

**Does explicit teacher instruction of
resilience increase a child's resilience?**

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Abstract

Resilience is the ability to achieve favourable outcomes in the face of adversity (Condly, 2006). The increased presence of resilience in education has been noted of particular interest recently as schools move towards a more holistic curriculum, where they are not only teaching academic skills, but also social skills that rely on values, competencies, and principles (Hymel, Schonert-Reichl, & Miller, 2006). The present study aimed to measure the impact of teaching resilience on students as it correlated to their performance on tasks that assessed resilience. This study recruited 120 student participants from year one to year eight from an inner-city full primary school in Dunedin, New Zealand. This study used a repeated measure experimental design with a control group to assess the effectiveness of explicitly teaching students about resilience. Students' resilience was assessed based off their performance on four tasks across three different phases of the study. Students in the experimental condition group were exposed to three linked lessons about resilience, while students in the control condition were not exposed to these lessons until after the assessments had concluded. The results showed no significant difference in resilience between control participants and the experimental group across all measured tasks. The performance of the experimental condition participants on the four resilience tasks was not significantly better than the control condition participants. In some instances there was actually poorer performance by the experimental condition participants on certain tasks. Results from this study suggest that the intervention of teaching children about resilience was not strong enough. Alternatively the measures of resilience were not sensitive enough to the intervention or were not valid. Further research could explore these implications through a more intensive and long-term intervention.

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Introduction

This study investigated whether a short-term series of lessons about resilience would help to increase school-aged students' resilience across a variety of measures. The study used a repeated measure experimental design with a control group to assess the effectiveness of explicitly teaching students about resilience and to ask how this could apply to their own lives.

In order to provide a context for the study, the following sections of the introduction chapter outline aspects of the social, economic, and political context that conducting research in New Zealand schools involves. Furthermore, there is mention of effective pedagogy, values based education, and how the School-Wide Positive Behaviour for Learning (SWPB4L) framework operates in New Zealand. Further details are also provided about the researcher's position within the work, the research questions, and the full scope of the project.

Background: New Zealand Education System

Education in New Zealand is viewed in a favourable light internationally based on assessments by governments around the world and from the Organisation for Economic Co-Operation and Development (OECD) (OECD, 2014). The OECD reports that New Zealand has higher rates of enrolment in Early Childhood Education (ECE) compared to international averages, near 100% enrolment in education for children aged 5 to 14, and higher than average enrolment in tertiary education (OECD, 2014).

The Ministry of Education is New Zealand's government agency responsible for education from ECE through to tertiary level. The Ministry of Education suggests that education in New Zealand is child-centered, continually evolving and improving,

based upon empirical evidence, and geared toward engaging learners to be competent in the 21st century (Ministry of Education, 2015).

Schooling and education in New Zealand are key cultural components of growing up to be a 'kiwi' and highly valued by the majority of citizens. With such high attendance in education for New Zealand children, particularly in the early years (ECE and Primary Education), schools are in an ideal position to not just deliver a strict 'learning areas' curriculum, but also to broaden their scope and diversify their approach. The New Zealand Curriculum (NZC) (Ministry of Education, 2007) is a holistic curriculum document that takes a broad-brush stroke to education and enables individual schools autonomy and agency in being able to educate their respective students how they wish. The NZC (Ministry of Education, 2007) not only delivers eight key learning areas, but also promotes a curriculum that includes a vision, values, key competencies, and principles.

Effective Pedagogy

The NZC outlines what effective pedagogy looks like in the New Zealand context (Ministry of Education, 2007). Tenets of effective pedagogy are listed in this document as: "creating a supportive learning environment, encouraging reflective thought and action, enhancing the relevance of new learning, facilitating shared learning, making connection to prior learning and experiences, and providing sufficient opportunities to learn" (Ministry of Education, 2007, p. 34). These approaches to effective pedagogy establish that student learning in New Zealand schools is best achieved when meaning and understanding are co-constructed. Effective learning is not based upon the teacher being a vessel of knowledge that fills up students, but rather is about active participation by both teachers and students alike

to construct understanding together. Māori, the indigenous ethnic group in New Zealand, present the term *ako* as a reciprocal process of teaching and learning where both the learner and teacher share roles (Ministry of Education, 2009).

In making connections between the holistic NZC and the practices that make up effective pedagogy in delivering the document it is important to note the interconnected nature of each aspect. This means that each aspect of the NZC is not taught in isolation of one another, but instead the curriculum is interwoven together to incorporate learning as not just an academic endeavor (i.e. learning areas), but also a social process (i.e. values and key competencies) where all types of learning are integrated and appreciated as ways of development for the children in the New Zealand education system.

General assessment practices help to promote a culture that ensures educators know their students well and can identify their strengths and the areas they need to develop further. This includes the knowledge, skills, and behaviours they learn that help them to accomplish the vision each community have for their young people. In this regard assessment is best viewed as assessment for learning, rather than assessment of learning (Black & Wiliam, 1998). This signifies an approach toward continually using assessment to inform future teaching and the learning needs of the students.

Values Based Education

Values are defined as attributes that are ‘good’ and which manifest within a person or social setting to promote human well-being (Beck, 1990; Halstead, 1996). The teaching of values has a relatively short history and has been aimed at developing values in students for their lifelong benefit (Halstead & Taylor, 1996). As such,

values based education is central to ensuring that children develop and grow to be the citizens that their society aspires for them to be. Schools are often referred to as microcosms of their respective communities and are therefore well placed to imbed and develop the values of that community (Halstead, 1996).

The majority of New Zealand schools have values that make up a part of their strategic vision for their pupils. Set out in a school's charter (strategic vision), they place these values as core to how students will progress through their education in that school setting. The values vary from school to school because each community has the autonomy to choose, but also because they have the ability to be responsive to the needs of the people they serve. Being responsive to need is integral to all forms of learning.

School-Wide Positive Behaviour for Learning

School-Wide Positive Behaviour for Learning (SWPB4L) is a framework for enhancing positive behaviour to lift students' engagement and achievement in their learning (Ministry of Education, 2013). This framework takes an approach of explicitly teaching behaviours, values, and problem solving strategies to students. This is in an attempt to ensure that students are as engaged in the learning as possible and therefore more likely to behave in a pro-social manner. This model takes a productive and positive approach to student behaviour management where deficits are identified and then explicit teaching of behaviours aims to remedy those deficits. This proactive approach is responsive to the needs of individual children, classes, or the whole school. Historically, misbehaviour has been followed up with punishment and does not allow for a time of reflection and alteration. The SWPB4L framework takes these historical ideas and flips them by making positive behaviour a key contributor to

effective learning. Schools often go through revolutionary change when SWPB4L is introduced as educators aspire to include their entire community in a process of identifying their values and expected positive behaviours and collaborating to ensure this happens across multiple contexts (e.g. classroom, cafeteria, gymnasium and so on) (Savage, Lewis, & Colless, 2011).

The current context for education in New Zealand schools provides an experience for students where behaviours, values, and key competencies are regarded as an integral part of the curriculum alongside the mandatory learning areas. The SWPB4L framework can tie all of these elements together and provide both school staff and students the understanding that behaviours impact upon learning just as much as learning impacts behavior.

The efficacy and effectiveness of the SWPB4L framework within a New Zealand context has largely been left unevaluated. For a framework to be effective in its implementation and to ensure longevity within respective schools there needs to be accurate information on best practice. One way to assess the efficacy and effectiveness of the SWPB4L framework is to assess how the explicit teaching of values or expected behaviours to children creates a shift in the behaviour of these children. Specific measures of expected behaviours or of each value would need to be established in order to assess whether students were taking on board the explicit teaching. The participating school in this research project is a part of the SWPB4L framework. Since taking part in this initiative in early 2013, the school has consulted many of the stakeholders in the school (students, staff, parents, community members) in order to develop the vision, values, and behaviours that they wish the children of their community to possess as lifelong competencies. The school now has three core values that are explicitly taught to the students: respect, responsibility, and resilience.

Positioning the Researcher

The research project is quantitative in its methodological approach. The goal in quantitative research is to strive for objectivity through a scientific investigation that presents findings through systematic processes and results in quantifiable outcomes (Hoy & Adams, 2015). However, despite these scientific processes being well entrenched in this research project, the main social position of the researcher in this study requires consideration (Pillow, 2003). I am a classroom teacher in the school where the research was conducted, and thus an insider in the process (see Brannick & Cohan; Pillow, 2003). There is already a power dynamic at work in research work conducted with children (Christensen & James, 2008), and this is further entrenched with the presence of pre-existing power dynamics between pupils and a teacher in a school context (Manke, 1997). I had taught many of the research participants in previous years or interacted with them daily in the playground or during larger school events; it is important to disclose this preexisting professional relationship as it is capable of influencing the interactions between both parties.

The power dynamics between the project's participants and I did not explicitly impact on the scientific methodology of the data collection. However, this study's experimental design did not occur in laboratory conditions, but instead in a classroom context. The social reality of classrooms and schools is that they are not laboratories where independent variables can be controlled unequivocally (Hoy & Adams, 2015). Therefore, holding an awareness of one's own social position as a researcher enables a reflexive expression of how one can interpret the research process (Pillow, 2003). Although this is a quantitative research project and the numerical data being collected could be viewed as being robust irrespective of the way data is collected, there is a need to be aware of social dynamics and how they may influence the research process.

Motivation for the Study

My interest in resilience and resilience education has grown out of previous research interests centered on education and suicide prevention. This previous work focused on the role schools can play in the mitigation and prevention of suicide for young New Zealanders. From here I wanted to establish a more proactive approach to preventing suicide. No longer satisfied with an ambulance at the bottom of the cliff scenario, there needed to be a shift to more proactive approaches. Rather than work in a capacity to try to fix something that had deficits, there was a desire to create a paradigm shift and examine a proactive model of capacity building. The aspiration was to use research capabilities to develop and build skills and competencies within children to face adversity and succeed under life's stresses.

As a primary school teacher, I am fortunate to work with children who share their hopes and dreams in an open forum on a daily basis. The optimism with which these children approach everyday is humbling, even though most are yet to become aware of the adversity they either currently face or may be yet to face in the future. Therefore, I hope that these children will be equipped with the tenacity, resilience, and courage to face those challenges with confidence.

As a professional working in the field of education, I have seen many children who simultaneously seem to encompass the many different facets of resilience, yet can easily be discouraged by even the smallest of challenges. It is this understanding and observation of young people that enables an understanding of resilience as far more complex than any definition can grant it. It is a personal strength that is relative to each individual and their unique circumstance.

Research Questions

This research was centered on the following main question:

- Can the New Zealand Curriculum (Ministry of Education, 2007) and the SWPB4L framework be used as tools to explicitly teach children resilience skills and competencies and therefore equip them better for facing adversity now and in the future?

Subsequent questions were raised in the process of reading literature and collecting data that help to focus the research further:

- What is resilience, why is it important, and how is it measured?
- What is the place of a school in the journey of developing resilience in children and how can it lead or facilitate the process?
- How do children develop their skills and competencies in being more resilient and therefore more capable of overcoming challenges and facing adversity in their lives?

The goal of this research project and the research questions above was to use a short-term teaching intervention to develop the resilience of children in a school-based setting. For this to be achieved, linked lessons were used to: establish a working definition of resilience for school-aged children, highlight where people need to use resilience, and identify how this value can be developed and grow within. An underlying theme in this research project is establishing the effectiveness of short-term interventions as vehicles for delivering and developing values in school students.

Although the primary focus of this research is to investigate the effectiveness of a short-term teaching intervention, links will be made to other studies. These comparisons will outline the types of assessments that are used in the teaching of

values, whether they see marked increases in these specific area, and if not, what else is being done to change practice and raise competency in that area.

Structure of the Dissertation

This dissertation includes the follow sections:

1. Introduction: The Introduction outlines the context of the New Zealand education system, effective pedagogy, and the place of values based education and School-Wide Positive Behaviour for Learning framework within. Furthermore, the key research questions are identified and linked to the above ideas. This section aims to contextualise values-based education in New Zealand, both historically and currently.
2. Literature Review: The literature review defines and discusses resilience and how it is relevant to developing children in our communities who are more capable to face challenges in life across multiple contexts, and how this has been done in the past. The literature review points to shortage of research of how values based education is currently practiced in schools in New Zealand. Consequently, there is a need for the present research project to be conducted to fill a void in the current research base.
3. Methods: The methods section details the research participants, materials, and procedure. This section provides a thorough identification of the materials and processes used to conduct this research so that if replication were to occur it could be followed from reading this chapter. This section also discusses rationale for the approach taken and issues inherent in this approach.

4. Results: The results section presents the findings of the study in terms of the statistical analyses performed on the data. The primary analysis concerns the experimental assignment of participants to treatment and control conditions. Demographic variables (year level, gender and ethnicity) are used to further explore the impact of the programme. Results are explained in reference to mean scores on each of the four measures of resilience and how this differed for participants who were randomly assigned to either the experimental condition or the control condition. These elements are then analysed over each of the eight years levels (1-8), both genders (male or female), and over four prominent ethnicities (Māori, Pasifika, Asian, and Pākehā/New Zealand European).

5. Discussion: The discussion section relates the present research project and its results back to the literature presented in the literature review. In linking the results of the research back to this research body, there is sense of triangulation of how this research has been informed by previous work but also serves to grow the body of knowledge. Furthermore, the interpretations of the results are further analysed in this section and empirical explanations are sought for how and why the results presented as they did.

Research Focus and Scope

The present research project aimed to assess whether teaching children about resilience in a short-term school-based intervention would increase their resilience. This was measured across a variety of pre-existing and created tasks that tested

resilience or the skills/competencies linked to this. There was also a control group of participants that this research used to establish if the act of teaching was effective in altering one group's results against another. This study used established frameworks based on the best evidence available in curriculum design, effective pedagogy, and behaviour management strategies to have the best outcomes for the intervention.

The scope of this research project was centered on finding a workable model for schools to use when trying to increase the presence of values in students. This project used resilience as a core value and a school that had already adopted this as integral to their community's aspirations, as per their involvement in the SWPB4L framework.

Literature Review

Resilience, the ability to achieve favourable outcomes in the face of adversity (Condly, 2006), is a term and idea being used across many fields of inquiry such as education, health, social welfare, and psychology. The increased presence of resilience in education has been noted of particular interest recently as schools move towards a more holistic curriculum, where they are not only teaching academic skills, but also social skills that rely on values, competencies, and principles (Hymel, Schonert-Reichl, & Miller, 2006). Resilience is seen as a pertinent skill for schools to foster in their students as they begin to understand more about the difficulties that children and young people face in their lives. Schools are aspiring to ensure that their students have the adequate skills and strategies to be able to problem solve and bounce back from difficult challenges, both in classroom and in their lives generally. This literature review will explain the various elements and definitions of resilience, how it has been and continues to be applied across the education sector, and what the outcomes of this are.

What is Resilience?

Despite the increased presence of the term resilience, there does not seem to be a concise definition that is shared across field's, or even within specific fields themselves (Khanlou & Wray, 2014). It is difficult to unpack resilience as a concept when there is no consistent definition across fields. However, because the term is used across such a broad range of fields, it is important to take into account the different perspectives that each discipline brings. It is also important to acknowledge the historical development of resilience and how resilience has emerged as significant within various field's (Khanlou & Wray, 2014). Resilience as a concept is reliant on

context to support its definition, relative to where it is being applied (Rutter, 1987; 2012). Resilience carries with it multiple definitions across various ethnicities, cultures and contexts (Kaplan, 2005). As a result of these additional understandings of resilience, this literature review includes a broad stroke definition that is informed by multiple disciplines, and considers what resilience means more specifically in educational contexts.

Broadly defined, the concept of resilience is the ability to achieve positive outcomes in the face of adversity (Condly, 2006; Rutter, 2012; Steinhardt & Dolbier, 2008). The term resilience has a Latin etymology and first appeared in academic literature concerning epidemiology research. These studies discussed how some individuals managed to remain without illness even when faced with exposure to the bacteria or germs that caused illness in others (Garmezy, 1973). Therefore, resilience came to signify how positive outcomes could be achieved when a person was present with a difficult set of circumstances. This body of research developed further and explored how protective factors and risk factors can also impact upon one's ability to contract any given illness (Garmezy & Streitman, 1974). Positive outcomes were more likely when individuals had a higher proportion of protective factors in their lives. While negative outcomes were more likely to occur for individuals where there was a greater proportion of risk factors present in their lives. However, neither of these possible outcomes were mutually exclusive to the presence or absence of either protective or risk factors. The presence and/or absence of protective and/or risk factors do not categorically predict outcomes for all individuals in all circumstances (Rutter, 2012).

From a biological science perspective, resilience is viewed as a means for organisms to positively adapt in the face of adversity (Wagnild & Young, 1993). For

example, bulbs are an evolutionary response for plants to be able to survive in harsh winter conditions. This same definition can be translated to the human experience in regard to both our biology and physiology, and to the social contexts in which we reside. Biologically, some humans are able to positively adapt to their current circumstances and overcome adversities in the process. Consider people who become sick or who are injured. Their bodies compensate for these deficits and activate processes that are there to protect the inner workings and ensure recovery. Similarly, humans adapt to social environments by picking up social cues within specific circumstances to positively adapt. For example, when people feel threatened they almost immediately adopt a fight or flight mentality that is aimed at achieving a positive outcome (survival) in a difficult set of circumstances (threat) (Nelson, Adger, & Brown, 2007).

Resilience can be understood as both a whole concept and as a sum made up of different parts. Resilience is achieved in the presence of two qualifying criteria: adversity and competence (Osborn, 1990). Resilience is present when an individual is able to achieve a competent outcome in the face of adversity (Luthar & Cicchetti, 2000). When people face adversity, they are challenged to complete the outcome they are goal-oriented towards. Gledhill (2007) explains that resilience occurs when the challenge to achieve a goal is met with an outcome where wellbeing is attained. Therefore, resilience is a process of moving from being faced with an adverse challenge to achieving a positive and competent outcome. To successfully define resilience, we must first define what qualifies as ‘adversity’ and also, a ‘competent’ outcome (Kaplan, 2005). These two sub-concepts, which make up Luthar and Cicchetti’s (2000) definition of resilience, are context specific and further complicate the possibility of a general definition. For example, a life adversity for one person

could seem trivial and insignificant to another. The tension and contradictions between the applications of such a definition can be problematic (Kaplan, 2005). Adversity can be described as a continuum, where risk factors (those more likely to cause adversity) or protective factors (those likely to keep you from adversity) determine what form of impact an adverse situation will have on an individual or group of individuals (Masten, 2011). Competent outcomes could also be applied to a continuum as a way of being able to quantify how competent the outcome was. However, this would also need to be cross-referenced against how severe the adversity being faced was and what resources the individual or group of individuals were able to pull from in order to achieve their competent outcome. One study used multiple measures to assess competence through ascertaining how quickly and efficiently their desired outcome was achieved based upon the resources available (Masten, Hubbard, Gest, Tellegen, Garmenzy, & Ramirez, 1999). Using continuums or scales to describe adversity and competence as parts of defining characteristics of resilience illustrates how resilience can be seen more as a spectrum rather a concept that is all or nothing (i.e. resilient or not).

An example of resilience in action is children learning to walk; as they attempt to master the skill of walking, they will experience a number of falls along the way, yet this does not deter them from trying again and again. Take for instance a two-year-old who began walking around her first birthday. Achieving this milestone is considered competent because she is achieving developmentally appropriate goals. If you contrast this example to a child with a physical disability, their success in walking is seen as a competent outcome with an obvious adversity to overcome. Masten and Coatsworth (1995; 1998) write that competence and successful outcomes are very much dependent on an individual's social position and personal circumstance.

Success criteria for individuals are based upon age, gender, culture, capability and much more. These are integral to a 'successful' or 'competent' outcome. Masten and Coatsworth (1995; 1998) further argue that a resilient outcome has been achieved when someone displays competence in the presence of risk factors. When you apply this extended concept to the latter example above, it becomes more a presentation of resilience because the individual attempting to walk has other barriers (risk-factors) to overcome in their attempt to walk.

Three factors are central to understand resilience as a construct (Garmezy, 1991; Werner, 1989): The characteristics of the individual, the social supports around an individual (socio-cultural), and the macro-ecological supports afforded to the individual and their immediate social supports. There are slight variations to how Werner (1989) and Garmezy (1991) view each of these three tenets coexisting to support and/or impede resilience. However, their fundamental theories are very similar. The relationship of these factors merge to provide a socio-ecological model of resilience where no one factor is ultimately responsible for resilience development or resilient outcomes, but rather there is a dynamic and complex system at play.

Taking an individual's internal resources as a starting point, one can infer that resilience is about timely application of these resources to overcome adversity (Garmezy, 1991; Werner, 1989). Individuals are able to activate these internal resources to problem solve their way past their adversity. These internal traits and strengths of character could be thought of as an individual's personality. A socio-cultural view of resilience goes beyond the individual and acknowledges the ever-changing format of an individual's life and their social surroundings (family, friends, networks and more). In this perspective, resilience is also about an individual's successful application of their social resources (Boyden & Mann, 2005). Therefore,

resilience is achieved when individuals are able to use their social resources (i.e. support networks) to help them to overcome the adversity they face. This socio-cultural perspective of resilience argues that resilience is not entirely reliant on the individual and their internal mechanisms to overcome adversity, but also their ability to rely on the support of networks around them. Individuals are able to access their internal support systems (personality and personal dispositions) and their external support systems (social networks and access to community supports). Finally, resilience is also inclusive of the macro-ecological impact upon an individual in any given time or context. This may include aspects of living conditions, cultural expectations, political climates, access to education and much more. The macro-ecological level of influence refers to aspects usually out of the individual's control but still very much influencing how the individual is able to behaviour and respond to their surroundings (Panter-Brick & Eggerman, 2012).

Resilience is not a concept that can be quantified easily. Although various scales exist to measure different levels of resilience in different individuals, these are variable to circumstance and context (Hjemdal, 2007; Waaktaar & Torgersen, 2009; Windle, Bennett, & Noyes, 2011). There are no uniform scales which explore the quantity of resilience one individual may have, compared to another. Instead, resilience is explored and understood as a dynamic process where people can exhibit varied levels of resilience dependent of the specific circumstance occurring in their life at any one time (Dupree, Spencer, & Spencer, 2015). The measure of how positive an outcome may be is also dependent on how influential the perceived adversity to be faced and overcome is. This is a matter of individual perception in reference to the resources available to an individual.

As outlined here, it is important to acknowledge that resilience is a complex concept not easily defined. There are multiple factors which influence our understanding of resilience. Firstly, we need to acknowledge that resilience can be applied to a variety of fields (biology, physiology, epidemiology, psychology and more), and that each of these fields has their own defining characteristics and understandings. Secondly, it is important to acknowledge resilience can be seen as a whole concept separated into smaller parts. Thirdly, resilience is very much context specific and relies on a merging of internal and external supports. This requires an understanding of the internal, external and macro-ecological systems at play that influence our understanding of resilience.

What is the Benefit of Resilience?

The development of resilience is important when children are developing to try and mitigate their exposure to risk factors and to reduce the impact of adversities in life. When children and young people are faced with challenging situations in their lives it is important for them to be able to overcome these circumstances in order to progress and move forward. If individuals have the skills and capabilities to be able to overcome challenges within their lives from a young age then they will be better prepared to succeed in life.

Being able to problem solve is an important skill for any individual to have in order to progress through their daily lives. Any individual, as soon as they are born, begins to recognise strategies that support them in being able to get (or avoid) what they want. Some of the fundamental principles of human behaviour focus on reinforcement schedules, rewards and punishments (Skinner, 1965). These fundamental principles occur in most human interactions and inform how we behave.

Infants learn very quickly that by crying they are attended to very quickly and thus they are positively reinforced to continue crying. Often parents or caregivers will cradle, attempt to feed, sing, and try any range of strategies to sooth the crying. However, as we get older we learn more effective strategies to gain (or avoid) exactly what we want. For the majority of individuals this is achieved through the development of language-based communication. The overriding theme here is that humans adapt their behaviours to meet their needs and the needs of the environment around them. Some of these adaptations are based upon basic ‘human instinct’. However, for more abstract adaptations there needs to be a more complex form of problem solving to be able to adjust in order to meet the specific needs. For example, if a young person wants to be accepted into certain social groups she will need to navigate a path where she meets the expectations of their desired social group, but also not change her behaviour so much as to be ostracised by her family group or other groups that are in positions of power or authority. Behavioural changes and social integration are key to the importance of resilience because they establish how individuals problem solve, through behavioural change, to achieve desired outcomes. Goal oriented behaviour is the end point of resilient outcomes. An individual’s desire to reach and achieve their goal outweighs their willingness to give in to the adversity they are currently facing.

Adversities or negative events can be considered risk factors in an individual’s life. There are many risk factors that children and young people can be exposed to in their lifetime. Risk factors are things such as poverty, abuse, conflict (in the home, in the community, in the nation or in their geopolitical environment), debilitated health (mental and physical), criminality, and many more. Risk factors have the ability to cause negative life outcomes, especially when they are compiled (Masten, 2001).

These risk factors range from specific one-off events in their lives (e.g. death of a loved one) or continual permanent occurrences within a young persons' life that become a fixture of normality (e.g. living in poverty or with a permanent health condition). Exposure to traumatic events is one risk factor that has the potential to have significant implications for children and young people (Condly, 2006).

Traumatic events do occur within the lives of most people throughout their lifespan (death of a loved one, natural disaster, serious illnesses, and more). Condly (2006) argues that responses to traumatic events are so variable between individuals that there must be internal mechanisms at play that determine reactions to such events.

These reactions range from not being able to see past the trauma and being completely consumed by it, through to being able to see the problem as one isolated incident (even if there are a serious of traumatic incidents happening concurrently) with multiple solutions. As a result we know that children need resilience as a protective factor to support them to cope with risk factors. However, from research over the last few decades and from around the world we now know that many children exposed to a range of these risk factors can still come to adapt to an adult life without significant negative side-effects (Benard, 1991; Rutter, 1987; Werner, 1989). This positive adaptation, even with significant factors of adversity and risk present in young people's lives, illustrates that there are possibly internal and/or external protective processes that are supporting young people (Withers & Russell, 2001).

Problem solving is a key benefit that is developed in individuals who are resilient (Bernard, 1995). Problem solving enables individuals the ability to plan ahead and foresee how to overcome possible adversity and therefore potentially avoid them. This comes with an ability to think critically, creatively, and reflectively about the current situation that is being faced by an individual and how they may choose to

deal with this. Also, problem solving enables individuals to strategically seek help and guidance from their social supports (Dumont & Provost, 1999). Dumont and Provost (1999) also suggest that the benefit of problem solving as a result of resilience encompassing forward planning as a mechanism to change their current path to avoid stressful and adverse situations.

Resilience is often described colloquially as the ability to bounce back from adverse situations. This ‘bounce-back’ mechanism can be thought of as being able to regain the same level of competence after an adverse event as was being achieved before it (Smith, Dalen, Wiggins, Tooley, Christopher, & Bernard, 2008). This links nicely to the understanding of internal personality traits and the ability to not stress over adverse events too much while still being able to compartmentalise them as one-off events, a glitch in the road so-to-speak. This is especially true to events that occur within a person’s life all of the time that cause them stress. For example, travelling to work in peak traffic hours are often constant stressors for individuals. However, being able to rationalise this as a common place part of one’s day is an important coping strategy. This has been successfully applied to the sporting world where individuals who are able to bounce back from failures have a greater performance in their overall sporting pursuit (Mummery, Schofield, & Perry, 2004). Being able to realise that one off sporting failure does not limit an individual to predetermined failures in the future but is simply viewed as an isolated episode.

Adapting to change is also a significant benefit to individuals who are resilient. This is similar to the ability to bounce back, however it differs slightly because individuals are not attempting to regain their previous state, but instead they are changing/adapting to meet the new circumstances. Ability to change and adapt is an individual’s own way of altered being and doing in order to mitigate the damage of

adversity in one's life (Masten, 2001). Successful adaptation to new situations despite facing adversity in the process of coming across novel challenges or threatening situations is a beneficial outcome (Masten, Best, & Garnezy, 1990). This is especially true in situations where you are unable to regain your previous state because the situation is completely out of your control (e.g. a loved one has died or a time-period has passed).

One of the most significant benefits for resilient individuals is an increased sense of self-control. If children and young people have higher reports of self-control then they are less likely to engage with risk taking behaviours. This has a direct correlation to more positive mental health and broader beneficial outcomes (Moffitt et al., 2011). If there is a perceived lack of self-control then these individuals are more likely to present with negative self-feelings (Diehl & Hay, 2010). A sense of self-control reduces the broader exposure to a variety of risk factors and therefore reduced vulnerability (Goldstein & Brooks, 2013).

Yeager and Dweck (2012) suggest that resilience is integral to success for children as they go through even small challenges in life. Carole Dweck's work around mindset has been picked by schools across the world as ground breaking to supporting children to overcome self-doubt and build self-efficacies around their problem solving competencies (Dweck, 2015). Dweck's work largely focuses on the ability to become more intelligent and learn more. She distinguishes between people who hold either a fixed mindset or a growth mindset about particular situations or problems. Individuals with fixed mindsets establish that their problems are fixed and immovable. They believe that their current skill set and resource pool is not adequate in being able to overcome the challenge before them. Individuals with growth mindsets see problems and challenges as an opportunity to grow through practicing

previously learned skills or developing new skills. This notion of fixed and growth mindsets can easily be transferred to the work around resilience and how people view their current circumstance as either unchangeable or unmanageable. This is juxtaposed by individuals who view life's challenges as a chance to use skills and push one's self to grow and develop. If individuals develop without basic resilience skills (i.e. not being able to positively adapt to difficult circumstances) then they are put at serious risk of negative outcomes. These negative outcomes could present in a variety of difficult forms. If you were to apply this particular lack in resilience to an individual's mental health, some possible examples of negative outcomes could include; social isolation, mental illness, or even suicide.

Resilience training is a mechanism to educate and support people from the potential negative impacts of mental illness, self harm and even suicide. Resilience from a suicide prevention perspective is "...the capacity to cope with, and bounce back after, the ongoing demands and challenges of life..." (Joubert & Raeburn, 1998. Cited in Mental Health Foundation of New Zealand, 2001, p. 20). This is a primary prevention methodology and involves teaching children about how to cope with adverse events in their lives and what steps they could take to build their internal strength and coping strategies and also how they could seek advice and support from family, peers, and professionals. Resilience is described by academics in the field as a protective factor to suicide and therefore, the more resilient you are, the less likely you are to attempt or complete suicide (Everall, Altrows, & Paulson, 2006). Everall and colleagues (2006) suggest that resilience is about having the social supports, emotional and cognitive awareness, and goal-directed determination to change current behaviours to prevent suicide.

Suicide is often seen as an extreme outcome for individuals that are unable to see past their current difficult situation and therefore see their only possible outcome is to end their own life. The adversity a person may face in their day to day lives, and right throughout their lifetime, has been an associated factor to those people who attempt or complete suicide (De Leo, Cerin, Spathonis, & Burgis, 2005). A significant reason for completing suicide is that life becomes too tough and that there is no longer the capacity to cope after certain events. The death of a loved one, sexual or physical abuse, and insurmountable debt are just some of the reasons a person may feel that suicide is the only way to escape their current dire circumstances.

Other studies have indicated that stressful lives that include multiple traumatic events have higher risk of suicidality (Flannery, Singer, & Wester, 2001; Yang & Clum, 1996). The constant self-perception that an individual is continually experiencing trauma may make a person feel a lowered sense of self-worth and induce feeling of inability to attain important goals (Hirsch, Wolford, LaLonde, Brunk, & Morris, 2007). This maladaptive behaviour, as a result of external stressors, could be a result of lessened optimism and resilience within individuals (Hirsch et al., 2007). This is accordance with research which indicates that increased optimism is correlated with reduced reports of depressive symptoms (Puskar, Tusaie-Mumford, Sereika, & Lamb, 1999).

The flipside to causal or risk factors for suicide are factors that are protective to suicide and thus, tend to safeguard some people from this phenomenon (Cheng, Tao, Kann, Tian, Tian, Hu, & Chen, 2009). Protective factors can be more specific and can include how a person socialises, who they disclose information with and how frequently, or whether they are in continued employment. A large part of the ideology of protective factors is taking into account whether individuals who are associated

with certain factors are at a lesser risk of suicide. Walsh and Eggert (2007) identified two categories of protective factors: personal resources and social resources. The personal resources refers to the intra-personal mechanism where a person feels a strengthened sense of self-control, self-esteem, resilience, ability to cope, and problem solving skills. Conversely, the social resources are factors where an individual has support and is communicative with a range of people including family and close friends. This was especially protective if a person formed strong relationships prior to 18 years of age (Walsh & Eggert, 2007). Protective factors can be separated into four factors: “immediate family support; social connectedness; problem solving confidence; and locus of control” (Donald, Dower, Correa-Velez, & Jones, 2006, p. 3). Items that tended to have a high protective factor against suicide for these individuals were: the ability to talk to a family member or friend; having employment; frequent social contact; participating in sport; self-perceived efficacy to solve problems; and a sense of self-control. Therefore, if suicidality is an absolute dire outcome to a seeming absence of resilience, how then do individuals or groups of individuals go on to develop skills in resilience?

The research evidence about the many benefits of resilience is quite clear. Resilience is a means for individuals to assess and face adversities. Resilience ensures that this assessment is rational and adequately places any given issue into perspective. Resilience allows for self-control in situations of uncertainty and ensures positive adaptation in the event of unwanted or unsuspecting change. When things do not go well resilience enables individuals to move past an event, trauma, failed relationship and more. Resilient people are able to see these adversities as isolated events to a place in time or to a specific context and not as a reflection of them as a person. Resilience provides the ability to ‘bounce back’ from life adversities and resume a

new-normal after overcoming a challenging situation. Finally, resilience is also a protective factor to the pervasive effects of mental illness, self-harm and suicide.

How does Resilience Develop?

The development of resilience occurs through many aspects of a person's life including; social interactions, environmental stimulation and personal growth (Beauvais & Oetting, 1999; Rolf & Glantz, 1999). The development of resilience is continual and ongoing and does not come to an end-point throughout development (Masten, 2001). This understanding of resilience development acknowledges the ever-changing format of an individual's life, their social surroundings (family and friends) and wider macro-ecological environment (community and education). The research centered on the development of resilience in children and young people is largely focused on how individuals are able to adapt to their current environment. This is achieved through attempting to understand the specific social and ecological supports an individual has around them at any one time in their development. However, it also attempts to recognise the specific personality traits that an individual carries with them. This enables them to be more or less likely to be able to overcome an adverse situation they are facing. A multidisciplinary approach to researching resilience has added further understanding to how resilience as a concept is currently framed and also how it develops.

As previously discussed there are a number of factors that impact upon an individual's ability to be more resilient. There have been many studies over the last few decades that have centered on individual resilience development (Masten, 1994 in Wang, & Gordon, 1994; Werner, 2000 in Shonkoff and Meisels, 2000). However, there has now been a shift towards understanding the relationship between individual

resilience and the resilience that is achieved through interpersonal relationships (Masten & Monn, 2015). Environmental factors that take into account the broad macro-ecological elements are also an influencing factor on resilience. This interconnected relationship acknowledges that individuals are born into continuous social interactions with other individuals around them, and that these interactions occur in the environments they are exposed to. This is a socio-ecological approach to defining resilience because there is an acknowledgement that resilience does not just occur through some form of genetic predisposition (e.g. internally). Instead, as research highlights, having supporting social-networks and at least one other person to support you in life is a key aspect to being more resilient in life. Therefore, it could be argued that the more social support a person has throughout their life (e.g. supportive family and friend groups), the more likely that individual is to be more resilient in the face of adversity and life challenges (Armstrong, Birnie-Lefcovitch, & Ungar, 2005; Bender & Losel, 1997).

The American Psychological Association (2016) provided 10 key tenets of how to build resilience in individuals. These tenets include: building strong relationships with others, having a growth mindset and being able to see problems as solvable, being able to accept when something cannot be altered, being goal oriented, being able to make decisions in adverse situations, being able to reflect on yourself after meeting adversity, remaining self-confident, having a broader view of life; understanding that adverse events are a limited to moments in time (there is light at the end of the tunnel), remaining hopeful and knowing good things will come around sooner or later, and having self-care strategies that look after your physical and psychological wellbeing and health. These key tenets pick up on much of what it is to be resilient by definitions from the research literature. It gives rise to the idea that a

combination of internal, external and macro-ecological supports work collectively to prompt resilient outcomes.

Personality traits are a key aspect that enables individuals to be more resilient or not. Personality reflects the internal elements linked to a person's self-perception, their thoughts and their expression of these. When one attempts to uncover the specific individual characteristics of increased resilience, there are two key elements which impact upon better outcomes; higher-than-average intelligence (IQ) and an easygoing temperament (Condly, 2006; Werner, 1989;1993). Both of these individual characteristics enable individuals to be able to rationalise their life problems and stressors. Individuals are able to use processes to problem solve but they also do not tend to 'sweat the small stuff'. However, as previously discussed, these factors do not guarantee resilient outcomes. As such, they are not causal factors for resilience.

Familial relationships are an important social aspect to the development of resilience. Aspects of positive parenting are integral to the development of children have more resilient outcomes (Gribble et al., 1993). These positive parenting techniques equate to a greater involvement in their child's life and subsequently providing better guidance and support to their children. Each of the key tenets of positive resilient outcomes (individual attributes, familial supports and macro-social networks) can all have varying levels of interaction on an individual's particular set of circumstances. For example, one person may be completely void of familial supports but still have positive outcomes in the face of significant life adversity as a result of other positive influences. One of the biggest contributing factors to the development of resilience for an individual is the presence of strong relationships, either within or outside of one's family. A strong relationship to at least one other individual is key to the development of resilience because it provides support when an individual comes

across challenges they are unsure of (Armstrong, et al., 2005). With someone else there to support them, there is the possibility that the other person may have previously come across the type of adversity needing to be overcome. The supporting figure can be there to share ideas with about how to potentially solve and overcome particular problems. Alternatively, they can be there to support them by simply providing a 'can-do attitude' and guiding the individual through their hard times. It could also simply be the mere presence of another person in an individual's life that enables them to feel supported to overcome a challenge with no direct input into actively supporting them. Although there is better resilience in individuals with stronger social supports, there are always exceptions to this rule. In studies that have assessed resilience and the relationship to social connectedness and networks (Bender & Losel, 1997; Halstead & Taylor, 1996; Mummery, et al., 2004), there have always been outliers that buck the trend. Therefore it must be argued that although social supports are a key aspect to the development of resilience, it does not tell the whole story of how resilience is developed.

Ungar (2011) argues for this social ecology of resilience by putting forward four principles. The first principle acknowledges the relationship between individuals and their environment. The second principle expands on this and acknowledges the complexity of resilience-based systems, stating there is no simple cause and effect relationship, but something far more dynamic at work. The third principle focuses on the possible atypical events that occur in an individual's specific circumstances in their environment. At times resilient outcomes are the result of non-typical processes whereby successful results are still produced. The fourth and final principle discusses how socio-ecological resilience is culturally relative. This means that the shared social customs of any one particular group of individuals and their perspectives on

resilience both impacts upon an individual's perceived resilience but also on their outcome measure of resilience. There is a growing consensus that resilience is a dynamic concept that entails many different sub-concepts. Grit is one of these sub-concepts that help to unpack the vast nature of resilience. Grit, developed by Duckworth, Peterson, Matthews, and Kelly (2007) is used to describe specific perseverance and goal-oriented behaviours. From this work, Duckworth and colleagues (2007) went on to develop the Grit Scale and then The Short Grit Scale (Grit-S) (Duckworth & Quinn, 2009). The Grit-S scale assessed an individual's capacity to do well on a task or set of tasks based upon both their interest in the task but also their capacity or skills to do well. The assessment relies heavily on the individuals' self-reporting on their capacity to do well and cope with stressors. As cited in Duckworth and colleagues (2007) work, Bloom (1985) suggests that being a skilled and a leader in any given task is more about an individual's interest in a task, a desire to be good at it, and their willingness to work hard at improving their skill set. These traits give significant recognition to the underlying concepts of resilience which situate an individual's ability to problem solve and move past their current point of understanding as key to having positive outcomes in the face of challenging circumstances. Again, this ties nicely to Dweck's (2015) ideas around growth mindset and having self-belief or self-efficacy around being able to improve and change the current circumstance through attempting challenges again or in a different way.

Resilience is something that develops within an individual over the course of a life time. The specific measure of a person's resilience is, as stated previously, variable because of the particular circumstances attached to an individual at any one time. As any individual continues to grow and develop throughout the entire span of their life, they will move closer to or further from embodying many of the

dispositions that are aligned with resilient traits. The development of resilience is not fixed in time or constrained to context. It can remain fluid across these factors.

Resilience is also embodied across an individual's internal resources, their external social resources and their macro-ecological environmental resources. However, what remains to be seen is whether schools can play a role in teaching and facilitating the development of resilience.

Can Resilience be Taught in Schools?

Education professionals are increasingly recognising that many children are entering their primary school years without many important social skills (Blair, 2002; McClelland, Morrison, & Holmes, 2000). Therefore, if these skills are not being taught to children in their home environments (for any number of contributing reasons), schools have the challenge and/or opportunity to support children in developing these skills. One such challenge may be that schools already have a crowded curriculum where they are expected to continually teach more and more to children without anything dropping off (Alter, Hays & O'Hara, 2009; Jones, Harlow & Cowie, 2004; Miles, 2008; Morgan & Hansen, 2007). Gone are the days when teachers were only expected to educate children about reading, writing, arithmetic and other 'core' learning areas. However, a unique opportunity of being able to teach social skills in an education setting is that there is the possibility for a more unified message to be given out. Within this opportunity schools can provide a far more diverse form of education that they have ever been able to in the past.

Schools are increasingly being directed to include competency building strategies within their curriculums to ensure that their pupils are equipped with the adequate skills to be successful citizens. Take for example the New Zealand

Curriculum that includes a Vision, Key Competencies, Values, Principles, and Learning Areas (Ministry of Education, 2007). All of the domains of this curriculum provide a direction of learning for New Zealand educators to produce learners that are holistic in their skills, strategies and understandings of the world that surrounds them. When you include concepts such as Key Competencies: Thinking; Using Language, Symbols, and Texts; Managing Self; Relating to Others; and Participating and Contributing (Ministry of Education, 2007, p. 12), the curriculum becomes far broader than traditional learning areas and begins to include aspects of attitude, disposition, and knowledge. It is the introduction of such a curriculum document like the New Zealand Curriculum that highlights the changing direction of education towards a holistic child-centered model where curriculum knowledge is no longer valued as the only, or even the most important component to school-based education.

Resilience in a school setting is about behavioural patterns that enable children to succeed in the face of struggle (Medoff, 2010). As such, resilient children are more willing to take risks, be open-minded and have an optimistic disposition. This type of child links very well with Dweck's (2006) work around fixed and growth mindsets. In a growth mindset children are able to see that the situation they are currently in is changeable and that they will be able to get through the struggle they are currently facing. Essentially they can show growth out of their current predicament. Medoff (2010) reports that there are six key characteristics of classrooms that support resilience building in students. These include; "Care and Support; High Expectations; Opportunities to Participate in Meaningful Ways; Prosocial Bonding; Clear Boundaries and Expectations; and Teaching of Life Skills" (p. xx, xxi). These characteristics fit into the wider socio-ecological model that is discussed earlier and support the internal and external supports a person has at their disposal to achieve

resilient outcomes. Further still, the macro-ecological environment (i.e. the classroom) provides even more support if it includes these characteristics. Similar to the growth mindset concept is the idea of the learning pit, which outlines the benefits of struggling in learning (Nottingham, 2014). Nottingham (2014) argues that the learning pit goes through four stages of development: concept, conflict, construct, and consider. These stages transition a student through the learning of new information or concepts and give permission for learners to go through struggles, misunderstandings, frustrations and more. The conceptualisation of the Nottingham's (2014) learning pit, coupled with Dweck's (2006) growth mindset, illustrates how new ideas in educational research and practice are intertwined with resilience. Without resilience in the educational journey, children are likely to come across challenges and just give up. However, these paradigms are providing children and teachers with the acknowledgment that adversity in their learning is a positive factor and recognises this as a natural stage within the learning process.

Schools play a unique role in New Zealand communities and provide frequent opportunities for community members to assemble and be connected. This opportunity allows for access to a broad audience, particularly in nations like New Zealand where school attendance averages above 90% throughout the country, across primary and secondary education settings (Ministry of Education, 2015). Therefore, schools are in an ideal position to be able to reach out and assess children, their whānau/families, and other members of the wider community. Schools are often referred to as the centre of their communities and, as a result, can play a pivotal role in providing accurate, reliable and up-to-date information about what can be done to promote positive messages to their community members. With this in mind, it could be possible for many professional groups across a variety of sectors to come together

for the vested interest of their community. Providing evenings that introduce laypersons to the skills, strategies and knowledge they could use to help people who may be in need would be a step forward. Involved in this could be parent evenings that educate parents about how to best instill some of the protective factors that children and young people require to face the challenges in their lives. Furthermore, as communication within family and peer settings is a protective factor for suicide (Donald et al., 2006; Walsh & Eggert, 2007), the mere gathering of people from within the community on a regular basis would be a positive initiative. Although schools provide this type of whole-of-community education, it is not their core business. Therefore, it would be particularly beneficial if schools had evidence tested methods to provide this type of information to young children right from any early age and work more proactively, rather than reactively.

Werner and Smith's (1992) work on resilience in children as an indicator of adaptive or maladaptive outcomes in later adulthood is a key study to understanding how risk/protective factors operate within the life span. This study found that children exposed to continual risk factors (e.g. poverty and/or abuse) were more likely to present with negative life outcomes later in development. However, a significant group within the study's participants retained adaptive outcomes in adulthood, despite exposure to similar measures of risk factors. The key difference in this latter group was that these children had positive role models, optimistic outlooks on school achievement and tended to have positive relationships with peers. All of these protective factors are contributory to making someone more resilient. The building of resilience is largely linked to the building of strong and long-term relationships with the students that you teach (Medoff, 2010). This can be achieved through a continual effort made on behalf of the teacher attempting to connect and empathise with their

learners to ensure that they are able to see the world from not only their own perspective, but also from the perspective of their students. The development of empathy is not always an easy task as it often can conflict with how we already view and perceive the world. However, it is vital to be able to build trusting relationships with students and for them to gain an understanding that you will continually be there to support them (Medoff, 2010). The difficulty in relying on the development of resilience through building strong bonds is that often with a busy curriculum and also in a busy school environment with high-class numbers, it can be difficult to build meaningful bonds with students that allow empathy to flow in genuine ways.

Resilience should be a high priority in schools, especially when individuals take into account the difficulties and trauma children may face in their lives. Put quite simply, school can be a very difficult place for many children to feel successful and fully included in all that happens. For example schools in New Zealand are becoming increasingly assessment driven and do little to support the needs of vulnerable children that may begin life with learning or physical disabilities (MacLeod, Hawken, O'Neill, & Bundock, 2016). Children with learning disabilities already report “feelings of low self-worth, and incompetence and that many believed that their situation would not improve” (Panicker & Chelliah, 2016, p. 18). When this is added to a school system that is becoming more focused on reaching a specific grade, these children who already begin school with significant challenges begin to be further disenfranchised from their education setting. Brooks (1991) suggests that this becomes a self-fulfilling prophecy where a child’s low self-worth meets challenging circumstances, which result in failure, and therefore low self-worth continues to emerge.

Stress management is one element of being able to be resilient under stressful situations. A recent study used a stress management and resilience training (SMART)

programme developed by NASA in an online format to support resilience building over six weekly sessions with pre- and post- measures of current stress management and resilience strategies (Rose, Buckley, Zbozinek, Motivala, Glenn, Cartreine, & Craske, 2013). This programme found that the SMART programme provided participants with an increased sense of being able to manage stress and abilities to be able to face adversities. The short time frame nature of such a programme is important as it illustrates that advances are able to be achieved without having to conduct time-consuming and costly interventions. This particular study was conducted with university students. In many of the resilience training programmes where empirical evidence exists, university students are often used as experimental participants. This is often out of ease-of-access because tertiary students operate in research-intensive spaces. There is limited literature that assesses the effectiveness of school-based resilience interventions.

One Canadian study of resilience building assessed the effectiveness of the “FRIENDS for Life” programme, with participants receiving eight resilience-building lessons over two months (Rose, Miller & Martinez, 2009). The programme is aimed at both increasing students’ resilience but also in reducing students’ anxiety. The study had an experimental group and a control group with pre-intervention and post-intervention assessment conducted. The study did not produce any statistically significant results as both groups increased in resilience over the time period, even with the control group not being exposed to the programme in between each assessment. Although the study did not produce the results that were hoped, the authors have suggested that having programme-based interventions enable a universal level of support to students and school staff is better than not acknowledging resilience-building as a component of the psychosocial needs of students in schools.

The development and effectiveness of resilience building programmes in the school setting is not well researched. Much of the research literature promote that schools are ideal settings to be sharing the types of messages that resilience development would deliver because of their ease of access to young people and also because of the value placed on the school setting as a whole. However, there are significant unknowns to this with regard to best practice and especially with respect to delivery in a culturally diverse classroom setting.

These findings notwithstanding, there is a significant gap in the literature concerning how resilience can be taught as a short-term intervention in New Zealand classrooms. A study measuring the effectiveness of such an intervention would help consider how the resilience of children in the school setting can be developed.

Present Study

The overarching goal of the present study was to further explore the relationship between short-term interventions of teaching children about resilience and whether this impacted upon children becoming more resilient. Key gaps in the current body of research exist around the teaching of resilience and how this is most effectively carried out, particularly with a New Zealand perspective on the issue. The key research question is: Does explicit teaching of resilience in a New Zealand primary school setting make students more resilient?

There is currently a dilemma with a crowded curriculum (Barker, 2008) where more and more is expected to be taught in the school environment. Therefore, often schools are looking for short-term interventions and quick-fix options. There is a dearth of literature to back up or validate the existence of short-term resilience intervention programmes in the school setting (i.e. not clinical or lab-based). The

majority of literature on teaching resilience to children in the school setting has been conducted outside of New Zealand and has largely involved long-term interventions.

The present study sought to fill these two major gaps in the research literature by providing a short-term intervention in a New Zealand school setting. The relationship between children in school settings being exposed to linked-lessons about resilience and their performance against measures of resilience was explored. A repeated measures study was conducted to assess children's resilience across four tasks over three time periods. Half of the participants were a part of an experimental condition and exposed to three resilience lessons after their first assessment, but before their second and third assessments. The remaining half of the participants were included in the control condition. They were exposed to the three resilience lessons after all three of their resilience assessment phases. The children included in the experimental condition received the resilience lessons as if it were part of their regular class routine. A teacher, well known to the participants, facilitated the lessons and students were in the company of their peers (many of their usual classmates). This study is unique because it provides an insight into how resilience could be taught in New Zealand schools, but also because it controlled for many variables while still providing an authentic in-school setting (i.e. not in a lab). This is a controlled study because of its experimental design with two groups (experimental and control).

It is hypothesised that a short-term resilience teaching intervention would increase students results overall across four different tasks that measured resilience. It was also hypothesised that the control condition participant would not be affected by continual assessment phases and that their reporting of resilience or performance on any of the tasks would neither improve or decline over time.

Method

Participants

One hundred and twenty child participants (61 males, 59 females) were recruited from a co-educational decile* three full primary school in an urban centre of Dunedin, New Zealand. Participants were grouped by their year level at school (years 1-8) and had a range of five-years to 12-years of age. For statistical analysis, participants were also coded for their ethnicity (Māori, Pasifika, Asian or Pākehā/NZ European) and their gender (male or female). See Table 1 for demographic information on all participants. All child participants were volunteers and had provided their own consent and the consent of their parents or caregivers to participate. This study was approved by the Ethics Board of the University of Otago (see page 52). All participants reported they were of good health.

Table 1

Demographic Information of Participants (year level, gender, and ethnicity)

Year Group	Gender		Total	Ethnicity							
				Māori		Pasifika		Asian		Pākehā/NZ European	
	Male	Female		Male	Female	Male	Female	Male	Female	Male	Female
Year 1	10	6	16	3	0	0	3	0	0	7	3
Year 2	11	10	21	1	2	2	0	1	0	7	8
Year 3	8	11	19	3	4	0	1	0	0	5	6
Year 4	12	7	19	2	1	2	0	0	1	8	5
Year 5	7	9	16	4	1	0	1	0	0	3	7
Year 6	4	6	10	0	3	0	0	0	0	4	3
Year 7	7	5	12	2	1	1	1	1	0	3	3
Year 8	2	5	7	0	2	0	1	0	0	2	2
Total	61	59	120	15	14	5	7	2	1	39	37
				29		12		3		76	

* Decile refers to a 1-10 rating of a school's socio-economic status based upon the students in their catchment area (Ministry of Education, 2016).

Table 1 presents the numbers of each demographic group analysed for the study. On the left of Table 1 the number of participants from each year group is assessed against the gender make up within each group. For example, the top left figure shows that there is ten males in year one who took part in this study. On the right of Table 1 there is a breakdown of each ethnic group represented in the study and this presented against the year levels of the participants and also their genders. For example, the top right figure in Table 1 shows that there are three female Pākehā/NZ European participants in year one. The figures enclosed in vertical lines with bolded font show the total number of participants for each year level and also the overall total number of participants in the study.

Demographic Coding

The New Zealand education system provides thirteen academic year levels in schools. Children can begin their primary schooling at five-years-of-age (year 0/1) and progress through to the end of secondary school at nineteen years-of-age (year 13). Contributing primary schools educate students from years 0/1-6, while intermediate schools educate students in years 7-8. Full primary schools educate students right from year 0/1 through to year 8. Colleges educate students from years 7-13, while secondary schools educate students from years 9-13. All students in this study attend a full primary school and are classified from years 1-8.

Gender is the socially constructed outward expression of ones sex (biological characteristics) (Butler, 1990). Gender is largely classified as a binary between male and female. However, nowadays there is a movement towards a much more fluid and continuum like expression of gender (Butler, 1990). The participants in this study

where coded as either male or female for their gender as already recorded in the participating school's online student management system.

New Zealand is a multi-cultural nation that has a diverse range of ethnic groups. Māori are the indigenous group to New Zealand and represent 15% of the population. The participants in this study who are coded as Pasifika (term of convenience used by government departments to encompass all people who have either migrated from a Pacific Island nation or that are born in New Zealand to parents of Pacific Island decent) are recognised as having ethnic origins to one of the many island nations in the Pacific Ocean. Pacific Peoples or Pasifika represent 7% of the New Zealand population in the last census. The participants in this study who were coded as Asian are recognised to have ethnic origins to one of the many nations in the continent of Asia. New Zealand has an Asian population of 12%. Pākehā/New Zealand (NZ) European people are recognised to be of European ethnic descendant and have emigrants to New Zealand from as early as the nineteenth century through to the current day. People of Pākehā/NZ European ethnic identification make up 74% of New Zealand's population (Statistics New Zealand, 2015). The term 'Pākehā' is often used to inclusively refer to any person with European decent who lives in New Zealand and does not already otherwise classify themselves as a specific nationality e.g. British.

Materials

All participants completed a Resilience Self-Measure Continuum Scale and an eight-item Grit Scale assessment (Appendix A) at three different intermitted intervals throughout the data collection process (initial, middle and final). They also completed two spot the difference tasks. Appendix B was used during the initial and final

assessments and Appendix C was used in the middle assessment phase. All participants completed three sessions of the wire maze (Appendix D). Participants completed an enjoyment scale after each task they had completed and were presented with Appendix E to support them in making their decision. During each interaction with participants the researcher always read from the instruction cards (Appendix F) to ensure consistency.

The materials used for the resilience lesson intervention with the experimental condition participants reflected what students would use in everyday school activities. Participants were provided with pencils and paper for writing/drawing activities, they were read a storybook titled “The Book with No Pictures” (Novak, 2014) and there were also large whiteboards and whiteboard markers used to record group brainstorm activities. Students also watched a video clip from YouTube about resilience titled “Definition of Resilience – A light-hearted animation” (In-Equilibrium, 2013). This was played on a large ActivInspire electronic whiteboard.

Design

The present research project has an experimental design where one group (experimental group) within the whole participant cohort underwent exposure to the independent variable (resilience teaching intervention), while the control group did not (until after the conclusion of the research). Good experimental design usually consists of random participant selection and random participant assignment to either experimental or control conditions (Hoy & Adams, 2015). The present study did not use random selection as all students ($n = 327$) within the participating school were approached to be a part of the research. Of this, 36.7% of the student population ($n = 120$) chose to be a part of the research project. However, the study did use random

assignment to treatments, which is a critical aspect to experimentation. From the 120 participants across all year levels, half of each year level was randomly assigned to the experimental condition and the other half were assigned to the control condition.

As illustrated in Table 2, all participants were exposed to all aspects of the study at its conclusion.

Table 2

Activity Sequence for Experimental Group and Control Group

	Initial Data Collection			Resilience Teaching Intervention	Middle Data Collection			Final Data Collection			Resilience Teaching Post-Study
	A	B	D		A	C	D	A	B	D	
Experimental Group	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Control Group	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓

The experimental group was exposed to resilience teaching sessions as an intervention, compared with the control group that was exposed to this same teaching series at the conclusion of the study. The teaching series is the independent variable (manipulated variable) and the resilience measures (each of the three tasks) are the dependent variable (measured variable).

Procedure

At the beginning of the study prospective participants and their parents/guardians were given information sheets (Appendices G, H, and I) and consent forms (Appendices J and K). Upon receipt of consent from all participants and their parents/guardians, demographic information was sought from the participating school’s online student management system.

Participants were collected from their classrooms (n=12) in classroom cohort groups that represented either one or two year levels (i.e. some classrooms have one year level represented while other classroom are a composite of two year levels, e.g. years four and five are in classroom 11). The information sheets (Appendix G and H) were read aloud to all participants in their classroom cohort groups during the initial data collection sessions. Appendix G was read to participants from year three or below. Appendix H was read to participants from years four and above. This reading of the information sheets enabled students to be fully aware of the expectations during participation in the study and to be clear that it is completely voluntary.

All consenting participants completed three phases of data collection; initial, middle and final. An experimental group of participants was selected to take part in a teaching intervention of resilience skills and reflection. This took place after the initial data collection phase but before the middle data collection phase. The control group was provided with this same teaching experience after data collection was complete. No participants were advantaged or disadvantaged from being in either the experimental or control group as all participants received all conditions of the intervention by the conclusion of the study.

Initial Data Collection

The initial phase of data collection assessed a baseline measure of each participant across each of the three tasks administered (Appendix B, Appendix A and Appendix D). The Spot the Difference task (Appendix B) was administered first and participants were timed while they worked on this task. The instructions for Spot the Difference were read from Appendix F before the beginning of this task. Participants handed their sheet to the researcher when they believed they had found as many

differences as they could spot on the sheet. A participant's time taken to complete the task was recorded at the top of the sheet by the researcher.

The resilience self-measure continuum and Grit Scale sheet (Appendix A) were completed next. The researcher read out all of the questions to the participants and clarified questions as they arose. More competent readers (i.e. older year levels) were able to complete the task in their own time. However, questions were still always read out to all classroom cohort groups.

The final task in the initial data collection phase was to work on the wire maze (Appendix D). Five wire mazes were provided for participants to work in pairs or small groups of no more than four participants. Each participant could have as many turns as they wished up to a maximum of 20 attempts to complete the wire maze without making a buzz sound. They could voluntarily stop at any point if they no longer wished to continue. If they successfully completed the wire maze task within 20 attempts then their turn stopped. If they reached their maximum of 20 turns without successful completion their turn also stopped. Each participant was expected to keep track of how many turns they took and whether they successfully completed the maze without making a buzzing sound or not (the other group members were also keeping track of how many turns each participant had reached, while the researcher roamed the room).

At the completion of all three tasks participants were asked to rate their enjoyment of each task on a scale from one to ten (Appendix E). The scores were recorded on a classroom cohort group list by the researcher.

Resilience Teaching Intervention

Half of all participants in each year level were randomly selected for participation in the experimental group of the present study. All participants were numbered from 1 to 120. Each year level cohorts' numbers were placed in a web-based random selection generator that chose half of the participants from each year level to be apart of the experimental group. As opposed to having an even 60/60 split, there is an uneven distribution of participants assigned to the experimental (n = 59) and control (n=61) conditions. This is because if year group cohorts had odd numbers either a lower or higher number of participants were randomly assigned to either experimental or control conditions. For example, in the year 2 cohort there are 21 participants and therefore there is an uneven distribution between the number in the experimental condition (n = 10) and the number in the control condition (n = 11).

The experimental group were exposed to a series of three lessons within a one-week period, lasting approximately 45 minutes each time (total time = two hours and fifteen minutes). Experimental participants were separated into three groups (years 1-3; years 4-6; years 7 and 8) for the lesson series. As a result of a strict timeframe set around these lesson sequences, if participants in the experimental condition were absent they were excluded from the study. This was because they would miss out on a lesson in the experimental teaching sequence and would not have the opportunity to catch up. Alternatively they could have become control participants but this would remove the random assignment element from this study. Five experimental condition participants were excluded from the study because they were absent during one of the three teaching sessions. Originally 125 participants were in the study but these exclusions brought the total number of participants to 120.

Participants were first read “The Book With No Pictures” (Novak, 2014) and asked to think of and discuss a time when they had to do something that they found difficult (e.g. read a book that was complicated). Think-Pair-Share (TPS) was adopted by the research as a primary mode of delivery right throughout the teaching intervention lesson series because it enables engagement from as many students as possible (Kothiyal, Majumdar, Murthy & Iyer, 2013). This pedagogical approach ensures that all children are first able to think through the problem posed, and then share their ideas in a pair before beginning a large group or whole class discussion. When participants in the whole group scenario shared their thoughts on the matter this either naturally lead to aspects of resilience, or was directed that way by facilitation of the researcher. For example, the research might ask, “what type of skills or values would you need to have to attempt something that you thought was difficult?”

From here discussion stemmed onto a working definition of resilience – what is resilience? What does mean to you? When do you need to be resilient? How do you use or show resilience? Students were provided with the opportunity to either write or draw a definition of, or a time when they required, resilience. These recordings were shared with the wider group if participants wished to share. This concluded the first resilience teaching intervention sessions.

At the beginning of the second session, students were reintroduced to their own definitions or examples of resilience and a collective brainstorm was constructed, after a think-pair-share, to explain and define resilience. Participants were then asked to work in small groups of up to four students where they thought of actions that showed resilience in different settings. These groups worked at a station where one context was provided at a time and they moved to the next station after a five-minute time frame of recording ideas on the sheet. The contexts provided were: in the

classroom; at home; in the school playground; on the sports-field; playing on an electronic device; and at my friend's house. Participants had the opportunity to record their ideas of actions representing resilience by either writing them down or drawing pictures (that they would then be asked to explain to the researcher at the conclusion of the think-pair-share activity). From here a collective list of skills/actions of how a person could be resilient was recorded for all students to view. This concluded the second resilience teaching intervention stage.

The third and final session of the resilience teaching intervention made use of the co-constructed definitions, examples and actions from each respective group. The groups used their pre-constructed ideas of resilience to problem solve how they would work through adversity and challenge, as presented to them in vignettes. The participants were required to solve the problems in groups by suggesting ways that the characters within the vignettes could use the actions of resilience (brainstormed in the prior session) to overcome the challenges presented. Each small group then orally shared their suggested resilience strategies with the larger group. The final activity the participants worked on involved using their developed skill set to help solve the problems that were first shared when they wrote about a time when they had faced adversity/challenge in their lives from session one. This enabled them to go back and reflect upon a time when they felt challenged and allowed them an opportunity to think through and problem-solve how they could activate resilience to over-come their stated adversity in the future. These were again shared orally in a pair and then to the whole group if participants wished.

Middle Data Collection

The middle data collection phase was conducted two weeks after the resilience teaching intervention for the experimental group. The middle data collection phase followed the same procedure as the initial data collection phases and assessed all participants. Participants were assessed in their classroom cohort groups by the researcher. Participants were first administered a new Spot the Difference task (Appendix C), followed by the Resilience Self-Measure and Grit Scale (Appendix A) and lastly with the Wire Maze (Appendix D). Enjoyment scales for all three of the above tasks were taken at the completion of each task (Appendix E).

Final Data Collection

The final data collection occurred 10 weeks after the resilience teaching intervention for the experimental group. The final data collection phases followed the same process as the initial and middle phases. All participants were assessed on the same Spot the Difference task as in the initial data collection phases (Appendix B), the Resilience Self-Measure and 8-item Grit Scale (Appendix A), and the wire maze (Appendix D). Enjoyment scales for all three of the above tasks were taken at the completion of each task (Appendix E).

Resilience Teaching Post-Study

All control participants were exposed to the resilience teaching material after the final data collection phase of the study. This teaching was conducted by their classroom teachers a part of the participating school's "School-Wide Positive Behaviour for Learning" (SWPB4L) framework. This ensured that no students were disadvantaged by being randomly selected to be a part of the experimental condition

of the study compared with the control condition because all participants received all conditions of the research in the end.

Ethics

The ethical approval process for a project of this scope required a Category A application to the University of Otago Human Ethic Committee. Throughout the ethical approval application process the researcher was mindful to ensure that participation in this project was voluntary for all involved. As highlighted earlier, the researcher was distinctly aware of his professional position within the school where the research was conducted. This was highlighted by the research in the application to the Ethics Committee as a possible conflict of interest. However, it was also emphasised that this possible conflict of interest would not disadvantage any students who either wanted or did not want to participate in the research project.

The nature of research with children was explored in the consent process and within the participants' initial interaction with the researcher. As children may have felt obliged to participate in the research if their parents had already consented for them to take part, it was made explicitly clear that it was their own choice to be a part of this research if they wished. If they did not wish to participate, even after their parents had granted permission, children were able to remove themselves voluntarily from participation in the research.

The first application to the University of Otago Human Ethics Committee was granted on conditional approval. The Ethics committee required that the researcher submit a version of the information sheet that would be able to be easily understood by young children (Appendix G). They also required written permission from the participating school's Principal and/or Board of Trustees for the research to be

conducted there. Furthermore, the ethics committee required a clearer understanding of specific measures of resilience and specific activities conducted during intervention teaching sessions. Upon submission of these items, ethical approval was granted by the University of Otago Human Ethics Committee in October 2013. The Ethics Committee's reference number is 13/241.

Positivist and Empiricist Framework

The present research project has employed the scientific method with empirical evidence as the basis for presenting its findings. The scientific method uses the control of variables to quantify the impact of any one variable that is changed throughout the investigation process (Hoy & Adams, 2015). The inclusion of a control group in the present study allows for participants that are a part of the experimental condition of the study to be viewed as having experienced a difference in treatment through the research process. Creswell and Garrett (2008) suggest that this process of scientific investigation enables the objectivity of research to be central in how findings are presented. This very objective and clinical form of research is positioned within a positivist paradigm and often well suited to natural or physical science research where the research does not directly or indirectly influence the results (Taylor & Medina, 2013). However, in the social science realm where it is evident that just the presence of research can have implicit impacts upon the results, a post-positivist paradigm may be adopted. Post-positivism allows for more of an interaction between the researcher and the researched (Taylor & Medina, 2013). This theoretical paradigm still provides objective data that can be generalised and extrapolated, but acknowledges that the researcher cannot be entirely removed from the research project. The present research project aligns somewhere in the middle of

the positivist and post-positivism paradigms. This is due to the random and controlled nature of the project being positivist. However, the interaction between researcher and the research participants is a post-positivist paradigm. For example, the researcher also becomes the teacher to the participants in the experimental condition.

Results

Results are presented for the full sample of participants (n = 120) based on performance across the four measures of resilience. Results are also presented for more specific analysis by age group (young and older children), gender (male and female), and ethnicity (Māori, Pasifika, Asian, and Pākehā/New Zealand European). Demographic characteristics of the full sample can be found in Table 1 (repeated below).

Table 1

Demographic Information of Participants (year level, gender, and ethnicity)

Year Group	Gender		Total	Ethnicity							
				Māori		Pasifika		Asian		Pākehā/NZ European	
	Male	Female		Male	Female	Male	Female	Male	Female	Male	Female
Year 1	10	6	16	3	0	0	3	0	0	7	3
Year 2	11	10	21	1	2	2	0	1	0	7	8
Year 3	8	11	19	3	4	0	1	0	0	5	6
Year 4	12	7	19	2	1	2	0	0	1	8	5
Year 5	7	9	16	4	1	0	1	0	0	3	7
Year 6	4	6	10	0	3	0	0	0	0	4	3
Year 7	7	5	12	2	1	1	1	1	0	3	3
Year 8	2	5	7	0	2	0	1	0	0	2	2
Total	61	59	120	15	14	5	7	2	1	39	37
				29		12		3		76	

Preliminary Analysis

This study assessed four basic measures of resilience: Grit Scale, Resilience Self-Measure, Spot the Difference (seconds taken to complete), and Wire Maze (number of attempts and success or failure of completion). All participants in the study completed all four tasks at three different time periods. After the first assessment of the four tasks, half of each year group was randomly assigned to the

experimental treatment (n = 59), and the other half was randomly assigned to control (n = 61).

The experimental group was exposed to a series of three linked lessons about resilience. Each lesson was approximately 45 minutes in length, equating to a total of approximately two hours and fifteen minutes of teaching/learning time. The control group did not have exposure to the treatment at this time. The second assessment of the four tasks for all participants was taken two weeks after the teaching of the experimental group. The third and final assessment of the four tasks for all participants occurred 10 weeks after the teaching of the experimental group. The control group was then exposed to the three linked lessons about resilience after all of the assessment of the resilience tasks concluded.

Hypothesis

The hypothesis for this study is that short-term explicit teaching of resilience will increase students' resilience across a variety of tasks over time. Participants assigned to the experimental condition of the study were expected to increase their performance across tasks after they were exposed to three lessons about resilience, compared to their baseline measure. This would be contrasted against a control group of students that would not be exposed to explicit resilience lessons and therefore would maintain a consistent measure of resilience across resilience tasks over time.

Repeated Measure Analysis of Variance

The data from the study were analysed using a repeated measures design. The repeated measure analysis of variance (ANOVA) allows for each participant's assessment results at each of the three phases of data collection to be analysed in a

sequence. This enables all participants to serve as their own control. Mauchly's sphericity test was used to assess the assumption of equal variance and equal covariance of the data. Results indicate that it was not significant for three of the four measures, but it was for main effect of the Wire Maze task. In order to ensure that all tests were equivalent, the Huynh-Feldt test was used. The Huynh-Feldt test alters the degrees of freedom used, producing an F-ratio and reducing the possibility of a Type I error. Using the Huynh-Feldt measure for all analyses makes them slightly more conservative, but assures equivalence across tests. For all analyses, it is the time by treatment interaction that provides the test of the hypotheses. What is being sought is a difference between the mean at time two and the mean at time three for treatment versus control conditions, with time one (pre-test) not being different.

Task Performance

The first analysis of data assesses participants' performance on all four of the tasks that measured resilience. The number of participants, their mean scores/results for each resilience task and their standard deviation were recorded. Table 3 shows performance for both control and experimental participants on the Grit Scale.

Table 3

Experimental and Control Participant Performance on Grit Scale Task

	Experimental or Control	<i>n</i>	Mean	Standard Deviation
Grit Scale (1)	Experimental	59	3.35	.495
	Control	61	3.22	.732
	Total	120	3.28	.629
Grit Scale (2)	Experimental	59	3.30	.610
	Control	61	3.36	.629
	Total	120	3.33	.618
Grit Scale (3)	Experimental	59	3.49	.547
	Control	61	3.35	.675
	Total	120	3.42	.616

Mean scores for control participants on the Grit Scale show a slight increase after trial one and remain steady across trials two and three. However, mean scores for experimental participants decline after trial one and then show an increase at trial three. The repeated measures ANOVA for the Grit Scale tasks showed a main effect for time $F = 3.09$, $df = 2, 236$, $p < .05$. The main effect for treatment was not significant $F = .54$, $df = 1, 118$, $p = .463$. The time by treatment interaction was not significant $F = 2.10$, $df = 2, 236$, $p = .124$. The time by treatment interaction provides the test of the hypothesis concerning the differential effect of the experimental versus control conditions on the repeated measures, and it is not significant. The mean raw scores on the Grit Scale for participants' in both the experimental and control conditions are illustrated in Figure 1.

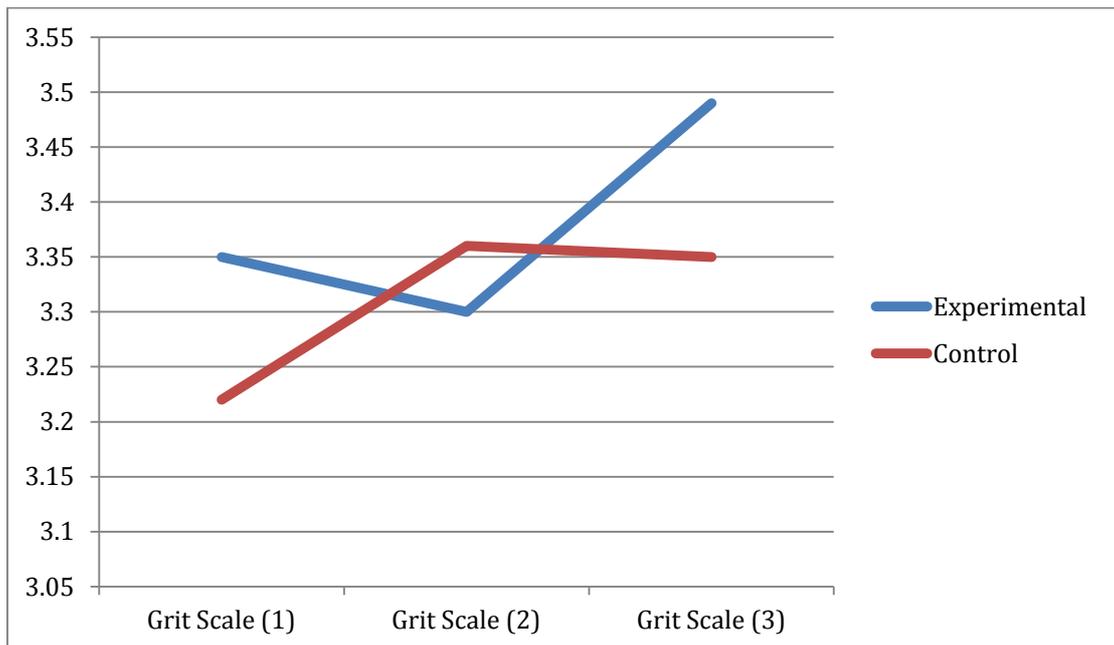


Figure 1. Experimental and Control Participants' Mean Raw Scores on Grit Scale Tasks Across Repeated Measures.

Table 4 shows the mean scores for both experimental and control participants in their performance on the resilience self-measure scale. Please note that there are

fewer participants that completed this section of the survey (as shown at the top of Appendix A). All participants were instructed to complete all sections of the each task, however some participants either overlooked or chose not to fill this section in.

Table 4

Experimental and Control Participant Performance on Resilience Self-Measure Task

	Experimental or Control	<i>n</i>	Mean	Standard Deviation
Resilience Self-Measure (1)	Experimental	51	3.25	.868
	Control	62	3.21	.825
	Total	103	3.23	.843
Resilience Self-Measure (2)	Experimental	51	3.37	.631
	Control	52	3.40	.774
	Total	103	3.39	.703
Resilience Self-Measure (3)	Experimental	51	3.47	.643
	Control	52	3.54	.670
	Total	103	3.51	.655

Table 3 shows that both experimental and control participants increased their means scores of the Resilience Self-Measure scale across all three attempts at the task. Of particular note is that the experimental group's initial mean score is slightly higher than the control participants'. However, after the second and third trials, the control participants record slightly higher mean scores compared to the experimental participants.

The repeated measures ANOVA for the Resilience Self-Measure tasks showed a main effect for time $F = 6.09$, $df = 2, 202$, $p < .05$. The main effect for treatment was not significant $F = .03$, $df = 1, 101$, $p = .872$. The time by treatment interaction was not significant $F = .26$, $df = 2, 202$, $p = .768$. The time by treatment interaction provides the test of the hypothesis concerning the differential effect of the experimental versus control conditions on the repeated measures, and it is not significant.

The mean scores on the Resilience Self-Measure scale task for participants' in both the experimental and control conditions are illustrated in Figure 2 below. It can be seen in Figure 2 that although both groups recorded an increase in their Resilience Self-Measure, this increase is slightly, but not significantly, more pronounced for the control group.

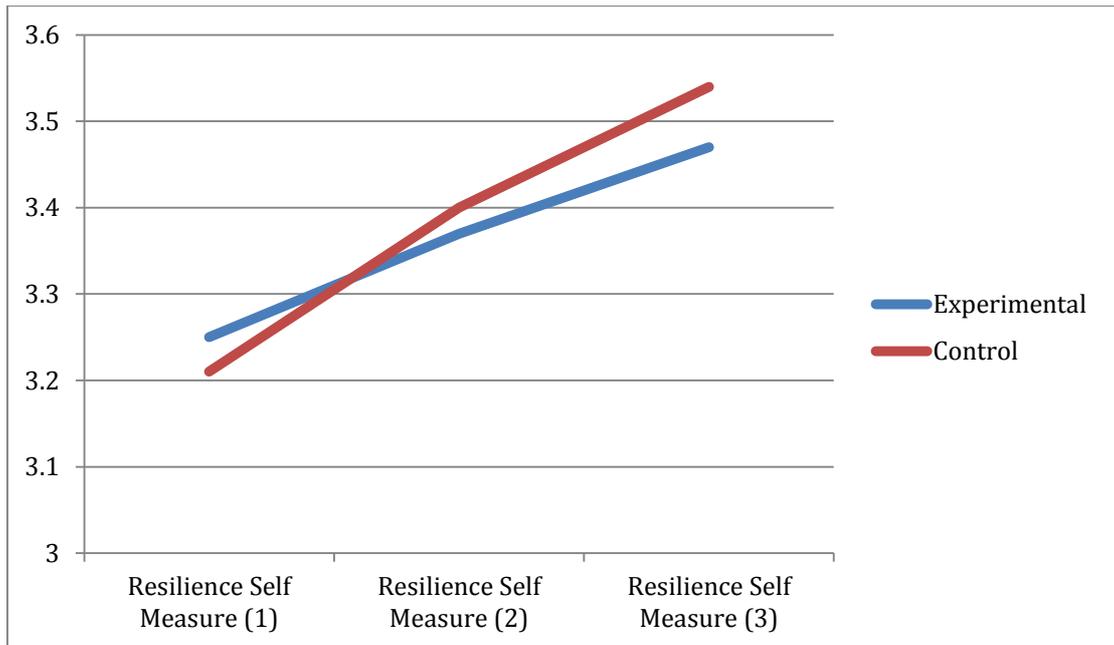


Figure 2. Experimental and Control Participants' Mean Scores on Resilience Self-Measure Tasks Across Repeated Measures.

The Spot the Difference task was analysed next and results are presented in Table 5. Both experimental and control participants had their time (in seconds) recorded for how long they wished to continue spotting differences on a worksheet.

Table 5

Experimental and Control Participant Performance on Spot the Difference Task

	Experimental or Control	<i>n</i>	Mean	Standard Deviation
Spot the Difference (1)	Experimental	59	308.34	189.16
	Control	61	233.93	130.63
	Total	120	270.52	165.64
Spot the Difference (2)	Experimental	59	257.61	99.35
	Control	61	218.23	80.26
	Total	120	237.59	91.92
Spot the Difference (3)	Experimental	59	184.53	71.68
	Control	61	163.41	83.36
	Total	120	173.79	78.23

For both experimental and control participants the time taken in this task decreases with each trail. The decrease in time taken on the Spot the Difference tasks is more pronounced in the experimental group. The experimental group averaged a decrease of just over sixty-one seconds across the three trials compared with the control group who averaged a decrease of just over thirty-five seconds. Based on the hypothesis, it was expected that the experimental group would present with an increased mean time taken because of their resilience lessons, while the control group would remain consistent.

The repeated measures ANOVA for the Spot the Difference tasks showed a main effect for time $F = 33.17$, $df = 1, 236$, $p < .05$. The main effect for treatment was significant $F = 7.98$, $df = 1, 118$, $p = .006$. The time by treatment interaction was not significant $F = 2.49$, $df = 1, 236$, $p = .100$. The time by treatment interaction provides the test of the hypothesis concerning the differential effect of the experimental versus control conditions on the repeated measures, and it is not significant.

The mean number of seconds to complete the Spot the Difference Tasks is shown for both experimental and control participants in Figure 3. The decline in time

taken for both groups is clear with an accelerated decline for the experimental group especially. It can also be seen that the experimental group spent consistently more time on the task.

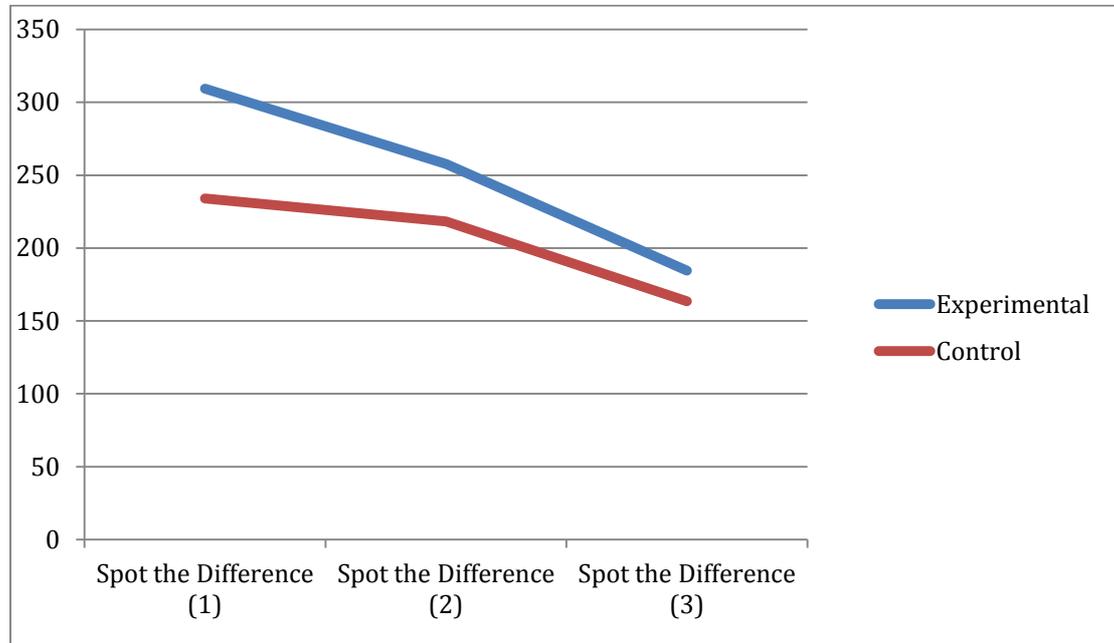


Figure 3. Experimental and Control Participants' Mean Number of Seconds Taken on Spot the Difference Tasks Across Repeated Measures.

Table 6 shows participants' performance on the Wire Maze task. The data from this task illustrate a similar trend for experimental group as in the Grit Scale task where there is a decreased score for the second trail, compared with the first and the third trial thereafter records an increase. A similar trend is also shown for the control group where trial two on the Wire Maze task shows a dip in performance.

Table 6

Experimental and Control Participant Performance on Wire Maze Task

	Experimental or Control	<i>n</i>	Mean	Standard Deviation
Wire Maze (1)	Experimental	59	8.71	6.73
	Control	61	8.08	5.92
	Total	120	8.39	6.31
Wire Maze (2)	Experimental	59	6.44	5.11
	Control	61	6.56	5.69
	Total	120	6.50	5.39
Wire Maze (3)	Experimental	59	8.00	4.92
	Control	61	7.90	4.88
	Total	120	7.95	4.88

The mean number of attempts at the Wire Maze is shown in Figure 4. This illustrates the trends as previously discussed where performance for both participant groups declines on the Wire Maze at trial two. However, this goes back up again for trial three, but not to the same level as trial one.

The repeated measures ANOVA for the Wire Maze tasks showed a main effect for time $F = 6.25$, $df = 1, 118$, $p < .05$. The main effect for treatment was not significant $F = .07$, $df = 1, 118$, $p = .796$. The time by treatment interaction was not significant $F = .23$, $df = 1, 118$, $p = .714$. The time by treatment interaction provides the test of the hypothesis concerning the differential effect of the experimental versus control conditions on the repeated measures, and it is not significant.

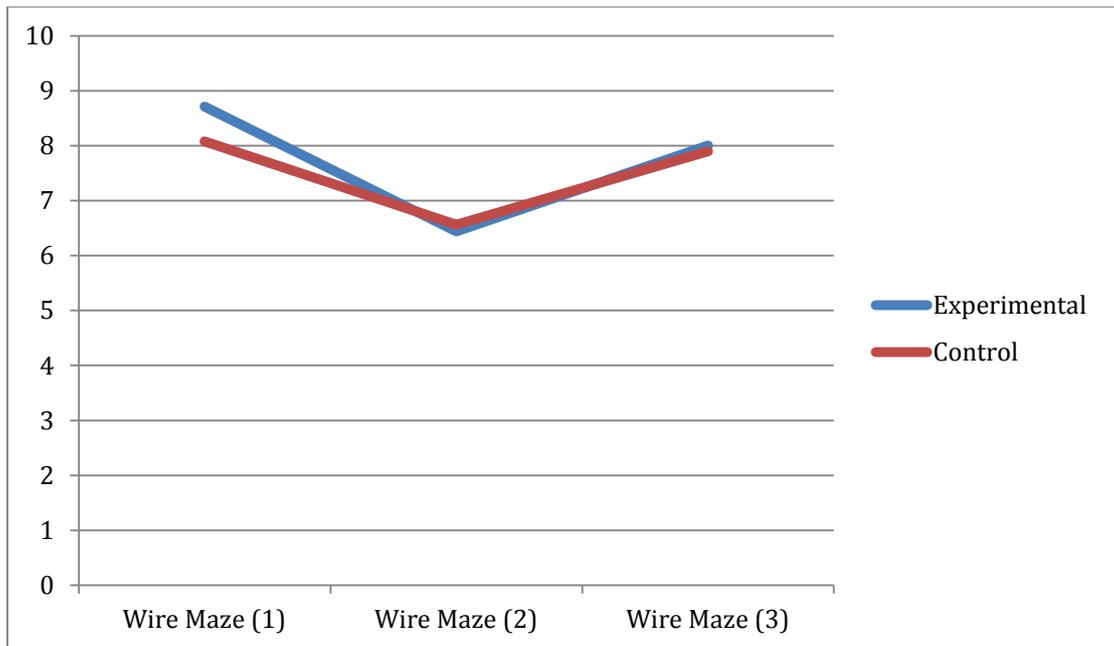


Figure 4. Experimental and Control Participants' Mean Number of Attempts on Wire Maze Tasks Across Repeated Measures.

Age – Young Children and Older Children

The children in the study were divided into two groups to further analyse the data. The Young Children group was comprised of those participants that were in years 1-4 (n = 75). The Older Children group were those in the study from years 5-8 (n = 45). From this, the participants are further divided into either the experimental or control group condition as determined by their random assignment. Results are analysed for the performance of these participant sub-groups across the four resilience tasks. A repeated measures design was employed with two age groups (years 1-4 and years 5-8), two experimental conditions (experiment or control), and three repeated measures (initial/middle/final) for each of the four tasks.

Table 7 shows both the young children and older children's performance on the Grit Scale task.

Table 7

Young and Older Children's Performance on Grit Scale Task

Year Group		Experimental or Control	Mean	Standard Deviation	<i>n</i>
Young Children	Grit Scale (1)	Experimental	3.37	.459	36
		Control	3.13	.689	39
		Total	3.25	.599	75
	Grit Scale (2)	Experimental	3.27	.561	36
		Control	3.35	.669	39
		Total	3.31	.617	75
	Grit Scale (3)	Experimental	3.54	.529	36
		Control	3.32	.652	39
		Total	3.43	.603	75
Older Children	Grit Scale (1)	Experimental	3.32	.557	23
		Control	3.37	.794	22
		Total	3.35	.676	45
	Grit Scale (2)	Experimental	3.35	.690	23
		Control	3.39	.566	22
		Total	3.37	.626	45
	Grit Scale (3)	Experimental	3.41	.578	23
		Control	3.43	.723	22
		Total	3.42	.646	45

In previous analyses, the time by treatment interaction was tested and found to be non-significant. In this analysis, we were concerned with the influence of year, and therefore we tested the three-way interaction of time by experimental condition by year group. Again using the Huynh-Feldt criterion, the results were not statistically significant $F = 1.22$, $df = 2, 232$, $p = 0.297$.

The young children within the experimental condition present a similar pattern to other finding where their score from trial one later dip in trial two and rise again for trial three. Comparatively, the young group control participants present in a reverse manner where their trial two mean scores for the Grit Scale are slightly higher than both their trial one and trial three scores. Overall the young children cohort (experimental and control participants) increase their mean Grit Scale scores across the trails i.e. trial three is higher than trial two which is higher than trial one.

The trend for the older children cohort is the same for both the experimental and control groups which all show a growth in mean score for the Grit Scale from trial one through to trial three.

Table 8 shows the mean scores for both young and older children's performance on the Resilience Self-Measure scale. For young children, both the control and experimental participants showed a growth in mean scores from trial one through to trial three. This same trend is also identified in the older children cohort across both the experimental and control conditions.

Table 8

Young and Older Children's Performance on Resilience Self Measure Task

Year Group		Experimental or Control	Mean	Standard Deviation	<i>n</i>
Young Children	Resilience Self Measure (1)	Experimental	3.45	.948	29
		Control	3.36	.895	33
		Total	3.40	.914	62
	Resilience Self Measure (2)	Experimental	3.59	.628	29
		Control	3.52	.870	33
		Total	3.55	.761	62
	Resilience Self Measure (3)	Experimental	3.55	.736	29
		Control	3.64	.653	33
		Total	3.60	.688	62
Older Children	Resilience Self Measure (1)	Experimental	3.00	.690	22
		Control	2.95	.621	19
		Total	2.98	.651	41
	Resilience Self Measure (2)	Experimental	3.09	.526	22
		Control	3.21	.535	19
		Total	3.15	.527	41
	Resilience Self Measure (3)	Experimental	3.36	.492	22
		Control	3.37	.684	19
		Total	3.37	.581	41

In this analysis, we were concerned with the influence of year, and therefore we tested the three-way interaction of time by experimental condition by year group. Again using the Huynh-Feldt criterion, the results were not statistically significant F

= .359, $df = 2, 198$, $p = 0.699$.

Young and older children's performance on the Spot the Difference tasks is analysed in Table 9.

Table 9

Young and Older Children's Performance on Spot the Difference Task

Year Group	Experimental or Control	Mean	Standard Deviation	<i>n</i>	
Young Children	Spot the Difference (1)	Experimental	342.83	228.322	36
		Control	250.15	150.883	39
		Total	294.64	196.265	75
	Spot the Difference (2)	Experimental	246.17	84.583	36
		Control	209.41	80.578	39
		Total	227.05	84.022	75
	Spot the Difference (3)	Experimental	198.58	73.192	36
		Control	173.39	93.700	39
		Total	185.48	84.870	75
Older Children	Spot the Difference (1)	Experimental	254.35	79.999	23
		Control	205.18	78.773	22
		Total	230.31	82.336	45
	Spot the Difference (2)	Experimental	275.52	118.710	23
		Control	233.86	79.086	22
		Total	255.16	102.346	45
	Spot the Difference (3)	Experimental	162.52	64.774	23
		Control	145.73	58.771	22
		Total	154.31	61.794	45

For the young children cohort, all participants show a decrease in time taken to complete the tasks from trial one through to trial three. However, the older children cohort shows a spiked increase in time taken to complete the second trial of the Spot the Difference task compared to both trials one and three, across both the experimental and control participants.

In this analysis, we were concerned with the influence of year, and therefore we tested the three-way interaction of time by experimental condition by year group. Again using the Huynh-Feldt criterion, the results were not statistically significant F

= .524, df = 1.516, 175.914, p = 0.544.

Table 10 shows the mean number of attempts at the Wire Maze task for both young and older children across experimental and control conditions. The experimental condition participants across both young and older children cohorts show a similar trend with a decrease in the number of attempts for trial two. This is far more pronounced for the older children group than for young children. This same trend is presented for the control participants across both the young and older children groups.

Table 10

Young and Older Children's Performance on Wire Maze Task

Year Group	Experimental or Control	Mean	Standard Deviation	N	
Young Children	Wire Maze (1)	Experimental	8.97	6.575	36
		Control	7.44	5.510	39
		Total	8.17	6.052	75
	Wire Maze (2)	Experimental	7.22	5.194	36
		Control	6.72	5.666	39
		Total	6.96	5.414	75
	Wire Maze (3)	Experimental	7.92	5.096	36
		Control	7.46	5.103	39
		Total	7.68	5.070	75
Older Children	Wire Maze (1)	Experimental	8.30	7.112	23
		Control	9.23	6.561	22
		Total	8.76	6.786	45
	Wire Maze (2)	Experimental	5.22	4.852	23
		Control	6.27	5.857	22
		Total	5.73	5.332	45
	Wire Maze (3)	Experimental	8.13	4.761	23
		Control	8.68	4.466	22
		Total	8.40	4.575	45

The trend of the second trial showing fewer attempts at the wire maze in both young and older children is representative of the results from the whole group. In this analysis, we were concerned with the influence of year, and therefore we tested the

three-way interaction of time by experimental condition by year group. Again using the Huynh-Feldt criterion, the results were not statistically significant $F = 0.2$, $df = 1.45, 232$, $p = 0.746$.

Gender

Participants were coded as either male or female depending on the gender recorded in the participating school's student management system. Results in this section are analysed for gender difference across both experimental and control conditions participants. This analysis is completed for all four of the resilience measure tasks. The Grit Scale task is analysed by gender below in Table 11.

Table 11

Performance on Grit Scale Task by Gender

	Gender	Experimental or Control	Mean	Standard Deviation	N
Grit Scale (1)	Male	Experimental	3.34	.523	31
		Control	3.11	.756	30
		Total	3.23	.653	61
	Female	Experimental	3.37	.472	28
		Control	3.32	.705	31
		Total	3.34	.601	59
Grit Scale (2)	Male	Experimental	3.19	.608	31
		Control	3.30	.587	30
		Total	3.25	.595	61
	Female	Experimental	3.42	.603	28
		Control	3.43	.672	31
		Total	3.42	.635	59
Grit Scale (3)	Male	Experimental	3.43	.550	31
		Control	3.33	.770	30
		Total	3.38	.664	61
	Female	Experimental	3.56	.546	28
		Control	3.38	.580	31
		Total	3.47	.566	59

Male participants in the experimental condition follow the common trend seen in many of the other analysis for the Grit Scale task. In the second trial of this task,

there is a decreased mean score record followed by an increase in the third task. Comparatively, the female participants in the experimental condition record a slight, but consistent increase in mean score from trial one through to trial three. The male participants in the control condition show a slight increase in mean scores on the Grit Scale from trial one through to trial three. However, female participants in the control condition show a slightly increased mean score in their second trial of the Grit Scale followed by a decrease on the third.

In previous analyses, the time by treatment interaction was tested and found to be non-significant. In this analysis, we were concerned with the influence of gender, and therefore we tested the three-way interaction of time by experimental condition by gender. Again using the Huynh-Feldt criterion, the results were not statistically significant $F = .996$, $df = 2, 232$, $p = 0.371$.

Table 12 shows the male and female participants' performance on the Resilience Self-Measure Scale across each trial and for both experimental and control.

Table 12

Performance on Resilience Self Measure Task by Gender

	Gender	Experimental or Control	Mean	Standard Deviation	N
Resilience Self Measure (1)	Male	Experimental	3.12	.927	25
		Control	3.00	.953	23
		Total	3.06	.932	48
	Female	Experimental	3.38	.804	26
		Control	3.38	.677	29
		Total	3.38	.733	55
Resilience Self Measure (2)	Male	Experimental	3.36	.638	25
		Control	3.26	.964	23
		Total	3.31	.803	48
	Female	Experimental	3.38	.637	26
		Control	3.52	.574	29
		Total	3.45	.603	55
Resilience Self Measure (3)	Male	Experimental	3.40	.764	25
		Control	3.56	.728	23
		Total	3.48	.743	48
	Female	Experimental	3.54	.508	26
		Control	3.52	.634	29
		Total	3.53	.573	55

Male participants in the experimental condition show a gradual increase in their mean score on the Resilience Self-Measure scale from trial one to trial three. Female participants in the experimental condition show the same mean score on trials one and two and a slight increase on the third trial. For control condition participants across both genders, there is a steady increase of mean scores with the exception that the female control participants remained the same from trial two to trial three.

In this analysis, we were concerned with the influence of gender, and therefore we tested the three-way interaction of time by experimental condition by gender. Again using the Huynh-Feldt criterion, the results were not statistically significant $F = .954$, $df = 2, 198$, $p = 0.387$.

Performance on the Spot the Difference tasks is analysed by gender in Table 13.

Table 13

Performance on Spot the Difference Task by Gender

	Gender	Experimental or Control	Mean	Standard Deviation	N
Spot the Difference (1)	Male	Experimental	330.90	182.316	31
		Control	242.30	134.733	30
		Total	287.33	165.494	61
	Female	Experimental	283.36	196.717	28
		Control	225.84	128.230	31
		Total	253.14	165.404	59
Spot the Difference (2)	Male	Experimental	281.00	112.403	31
		Control	210.40	83.196	30
		Total	246.28	104.543	61
	Female	Experimental	231.71	76.436	28
		Control	225.81	77.919	31
		Total	228.61	76.609	59
Spot the Difference (3)	Male	Experimental	201.55	77.099	31
		Control	162.33	74.548	30
		Total	182.26	77.775	61
	Female	Experimental	165.68	61.099	28
		Control	164.45	92.320	31
		Total	165.03	78.401	59

Across both male and female participants in both experimental and control condition, there was a continual decrease in mean time (seconds) spent on the Spot the Difference tasks from trial one through to trial three. There was a more pronounced decrease in time taken for male participants compared to female. There was a strong consistency for control condition female participants between trial one and trial two with only a mean difference in time taken of -0.03 seconds.

In this analysis, we were concerned with the influence of gender, and therefore we tested the three-way interaction of time by experimental condition by gender. Again using the Huynh-Feldt criterion, the results were not statistically significant $F = .264$, $df = 1.549, 179.627$, $p = 0.711$.

Table 14 shows the mean number of attempts at the Wire Maze task for both Male and Female participants across experimental and control conditions. There is an

obvious gender difference in this task with females attempting at 1.2 times more than males in all trials except control participants in the second trial where males put forward .87 more attempts than females.

Table 14

Performance on Wire Maze Task by Gender

	Gender	Experimental or Control	Mean	Standard Deviation	N
Wire Maze (1)	Male	Experimental	8.16	6.388	31
		Control	7.40	5.500	30
		Total	7.79	5.930	61
	Female	Experimental	9.32	7.170	28
		Control	8.74	6.319	31
		Total	9.02	6.684	59
Wire Maze (2)	Male	Experimental	5.19	3.919	31
		Control	7.00	5.925	30
		Total	6.08	5.047	61
	Female	Experimental	7.82	5.951	28
		Control	6.13	5.518	31
		Total	6.93	5.741	59
Wire Maze attempts (3)	Male	Experimental	7.23	3.757	31
		Control	7.40	5.256	30
		Total	7.31	4.519	61
	Female	Experimental	8.86	5.917	28
		Control	8.39	4.522	31
		Total	8.61	5.190	59

Male participants in the experimental condition show a clear decreased number of attempts in the second trial of the Wire Maze task compared with the first and third trails. However, control condition male participants showed a far more stable mean number of attempts with only a slight decrease in the second trial with the first and third trials presenting the same mean number of attempts. Female participants across both experimental and control conditions showed a decreased number of attempts for the second trial compared with the first and third trials.

In this analysis, we were concerned with the influence of gender, and therefore

we tested the three-way interaction of time by experimental condition by gender.

Again using the Huynh-Feldt criterion, the results were not statistically significant $F = 2.297$, $df = 1.794, 208.144$, $p = 0.109$.

Ethnicity

Children were coded for their first selected ethnicity as per the participating school's online student management system. If children were recorded as belonging to multiple ethnic groups, their first selected option was used. Definitions for ethnic groups can be found in the Method section (p. 43). Data analysis for this section are presented as how ethnic groups performance as apart of either experimental or control condition and across all four of the resilience tasks. Data for the Asian cohort of participants are limited because this group only represents three participants in total. As a result, there is no standard deviation for the control condition of the Asian cohort because this only included one participant.

Table 15 presents data for the four different ethnic groups (Māori, Pasifika, Asian and Pākehā/NZ European) across both experimental and control conditions for performance on the Grit Scale task.

Table 15

Performance on Grit Scale Task by Ethnicity

	Ethnicity	Experimental or	Mean	Standard	N
		Control		Deviation	
Grit Scale (1)	Māori	Experimental	3.52	.412	10
		Control	3.14	.621	19
		Total	3.27	.581	29
	Pasifika	Experimental	3.19	.549	9
		Control	3.30	.393	3
		Total	3.22	.499	12
	Asian	Experimental	3.00	.177	2
		Control	2.25	.	1
		Total	2.75	.451	3
	Pākehā/ NZ European	Experimental	3.37	.507	38
		Control	3.28	.800	38
		Total	3.32	.667	76
Grit Scale (2)	Māori	Experimental	3.18	.465	10
		Control	3.28	.651	19
		Total	3.25	.587	29
	Pasifika	Experimental	3.08	.515	9
		Control	2.96	.577	3
		Total	3.05	.507	12
	Asian	Experimental	2.87	.000	2
		Control	2.88	.	1
		Total	2.88	.000	3
	Pākehā/ NZ European	Experimental	3.41	.661	38
		Control	3.45	.623	38
		Total	3.43	.638	76
Grit Scale (3)	Māori	Experimental	3.54	.580	10
		Control	3.24	.582	19
		Total	3.34	.589	29
	Pasifika	Experimental	3.31	.480	9
		Control	3.71	.710	3
		Total	3.41	.541	12
	Asian	Experimental	3.19	.088	2
		Control	2.38	.	1
		Total	2.92	.473	3
	Pākehā/ NZ European	Experimental	3.54	.567	38
		Control	3.41	.707	38
		Total	3.48	.640	76

Māori participants in the experimental condition showed a decreased mean score for the Grit Scale in the second trial compared with trials one and three.

However, there was the opposite effect for the Māori participants in the control condition with a slightly increased mean score in the second trial compared to trials one and three. Pasifika participants in both the experimental and control conditions recorded decreased mean scores for their second trial compared with their first and third trials.

Asian participants from the experimental condition recorded a decrease in the second trial; the control condition participants recorded an increase in the second trial in comparison to the first and third trials.

The Pākehā/NZ European participants in the experimental condition recorded continual growth in Grit Scale scores from their first trial through to their third trial. In comparison, the control condition increased their score in the second trial, but reduced this in the third trial. Of note is that the control conditions increase from the first trial to the second exceeded the experimental group by a mean score of 0.13.

In previous analyses, the time by treatment interaction was tested and found to be non-significant. In this analysis, we were concerned with the influence of ethnicity, and therefore we tested the three-way interaction of time by experimental condition by ethnicity. Again using the Huynh-Feldt criterion, the results were not statistically significant $F = .959$, $df = 6, 224$, $p = 0.454$.

Results for performance on the Resilience Self-Measure task by ethnicity are recorded in Table 16. This table provides data by ethnicity for mean scores on this task with a comparison of experimental and control condition participants.

Table 16

Performance on Resilience Self Measure Task by Ethnicity

	Ethnicity	Experimental or	Mean	Standard	N
		Control		Deviation	
Resilience Self Measure (1)	Māori	Experimental	3.25	1.035	8
		Control	3.38	.719	16
		Total	3.33	.816	24
	Pasifika	Experimental	3.00	.756	8
		Control	3.00	.	1
		Total	3.00	.707	9
	Asian	Experimental	4.00	.	1
		Control	2.00	.	1
		Total	3.00	1.414	2
	Pākehā/ NZ European	Experimental	3.29	.871	34
		Control	3.18	.869	34
		Total	3.24	.866	68
Resilience Self Measure (2)	Māori	Experimental	3.50	.535	8
		Control	3.63	.500	16
		Total	3.58	.504	24
	Pasifika	Experimental	2.88	.835	8
		Control	3.00	.	1
		Total	2.89	.782	9
	Asian	Experimental	4.00	.	1
		Control	2.00	.	1
		Total	3.00	1.414	2
	Pākehā/ NZ European	Experimental	3.44	.561	34
		Control	3.35	.849	34
		Total	3.40	.715	68
Resilience Self Measure (3)	Māori	Experimental	3.50	1.069	8
		Control	3.69	.6021	16
		Total	3.63	.7697	24
	Pasifika	Experimental	3.25	.4629	8
		Control	4.00	.	1
		Total	3.33	.5000	9
	Asian	Experimental	4.00	.	1
		Control	2.00	.	1
		Total	3.00	1.414	2
	Pākehā/ NZ European	Experimental	3.50	.5641	34
		Control	3.50	.6629	34
		Total	3.50	.6108	68

The Māori participant cohort across by experimental and control conditions recorded an increase for the first trial to the second trial and through to the third trial.

The only exception was that the experimental group's mean score for the Resilience Self-Measure score remained consistent at 3.50 from trial two to trial three.

Pasifika participants in the experimental condition recorded a decrease in the second trial of the Resilience Self-Measure mean score compared to the first and third trials. For the control condition there is only one participant in the Pasifika cohort for this task because the remaining two participants did not complete this section. This participant's score for the Resilience Self-Measure scale remained consistent across both trial one and two but increased by one-point to 4.0 in the third trial.

The Asian participants across both experimental and control conditions remained consistent across all three trials on the Resilience Self-Measure score. The experimental participant was two-points higher than the control participant.

The Pākehā/NZ European participants from both the experimental and control conditions recorded increases from trial one through to trial three. Of note is that the control condition participants from the Pākehā/NZ European cohort started off with a lower score from the first trial, compared to the experimental condition participants. However, both groups completed their third trial with a mean score of 3.50.

In previous analyses, the time by treatment interaction was tested and found to be non-significant. In this analysis, we were concerned with the influence of ethnicity, and therefore we tested the three-way interaction of time by experimental condition by ethnicity. Again using the Huynh-Feldt criterion, the results were not statistically significant $F = .11$, $df = 6, 190$, $p = 0.995$.

Performance on the Spot the Difference tasks across ethnicities is found on Table 17. This table provides data on the mean number of seconds taken to complete the Spot the Difference activity and separates the experimental condition participants from the control condition participants.

Table 17

Performance on Spot the Difference Task by Ethnicity

	Ethnicity	Experimental or	Mean	Standard Deviation	N
		Control			
Spot the Difference (1)	Māori	Experimental	238.40	98.882	10
		Control	243.89	164.966	19
		Total	242.00	143.682	29
	Pasifika	Experimental	427.56	284.527	9
		Control	224.33	82.954	3
		Total	376.75	261.869	12
	Asian	Experimental	227.00	56.569	2
		Control	228.00	.	1
		Total	227.33	40.004	3
	Pākehā/ NZ European	Experimental	302.79	175.929	38
		Control	229.87	118.255	38
		Total	266.33	153.347	76
Spot the Difference (2)	Māori	Experimental	222.10	62.344	10
		Control	227.11	100.912	19
		Total	225.38	88.327	29
	Pasifika	Experimental	278.11	89.399	9
		Control	161.00	47.466	3
		Total	248.83	95.013	12
	Asian	Experimental	307.00	82.024	2
		Control	288.00	.	1
		Total	300.67	59.028	3
	Pākehā/ NZ European	Experimental	259.50	109.725	38
		Control	216.47	70.206	38
		Total	237.99	94.022	76
Spot the Difference (3)	Māori	Experimental	194.70	67.008	10
		Control	185.58	124.073	19
		Total	188.72	106.578	29
	Pasifika	Experimental	220.56	88.868	9
		Control	133.33	39.107	3
		Total	198.75	87.051	12
	Asian	Experimental	233.00	53.740	2
		Control	136.00	.	1
		Total	200.67	67.678	3
	Pākehā/ NZ European	Experimental	170.76	67.174	38
		Control	155.42	57.314	38
		Total	163.09	62.500	76

The Māori participant cohort across both experimental and control conditions showed a continual decrease in the number of seconds taken to complete the Spot the

Difference task from trial one through to trial three. The control condition had a higher mean number of seconds taken to complete the task compared with the experimental condition group for trials one and two. However, this changed in the third trial where the experimental condition group had a mean time higher than the control group.

The decline in time taken is seen for both the experimental and control condition groups of the Pasifika participants. Of interest for this cohort is that the experimental group's first trial had a mean time of 427.56 seconds to complete the Spot the Difference task. This is over 120 seconds more than any other ethnic group's mean time taken, either by experimental or control conditions and in either of trials one, two or three.

The Asian participants group showed an increase in the amount of time taken to complete the task for trial two, compared to the mean times taken for trials one and three. For the experimental group of Asian participants, the mean time for trial three was higher than trial one. This is not recorded for any other ethnic group across either experimental or control conditions.

The Pākehā/NZ European participants across both experimental and control conditions showed a continual decrease in the mean time taken to complete the Spot the Difference tasks from trial one through to trial three. There is a more pronounced decrease for the experimental condition participants compared with a more gradual decrease for control participants.

In previous analyses, the time by treatment interaction was tested and found to be non-significant. In this analysis, we were concerned with the influence of ethnicity, and therefore we tested the three-way interaction of time by experimental condition by ethnicity. Again using the Huynh-Feldt criterion, the results were not statistically

significant $F = 0.51$, $df = 4.821$, 179.969 , $p = 0.762$.

Performance on the Wire Maze task across ethnicities is found on Table 18.

Table 18

Performance on Wire Maze Task by Ethnicity

	Ethnicity	Experimental or Control	Mean	Standard Deviation	N	
Wire Maze (1)	Māori	Experimental	8.80	7.613	10	
		Control	7.16	5.367	19	
		Total	7.72	6.146	29	
	Pasifika	Experimental	10.11	6.864	9	
		Control	10.67	3.055	3	
		Total	10.25	6.002	12	
	Asian	Experimental	10.50	3.536	2	
		Control	20.00	.	1	
		Total	13.67	6.028	3	
	Pākehā/ NZ European	Experimental	8.26	6.757	38	
		Control	8.03	6.123	38	
		Total	8.14	6.406	76	
	Wire Maze (2)	Māori	Experimental	3.80	3.360	10
			Control	5.05	3.153	19
			Total	4.62	3.223	29
Pasifika		Experimental	8.33	5.099	9	
		Control	2.00	1.000	3	
		Total	6.75	5.225	12	
Asian		Experimental	4.50	.707	2	
		Control	20.00	.	1	
		Total	9.67	8.963	3	
Pākehā/ NZ European		Experimental	6.79	5.438	38	
		Control	7.32	6.269	38	
		Total	7.05	5.835	76	
Wire Maze (3)		Māori	Experimental	8.000	5.313	10
			Control	7.579	3.641	19
			Total	7.724	4.199	29
	Pasifika	Experimental	8.889	5.396	9	
		Control	3.667	3.786	3	
		Total	7.583	5.418	12	
	Asian	Experimental	9.500	9.192	2	
		Control	20.000	.	1	
		Total	13.000	8.888	3	
	Pākehā/ NZ European	Experimental	7.711	4.713	38	
		Control	8.079	5.090	38	
		Total	7.895	4.876	76	

This table provides data on the mean number of attempts taken to complete the Wire Maze activity and separates the experimental condition participants from the control condition participants. All ethnic groups showed a drop in the mean number of attempts at the Wire Maze during trial two compared with trial one and trial three. This trend is consistent across both experimental and control condition participants. The only exception is the control condition Asian participant (n = 1) where the score remained consistent across all three trials.

Māori participants in the experimental condition showed a more substantial decrease in the mean number of attempts for the second trial compared to the control condition. The control condition participants in the Pasifika cohort showed a large decrease in the mean number of attempts on trials two and three compared with trial one. Although there was an increase for trial three compared with trial two there still remained a 7.0 decrease from trial one.

In previous analyses, the time by treatment interaction was tested and found to be non-significant. In this analysis, we were concerned with the influence of ethnicity, and therefore we tested the three-way interaction of time by experimental condition by ethnicity. Again using the Huynh-Feldt criterion, the results were not statistically significant $F = 2.202$, $df = 5.653$, 211.046 , $p = 0.048$.

Results Summary

The underlying finding of the study is that the intervention to increase resiliency did not have an effect on the four measures of resiliency employed. The performance of the experimental condition participants on the four resilience tasks was not significantly better than the control condition participants. In some instances there was actually poorer performance by the experimental condition participants on certain tasks, although no finding was statistically significant. The Grit Scale Scores

that were recorded for the present research project were representative of findings on the Grit Scale on a whole (Duckworth & Quinn, 2009).

An interesting trend that occurred across several of the resilience tasks and was most pronounced in the Wire Maze task was the decrease in performance during trial two, followed by an increase to near trial one levels for the third trial. This finding will be further evaluated along with other possible explanations of these results in the discussion section to follow.

Discussion

The current study aimed to assess whether the New Zealand Curriculum (2007) and the School-Wide Positive Behaviour for Learning (SWPB4L) framework could be used as tools to explicitly teach children resilience skills and competencies and therefore equip them better to face adversity now and in the future. Through this process the current study unpacked the multiple meanings of resilience, what roles schools can play in developing resilience in children/pupils and whether the perceived development of resilience can support individuals to be more able to overcome adversity in their life. This study aimed to investigate all of this in a short-term intervention. The study aimed to fill a gap in resilience research in New Zealand schools with a randomised study to assess the impact that explicit teaching of resilience could have on students. This was an attempt to produce a workable model for schools to teach resilience to students in a way that is both time efficient but also valid and effective.

In this chapter the findings of this study are analysed against the research questions and the broader literature. Furthermore, some of the limitations of this research project are shared, and possible future research directions discussed in relation to these limitations.

Summary of the Findings

The current study had an experimental design with one experimental group and one control group. The study used random assignment to place half of the participants in the experimental group and half in the control group. Gender and year level were balanced for in both the experimental and control groups. The data were analysed through a repeated measure analysis of variance that allowed for each

individual's performance across each of the tasks to be assessed over time, meaning each participant could act as their own control.

As illustrated in the results section, data were analysed for: task performance over time (Grit Scale, Resilience Self-Measure, Spot-the-difference, and Wire Maze), task performance by age group over time (young and older children), task performance by gender over time (male and female), and task performance by ethnicity over time (Māori, Pasifika, Asian and Pākeha). The data from this study found no statistically significant results to support the hypothesis that explicitly teaching students about resilience would improve their performance against the four measures of resiliency employed, when compared with a control group. In fact, in some instances, participants in the control condition had better observed performance across the four tasks in phases two and three of assessment, compared with those students in the experimental condition.

Findings in Relation to the Literature

The literature review highlights that resilience is emerging as a topic of investigation for many schools worldwide as they grapple to build competencies in their students to manage and overcome adversity (Hymel et al., 2006). The literature review is divided into five sections: What is resilience? What is the benefit of resilience? How does resilience develop? And, can resilience be taught in schools? Therefore the following discussion reviews these sections with direct reference to the present study's findings.

What is Resilience?

There are a variety of definitions used for the concept resilience (Khanlou & Wray, 2014). These different definitions exist across varying contexts and are based upon the specific field using the term. However, the definition that was used for the present study is that resilience is the achievement of a positive outcome in the face of adversity (Condly, 2006; Rutter, 2012; Steinhardt & Dolbier, 2008). Therefore, the present study attempted to increase the positive outcomes of participants in the experimental condition who were facing adversity in the form of the four separate resilience tasks.

It was hypothesised that exposure to three linked lessons about resilience would prompt the participants in the experimental condition to be able to recall the skills, strategies, and competencies discussed in the lessons and use these to increase their performance across the tasks. This hypothesis is based on the research which positions resilience as a skill that is used to aid in helping individuals (and groups) to problem solve (Bernard, 1995; Dumont & Provost, 1999).

However, one limitation of using resilience as a problem solving strategy, is that through attempting to increase resilience, participants may also use problem solving strategies to escape the task. Thus, escape the real or perceived negative outcomes from failing to complete or do well in the task. Durmont and Provost (1999) argued that the avoidance and removal of stressful and potentially adverse situations is one key problem solving strategy that helps remove adversity from the equation.

What is the Benefit of Resilience?

As discussed in the literature review, when resilience is developed so too is self-control (Moffitt et al., 2011). However, this increase in self-control also could

have been counterproductive in the current study as there is still a significant power dynamic at play with all participants being pupils in a school setting with a teacher administering the tasks (Manke, 1997). Feeling inadvertently pressured to do well in a task with a teacher present could have provided undue stress or a false representation of self-control that is actually unwillingness to give-up on difficult tasks with a school teacher present.

A further benefit of resilience, as discussed in the literature, is that children are able to mobilise their problem solving strategies to meet their fundamental needs (Skinner, 1965). Although the assessments conducted in the present study were not contingent on meeting the fundamental needs of the participants, there are still elements of participants feeling a need or want to complete the tasks to a satisfactory level. These could include aspects of feeling the need/want to do well in a task and feeling and/or wanting to complete the tasks to please themselves, their peers, and the researcher. The Wire Maze was a particularly popular task that attracted a lot of peer attention and competition of who was able to do the task 'the best'. Therefore, an implication of such a task on being able to activate problem-solving strategies could have been inhibited by the peer scrutiny that also went along with it.

How does Resilience Develop?

The literature suggests that the development of resilience is a complex and multifaceted process (Beauvais & Oetting, 1999; Rolf & Glantz, 1999). A large pool of research in the area of resilience development for children and young people attempts to explain how resilience simultaneously develops in individuals and then how their social and environmental surroundings can either help and/or hinder this (Masten, 2001). The present study attempted to accommodate this complex process

by acknowledging that children were developing resilience (or not) as an individual through the intervention process. However, they were also developing resilience (or not) through the social process of being in a class setting for both the intervention lessons and also through all three assessment phases.

The American Psychological Association (2016) has provided ten key features of how resilience is developed. These key features focus largely on how an individual is able to use their internal resources to develop resilience. However the present study did not take into account each of these ten features in isolation when designing lessons and also in targeting the messages to areas of need. If each of these features were first assessed for in the participants, the intervention lessons could have been better targeted to meet the specific needs of the group, rather than providing a more general and global approach.

Can Resilience be Taught in Schools?

Using schools as a vehicle to deliver and promote a message of building resilience in children and young people is about setting students up to succeed in the face of adversity (Medoff, 2010). The present study was able to use a school setting to directly provide children across a variety of year levels, ethnicities, and genders the ability to access resilience lessons in the hope of being able to build their capacity to overcome adversity. In this regard the present study took into account the American Psychological Association's (2016) key features of building resilience and included these as generic themes to support the participants in building their resilience. A specific example of this is the explicit instruction of what it means to have either a fixed or growth mindset, as characterised in Carol Dweck's (2006) work. This is because one of these key features includes the ability for young people to address

problems with a growth mindset and not to focus the struggle ahead of them but alternatively to focus on the possible solutions (American Psychological Association, 2016).

A key reason for schools being used to deliver messages like this is because of the capacity to reach a large number of young people in an efficient time. New Zealand schools have high enrolment and attendance rates with averages well over 90% for all nearly all year levels (Ministry of Education, 2015). Therefore the current project was able to reach a wide variety of students in the sample school, who are representative of their particular community. However, as participation in this research required written consent from both participants and their parents/caregivers, there were still a large number of students from within the school who chose not to participate.

The literature in the field of resilience for young people covers a large scope. It is a very complex process to develop resilience from within an individual and then being able to use social and environmental supports to further build this. The present research has attempted to capture a broad understanding of what resilience is, what benefit it accords young people, how it develops and how and why schools can and should teach it. However, given the findings of the present study, there is a need to now explore its limitations and explore how future studies in this field can be improved.

Limitations of the Research

There are a number of limitations of this research that need to be acknowledged. These limitations relate to the sample of participants in this study, the

validity and reliability of the resilience measures used, and the strength of the resilience lesson intervention.

Firstly, the study only gathered information from a sample of students from within one school. Although there is representation across all year levels, both male and female participants, and the major ethnicities present in the school, it still only represents one school. Therefore, the results (albeit, most of them statistically insignificant) can only reflect the findings in one school setting. As a result of this the extrapolation of results is limited as the school is situated in a broader community with a low-socioeconomic status, higher than average (for the city) Māori population, and higher ratio of boys to girls in the school.

From within this limitation comes another as the study's sample drew only from students within the school where the parents and participants were both willing to participate. Therefore, even if students did want to participate in the study (with many students expressed this to me), they were unable to as their parents or guardians had not completed the forms granting them permission. Therefore, there is an element of students being excluded from the study due to either 'hard-to-reach parents' or parents who did not want their children to participate.

A further implication of having gathered data in only one school is that the particular school already has resilience as a pre-existing value and therefore the students are likely to have been predisposed to this concept. This pre-disposure could very well have limited the ability of the intervention to have a positive impact of the study's participants because they may very well have already had their resilience 'buckets' filled up.

The results illustrate that many of the participants had lowered their performance across many of the tasks in the second phases of assessment (compared

with the first), and then increased again in the third phase. Therefore, the question needs to be asked: Were these tasks reliable measures of participants' resilience? The measures that were used to assess the participants resilience includes: The Grit Scale, the Resilience Self-Measure, a Spot-the-Difference task, and a Wire Maze. Every participant that completed all three assessment phases of this study did each task once during each phase (i.e. they had completed 12 tasks after completing all that was required of them). With this much exposure to the tasks it could be argued that a practice effect was activated whereby the participants were able to improve or decrease their performance with continued exposure to the task. It may be that each participant was not cognisant of their resilience when engaging with the task, but were in fact motivated by other factors (e.g. social approval, getting back to class, pleasing the teacher, and more).

One of the contributing factors to be able to measure resilience in the school setting is that there needed to be a method of assessment available that was able to efficiently quantify a student's resilience. There also needed to be tasks that were going to be able to engage young people so as to ensure that we were gathering accurate data. However, it is not clear as to whether these tasks were engaging for some students and not engaging for others. Even though the participants were asked to rate each task on a scale from 0 to 9 ('did not enjoy at all' through to 'did enjoy a lot'), it is not fully understood how the power dynamic of students being asked to complete a task from a teacher could have influenced these responses.

The length of the resilience training intervention is another limitation of this research. One of the key questions within this research project was to investigate whether a short-term intervention would be useful in support children to further develop skills in resilience. A primary reason for the push to have a short-term

intervention is because of the strain that New Zealand teachers (as possibly those from around the world) are currently feeling around the need to consistently fit more into their practice without letting go of other jobs (Alter, Hays & O'Hara, 2009; Jones, Harlow & Cowie, 2004; Morgan & Hansen, 2007). With teachers feeling they are 'time-poor' there is a need to identify how interventions like this can be as least intrusive into core school business, while still retaining their reliability and validity.

The data and results of the present research would suggest that three lessons are too short an intervention. This is because many of the children in the experimental condition did not out perform children in the control condition. In some instances there were a high number of children in the control condition that actually outperformed the experimental condition participants.

Medoff (2010) argued that there are six key components of teaching students about resilience and these are discussed in length in the literature review. Given that these features were present in the intervention, it is possible the participants' under-exposure to these elements was a key factor in the reason for the results not reflecting a greater increase in resilience on the tasks. Two other studies where pre- and post-intervention assessments were completed include the "SMART" programme (Rose et al., 2013) and the "FRIENDS for Life" programme (Rose, et al., 2009). The "SMART" programme was carried out over 6 weeks with weekly sessions and produced statistically significant results with participants reporting an increase in stress management and abilities to face adversity. However, the "FRIENDS for Life" programme was carried out over eight sessions in two months and did not provide statistically significant results. In fact, there were similar trends to the current study with the control group out-performing the experimental group in some aspect on the intervention. Rose and colleagues (2009) put this down to the possibility that in-

school interventions like these raise the profile of resilience and therefore provide a universal level of support and awareness, even if not intended. When this is applied to the currently study, it can be hypothesised that because all of the staff within the study's sample school were aware of the study and its underlying principles, they could have unintentionally primed all participants. Strong support from an adult (e.g. teacher) is a key component of developing resilience (Armstrong, et al., 2005)

Areas of Future Research

The results of the present study do provide a great number of ideas for future research in the field. There is a need to explore further the relationship between the ability to explicitly teach school children about resilience and resilient behaviour and resilient outcomes from children when they face adversity.

The findings of the present study might seem to suggest that it is worthwhile to teach children about resilience, as it does not translate to more resilient outcomes for students. However, as discussed in the limitations above, this finding is not aligned with the bulk of literature, which supports resilience as a key skill that can be taught to school-aged children with a number of benefits. Therefore, future research needs to take into account the limitations listed above and alter them to see at what point a resilience-based intervention starts to benefit students (i.e. duration of intervention). One aspect that the present research attempted to counteract was the need for a lengthy intervention process. However, one of the key variables noted in the limitations is that possible a three-lesson sequence was too short and did not allow enough time or repetition for skills to be taught/learned. A key component of further research could be to investigate after how many resilience lessons do children (on average) begin to make progress in becoming more resilient against the measures.

A further area for research could be to investigate the different types of tools that can be used to measure resilience as a skill or competency in children. Being able to measure these skills with some assurance of validity is difficult, particularly if using tasks that are or are not perceived as engaging for young people.

Implications for Schools and Educators

At the beginning of this thesis, I discussed my research background and my motivation for wanting to conduct research around resilience. My motivation was based on an aspiration to be able to develop skills and competencies in young people so that when they come across challenge and adversity in their lives, they are able to problem solve their way through them. Therefore, the goal of the present study was to argue for educators and schools to have a key role in growing this skill set for young people.

The most significant implication of this study is that it may not be possible to teach resilience in a series of a few lessons here and there. Resilience may need to be taught as a skill over a long period of time with consistent feedback and encouragement to continue to build and grow. Therefore, if schools are truly dedicated to growing this competency in their students then they need to be dedicated to having a long-term intervention to support and nurture the growth of students' resilience over time. That way when students come across difficult situations across any aspect of their life they will have the skills and strategies, to be resilient.

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Appendix A
Resilience Self-Measure Continuum and Grit Scale (Duckworth & Quinn, 2009)

Name: _____ Year: _____

Please indicate on the line below how resilient you think you are:



Please respond to the following 8 questions. Be honest. There are not right or wrong answers.

<p>1. New Ideas and projects sometimes distract me from previous ones.</p> <ul style="list-style-type: none"> <input type="radio"/> Very much like me <input type="radio"/> Mostly like me <input type="radio"/> Somewhat like me <input type="radio"/> Not much like me <input type="radio"/> Not like me at all 	<p>2. Setbacks (delays and obstacles) don't discourage me. I bounce back from disappointments faster than most people.</p> <ul style="list-style-type: none"> <input type="radio"/> Very much like me <input type="radio"/> Mostly like me <input type="radio"/> Somewhat like me <input type="radio"/> Not much like me <input type="radio"/> Not like me at all
<p>3. I have been obsessed with a certain idea or project for a short time and then lost interest.</p> <ul style="list-style-type: none"> <input type="radio"/> Very much like me <input type="radio"/> Mostly like me <input type="radio"/> Somewhat like me <input type="radio"/> Not much like me <input type="radio"/> Not like me at all 	<p>4. I am a hard worker.</p> <ul style="list-style-type: none"> <input type="radio"/> Very much like me <input type="radio"/> Mostly like me <input type="radio"/> Somewhat like me <input type="radio"/> Not much like me <input type="radio"/> Not like me at all
<p>5. I often set a goal but later choose to pursue (follow) a different one.</p> <ul style="list-style-type: none"> <input type="radio"/> Very much like me <input type="radio"/> Mostly like me <input type="radio"/> Somewhat like me <input type="radio"/> Not much like me <input type="radio"/> Not like me at all 	<p>6. I have difficulty maintaining (keeping) my focus on projects that take more than a few months to complete.</p> <ul style="list-style-type: none"> <input type="radio"/> Very much like me <input type="radio"/> Mostly like me <input type="radio"/> Somewhat like me <input type="radio"/> Not much like me <input type="radio"/> Not like me at all
<p>7. I finish whatever I begin.</p> <ul style="list-style-type: none"> <input type="radio"/> Very much like me <input type="radio"/> Mostly like me <input type="radio"/> Somewhat like me <input type="radio"/> Not much like me <input type="radio"/> Not like me at all 	<p>8. I am diligent (hard working and careful).</p> <ul style="list-style-type: none"> <input type="radio"/> Very much like me <input type="radio"/> Mostly like me <input type="radio"/> Somewhat like me <input type="radio"/> Not much like me <input type="radio"/> Not like me at all

Appendix B
Spot the Difference – Cat



Appendix C
Spot the Difference – Snow

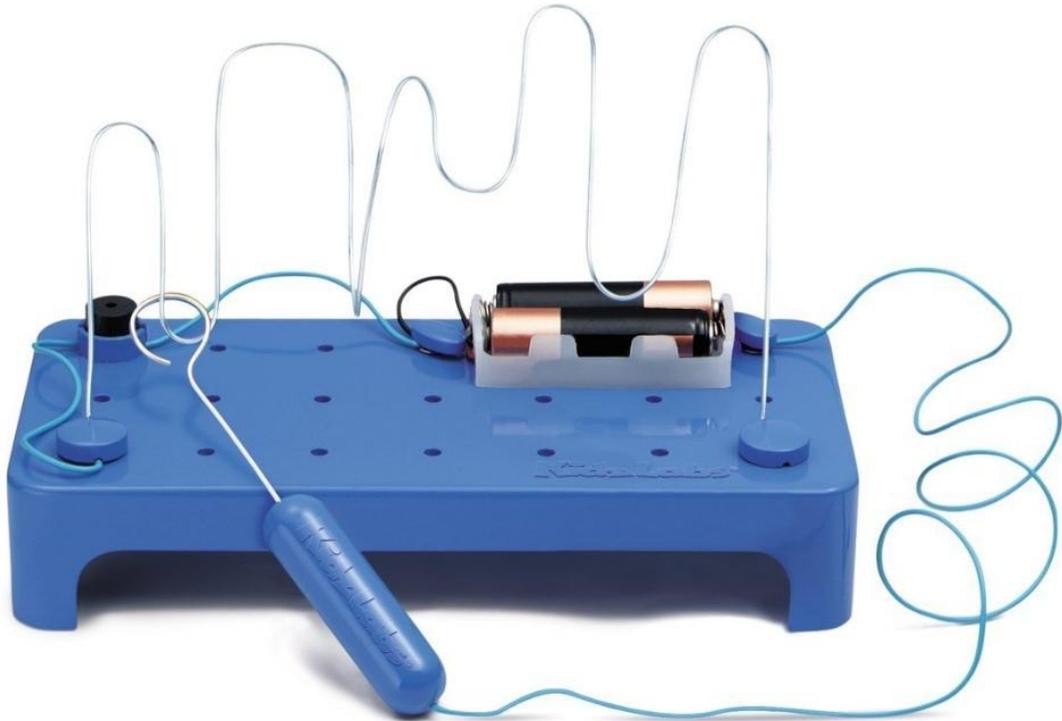


Find The Differences!



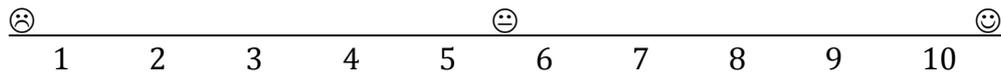
Appendix D
Wire Maze

Wire Maze (Photograph) Retrieved from
http://www.amazon.co.uk/dp/B000088T2F/ref=pe_385721_37986871_TE_item_image on Thursday, 18 June, 2015



Appendix E
Enjoyment Likert Scale

On a scale from 1 to 10 (1 being not at all and 10 being very much), how much did you enjoy this task?



Appendix F Task Instructions

Grit Scale Questions

I am going to ask you some questions about your resilience. Resilience is when you try hard to keep doing something, even if it might be difficult.

Your job is to answer these 8 questions as honestly as you can about yourself. There are no right or wrong answers.

Spot the Difference

The two pictures in front of you have a lot of difference. Your job is to spot as many differences as you can. I cannot tell you if you are correct or not.

When you have found as many differences as you can, please give your sheet to me.

Wire Maze

The wire maze in front of you uses battery power and electrical circuits to sound a buzz when you touch the wand and the track together.

Your job is to use your hand eye co-ordination to stop the wand and the track from touching. You need to make your way from the start to the finish. If the buzz sounds you need to go back to the start.

Appendix G

Information Sheet for Young Child Participants



DOES EXPLICIT TEACHER INSTRUCTION OF RESILIENCE INCREASE A CHILD'S RESILIENCE?
INFORMATION SHEET FOR YOUNG CHILD PARTICIPANTS
This information will be read aloud to all children by the researcher

Thank you for showing an interest in these activities. Please listen carefully to this information before deciding whether or not to be apart of these activities. If you decide to take part we thank you. If you decide not to take part that is okay too and nothing bad will happen.

What do we want to achieve from these activities?

Resilience is a value of Carisbrook School. We want our children to always try their best even when things go wrong and when you find something hard. I want to find out if teaching children to always try their best and not stop when things are hard helps them to be able to do there best in their lives.

Who do we want to take part in these activities?

We want to involve all the children at Carisbrook School. Hopefully around 180 children will do these activities.

What will you be asked to do?

If you want to take part in these activities you will be asked to work on some entertaining and challenging games that will require you to keep trying when it gets difficult and use your resilience. The activities include some questions from Mr. Sanders, a physical activity of throwing a beanbag into a hole on a board, and an electronic tracing maze where a buzzer will sound if you touch the side of the maze. You will be asked to do these activities three times in the next few months. Each time you do these activities it will take approximately 15 minutes. Some of you will have lessons about resilience and always trying your best between your turns on these activities. Some of you will have lessons about resilience and always trying your best after you have had all of your turns on the activities. If you want to stop taking part in this study then you do not have to keep doing the activities.

What information will be collected and what use will happen to it?

I will ask you what year level you are, whether you are a boy or a girl, and what ethnicity you are (for example, if you are Māori or Cook Island or some other nationality). Only my two supervisors and I will be able to see what you tell me. This information will be kept for 5 years in a password-protected computer and in a locked file cabinet. At the end of the project a book will be produced (called a thesis) and this will be available in the University of Otago Library. If you want to find out more about the project you can ask me, Mr Sanders, at any time.

Can Participants Change their Mind and Withdraw from the Project?

If you want to stop taking part in this study then you do not have to keep doing the activities. You can stop at all time you want.

What if Participants have any Questions? If you have any questions, either now or later, you can talk to:

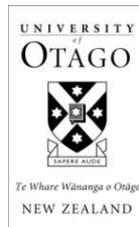
Byron Sanders
Principal Researcher
University of Otago College of Education
Carisbrook School Telephone: 03 455 8315
sanby994@student.otago.ac.nz
byrons@carisbrook.school.nz

or

Professor Jeffery Smith *or* Dr. David Berg
Research Supervisors
University of Otago College of Education
University Telephone: 03 479 4900
jeffery.smith@otago.ac.nz
david.berg@otago.ac.nz

This study has been approved by the University of Otago Human Ethics Committee. If you have any concerns about the ethical conduct of the research you may contact the Committee through the Human Ethics Committee Administrator (ph 03 479 8256). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome.

Appendix H Information Sheet for Child Participants



DOES EXPLICIT TEACHER INSTRUCTION OF RESILIENCE INCREASE A CHILD'S RESILIENCE? **INFORMATION SHEET FOR CHILD PARTICIPANTS** *For children that cannot read this information sheet, it will be read to them*

Thank you for showing an interest in this activity. Please read this information sheet carefully before deciding whether or not to take part. If you decide to take part we thank you. If you decide not to take part that is okay too and nothing bad will happen.

What is the aim of the project?

Resilience is a value of Carisbrook School because we want our children to always try their best even when things go wrong and when you find something difficult. I want to find out if teaching children about resilience helps them to become more resilient.

What types of participants are being sought?

We want to involve all the children at Carisbrook School. We hope that around 180 children from Carisbrook School will take part.

What will participants be asked to do?

If you agree to take part in these activities you will be asked to work on some entertaining and challenging games that will require you to use your resilience. The activities include some questions from Mr. Sanders, a physical activity of throwing a beanbag into a hole on a board, and an electronic tracing maze where a buzzer will sound if you touch the side of the maze. You will be asked to do these activities three times in the next few months. Each time you do these activities it will take approximately 15 minutes. Some of you will have lessons about resilience between turns on these activities. Some of you will have lessons after you have had all of your turns on the activities. Each lesson is a part of the SWPB4L framework that is helping us to promote positive behaviour at Carisbrook School. If you want to stop taking part in this study then you do not have to keep doing the activities.

What data or information will be collected and what use will be made of it?

When we do these activities with you we will also ask what year level you are, whether you are a boy or a girl, and what ethnicity you are. Only Mr. Sanders and his two supervisors will be able to see this information. This information will be kept for 5 years in a password-protected computer and in a locked file cabinet. At the end of the project a book will be produced (called a thesis) and this will be available in the University of Otago Library. If you want to find out more about the project you can ask Mr. Sanders.

Can Participants Change their Mind and Withdraw from the Project?

If you want to stop taking part in this study then you do not have to keep doing the activities.

What if Participants have any Questions? If you have any questions, either now or later, you can talk to:

Byron Sanders
Principal Researcher
University of Otago College of Education
Carisbrook School Telephone: 03 455 8315
sanby994@student.otago.ac.nz
byrons@carisbrook.school.nz

or
Professor Jeffery Smith *or* Dr. David Berg
Research Supervisors
University of Otago College of Education
University Telephone: 03 479 4900
jeffery.smith@otago.ac.nz
david.berg@otago.ac.nz

This study has been approved by the University of Otago Human Ethics Committee. If you have any concerns about the ethical conduct of the research you may contact the Committee through the Human Ethics Committee Administrator (ph 03 479 8256). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome.

Appendix I

Information Sheet for Parents/Caregivers



DOES EXPLICIT TEACHER INSTRUCTION OF RESILIENCE INCREASE A CHILD'S RESILIENCE?

INFORMATION SHEET FOR PARENTS / GUARDIANS

Thank you for showing an interest in this project. Please read this information sheet carefully before deciding whether or not your child is to participate. If you decide to allow your child to participate we thank you. If you decide that you wish your child not to take part there will be no disadvantage to them or you and we thank you for considering our request.

What is the aim of the project?

A person's resilience is a measure of their ability to cope with adversity and to be able to bounce back from challenging circumstances. The present study aims to assess whether the teaching of resilience is beneficial to Carisbrook School pupils' ability to deal with challenging situations. The study wants to find out if the lessons planned for our School Wide Positive Behaviour for Learning (SWPB4L) framework are helpful to our children. This project is being undertaken as part of the requirements for Byron Sanders' Master of Arts degree.

What types of participants are being sought?

All pupils of Carisbrook School are being invited to participate in this research project. Consent forms for this project are attached to this information sheet. When a caregiver provides consent, the child in question will then be asked if they wish to participate. Only when both the parent/guardian and the child indicate that they wish to participate will they be involved in the research project. It is hoped that approximately 180 pupils of Carisbrook School will participate in this research project.

What will participants be asked to do?

If you agree your child can take part in this project they will be asked to participate in three entertaining and challenging activities that will enable them to showcase their personal resilience. The activities are: a paper and pencil measure, a physical activity involving throwing a beanbag into a hole on a board, and an electronic tracing maze where a buzzer will sound if pupils touch the side of the maze. Participants will be asked to take part in all three of these activities three times each. Each task will be approximately 15 minutes in length (dependant on a participant's ability to be resilient with the tasks) and will occur throughout the school day with minimal disruption to their regular class learning. Half of the participants will participate in explicit lessons on resilience between the first and second interaction with the tasks, while the remainder will complete them after they have done the tasks three times. Each lesson is apart of the SWPB4L framework and will be taught to the pupils of Carisbrook School whether they participate in this project or not. Please be aware that you or your child may decide not to take part in the project without any disadvantage to yourself or your child of any kind.

What data or information will be collected and what use will be made of it?

Your child will have their school year level, ethnicity, and gender collected for the purpose of this study. This data will be collected so that the researcher can comment on the performance of particular demographic groups. At no stage in the research will any individual children be identifiable. Only Byron Sanders and his two supervisors will have access to this information. The data collected will be securely stored in such a way that only those mentioned below will be able to gain access to it. Data obtained as a result of the research will be retained for at least 5 years in secure storage. Any personal information held on the participants may be destroyed at the completion of the research even though the data derived from the research will, in most cases, be kept for much longer or possibly indefinitely. The results of the project may be published and will be available in the University of Otago Library (Dunedin, New Zealand) but every attempt will be made to preserve your child's anonymity. If you wish to access a publication of this research project upon its completion please contact the principal researcher or the Carisbrook School office.

Can Participants Change their Mind and Withdraw from the Project?

You may withdraw your child from participation in the project at any time without any disadvantage to anyone.

What if Participants have any Questions?

If you have any questions about our project, either now or in the future, please feel free to contact either:

Byron Sanders
Principal Researcher
University of Otago College of Education
Carisbrook School Telephone: 03 455 8315
sanby994@student.otago.ac.nz
byrons@carisbrook.school.nz

or
Professor Jeffery Smith *or* Dr. David Berg
Research Supervisors
University of Otago College of Education
University Telephone: 03 479 4900
jeffery.smith@otago.ac.nz
david.berg@otago.ac.nz

This study has been approved by the University of Otago Human Ethics Committee. If you have any concerns about the ethical conduct of the research you may contact the Committee through the Human Ethics Committee Administrator (ph 03 479 8256). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome.

Appendix J Consent Form for Participants



DOES EXPLICIT TEACHER INSTRUCTION OF RESILIENCE INCREASE A CHILD'S RESILIENCE? CONSENT FORM FOR PARTICIPANTS

I have been told about this study and understand what it is about. All my questions have been answered in a way that makes sense.

I know that:

1. Participation in this study is voluntary, which means that I do not have to take part if I don't want to and nothing will happen to me. I can also stop taking part at any time and don't have to give a reason.
2. Anytime I want to stop, that's okay.
3. If I don't want to answer some of the questions, that's fine.
4. If I have any worries or if I have any other questions, then I can talk about these with Mr. Sanders.
5. The paper and computer file with my answers will only be seen by Mr. Sanders and the people *he* is working with. They will keep whatever I say private.
6. Mr. Sanders will write up the results from this study for his University work. The results may also be written up in journals and talked about at conferences. My name will not be on anything Mr. Sanders writes up about this study.

I agree to take part in the study.

.....
Signed

.....
Date

.....
Name

This study has been approved by the University of Otago Human Ethics Committee. If you have any concerns about the ethical conduct of the research you may contact the Committee through the Human Ethics Committee Administrator (ph 03 479 8256). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome.

Appendix K Consent Form for Participants



DOES EXPLICIT TEACHER INSTRUCTION OF RESILIENCE INCREASE A CHILD'S RESILIENCE? CONSENT FORM FOR PARENTS/GUARDIANS

I have read the Information Sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:

1. My child's participation in the project is entirely my choice;
2. I am free to withdraw my child from the project at any time without any disadvantage;
3. Personal identifying information will be destroyed at the conclusion of the project but any raw data on which the results of the project depend will be retained in secure storage for at least five years;
4. The results of the project may be published and will be available in the University of Otago Library (Dunedin, New Zealand) but every attempt will be made to preserve my child's anonymity; and
5. If I have any concerns or questions I can discuss these with Mr. Sanders at any time.

I agree for my child to take part in this project.

.....
(Signature of parent/guardian)

.....
(Date)

.....
(Name of child)

This study has been approved by the University of Otago Human Ethics Committee. If you have any concerns about the ethical conduct of the research you may contact the Committee through the Human Ethics Committee Administrator (ph 03 479 8256). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome.