely skewed toward pessimism brings challenges with it and may limit how much can be extrapolated from the results. It is possible that the Learned Optimism Test was not normalised to a New Zealand population and it would be interesting if using the LOT or LOT-R would have found differing results. A potential cultural bias may exist wherein New Zealanders answer

questions in a more pessimistic manner so this may be due to cultural differences as opposed to actual differences in pessimism.

Possibly the main limitation of this study is that it is also difficult to ascertain if the self-expectancy was actually changing optimism levels. There is no real way of knowing if it was simply the suggestion of optimism causing the improvement or whether the participants really felt changed, even if temporarily. Some form of survey or follow-up from participants undertaken immediately following the procedure may have shed some light on this matter. A brief informal discussion with a number of participants after the experiment did produce some interesting responses. Quite a few participants felt as though the information telling them they were pessimistic or optimistic “can’t be right” and were “shocked” but thought it sounded legitimate enough to go along with it all the same. Other participants tended to agree with the information, whether it was pessimistic or optimistic.

## IMPLICATIONS

This research indicates that individuals who are primed/induced with self-expectancy to believe they are optimistic may perform slightly better when undertaking an academic test. Though this is not statistically significant, the trend is fairly pronounced. Correlations, also not significant, were found between participants’ actual optimism levels and their achievement on the reading skill tests. Both of these findings are in alignment with the research linking optimism with academic success (Harpaz-Itay & Kaniel, 2012). The present research supports findings regarding academic optimism by Hoy et al. (2006) and the Pygmalion experiments (Brookover, Rosenthal, & Jacobson, 1969; Rosenthal, 1994), that a teachers individual sense of optimism or expectation about the students’ performance may alter the students own optimism or performance to match it - which in effect means the students are expecting themselves to perform well, as they arguably would have

done in the present experiment. The findings also somewhat support the idea that if students expect themselves to perform well similar to the experiments by Eden & Ravid (1982), then they will. Research like this could highlight the need for teachers and other faculty members such as school counsellors to develop programs aimed at increasing optimism among students, or creating a more optimistic environment for testing. It may not be critical for teachers to place optimistic expectations on students either; this could be achieved through some form of priming or self-expectancy.

The self-expectancy method used in the present experiment was novel. The method may not need much in order to make it viable, so it appears possible that a method to increase optimism with less of a time commitment than those used by others (Carver & Scheier, 2014; Fresco et al., 2009), may be able to create a statistically significant effect. This is also notwithstanding the possibility that the skewed amount of pessimists may have lowered the effectiveness.

One thing to note is that all participants were given the study information sheet (Appendix A) which mentioned that the research was about optimism, and that they would be taking an Optimism test. Also the Optimism test itself mentioned that was the purpose, and all participants were told that the study was to do with Optimism. The priming effect can arise from subtle cues such as these (In Den Bosch-Meevissen et al., 2014; Kassin, S. M., Fein, S., & Markus, 2008; Rule & Ambady, 2010). This may explain why there was no significant difference found between the pessimism and control groups.

The present research also somewhat supports the importance of instilling an optimistic mind-set. If a method could be developed to increase optimism in schooling systems or even in the workforce, this could greatly reduce or even prevent many instances of depression, anxiety and post-traumatic stress disorders. The present experiment could be used as a form of treatment for

individuals identified as being pessimistic in a scholastic or work environment or even as part of a treatment programme for depression.

Another potential explanation for why weaker effect was observed, could be that since the expectation was induced in a direct manner similarly to as was done in the experiments by (Eden & Ravid, 1982) and not subconsciously like the in the priming experiments by (Bargh et al., 1996). It is possible that individuals in the pessimism condition didn't want to associate themselves with a negative disposition and as a result tried harder to perform well on the academic tests. It is possible that this could be accounted for by the optimism bias, which is a psychological phenomenon whereby individuals have a tendency to believe things are better than they truly are (Sharot, Riccardi, Raio, & Phelps, 2007). For example, an individual might believe that while others will develop lung cancer from smoking, they themselves will not, in spite of evidence based around average statistics. Perhaps individuals are more often than not, pessimistic, but they believe they are probably an optimist and in the case of this experiment that belief might have somewhat altered their own expectancy to a slightly more optimistic one instead for the duration of the test.

The most concerning data from the results, is that 55% of participants identified as not just moderately pessimistic, but as very pessimistic. With links between pessimism or a pessimistic explanatory style and depression (Carver & Gaines, 1987; Seligman, 1998) as well as pessimistic thinking being robustly predictive of depression symptomology (Fresco et al., 2009), this is a concerning figure. This is especially so when given how pervasive depression is worldwide (Topper et al., 2010), and especially in New Zealand (Joyce et al., 1990). New Zealand's pervasive depression epidemic is also potentially why we do not see as strong of an effect of inducing optimism. This number of "very pessimistic" individuals does seem inordinately high and perhaps brings into question the validity of the Learned Optimism Test. It appears that the Learned

Optimism Test was biased somehow toward placing individuals in the very pessimistic range. As has been mentioned, attempts to reclassify Seligman's groupings were made but still the groupings did not apply well to this sample.

There is a potential cultural bias in the Learned Optimism Test, as 91 out of 119 respondents were Optimistic regarding Permanence and 94 out of 119 responded negatively when questions related to Personalisation. Pervasiveness was answered in a much more balanced manner. It's possible that the studies that have attempted to validate the Learned Optimism Test on an American population have only been so valid because the phrasing of the questions is answered culturally in a more balanced manner.

It is worth noting that in spite of the *Learned Optimism Test* identifying the vast majority of participants as pessimistic, non-significant effects were still found in alignment with the first hypothesis. This may indicate that the effects that utilize the method of this study could find stronger effects for those who are optimists.

Geers et al. (2010) found that pessimists have a stronger reaction than optimists to a negative placebo expectation if the expectation was deceptive, that is to say if they were told that the pill would make them feel unpleasant then they were more likely to feel unpleasant than optimists. This would have been an interesting difference to observe from the statistical analysis, however unfortunately such a comparison cannot be made with so few participants identifying as optimistic.

It would have been interesting to re-test participants at a later time to see if they had increased significantly in optimism from the simple self-expectancy experiment. Other experiments were able to increase levels of optimism using CBT thought restructuring techniques in 5 minute sessions over 2 weeks (Scheier et al., 1994) and 10 minute thought reframing sessions

over 28 days (Fresco et al., 2009). These approaches both use multiple applications which may be difficult for the individual to follow through with. A follow up a week, or perhaps even a month later re-testing participants' optimism might yield interesting findings about any lasting effects.

One of the most notable implications from this study is that there appears to be a gap in the research, no previous research was found investigating optimism in a New Zealand population. This meant that there were no previous studies to compare the results from this study to. With optimism being such an important predictor in people's lives which can help lower depressive symptomology, and depression being so pervasive in New Zealand, it is a subject that deserves more research.

## FUTURE RESEARCH

As the present investigation used only reading skill tests, it is likely not possible to generalise these findings to all areas of academics. Future research may want to use a more diverse range of tests across an academic spectrum. For instance, a mathematical component of the SAT could be used separately or as an extra measure.

This research was conducted with mainly university students as participants for the ease of finding participants, however, as the SAT tests themselves are designed in order to gain entry to graduate studies, it would also be valuable to conduct this research on a non-student population to establish whether or not the same effect would be demonstrated. For this, however a different testing measure would be needed as the SAT is specifically designed for student populations.

A future study could use the *life orientation test* as well as or independently of the *Learned Optimism Test* in order to differentiate between them. This would mean that participants would need to complete both optimism tests prior to being induced with self-expectancy and naturally,

the experiment would take longer to carry out. This would further distinguish which test was accurately measuring optimism versus pessimism as validly as possible.

Ideally a future iteration of this experiment would have an even number of optimists and pessimists; this may mean that there would need to be multiple phases of the experiment. The first phase would need to identify optimists and pessimists to attain a reasonable sample size with an even distribution before the second phase, which would be to then assign them randomly to a falsified optimism condition and proceed as normal.

As was mentioned earlier, some of the participants felt shocked or were in disbelief to varying degrees with their falsified results on the optimism test. A future experiment along these lines could add an immediate survey to indicate how much participants felt changed, to identify the amount participants believed/took on board the information, against how much their performance on the reading skill tests was affected. A similar experiment could also use an alternative priming technique such as the scrambled sentence task used by Bargh et al. (1996). This way the prime is subliminal as opposed to conscious and would potentially solve the issue with the second hypothesis result being non-significantly in opposite alignment. If the cause of those in the pessimism condition outperforming those in the control condition was down to them challenging the fabricated optimism test results and intentionally trying to perform better, then this may be due to their awareness.

In a similar vein, a future experiment may want to use a follow-up experiment to measure optimism levels in participants a week, fortnight or month after the experiment or multiple times in a longitudinal study. This would be useful for determining how influential the experiment was on changing optimism levels. One would likely want to exclude the pessimism condition from this replication in order to avoid worsening pessimism.

In a future replication of the study it may also be beneficial to have the participants read aloud the inducement pages in order to achieve a stronger effect as was done in the experiment by In Den Bosch-Meevissen et al. (2014). Unfortunately, to make finding participants easier, there would have been no way to enforce this for those completing it online.

## CONCLUSION

In conclusion, the findings from this experiment provide some support for the body of evidence that instilling the belief in a person that they are optimistic does lead to improved academic performance, though this was not found to be statistically significant. This is supported by marginally significant correlations on measures of reading comprehension and sentence completion, though there is no way to be certain that participants did in fact feel changed or whether the suggestion itself was bringing about the improvements.

Part of the reasoning behind this research was the belief that optimism breeds optimism. If students succeed on one test, they are more likely to view the next test in a more optimistic manner, and as a result begin to achieve better grades exponentially. If an individual's succeeding reinforces the mind-set, then enabling students to achieve higher grades in the classroom may in turn make them more optimistic across the board. They may end up enjoying a successful life in such areas as school, the workforce, entrepreneurship, and so forth. Their increased optimism may also allow them to enjoy benefits to their immune system, and both psychological and physical health.

In summary, the findings from this experiment do suggest a correlation (though marginally significant) between having higher optimism and achieving higher grades. This research as well as past, suggests that one should *expect the best* as whether we are aware of it or not, often times our thoughts become our realities.

“Pessimism leads to weakness, optimism to power.”

-William James

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## APPENDICES: TABLE OF CONTENTS

### APPENDIX A: INFORMATION SHEET

*My name is Greg Hubbard; I am conducting research to examine the role that optimism plays in critical reading skills such as reading comprehension and sentence completion.*

Your involvement in this project will be to fill in 3 tests (optimism, reading comprehension and sentence completion), this will take about 45 minutes to complete, your information will be stored in a secure database for results to be analysed.

In the performance of the tasks and application of the procedures there are no risks.

You may receive a copy of the project results by contacting the researcher at the conclusion of the project. Participation is voluntary and you have the right to withdraw at any stage without penalty. If you withdraw, I Greg Hubbard will remove information relating to you once the project has been completed.

The results of the project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation: your identity will not be made public without your prior consent. To ensure anonymity and confidentiality, all data will be stored in a secure database accessible only by myself and will be deleted at the completion of the thesis. A thesis is a public document and will be available through the UC Library.

The project is being carried out as a requirement of a master's of science in psychology Greg Hubbard is completing under the supervision of Simon Kemp & Kauyumari Sanchez, who can be contacted at [simon.kemp@canterbury.ac.nz](mailto:simon.kemp@canterbury.ac.nz) & [mari.sanchez.77@gmail.com](mailto:mari.sanchez.77@gmail.com). They will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag, 4800, Christchurch (*human-ethics@canterbury.ac.nz*).

If you agree to participate in the study, you are asked to complete the consent form and return it.

*Greg Hubbard*

To continue to the consent form [click here](#)

## APPENDIX B: CONSENT FORM

I have been given a full explanation of this project and have had the opportunity to ask questions.

I understand what is required of me if I agree to take part in the research.

I understand that participation is voluntary and I may withdraw at any time without penalty.

Withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable.

I understand that any information or opinions I provide will be kept confidential to the researcher and/or his supervisors and that any published or reported results will not identify the participants.

I understand that a thesis is a public document and will be available through the UC Library.

I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form and will be destroyed after five years.

I understand the risks associated with taking part and how they will be managed.

I understand that I am able to receive a report on the findings of the study by contacting the researcher and the conclusion of the project.

I understand that I can contact the researcher Greg Hubbard, 027 861 8585,

[greg.hubbard@pg.canterbury.ac.nz](mailto:greg.hubbard@pg.canterbury.ac.nz) or supervisor Simon Kemp,

[simon.kemp@canterbury.ac.nz](mailto:simon.kemp@canterbury.ac.nz) for further information.

If I have any complains, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz))

By clicking the link below, you agree to participate in this research project.

I consent to take part in this project

## APPENDIX C: 1 - OPTIMISTIC STUDY INFO

*It is important that you carefully read this information before continuing.*

In recent years, research into optimism has found that optimistic individuals tend to live longer and suffer from less health issues such as post-traumatic stress disorder and cardiovascular disease. An optimist is also more likely to outperform in the classroom and on the sports field as well as in the workplace. They also suffer less mental health issues such as depression.

Fortunately, new research in the field of positive psychology surrounding optimism suggests that New Zealanders are much more optimistic than pessimistic on average. In fact, roughly 3 out of 5 New Zealanders are overly optimistic. This research is looking into why optimism is so commonplace in the hopes that other countries where individuals are more pessimistic can enjoy the benefits of a more optimistic mind-set.

[Click here](#) to find out how you score on the optimism test.

## APPENDIX C: 2 - PESSIMISTIC STUDY INFO

*It is important that you carefully read this information before continuing.*

In recent years, research into pessimism has found that pessimistic individuals tend to live shorter lives and suffer from more health issues such as post-traumatic stress disorder and cardiovascular disease. A pessimist is also more likely to underperform in the classroom and on the sports field as well as in the workplace. The negative thinking patterns involved in a pessimistic mind-set are linked with mental health issues such as depression.

Unfortunately, new research in the field of positive psychology surrounding pessimism suggests that New Zealanders are much more pessimistic than optimistic on average. In fact, roughly 3 out of 5 New Zealanders are overly pessimistic. This research is looking into why pessimism is so commonplace in the hopes that a method can be developed to change.

[Click here](#) to find out how you score on the pessimism test.

## APPENDIX D: LEARNED OPTIMISM TEST

### The Instructions:

There are forty-eight (48) questions in this evaluation test. Take as much time as you need to answer each of the questions. On average, this test takes about fifteen minutes. There are no right or wrong answers.

Read the description of each situation and vividly imagine it happening to you. You have probably not experienced some of the situations, but that should not matter. Perhaps neither response will fit; but go ahead and choose the cause likelier to apply to you.

You may not like the way some of the responses sound, but don't choose what you think you should say or what would sound right to other people; choose the response you'd be likelier to have.

### The Questions:

1. *The project you are in charge of is a great success.*
  - *I kept a close watch over everyone's work.*
  - *Everyone devoted a lot of time and energy to it.*
2. *You and your spouse (boyfriend/girlfriend) make up after a fight.*
  - *I forgave him/her.*
  - *I'm usually forgiving.*
3. *You get lost driving to a friend's house.*
  - *I missed my turn.*
  - *My friend gave me bad directions.*
4. *Your spouse (boyfriend/girlfriend) surprises you with a gift.*
  - *He/she just got a raise at work.*
  - *I took him/her out to a special dinner the night before.*
5. *You forget your spouse's (boyfriend's/girlfriends) birthday.*
  - *I'm not good at remembering birthdays.*
  - *I was preoccupied with other things.*

6. *You get a flower from a secret admirer.*
  - *I am attractive to him/her.*
  - *I am a popular person.*
7. *You run for a community office position and win.*
  - *I devote a lot of time and energy to campaigning.*
  - *I work very hard at everything I do.*
8. *You miss an important engagement.*
  - *Sometimes my memory fails me.*
  - *I sometime forget to check my appointment book.*
9. *You run for a community office position and you lose.*
  - *I didn't campaign hard enough.*
  - *The person who won knew more people.*
10. *You host a successful dinner.*
  - *I was particularly charming that night.*
  - *I am a good host.*
11. *You stop a crime by calling the police.*
  - *A strange noise caught my attention.*
  - *I was alert that day.*
12. *You were extremely healthy all year.*
  - *Few people around me were sick, so I wasn't exposed.*
  - *I made sure I ate well and got enough rest.*
13. *You owe the library ten dollars for an overdue book.*
  - *When I am really involved in what i am reading, I often forget when it is due.*
  - *I was so involved in writing the report that I forgot to return the book.*
14. *Your stocks make you a lot of money.*
  - *My broker decided to take on something new.*
  - *My broker is a top-notch investor.*
15. *You win an athletic contest.*
  - *I was feeling unbeatable.*
  - *I train hard.*

16. *You fail an important examination.*
- *I wasn't as smart as the other people taking the exam.*
  - *I didn't prepare for it well.*
17. *You prepared a special meal for a friend and he/she barely touched the food.*
- *I wasn't a good cook.*
  - *I made the meal in a rush.*
18. *You lose a sporting event for which you have been training for a long time.*
- *I'm not very athletic.*
  - *I'm not good at that sport.*
19. *Your car runs out of gas on a dark street late at night.*
- *I didn't check to see how much gas was in the tank.*
  - *The gas gauge was broken.*
20. *You lose your temper with a friend.*
- *He/she is always nagging me.*
  - *He/she was in a hostile mood.*
21. *You are penalized for not returning your income-tax form on time.*
- *I always put off doing my taxes.*
  - *I was lazy about getting my taxes done year.*
22. *You ask a person out on a date and he/she say no.*
- *I was a wreck that day.*
  - *I got tongue-tied when I asked him/her on the date.*
23. *A game-show host picks you out of the audience to participate in the show.*
- *I was sitting in the right seat.*
  - *I looked the most enthusiastic.*
24. *You are frequently asked to dance at a party.*
- *I am outgoing at parties.*
  - *I was in perfect form that night.*
25. *You buy your spouse (boyfriend/girlfriend) a gift and he/she doesn't like it.*
- *I don't put enough thought into things like that.*
  - *He/she has very picky tastes.*

26. *You do exceptionally well in a job interview.*
- *I felt extremely confident during the interview.*
  - *I interview well.*
27. *You tell a joke and everyone laughs.*
- *The joke was funny.*
  - *My timing was perfect.*
28. *Your boss gives you too little time in which to finish a project, but you get it finished anyway.*
- *I am good at my job.*
  - *I am an efficient person.*
29. *You've been feeling run-down lately.*
- *I never get a chance to relax.*
  - *I was exceptionally busy this week.*
30. *You ask someone to dance and he/she says no.*
- *I am not a good enough dancer.*
  - *He/she doesn't like to dance.*
31. *You save a person from choking to death.*
- *I know a technique to stop someone from choking.*
  - *I know what to do in crisis situations.*
32. *Your romantic partner wants to cool things off for a while.*
- *I'm too self-centred.*
  - *I don't spend enough time with him/her.*
33. *A friend says something that hurts your feelings.*
- *She always blurts things out without thinking of others.*
  - *My friend was in a bad mood and took it out on me.*
34. *Your employer comes to you for advice.*
- *I am an expert in the area about which I was asked.*
  - *I am good at giving useful advice.*
35. *A friend thanks you helping him/her get through a bad time.*
- *I enjoy helping him/her through tough times.*
  - *I care about people.*

36. *You have a wonderful time at a party.*
- *Everyone was friendly.*
  - *I was friendly.*
37. *Your doctor tells you that you are in good physical shape.*
- *I make sure I exercise frequently.*
  - *I am very health conscious.*
38. *Your spouse (boyfriend/girlfriend) takes you away for a romantic weekend.*
- *He/she needed to get away for a few days.*
  - *He/she likes to explore new areas.*
39. *Your doctor tells you that you eat too much sugar.*
- *I don't pay much attention to my diet.*
  - *You can't avoid sugar, it's in everything.*
40. *You are asked to head an important project.*
- *I just successfully completed a similar project.*
  - *I am a good supervisor.*
41. *You and your spouse (boyfriend/girlfriend) have been fighting a great deal.*
- *I have been feeling cranky and pressured lately.*
  - *He/she has been hostile lately.*
42. *You fall down a great deal while skiing.*
- *Skiing is difficult.*
  - *The trails were icy.*
43. *You win a prestigious award.*
- *I solved an important problem.*
  - *I was the best employee.*
44. *Your stocks are at an all-time low.*
- *I didn't know much about the business climate at the time.*
  - *I made a poor choice of stocks.*
45. *You win the lottery.*
- *It was pure chance.*
  - *I picked the right numbers.*

46. *You gain weight over the holidays and you can't lose it.*

- *Diets don't work in the long run.*
- *The diet I tried didn't work.*

47. *You are in the hospital and few people come to visit.*

- *I'm irritable when I am sick.*
- *My friends are negligent about things like that.*

48. *They won't honour your credit card at a store.*

- *I sometimes overestimate how much money I have.*
- *I sometimes forget to pay my credit-card bill.*

Submit

## APPENDIX E: LEARNED OPTIMISM SCORING KEY

1. *Personalisation Good (PsG)*

a. 1

b. 0

2. *Permanence Good (PmG)*

a. 0

b. 1

3. *Personalisation Bad (PsB)*

a. 1

b. 0

4. *Personalisation Good (PsG)*

a. 0

b. 1

5. *Permanence Bad (PmB)*

a. 1

b. 0

6. *Pervasiveness Good (PvG)*

a. 0

b. 1

7. *Pervasiveness Good (PvG)*

a. 0

b. 1

8. *Pervasiveness Bad (PvB)*

a. 1

b. 0

9. *Personalisation Bad (PsB)*

a. 1

b. 0

10. *Permanence Good (PmG)*

a. 0

b. 1

11. *Personalisation Good (PsG)*

a. 0

b. 1

12. *Personalisation Good (PsG)*

a. 0

b. 1

13. *Permanence Bad (PmB)*

a. 1

b. 0

14. *Permanence Good (PmG)*

a. 0

b. 1

15. *Permanence Good (PmG)*

a. 0

b. 1

16. *Pervasiveness Bad (PvB)*

a. 1

b. 0

17. *Pervasiveness Bad (PvB)*

a. 1

b. 0

18. *Pervasiveness Bad (PvB)*

a. 1

b. 0

19. *Personalisation Bad (PsB)*

a. 1

b. 0

20. *Permanence Bad (PmB)*

a. 1

b. 0

21. *Permanence Bad (PmB)*

a. 1

b. 0

22. *Pervasiveness Bad (PvB)*

a. 1

b. 0

23. *Personalisation Good (PsG)*

a. 0

b. 1

24. *Permanence Good (PmG)*

a. 1

b. 0

25. *Personalisation Bad (PsB)*

a. 1

b. 0

26. *Permanence Good (PmG)*

a. 0

b. 1

27. *Personalisation Good (PsG)*

a. 0

b. 1

28. *Pervasiveness Good (PvG)*

a. 0

b. 1

29. *Permanence Bad (PmB)*

a. 1

b. 0

30. *Personalisation Bad (PsB)*

a. 1

b. 0

31. *Pervasiveness Good (PvG)*

a. 0

b. 1

32. *Pervasiveness Bad (PvB)*

a. 1

b. 0

33. *Permanence Bad (PmB)*

a. 1

b. 0

34. *Pervasiveness Good (PvG)*

a. 0

b. 1

35. *Pervasiveness Good (PvG)*

a. 0

b. 1

36. *Personalisation Good (PsG)*

a. 0

b. 1

37. *Pervasiveness Good (PvG)*

a. 0

b. 1

38. *Permanence Good (PmG)*

a. 0

b. 1

39. *Personalisation Bad (PsB)*

a. 1

b. 0

40. *Permanence Good (PmG)*

a. 0

b. 1

41. *Personalisation Bad (PsB)*

a. 1

b. 0

42. *Permanence Bad (PmB)*

a. 1

b. 0

43. *Pervasiveness Good (PvG)*

a. 0

b. 1

44. *Pervasiveness Bad (PvB)*

a. 1

b. 0

45. *Personalisation Good (PsG)*

a. 0

b. 1

46. *Permanence Bad (PmB)*

a. 1

b. 0

47. *Personalisation Bad (PsB)*

a. 1

b. 0

48. *Pervasiveness Bad (PvB)*

a. 1

b. 0

## APPENDIX F: 1 - OPTIMISTIC RESULTS PAGE

*This is what participants will see if they are in the optimism condition*

### Research on Optimism

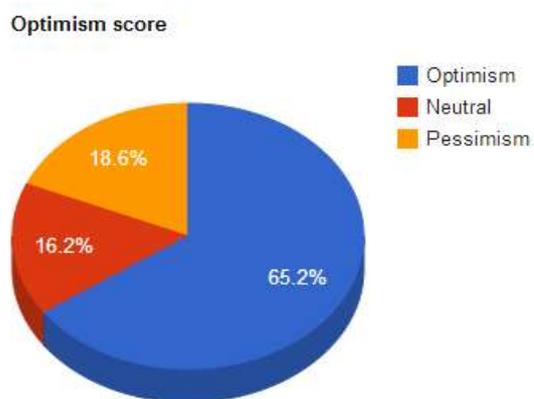
Please read this section carefully before continuing

The purpose of the questionnaire was to obtain your optimism score.

Your score has been calculated as 65.2% optimistic.

Fortunately for you, this places you in the *highly optimistic* category. In other words, you are considered to be an optimist.

As previously stated those who are optimistic, like yourself, tend to do better in a number of different settings such as the workforce, classroom and even on the sports field. They also tend to have better immune systems and live, longer, happier lives.



Submit

## APPENDIX G: 2 - PESSIMISTIC RESULTS PAGE

### Research on Optimism

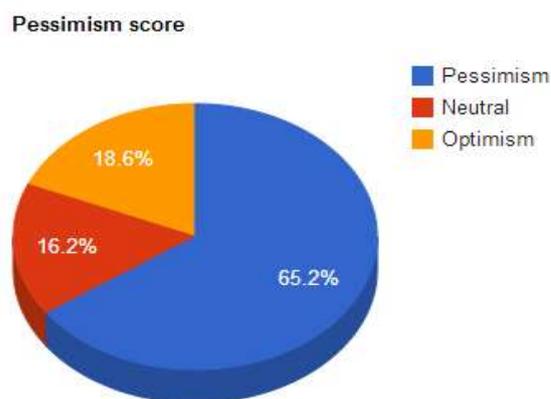
Please read this section carefully before continuing

The purpose of the questionnaire was to obtain your pessimism score.

In alignment with the research, you scored highly on all measures of pessimism. Your score has been calculated as 65.2% pessimistic.

Unfortunately, this places you in the *highly pessimistic* category.

As previously stated those who are pessimistic, like yourself, tend to think more negatively about the cause of bad events that take place in all aspects of life, ranging from the sports field, classroom and the workplace. The good news is that, as we speak new techniques are being developed to help individuals like yourself.



Submit

## APPENDIX H: SENTENCE COMPLETION TASK

1. Today Wegener's theory is \_\_\_\_ ; however, he died an outsider treated with \_\_\_\_ by the scientific establishment.

- *A. unsupported – approval*
- *B. dismissed – contempt*
- *C. accepted – approbation*
- *D. unchallenged – disdain*
- *E. unrivalled - reverence*

2. The revolution in art has not lost its steam; it \_\_\_\_ on as fiercely as ever.

- *A. trudges*
- *B. meanders*
- *C. edges*
- *D. ambles*
- *E. rages*

3. Each occupation has its own \_\_\_\_ ; bankers, lawyers and computer professionals, for example, all use among themselves language which outsiders have difficulty following.

- *A. merits*
- *B. disadvantages*
- *C. rewards*
- *D. jargon*
- *E. problems*

4. \_\_\_\_ by nature, Jones spoke very little even to his own family members.

- *A. garrulous*
- *B. equivocal*
- *C. taciturn*
- *D. arrogant*
- *E. gregarious*

5. Biological clocks are of such \_\_\_\_\_ adaptive value to living organisms, that we would expect most organisms to \_\_\_\_\_ them.

- *A. clear – avoid*
- *B. meagre – evolve*
- *C. significant – eschew*
- *D. obvious – possess*
- *E. ambivalent - develop*

6. The peasants were the least \_\_\_\_\_ of all people, bound by tradition and \_\_\_\_\_ by superstitions.

- *A. free – fettered*
- *B. enfranchised – rejected*
- *C. enthralled – tied*
- *D. pinioned – limited*
- *E. conventional - encumbered*

7. Many people at that time believed that spices help preserve food; however, Hall found that many marketed spices were \_\_\_\_\_ bacteria, moulds and yeasts.

- *A. devoid of*
- *B. teeming with*
- *C. improved by*
- *D. destroyed by*
- *E. active against*

8. If there is nothing to absorb the energy of sound waves, they travel on \_\_\_\_\_, but their intensity \_\_\_\_\_ as they travel further from their source.

- *A. erratically – mitigates*
- *B. eternally – alleviates*
- *C. forever – increases*
- *D. steadily – stabilizes*
- *E. indefinitely - diminishes*

9. The two artists differed markedly in their temperaments; Palmer was reserved and courteous, Frazer \_\_\_\_\_ and boastful.

- *A. phlegmatic*
- *B. choleric*
- *C. constrained*
- *D. tractable*
- *E. stoic*

10. The intellectual flexibility inherent in a multicultural nation has been \_\_\_\_\_ in classrooms where emphasis on British-American literature has not reflected the cultural \_\_\_\_\_ of our country.

- *A. eradicated – unanimity*
- *B. encouraged – aspirations*
- *C. stifled – diversity*
- *D. thwarted – uniformity*
- *E. inculcated - divide*

11. The conclusion of his argument, while \_\_\_\_\_, is far from \_\_\_\_\_.

- *A. stimulating - interesting*
- *B. worthwhile – valueless*
- *C. esoteric – obscure*
- *D. germane – relevant*
- *E. abstruse - incomprehensible*

12. In the Middle Ages, the \_\_\_\_\_ of the great cathedrals did not enter into the architects' plans; almost invariably a cathedral was positioned haphazardly in \_\_\_\_\_ surroundings.

- *A. situation – incongruous*
- *B. location – apt*
- *C. ambience – salubrious*
- *D. durability – convenient*
- *E. majesty - grandiose*

Submit

## APPENDIX I: READING COMPREHENSION TEST

*The extract is taken from a book written sixty years ago by a British scientist in which he considers the relationship between science and society.*

The pioneers of the teaching of science imagined that its introduction into education would remove the conventionality, artificiality, and backward-lookingness which were characteristic; of classical studies, but they were gravely disappointed. So, too, in  
5 their time had the humanists thought that the study of the classical authors in the original would banish at once the dull pedantry and superstition of mediaeval scholasticism. The professional schoolmaster was a match for both of them, and has almost managed to make the understanding of chemical reactions as dull  
10 and as dogmatic an affair as the reading of Virgil's Aeneid.

The chief claim for the use of science in education is that it teaches a child something about the actual universe in which he is living, in making him acquainted with the results of scientific  
15 discovery, and at the same time teaches him how to think logically and inductively by studying scientific method. A certain limited success has been reached in the first of these aims, but practically none at all in the second. Those privileged members of the community who have been through a secondary or public school  
20 education may be expected to know something about the elementary physics and chemistry of a hundred years ago, but they probably know hardly more than any bright boy can pick up from an interest in wireless or scientific hobbies out of school hours.

As to the learning of scientific method, the whole thing is palpably  
25 a farce. Actually, for the convenience of teachers and the requirements of the examination system, it is necessary that the pupils not only do not learn scientific method but learn precisely the reverse, that is, to believe exactly what they are told and to reproduce it when asked, whether it seems nonsense to them or  
30 not. The way in which educated people respond to such quackeries as spiritualism or astrology, not to say more dangerous ones such as racial theories or currency myths, shows that fifty years of education in the method of science in Britain or Germany has produced no visible effect whatever. The only way of learning the  
35 method of science is the long and bitter way of personal experience, and, until the educational or social systems are altered to make this possible, the best we can expect is the production of a minority of people who are able to acquire some of the techniques of science and a still smaller minority who are able to use and  
40 develop them.

Adapted from: *The Social Function of Science*, John D Bernal (1939)

1. The author implies that the 'professional schoolmaster' (line 7) has
  - *A. no interest in teaching science*
  - *B. thwarted attempts to enliven education*
  - *C. aided true learning*
  - *D. supported the humanists*
  - *E. been a pioneer in both science and humanities.*
2. The author's attitude to secondary and public school education in the sciences is
  - *A. ambivalent*
  - *B. neutral*
  - *C. supportive*
  - *D. satirical*
  - *E. contemptuous*
3. The word 'palpably' (line 24) most nearly means
  - *A. empirically*
  - *B. obviously*
  - *C. tentatively*
  - *D. markedly*
  - *E. ridiculously*
4. The author blames all of the following for the failure to impart scientific method through the education system except
  - *A. poor teaching*
  - *B. examination methods*
  - *C. lack of direct experience*
  - *D. the social and education systems*
  - *E. lack of interest on the part of students*

5. If the author were to study current education in science to see how things have changed since he wrote the piece, he would probably be most interested in the answer to which of the following questions?

- *A. Do students know more about the world about them?*
- *B. Do students spend more time in laboratories?*
- *C. Can students apply their knowledge logically?*
- *D. Have textbooks improved?*
- *E. Do they respect their teachers?*

6. Astrology (line 31) is mentioned as an example of

- *A. a science that needs to be better understood*
- *B. a belief which no educated people hold*
- *C. something unsupportable to those who have absorbed the methods of science*
- *D. the gravest danger to society*
- *E. an acknowledged failure of science*

7. All of the following can be inferred from the text except

- *A. at the time of writing, not all children received a secondary school education*
- *B. the author finds chemical reactions interesting*
- *C. science teaching has imparted some knowledge of facts to some children*
- *D. the author believes that many teachers are authoritarian*
- *E. it is relatively easy to learn scientific method.*

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## APPENDIX J: STUDY DEBRIEFING

### **Study debriefing**

*Thank you for your participation. Please try to keep the nature of this study a secret so if your friends enter it the data won't be biased. Research suggests that optimistic people tend to outperform pessimists in most of life's domains. One particular area where this happens is in the classroom.*

This study was designed to assess the impact that having someone believe they are optimistic or pessimistic has on reading skill test results. Specifically, to see if people primed to be optimistic perform better on the tests than those who are primed to be pessimistic and if the opposite is also true.

It was necessary to give you a fabricated test results on the optimism test so that you would be temporarily influenced to be a bit more optimistic or pessimistic. This score does not reflect in any way if you are actually optimistic or pessimistic. You can find that information out by emailing me [greg.hubbard@pg.canterbury.ac.nz](mailto:greg.hubbard@pg.canterbury.ac.nz) with your name.

If this research does find that optimism can be altered in a temporary test setting, and it increases performance, then this could have important implications for the classroom. Test environments and classroom attitudes could be pushed towards a more optimistic one, making everyone succeed more in the long term. Optimism tends to breed more optimism.