

**Homeschooling Versus Traditional Schooling; Difference in Students' Mindsets by
Schooling Type**

By

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Abstract

How a person views their failures and what they attribute these to, varies person to person. The study of implicit theories of intelligence has been ongoing since the 1980's, with the terms growth and fixed mindset being coined in the early 2000's. The benefits of a growth mindset on one's personal life and academic/work life is seen in research. Yet current research into what influences a certain mindset to develop is still in infancy. This study examined if the schooling environment might have an influence on the type of mindset a student develops. Using homeschooled and traditionally schooled participants, 219 New Zealand and Australian students aged 16 to 18 were anonymously surveyed and assessed on their level of each mindset. Our study did not find any significant difference in mindset type by schooling type, though our two groups were uneven in size. Looking at what might influence mindset for students in general, our study found higher levels of fixed mindsets to be associated with higher levels of loneliness, and lower levels of competence. This was in line with current research. We also found lower levels of loneliness to be associated with higher levels of growth mindset. This study contributes to current literature about mindsets, and homeschooling outcomes. Future research could test this same study again but using equal group sizes, in order to show results more accurately to the true population of homeschoolers. Looking further into the role of loneliness and mindset development will also help contribute to the formation of robust growth mindset interventions.

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Attestation of Authorship

"I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning."

Signed: 

Dated: 31/03/2025

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Ethics Approval

This study was approved by the Auckland University of Technology Ethics Committee on 15

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Introduction

Article 26.1 of the Universal Declaration of Human Rights asserts that everyone has the right to education (United Nations, 1948, art. 26.1), with article 26.3 stating that parents have a right to choose which kind of education their children receive (United Nations, 1948, art. 26.3). The different kinds of education that children can take part in during their adolescence provides them with unique experiences, affecting their development in different ways (Valiente et al., 2020). Some types of schooling include public schools, private schools, and homeschooling. Homeschooling can go by different names such as home education, unschooling or child-led education. For the sake of clarity, this type of schooling will be referred to as homeschooling throughout this thesis. The term 'traditional schooling' will be used to encompass all other schooling types, such as public, private, and state-integrated.

In New Zealand, the Education Act in 1877 made attendance at a public school both free and compulsory for all Pakeha students aged 6-15 (Education Act., 1877). It was not made compulsory for Māori students, but they were able to attend free public school also, if their parents wished (Education Act., 1877). This act paved the way for the traditional schooling system we now know in New Zealand. Children have always learned in the home and through their experiences in life, but in 1877 a more standardised form of learning was implemented due to this Education Act. In New Zealand, parents have always had the opportunity to receive an exemption from the government, allowing them to educate their child at home, rather than in a traditional school system (Education Act., 1877). This process is relatively easy today, in which parents apply using a form which is reviewed over four to six weeks by the Ministry of Education (MOE) (*Home education*, 2024). They need to include details of how they will be teaching and what sort of learning approaches they will use. The parents are then given a certificate of exemption which remains valid unless the child gets enrolled into traditional schooling.

Defining schooling types

The main difference between homeschooling and traditional schooling is who directs the teaching, and where the teaching takes place (Cogan, 2010). Homeschooling is often parent and/or child directed and within the home (Valiente et al., 2022). Whereas traditional schooling is school/teacher directed and conducted at a separate location to the home.

The homeschooling curriculum of each family is different and tailored to those students, sometimes based on the government issued public school curricula and utilising a small teacher-to-student ratio (Valiente et al., 2022; Firmin et al., 2019). The routine or system of how one homeschools is often very flexible depending on the family or their location (Sabol, 2018, Jackson, 2017), and class times are not always as structured as traditional schooling (Valiente et al., 2022). Parental reasoning for homeschooling differs by family, but studies have found a common reason is a distrust of public schooling (Sabol, 2018). A report by The National Household Education Surveys Program of 2012 in the United States found that 91% of parents who participated stated 'concern about school environment' as their main reason to homeschool their children (Noel et al., 2013, table 8). The choice to homeschool may give parents a better sense of control over their child's education, if they have reservations about government run systems of schooling (Valiente et al., 2022).

Public schooling refers to standard education at usually Government funded schools. These classrooms consist of around a 1:30 teacher to student ratio. Classes are run as a group, where students do both independent work and collaborative work (Valiente et al., 2020). They share their mealtimes with set hours to structure their days (Howell, 2013). As of July 1, 2023, there are 703,528 students at New Zealand public schools, accounting for 94.1% of all students in New Zealand, while 10,777 (1.4%) students were registered homeschoolers (*Ministry of Education, School rolls, 2023*).

Private schools in New Zealand follow similar day-to-day structuring as public schools, which is why the two have been grouped together as 'traditional schooling' for the purposes of

this thesis. The difference with private schools is that they are independently run, not government run, although they still receive some government subsidies in New Zealand (Carpenter, 2012). Private schools mainly run on paid yearly tuition by each student; they are not free like public schools (Carpenter, 2012). As of July 1, 2023, there are 33,152 students enrolled in New Zealand private schools, accounting for 4.4% of all students in New Zealand (*Ministry of Education. School rolls, 2023*).

Homeschooling

Educational Outcomes

Education outcomes for homeschooled students has always been a hotly debated topic. Valiente and colleagues (2022) review of the literature found that most outcomes between homeschoolers and traditional schoolers show that homeschoolers perform at relatively the same level or higher than traditional schoolers in terms of academic achievement (Valiente et al., 2022; Ray, 2017). Usually, these comparative studies are done based on standardised testing scores that cover multiple different subjects, and that are the studies that are most reported by journalists, and highlights that often the studied groups are unrepresentative of the homeschooling community (Ray, 2017). Other studies have found that when controlling for family background (including religion, ethnicity, mothers education and mothers employment), homeschooled students perform similarly to traditional schoolers, with no significant evidence for homeschoolers performing “better” than traditional schoolers overall (Belfield, 2005). Barwegen and colleagues (2004) found that public school students who perceived high parental involvement in their lives and schooling had better academic scores on the American College Testing (ACT: a standardized University admission exam used in the United States) than those that perceived low parental involvement. When comparing the scores of those ‘high-involvement students’ and ‘home-schooled students’, it was found both groups scored higher than the overall

average scores for 'low-involvement public school students' (Barwegen et al., 2004). This study contributes to the findings that homeschoolers perform similarly to those in traditional schooling. In another study that controls for family background, it was found that homeschooled students tended to perform better than average on the language-based sections of the Scholastic Assessment Test (SAT: another standardized University admission exam used in the United States), yet worse than average on the math section (Belfield, 2005). Ray (2017) also reports that even though many studies have been done to compare academic scores between homeschooling and traditional schooling students using various standardised tests, there are often biases in the participant selection process which may make it difficult to accurately generalise the results (Ray, 2017; Valiente et al., 2022). For example homeschoolers choosing to take standardised tests are likely doing so in preparation to go into formal tertiary education. In this case, they will be much better prepared to do a standardised exam academically than a homeschoolers who is not pursuing formal tertiary education.

Homeschooled students can be hard to recruit for studies, as they are not as systematically recorded - nor as easy to reach as traditional schooled students may be (Kunzman & Gaither, 2020). Many prior studies have relied on convenience sampling when studying homeschooled participants. This can make the data from the sample group less accurate to the whole population of homeschoolers as those who decide to take part are likely those who are already excelling and feel positive about homeschooling. Given that there is higher potential for bias when testing for academic achievement in homeschooling students than there is with traditional schooling students, the results of such studies may not be as accurate to the true homeschooled population (Ray, 2017).

Social Outcomes

Social outcomes are another common discussion when it comes to homeschooled students' development (Ray, 2010; Rothermel, 2012). Social outcomes for homeschooled

students are often expected to be poor, due to the inherent lack of consistent group interaction from same-aged peers that traditional school students receive (Murphy, 2014; Rothermel, 2012). Yet, as Murphy (2014) discusses, most literature shows this idea to be exaggerated, without research evidence. Many studies have found homeschooled students to be at equal or better levels than traditional school students in many social areas. Including maturity, leadership skills and general communication skills (Murphy, 2014; Ray, 2010; Ray, 2017). Again, the same potential for bias exists here as mentioned for educational outcomes. Social outcomes tend to be assessed through self-report measures so social outcomes can be a lot more subjective than educational outcomes, as there is no SAT for social skills. The findings may be more accurate to the true population of homeschoolers than studies on their educational outcomes as there is not a bias around those who complete research assessments. Research on educational outcomes can end up only assessing homeschooled students that have been working towards taking a standardised test as the final scores can be compared to traditional school students, but any homeschooled student can complete an assessment on social outcomes.

As education and social outcomes have been found to be relatively the same between traditional schoolers and homeschoolers, one area that has not been looked at is if there is a difference in mindsets between traditional schoolers and homeschoolers. Research investigating if schooling type has an impact on students' mindset type could give insight into why society views homeschooled students and traditionally schooled students so differently (Murphy, 2014). If homeschooled students and traditional schooled students differ on mindset type, this could spark future research into what elements of each learning environment contribute to mindset development.

Defining Mindsets

'Mindset' refers to one's collection of emotional and cognitive frameworks that influence how they approach problems, learning, and opportunities. It is the thought patterns one uses in order to make decisions about how they feel about something, or how they will approach a situation. The concept of growth and fixed mindsets comes from Carol Dweck (Dweck, 2000; Dweck, 2006). Dweck posits that growth mindset is the belief that one's abilities are always developing and can always be improved (Dweck, 2015). Whereas a fixed mindset is the opposite: believing that one's abilities are unchangeable, and focuses more on proving your skills to others, rather than improving skills (Dweck & Yeager, 2019). Dweck and Yeager (2019) discussed how the impacts of each mindset can be seen in students' reactions to failures. Either they give up, thinking they just cannot do it (fixed), or they see it as an area in which they still need to improve and work on (growth).

Forming her theory of the two mindsets, Dweck (2006) explains how she was always interested in the differing approaches people had to life. Their views on the world around them, how this influenced their self-perception, and how this informs their reaction to failure. Dweck (Dweck & Yeager, 2019) explains that she had always been fascinated by motivation, and differences in how people view and experience motivation. In some of Dweck's initial work with colleagues, she found that when children attributed their failures to their ability, they had a "helpless" reaction to the problem (Dweck & Reppucci, 1973). Whereas those that attributed their failures to their effort, they had a "mastery-oriented" reaction, even when they actually had equal ability in the task (Diener & Dweck, 1978). They explained "helpless" children as viewing their failures as a lack of ability and attributing their failures to external entities beyond their control (Dweck & Reppucci, 1973). Whereas "mastery-oriented" children did not often attribute their failures to anything and instead thought of ways to improve or fix their failures (Diener & Dweck, 1978). Given this work, she then went on to form the idea of achievement goal theory

(Elliott & Dweck, 1988). They saw that the different types of goals that students set for themselves would result in different reactions to failures. One type of goal is performance goals, associated with striving to prove your ability. The other is learning goals, associated with striving to enhance ability (Elliott & Dweck, 1988).

How she came to form the idea of mindsets was built off this research. In collaboration with Mary Bandura (Bandura 1983), they discussed the difference between how people viewed their abilities. They concluded that people usually viewed their own abilities as something to 'improve' or 'to prove', initially labelling this "implicit theories of intelligence" (Dweck & Yeager, 2019; Blackwell, et al., 2007; Hong, et al., 1995). This research set the stage for the theory of growth versus fixed mindset.

The type and extent of mindset one has can be influenced by the multiple people who shape a child's life, and can be changed over time, as growth and fixed mindsets exist on a continual scale (Svensen, 2023; Dweck, 2017). In a six-year longitudinal study, Kim and Park saw students' fixed mindset level increase over time, with this increase in fixed mindset being related to a decrease in classroom participation and academic achievement (Kim & Park, 2021). A student's mindset can be a predictor of their motivation levels and approach to learning, especially throughout childhood (Haimovitz & Dweck, 2016). The effect on motivation level, and how students approach their learning is key to assessing how they engage with their schooling.

In Dweck and her colleagues' more recent work on mindsets, they have found better academic achievement and overall education outcomes from those with a growth mindset (Haimovitz & Dweck, 2016; Iqbal et al., 2021). These results have been replicated in various studies (Yeager & Dweck, 2012; Claro, & Loeb 2019; Yeager et al., 2019; Ng et al., 2020; Claro et al., 2016). This could be due to those with a growth mindset believing they can always grow their understanding of an area and learn new material. Those with a growth mindset may not

feel 'helpless' after failure or setback, so they may put more effort into their schoolwork as they see effort as positive.

Not only is a growth mindset found to be associated with positive outcomes, it has also been found to be a buffer against the negative impacts of poverty, and resistant against the effects of lower SES (Claro, Paunesku, & Dweck, 2016). Claro and colleagues (2016) found growth mindset to be a reliable predictor of academic achievement, regardless of school quality and SES. Growth mindset can also act as a buffer to loneliness, adding to the positive impacts a growth mindset can have on youth development (Mosanya, 2021).

The Programme for International Student Assessment (PISA), which tests various skills of 15-year-old students, reported in 2018 that students with a growth mindset scored higher on reading performance than those with a fixed mindset (Gouédard et al., 2021). Students in New Zealand specifically had the largest difference between mindset and reading literacy scores, where those with a growth mindset tended to score higher on reading literacy than those without a growth mindset compared to 76 countries assessed by PISA (Jang-Jones & McGregor, 2019, fig 4.3). This gap between academic scores of those with growth vs fixed mindsets is an actionable problem worth addressing.

Growth Mindset Intervention

One approach schools and organisations go about instilling a growth mindset into their students is through growth mindset interventions. The positive impacts of growth mindset interventions, especially for students, have been well documented (Jiang et al., 2024). These interventions are mainly based around encouraging students to understand the difference between the mindset types, and how to change thinking patterns. Schleider and Weisz (2018) found that nine months after a single growth mindset intervention, young people reported lower levels of anxiety and depression. Furthermore, Sisk and colleagues (2018) found that students

who struggle academically, and/or those who come from lower socioeconomic backgrounds, benefited the most from these interventions.

The positive outcomes for young people with a growth mindset in terms of both their schooling and general emotional well-being have been well documented, making this an important area for parents and teachers. Growth mindset interventions give youths the tools needed to change their thought patterns, in order to approach failure with a growth-mindset, thus encouraging resilience.

Mindset and Socio-economic Status

Given the positives associated with a growth mindset, the next question is 'can a growth mindset be developed (nurture), or is it innate to an individual (nature).

The impact of Socio-Economic Status (SES) on students' academic performance is a well-researched area (Andersen and Hansen, 2012; Chmielewski, 2019; Liu, Peng, & Luo, 2020). Research often finds SES levels to be related to academic gaps across different countries and communities, with a lower SES often leading to poor academic results.

When looking at how SES is related to mindset type, Claro and colleagues (2016) found that lower SES students were more likely to have a fixed mindset than those from a higher SES. They also found a growth mindset to be a good predictor of outcomes regardless of SES and school quality. The finding of growth mindset prevailing against school quality was especially interesting and opens discussion about how mindsets are formed in students in the first place. The link between growth mindset and SES suggests that it can be nurtured, and is not inherent to someone's nature.

Svensen (2023) looked at families' SES and students' grades against their mindset type. They also looked at how parents' education level may predict students' mindset level. Their study found that the relationship between poorer academic performance and a higher level of fixed mindset was stronger for students with low-educated parents, than those with high-

educated parents (Svensen, 2023). This suggests that parents with lower levels of education may be contributing to the development of a fixed mindset in their children, resulting in poorer academic performance. Likely parents with lower levels of education see less value in formal education generally. Thus being more likely to attribute their child's failures to their inherent nature and less likely to encourage the child to keep practicing. If a parent has made it to adulthood and built their life all while having a lower level of education, they may feel that further formal education was not needed, and thus have less push for their child to overcome challenges in their academics. Those with a higher education level may understand the effort it takes to grasp difficult concepts when learning, and understand that education is life-long and you can always learn.

Findings from Haimovitz and Dweck (2016; 2017) found that day-to-day socializing with your child is not enough to pass on a particular mindset. They instead found that the biggest contribution to a students' mindset from their parents lies in how the parents respond to their children's failures (Haimovitz & Dweck, 2017). They found that children who viewed their parents as being focused on their efforts rather than grades, did in turn believe they could always get better at something (Haimovitz & Dweck, 2017). If a parent reacts to their child's failure by criticizing their ability, the student is more likely to form fixed beliefs about themselves as simply not being able to do well in certain areas. A child models their parent's reaction to their failures and internalises this to react the same way to their failures in the future. This could further imply that lower educated parents are more likely to react to their child's failures with criticism about their ability rather than their efforts, as the lower educated parent may not have as much experience with overcoming academic obstacles through effort. Making it more logical for them to criticise on current ability, rather than looking toward potential effort.

These findings raise more questions on what environments are the most influential to a student's mindset. If their parents' education level is low and thus has a higher likelihood of

having a fixed mindset, can their school environment buffer against this and still nourish a growth mindset? Svensen (2023) mentions the need for further research into how student's environments, such as home and school, are impacting their mindsets. This notion is backed by Claro and colleagues (2016) work, where a growth mindset was found to be protective against school quality and SES.

Literature Review

Mindset in Childhood

The development of a child's mindset starts early on in life. Through her research, Dweck found evidence of fixed and growth mindsets in children as young as three and a half years old (Dweck, 1991). This study consisted of children doing three of four puzzles unsuccessfully and one successfully. They were then told they had some more time left and asked which one they would like to do again. Those that asked to re-do the one they successfully did display a helpless response with no feelings of persistence (fixed mindset). Those that chose one they did not complete showed persistence, and a want to try again (growth mindset). When asked why they chose the one they did, the researchers could assess the fixed or growth reasoning behind their choice. The children explained their choice with statements about one being easy, or wanting to try and finish the unsuccessful ones, controlling for children choosing a puzzle based on the picture they liked the best (Dweck, 1991: Dweck, 2000). This suggests that children are forming their ways thinking about their own intelligence and abilities early on as their reasoning was due to their performance.

After this discovery they wondered where these reactions may stem from. To test this, they used dolls to represent the children's parents. They asked the children to role-play what their parents would say upon seeing their unfinished and finished puzzles. The children who displayed a growth mindset tended to imagine their mother giving praise for trying, and saying the child would try again later. Those who displayed a fixed mindset tended to imagine their

mother giving much harsher criticism, such as that they will be punished and have made their parents mad (Dweck, 2000). These findings add to Dweck's ideas about how mindset type can be seen in children's reaction to failure, as the child that is imagining a harsh reaction from their parent is more likely to choose to re-do a puzzle they know they can complete. In the study on preschoolers, we see how children repeat the sort of reaction their parents display to the child's failures. They then in turn feel this way about their own abilities and are reluctant to try again at an unsuccessful puzzle. The fear of punishment, and lack of praise for effort causes children to avoid trying again after failure and just seeking out 'easier' tasks.

Once children enter school age, they may become a lot more aware of their aptitude and what they are 'good' or 'bad' at in school as they start receiving grades and are compared to their peers. Depending on how a student views their success and failures can determine the amount of effort they put in. A fixed mindset student might turn away from learning new subjects, as it represents an avenue for failure, opting to continue with subjects they already know well and feel 'smart' in. A growth mindset student may be open to learning new subjects as they do not base their level of ability on whether they are good at something on the first try. Dweck (1991) shows the development of a mindset starts early but still does not provide a full picture of what influences this development. As parents provide the basis for how children react to their own failures at the start, how does this change once children get to school age? How does the schooling environment influence the continuation of that development?

Influences on the Development of Mindset

Having found that 'praise for effort' and 'parental reaction to failure' to be two of the most contributing factors to how a person develops either mindset, other factors that contribute is still somewhat limited in research, as discussed by Haimovits and Dweck (2017). Dweck and Yeager (2019) admit that even after so many years of researching mindsets, they still know little about how people acquire a growth mindset, and which contexts are best to develop this.

Originally, Dweck and colleagues hypothesised that mindsets were passed onto children by their parents simply through day-to-day socialisation (Haimovitz & Dweck, 2017). They have since found that this is not the only avenue for mindset development and has been unsupported in other studies (Haimovitz & Dweck, 2016; 2017).

Homeschool and Potential Mindset Development

Traditional schooling creates a second environment for children once they turn five. They are no longer mainly in the home, but now 35 hours a week at school, under supervision of another authority figure. This teacher usually changes each year, giving children in traditional schooling a wide range of teachers they learn from. A study by Mesler and colleagues (2021) looked at the impact of school teachers on students' mindsets. They looked at whether a teacher's growth mindset impacts the development of their students' growth mindset over the school year and found that there was a significant positive impact (Mesler et al., 2021). The impact of a teacher's mindset on their students' mindset had Mesler and colleagues (2021) saying there is a need for both students and teachers to engage in growth mindset interventions. In a similar vein, a study by Muenks and colleagues (2024) found that a teacher's actual mindset may differ from their belief of the mindset they hold, and in turn foster the opposite mindset in their students through their feedback. Teachers self-reported the mindset they had, yet this same mindset was not always being translated into the feedback that they gave their students. This study had findings consistent with findings from Dweck (2015) who noted an uptick in professionals and educators claiming to have a growth mindset, but not actually exhibiting growth mindset tendencies. Dweck (2015) explains this concept as those who do not understand growth mindsets completely, and claim it as they know it to be 'socially desirable' or the 'positive' mindset.

A study by Kroeper and colleagues (2022) found that students' perceptions of their teachers' mindset was formed through the feedback their teacher gave. They found the most

common way teachers were imparting a growth mindset through their feedback to students was by giving students opportunities to receive feedback on their work, take notice of and give extra support to struggling students, and show they value learning (Kroeper et al., 2022). Those that imparted more of a fixed mindset through their feedback did so by doing essentially the opposite: A lack of opportunity for students to receive feedback, holding achievement grades in high regard, labeling students as incapable, and reacting negatively to students who needed extra help (Kroeper et al., 2022). Students in homeschooling environments may have many opportunities to receive feedback on their work and can receive extra support due to the low student to teacher ratio, though the nature of each homeschool environment differs a lot between families. In New Zealand, families only need to provide proof of a viable learning environment when they first apply for an exemption, so this is difficult to research (Ministry of Education New Zealand, 2023).

All this showed how students' mindsets are at least in part developed in their school environment over the year, but research has not investigated how having a new teacher the next year may impact this development. There is research backing up the fact that teachers differ in their approaches to teaching and giving feedback, and how they treat each student can vary within the classroom itself (Ames, 1992; Rubie-Davies, 2012). The lack of consistency in teaching style that a student in traditional schooling may experience could have negative consequences on the development of their self-perception.

The differences in class school-wide culture and beliefs differ between all schools. Some schools have public streaming or tracking systems, where students are placed based on their scores on standardised testing. It creates a system of classes consisting of "top scores" to "lowest scores" within the school, where teachers can tailor their lessons to better match the students' progress. Yet, research has found the impact on streamed classes on students' social relationships to be negative, with many in-groups forming between students, creating social

divides in the school (Maharaj & Zareey, 2022). It also has the most negative effects on those in the lower streamed classes. Homeschoolers are able to reap the benefit of having a curriculum tailored to their abilities, and they do not have the potential of being an outcast from peers in their learning environment. Social divides due to streaming classes do not influence homeschoolers quality of education, as it may for traditional schoolers who have to make their way in a public social sphere at the same time as they get their formal education.

The classroom size is also something to consider. Traditional schooling has a much larger student to teacher ratio than homeschooling. The negative impact of large class size was found by Yusuf and colleagues (2016), in which class size had a significant impact on students' attitudes towards learning, and their motivation levels. This aspect of schooling is completely avoided by homeschoolers. Although, other research has shown that the impact of class size is not significant in the long term (Leuven, & Løkken, 2020).

If a student is homeschooled, it usually means their parent(s) are the ones teaching them and they may be more involved in their education and see the value in learning (Rothermel, 2012). They are usually the only ones teaching their children throughout the majority of their schooling. This leads to a naturally higher level of parental involvement in their education, as the teacher remains constant, and they have no second environment for learning.

A study by Firmin and colleagues (2019) interviewed 15 homeschooling parents on their perspectives around their experience homeschooling, and what made it a "success", using a qualitative approach. This study found that many of those homeschool parents credit their success in homeschooling, and their children's general success, to the fact that they were able to tailor the education to their children specifically (Firmin et al., 2019). Many parents spoke of being able to be so in-tune with their children's education, that they could easily shift and change their curriculum at any point, to focus on weak spots. Parents also found it easier to go at the pace of their child's learning ability per each subject or area (Firmin et al., 2019). This

may promote more autonomy and competence in students, as they feel more control over their own curriculum. This same luxury is not always afforded to students in traditional schooling, where a structured timeline forms on how each student should be progressing, in order to teach a larger group at once. Riley (2016) discusses the role of self-determination theory in homeschooling, and how much easier it can be for the homeschool environment to facilitate intrinsic motivation for learning, than in a traditional schooling environment, due to the flexible curriculum and structure. Further, research shows a link between self-determination theory and mindsets in students in general. A study by Burgoyne and colleagues (2018), found that students who received a growth mindset intervention reported higher levels of growth mindset and subsequently higher levels of competence, relatedness, and autonomy.

Although research has shown that social outcomes between homeschooled students and traditionally schooled students is mostly equal, as discussed earlier, another factor that could impact mindset development in homeschooled students is level of loneliness and levels of friendship support. The nature of the homeschooled environment does reduce the volume of similar-aged peers a student would interact with each day. Most research has found this aspect to not be an issue for homeschooled students' social lives, but the feeling of loneliness that could arise from a small class size may impact their mindset. Wang and colleagues (2024) found that a growth mindset significantly negatively predicted loneliness level. Meaning a high level of growth mindset was associated with a lower level of loneliness. Controlling for loneliness levels and sense of friendship support will help us to understand how mindsets may develop differently in homeschooled students as opposed to traditionally schooled students.

Taken together, the research suggests that mindsets which develop can be shaped by parents and teachers alike. The type of praise they offer (whether for outcome or effort) along with how they respond to a child's failures affects the development of their mindset. Thus, a

schooling type which involves both teachers and also parents (i.e., homeschooling environment) is likely related to an individual's growth and fixed mindset.

Could homeschoolers find their parents to be more effort-focused in general due to the fact that there are no formal grades to strive for, as there is in traditional schooling, since the curriculum and structure of schooling is more flexible? Homeschool students may not have as much of a fear of needing to pass classes in order to keep up with peers and can instead focus on learning in general. The homeschool environment could remove the formation of 'performance' goals that are often associated with a fixed mindset (Dweck, 2000).

In New Zealand, no standardised testing is required for homeschooled students' while they study from ages six to 18. If they are wanting to go into tertiary education in New Zealand, University of Canterbury and Massey University offer Discretionary Entrance (DE) where homeschooled students can show evidence of their academic achievement from their time homeschooling, in order to receive University Entrance (Ministry of Education New Zealand, 2023). They are also able to undertake various formal qualifications to get University Entrance, which is required by other New Zealand Universities.

Cogan (2010), found that those who came from homeschooled backgrounds were well prepared for tertiary education and showed higher levels of retention as opposed to students that came from traditional schooling while at University (Cogan, 2010). What is it about homeschool learning environments that seems to equip its students with the tools needed to take on novel tasks, such as transitioning into formal education? We posit that a background of learning in an environment that is more conducive to intrinsic motivation, such as homeschooling, may in turn foster a growth mindset (Riley, 2016). This link to motivations is in line with the basis of Dweck's mindset work, in which a person's view of their abilities, and thus the goals they set for themselves, inform how they approach obstacles (Dweck & Yeager, 2019).

Research Questions

In summary, the proposed study seeks to give insight into the following:

RQ1: Do students' mindsets (i.e. growth and fixed mindsets) differ as a result of their schooling type?

RQ2: What factors influence one's mindset?

RQ2a: Are personal attributes such as competence, loneliness, relatedness, and autonomy good predictors of one's mindset?

RQ2b: Is one's perception of the social support around them, including that of friends or family, a good predictor of mindset?

Study Hypothesis

We hypothesise for our first research question that homeschool learning environments produce more students with a growth mindset than those in traditional schooling. This hypothesis was informed by prior research in this area, where homeschooling can afford more room for mistakes that receive constructive feedback, less pressure to achieve high grades and do well against other peers' abilities, and more encouragement in self-efficacy surrounding one's education (Jackson, 2016; Riley, 2016). All these traits are commonly employed to foster a higher level of growth mindset in a child, where effort is praised, and mistakes are considered an area to grow in (Dweck, 2017).

Our hypothesis for our second research question is that competence, autonomy, relatedness and perceived social support will predict growth mindset, and loneliness will predict fixed mindset, as this has been found in previous literature (Wang et al., 2024; Burgoyne et al., 2018).

Methods

Study Design

The present study used a quantitative research approach, using a between groups quasi-experimental design to investigate if home schooling produces more growth mindset students. The two groups consisted of home-schooled participants, and traditional schooled participants (both public and private).

Sampling

Non-random, convenience sampling was used to find participants. Participation was completely voluntary. The homeschooled students were mainly contacted via their homeschool organisations¹. Participants from traditional schooling were mainly recruited via Facebook and Instagram through paid advertisements. The online advertising allowed people across all of New Zealand and Australia to access the study.

Participants

Participation was open to students between 16-18 years old, who have completed at least the last two years at their respective schooling type. From a total number of 285 respondents, participants that completed at least one scale were kept, so the resultant final sample was 219. The ages of participants ranged from 16 to 18 with a mean age of 17.06 (SD = .84) years.

Twenty-one participants reported being homeschooled (9.5%). The mean number of years of homeschooling reported by these students was 8.76 (SD = 3.82). There were 144 who reported attending public schooling (68.6%) and 32 reported attending private schooling (15.2%). There were 22 participants that indicated they attended 'other' (10%). These

¹ These included Homeschool HQ Hibiscus Coast, National Council of Home Educators New Zealand, Home Schooling New Zealand, and Auckland Home Educators.

participants gave answers including semi-private schools, state integrated schools and Catholic schools. Some participants attended a mix of schooling types. For our study, these participants were considered to be in 'traditional schooling' as they are not parent-led learning from home, meaning our group 'traditional schooling' had a total of 198 participants.

There were more female participants ($n = 131, 59.8\%$) who volunteered to participate than male participants ($n = 38, 17.4\%$) with eight participants identifying as gender diverse (3.7%) or other. There were 42 participants (19.2%) who did not disclose their gender.

Of the 219 participants, the majority identified as solely NZ European ($n = 97, 44.3\%$) and 11 (5%) as European. There were 70 (32%) participants who identified as Asian ethnicity. There were two participants identifying as Māori ($.9\%$) and three as Pasifika (1.4%). Three participants identified as Middle Eastern (1.4%). There were 31 participants who identified as two ethnicities (14.2%), such as NZ European/Māori, and NZ European/Asian. Two participants did not disclose their ethnicity (1%).

Measures

Mindset Towards Learning and Intelligence

The main dependent measure of this study was participants' mindset towards learning and intelligence, assessed with the Dweck Mindset Scale statements (Dweck, 2000). This scale was used to measure whether a participant had more of a fixed or growth mindset. The instrument consisted of two 4-item subscales: growth mindset (e.g., "No matter who you are, you can change your intelligence a lot") and fixed mindset (e.g., "You have a certain amount of intelligence, and you really can't do much to change it"). Each statement was scored using a 6-point response scale ranging from "strongly disagree" (coded as 1) to "strongly agree" (coded as 6).

To score participants' answers, the scores of 1-6 are summed for the fixed mindset items and the growth mindset items, giving each participant two scores that indicate their level of each mindset (Midkiff et al 2018). The range of scores of both sets of statements was 4-24. A higher score for the fixed mindset items indicated a more fixed mindset, and a higher score for the growth mindset items indicated a growth mindset. For all statements see appendix A.

In 2020, Dweck and Yeager published a paper looking at the many studies and discussions surrounding the validity and reliability of Dweck's original growth vs fixed mindset theory (Dweck, 1999). They found growth and fixed mindset predicted students' outcomes, results are replicable, and that mindset effect sizes were significant (Yeager & Dweck, 2020). Claro & Loeb (2019) used an adapted version of Dweck's mindset scale and showed growth mindset to be a good predictor of education outcomes (Claro & Loeb, 2019). Broda and colleagues (2018) also used Dweck's mindset scale to assess participant mindset, finding good reliability, Cronbach's $\alpha = .81$ (Broda et al, 2018). In the current study, Cronbach's alpha was .88 for the fixed mindset items, and .85 for the growth mindset items.

Socio-economic Status.

To assess socio-economic status (SES) we used the MacArthur Scale of Subjective Social Status – Youth Version (Goodman, et al, 2001). This scale uses two items consisting of a statement and then an image of a ladder. The first item asked:

Imagine that this ladder pictures how New Zealand society is set up. At the top of the ladder are the people who are the best off — they have the most money, the highest amount of schooling, and the jobs that bring the most respect. At the bottom are people who are the worst off — they have the least money, little or no education, no job, or jobs that no one wants or respects. Now think about your family. Please tell us where you think your family would be on this ladder. Mark the rung that best represents where your family would be on this ladder. (p. 3)

If the participants placed themselves at the bottom of the ladder, they perceive themselves and their family's SES to be low.

The second item asks:

Now assume that the ladder is a way of picturing your school. At the top of the ladder are the people in your school with the most respect, the highest grades, and the highest standing. At the bottom are the people whom no one respects, no one wants to hang around with, and have the worst grades. Where would you place yourself on this ladder? Mark the rung that best represents where you would be on this ladder. (p. 3)

If the participants placed themselves at the bottom of the ladder, they perceive their quality of schooling to be low.

This method of asking for SES level is easier for young people, who can assess their surroundings subjectively, and might not know their parents' income level or education status (Goodman et al, 2001). Their SES was scored by the average of each 'rung' they place themselves at, from 1-10 (bottom to top), with the two SES scores kept separate, as they assessed different areas. Operario and colleagues, (2004) and Quon and McGrath (2014) found subjective SES scales to be consistent and have good test-retest reliability. When using their scale, Goodman and colleagues (2001) found great reliability, and good interclass correlation coefficients at .73 for the society ladder and .76 for the schooling ladder. When using this same youth scale to assess how well it correlates to objective SES level, Goodman and colleagues (2015) looked at data from a ten-year cohort study and found this scale showed that subjective social status remained relatively stable during this period of older adolescence, and usually correlated with objective SES level. Amir and colleagues (2019) assessed the efficacy of this scale cross-culturally, finding children's answers to be mostly consistent with other social comparison questions. They also re-tested a group of children one year later and found a

significant correlation across both time points, with no significant difference in ladder placement at the second time point (Amir et al., 2019).

Multidimensional Scale of Perceived Social Support (MSPSS).

To assess perceived level of social support in participants, the current study used the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet, et al, 1988). This scale was made with the purpose of assessing one's perception of the social support in their life, through three different groups: friends, family, and a 'special person' in their life (e.g., "there is a special person who is around when I am in need"). For all statements see appendix B. This instrument consisted of three 4-item subscales, answered on a 7-point response scale from "strongly disagree" (coded as 1) to "strongly agree" (coded as 7). Each participants' composite score was the mean of the items in each subscale, putting the range of scores attainable at 1-7. A lower score shows low perceived social support.

Zimet and colleagues (1988) found their scale to have good consistency: Cronbach's $\alpha = .88$. A study testing the MSPSS reliability in 2018, 30 years after the scale was originally made, found Cronbach's alpha of .87 and Cronbach's alpha of .86 for two tested groups (Pushkarev, et al, 2020). Another study in 2023 used the MSPSS and found Cronbach's alpha of .91 (Khalid, et al. 2023). Given that this scale has maintained high reliability since 1988, it was used in the current study. The Cronbach's alpha was .88 in the current study.

Perceived parental involvement.

Perceived parental involvement in the participants' education was assessed using a questionnaire crafted by Barwegan et al., (2004) which surveyed public schoolers and home schoolers on their perception of their parents' involvement in their education, and how it correlated with students' academic scores. This scale included seven statements, answered on a 4-point response scale from "strongly disagree" (coded as 1) to "strongly agree" (coded as 4).

A participant's composite score is the mean of all seven items. The range of scores was between 1 (low level of perceived parental involvement) and 4 (high level of perceived parental involvement). An example of a statement in this scale is: "my parents ask me about schoolwork." For all statements see appendix C. The Cronbach's alpha was .79 in the current study.

Family Support and Strain.

Family support was measured using the Family Support and Strain Scale by Schuster and colleagues (1990). This scale assesses how much people think their family members help them or hold them back (*Family support and strain*. SPARQtools). The instrument consisted of two 4-item subscales: family support (e.g., "How much does your family understand the way you feel about things?") and family strain (e.g., "How often does your family criticise you?"). Using a 4-point response scale, the 'support' questions ranged from "not at all" (coded as 1) to "a lot" (coded as 4). The 'strain' questions ranged from "often" (coded as 1) to "never" (coded as 4). For all statements see appendix D.

Participants receive two scores, the mean of family support questions, and the mean of family strain questions. A higher score in the 'support' items showed high family support. The 'strain' items were reverse coded, so a high score in the 'strain' items showed high family strain.

For the Family Support and Strain Scale, a study by Lachman and Agrigoroaei (2010) reported Cronbach's alpha of 0.88 at time point 1, and 0.87 at time point two. A study by Carr and colleagues (2017) used the scale and had a Cronbach's alpha of .75 for the support questions, and .72 for the strain questions (Carr et al. 2017). For our study, Cronbach's alpha was .86 for the support questions and .75 for the strain questions.

Loneliness.

Loneliness was measured using a short-form loneliness scale (ULS-8) by Hays, & DiMatteo (1987). This scale was derived from the original 20-item loneliness scale (ULS-20) by Russell and colleagues (1978). All questions were answered on a 4-point response scale, ranging from “never” (coded as 1), to “always” (coded as 4). An example of this scale is “How often do you feel left out?”. Two items (“how often do you feel outgoing and friendly?” & “how often do you feel you can find companionship if you want it?”) were reverse coded. For all statements see appendix E. The lowest possible score was 8 (not lonely) and the highest was 32 (lonely) (Xu et al., 2018).

A study by Çutuk (2021) used the ULS-8 to measure loneliness in their participants, who were between the ages of 14-19. They had a Cronbach alpha of 0.81 (Çutuk, 2021). Given that this scale was used in 2021 on participants of similar age range to the current study, and was found to still be reliable, this scale was used for the current study. The Cronbach’s alpha was .8 in the current study.

Self-determination theory for adolescents.

Ryan and Deci (2000) and Gagnè (2003) originally developed the 20-item Basic Psychological Needs Satisfaction scale (BPNS) tapping into three constructs/components of self-determination theory: competence, autonomy, and relatedness. Girelli and colleagues (2019) formed a short-form version of this scale, to better target adolescents, settling on three 4-item subscales to measure those three components. Each statement is answered on a 5-point response scale from “strongly disagree” (coded as 1) to “strongly agree” (coded as 5). An example of a statement for each subscale is: autonomy, “I feel free to decide for myself how to do my things”, competence, “I feel good at doing many things”, and relatedness, “I like the people I interact with.” For all statements see appendix F. Girelli and colleagues (2019) had a Cronbach’s alpha of 0.72 for autonomy, 0.83 for the competence, and 0.80 for the relatedness.

A study in 2023 by Alivernini and colleagues used the short-form scale made by Girelli and colleagues (2019), their cronbach alphas ranged from 0.68 to 0.81 (Alivernini et al., 2023). Given this short form scale has proven to be consistent for adolescents and used in recent years, this scale was used for the current study. In the current study Cronbach's alpha was .74 for autonomy, .73 for competence, and .67 for relatedness.

Procedure

Participants accessed the online anonymous questionnaire via a paid advertisement on Facebook or Instagram or given to them through their homeschool organisation. The survey was distributed through a QR code on the recruitment flyer (see Appendix K), on paid social media advertisements or by an anonymous link from their home school organisations. The advertisements sent via email to homeschool organisations were sent out on mass emails to their group, or via group newsletters/forums. The Facebook and Instagram advertisements were initially only targeting New Zealand participants but were extended to Australian participants to reach more homeschooled participants. The study was open for participants to complete from May 2024 to the end of October 2024. The data were collected using Qualtrics (www.qualtrics.com), an online survey building platform, using an anonymous survey approach.

Once clicking the link to the survey, participants read through and agreed to the participant information sheet (See Appendix J). They were then shown the study questions, starting with the demographic questions. After all questions had been answered participants were again reminded of the helplines/resources available to them if any of the questions impacted them emotionally. They were then asked if they would like to go into the prize draw for one of eight Prezzy cards, as a thank you for participating. If they clicked yes, they were then redirected to a separate survey on Qualtrics, which asked for their email. The separate survey kept their initial anonymous answers detached from their email

This study was approved by the Auckland University of Technology Ethics Committee (AUTEK: reference number 24/119) (Appendix G).

Analysis

This study seeks to investigate if participants' mindsets differ by schooling type, which we will analyse with an ANOVA. We also seek to analyse if there is a difference in mindset by schooling type if we control for personal factors, support factors, and SES, which we will analyse with an ANCOVA. Finally, we intend to analyse how much of an effect personal factors, support factors, and SES have on participants' mindset outside of schooling type. We intend to analyse this through hierarchical regression.

Results

Descriptive Statistics

First, Pearson's correlations were run to examine relations between all variables, as seen in table 1. Individuals high in fixed mindset tended to be those who scored high in loneliness and family strain², but low in perceived social support from family and friends, competence, family support, and reported lower quality of education (SES education). Individuals high in growth mindset tended to be those who scored low in loneliness and family strain, but high in perceived social support from friends and family, parental involvement in education, competence, relatedness, and quality of education (SES education). The incongruency of those with a higher fixed mindset reporting high family support in one scale but low perceived family support in another scale, and vice versa for those with higher growth mindset may come down to the wording of the questions in the Family Support scale items. All of the significant correlations between mindsets and variables showed a low strength

² A high score of Family Strain indicates lower levels of strain

relationship with correlation coefficients ranging from .14 to .25 (Pallant, 2020). Perceived Social Support from Family (PSS family) had a high correlation to Family Support, so going forward only the Family Support variable was used in analyses.

Next, we ran a series of independent sample t-tests to see if any of our measures of interest, excluding mindset, differed between homeschoolers and traditional schoolers. An independent sample t-test showed that homeschoolers had significantly higher scores in PIE, family support, and competence in comparison to traditional schoolers. It also showed that traditional schoolers had significantly higher scores in family strain and loneliness, in comparison to homeschoolers.

Table 1
Pearson Correlation Between All Variables

Composite Scores for Each Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Fixed Mindset	-													
2. Growth Mindset	-0.66**	-												
3. PSS Special Person	-.02	.02	-											
4. PSS Family	-.19**	.15*	.29**	-										
5. PSS Friend	-.15*	.16*	.52**	.29**	-									
6. PIE	-.13	.14*	.18*	.62**	.13	-								
7. Family support	-.22**	.2*	.3**	.86**	.21**	.57**	-							
8. Family Strain	.18*	-.13	-.19**	-.61**	-.14	-.38**	-.59**	-						
9. Loneliness	.25**	-.2**	-.36**	-.33**	-.43**	-.26**	-.35**	.29**	-					
10. Autonomy	-.07	.08	.4**	.35**	.3**	.19**	.31**	-.29**	-.46**	-				
11. Competence	-.25**	.16*	.17*	.42**	.18*	.36**	.46**	-.34**	-.39**	.55**	-			
12. Relatedness	-.09	.16*	.39**	.38**	.47**	.23**	.37**	-.3**	-.41**	.54**	.45**	-		
13. SES Society	-.09	.03	-.03	.31**	.07	.27**	.27**	-.19*	-.14	.18*	.31**	.18*	-	
14. SES Education	-.24**	.16*	.06	.3**	.18*	.33**	.28**	-.19*	-.23**	.21**	.46**	.3**	.23**	-

Note. PSS = Perceived Social Support, PIE = Parental Involvement in Education

** . Correlation is significant at .01 level (two-tailed)

* . Correlation is significant at .05 level (two-tailed)

Table 2*Independent Sample T-tests of All Scales Compared to Schooling Type*

	Homeschooling		Traditional schooling		<i>t</i>	<i>p</i>
	M	SD	M	SD		
PSS Special person	22.52	5.53	21.38	5.53	.9	.37
PSS Friends	20.05	5.9	20.9	4.92	-.74	.46
Parental Involvement in Education	22.4	3.75	18.12	4	4.56	<.001
Family Support	13.3	2.54	11.34	3.01	2.8	.006
Family Strain	8.95	2.76	10.21	2.7	-1.98	.05
Loneliness	19.2	3.38	21.49	3.77	-2.59	.01
Autonomy	16.45	2.74	15.11	3.12	1.83	.069
Competence	16.65	2.68	14.88	2.99	2.53	.012
Relatedness	16.75	2.94	16.16	2.46	.99	.322
SES Society	6.21	1.51	5.62	1.5	1.64	.103
SES Education	6.71	1.93	6.42	1.53	.72	.472

Focal Analyses

Focusing on our main research question, to investigate whether fixed or growth mindsets differed depending on school type, a one-way between-groups analysis of variance (ANOVA) was conducted for each growth and fixed mindset. Preliminary analyses were conducted to ensure no violation of the assumptions needed to run an ANOVA. Normal distribution may be violated as the groups are uneven, with fewer homeschoolers ($n = 21$) than traditional schoolers ($n = 198$). Running Q-Q plots for all variables showed the entire sample was normally distributed. Q-Q plots for homeschoolers on all variables also showed the smaller group to be normally distributed. The Levene's Test for Equality of Variances showed a significant value of .81 for fixed mindset, and .34 for growth mindset. Given this, we decided to still run the ANOVA, as we can assume equal variances between groups. The one-way ANOVA found no statistically significant differences in mindset scores for the two schooling groups.

Table 3

One-way Analysis of Variance Comparing Fixed And Growth Mindset Across Two Schooling Types

Variables	Homeschool			Traditional School			df	F	p	Eta Squared
	n	M	SD	n	M	SD				
Fixed Mindset	21	11.62	4.66	198	12.43	4.36	1, 217	.66	.416	.003
Growth Mindset	21	15.9	4.21	198	16.32	3.87	1, 217	.21	.644	.001

Do mindset scores differ by school type if other factors are controlled for?

As no group level differences were found, we decided to see if any differences might arise if we control for other factors. We sought to control for “support factors”, “personal factors” and SES, to see if by controlling for these factors we may see a difference in mindset by school type. The ‘support factors’ included the variables: Perceived Social Support Special Friend, Perceived Social Support Friend, Parental Involvement in Education, Family support, and Family Strain. The ‘personal factors’ included the variables: loneliness, competence, autonomy, and relatedness. The SES variables included SES Society and SES Education. We ran a series of six separate ANCOVAs.

Table 4

Analysis of Covariance (ANCOVA) Examining the Effect of Schooling Type on Mindset Level Controlling for Personal Factors, Support Factors, and SES

ANCOVA	Covariants	Variable	F(df1, df2)	p	η^2p
Fixed Mindset	<i>Support Factors</i>	<i>School type</i>	1.10(1,189)	.296	.006
	<i>Personal Factors</i>	<i>School type</i>	.41(1,188)	.520	.002
	<i>SES</i>	<i>School type</i>	.39(1,178)	.533	.002
Growth mindset	<i>Support Factors</i>	<i>School type</i>	.39(1,180)	.534	.002
	<i>Personal Factors</i>	<i>School type</i>	.59(1,179)	.445	.003
	<i>SES</i>	<i>School type</i>	.00(1,178)	.960	.000

Note. Note: Support Factors included the covariates of Perceived Social Support Special Friend, Perceived Social Support Friend, Parental Involvement in Education, Family support, and Family Strain, Personal Factors included the covariates of Loneliness, Competence, Relatedness, and Autonomy, SES included SES Society and SES Education.

Table 4 shows that fixed and growth mindset levels did not differ significantly by either school type, when controlling for any covariates.

Second Research Question

Other influences on mindset

As no significant differences were found between schooling type and mindset type, we decided to investigate the rest of our results to answer our second research question. We had not anticipated such a small number of homeschoolers so due to the low number of our target population of homeschoolers, so we looked at the population to see differences in mindset types, rather than splitting the population by school type. Considering the population as simply 'students' we have data gathered from 219 students between the ages of 16-18, who completed at least one measure on the survey.

We have reason to believe that some of these factors might predict mindset. Given prior research that showed a link between growth mindset and self-determination theory (Burgoyne et al., 2018), we hypothesized those with a growth mindset would report higher levels of competence, relatedness, and autonomy. We also hypothesised that a fixed mindset would be associated with a higher level of loneliness and the opposite for a growth mindset, as informed by research by Wang and colleagues (2024). As discussed earlier, it has been found that a growth mindset intervention is associated with lowered rates of depression over time, especially for youths (Schleider & Weisz, 2018). The relationship between depression and loneliness is well established in research (Erzen, & Çikrikci, 2018).

As a natural follow on from this look into loneliness, we looked at the support factors in participants' lives, including their perceived support from family and friends, and the level of familial strain they experienced. Wang and Wang (2024) found in their study about online learning engagement, social support and growth mindset in undergraduate students, that those who perceived higher social support in their lives were more likely to have a growth mindset.

This makes sense given that loneliness was found to be associated with higher levels of fixed mindset (Wang, et al., 2024).

We included SES to see if this differed in our two groups, but also to see how this might impact mindset. We hypothesised that lower SES would be associated with higher levels of fixed mindset, as seen in current research (Claro et al., 2016; Svensen, 2023).

Controlling for other influences on mindset beyond school type

We used hierarchical regression analysis to see what else may be influencing students' mindsets towards learning. Preliminary analyses were conducted to ensure no violation of the assumptions needed for a hierarchical regression analysis. Two hierarchical regression analyses were run, one for growth mindset and one for fixed mindset. In the first step, we added personal factors (these included Loneliness, Competence, Relatedness, and Autonomy), then in the second step, we added support factors (these included Perceived Social Support (PSS) Special Person, PSS Friend, Parental Involvement in Education (PIE), Family Strain, and Family Support). Then in the third step SES was added (this included both SES Society and SES Education).

In the growth mindset analysis, the model was significant at Step one (personal factors). The personal factors explained 6% of the variance in growth mindset ($F(4, 176) = 2.7, p = .032$). The model is no longer significant in step two or three. In the first step the only variable that is a significant predictor is Loneliness. This shows us that as loneliness increases, the level of growth mindset decreases.

In the fixed mindset analysis, the model was significant at all three steps. At Step one, the personal factors explained 11% of the variance in fixed mindset ($F(4, 176) = 5.43, p < .001$). In Step 2, support factors explained an additional 3% of the variance in fixed mindset, after accounting for personal factors ($F(9, 171) = 2.99, p = .003$). In Step 3, SES accounted for an additional 1% of variance in fixed mindset ($F(11, 169) = 2.7, p = .003$). Competence is significant

in the first two steps, but no longer significant in the third step, after the addition of SES.

Loneliness is significant through all three steps. This shows us that as competence increases, fixed mindset decreases. It also shows that as loneliness increases, so does fixed mindset.

Table 5
Hierarchical Multiple Regression Analysis Summary Predicting Growth Mindset With Personal Factors, Support Factors, and SES.

Step and Predictor variable	SE B	Beta	p	Change in R ²	R ²
Step 1				.06	.06
Loneliness	.09	-.17	.050		
Autonomy	.12	-.11	.260		
Competence	.12	.11	.226		
Relatedness	.14	.10	.288		
Step 2				.03	.09
Loneliness	.09	-.13	.151		
Autonomy	.13	-.07	.519		
Competence	.13	.05	.599		
Relatedness	.15	.05	.594		
Special Person PSS	.06	-.14	.127		
Friend PSS	.07	.13	.158		
PIE	.08	.02	.787		
Family support	.14	.13	.225		
Family strain	.13	.00	.967		
Step 3				.01	.09
Loneliness	.09	-.13	.158		
Autonomy	.13	-.06	.593		
Competence	.14	.04	.725		
Relatedness	.15	.05	.642		
Special Person PSS	.07	-.15	.118		
Friend PSS	.07	.13	.173		
PIE	.09	.02	.817		
Family Support	.14	.14	.194		
Family Strain	.13	.00	.978		
SES Society	.21	-.07	.364		
SES Education	.21	.07	.405		

Note. PSS = Perceived Social Support; PIE = Parental Involvement in Education; * p < .005

Table 6
Hierarchical Multiple Regression Analysis Summary Predicting Fixed Mindset With Personal Factors, Support Factors, and SES.

Step and Predictor variable	SE B	Beta	p	R ²	Change in R ²
Step 1				.11	.11
Loneliness	.1	.24	.004		
Autonomy	.13	.17	.080		
Competence	.13	-.26	.004		
Relatedness	.15	.03	.701		
Step 2				.14	.03
Loneliness	.1	.2	.027		
Autonomy	.14	.14	.155		
Competence	.14	-.22	.021		
Relatedness	.17	.09	.359		
Special Person PSS	.07	.11	.227		
Friend PSS	.08	-.14	.134		
PIE	.09	.04	.616		
Family support	.15	-.12	.268		
Family strain	.15	.06	.512		
Step 3				.15	.01
Loneliness	.1	.2	.029		
Autonomy	.14	.13	.198		
Competence	.15	-.17	.088		
Relatedness	.17	.1	.280		
Special Person PSS	.07	.1	.280		
Friend PSS	.08	-.12	.178		
PIE	.1	.07	.457		
Family Support	.15	-.12	.249		
Family Strain	.14	.06	.496		
SES Society	.22	.02	.771		
SES Education	.23	-.14	.104		

Note. PSS = Perceived Social Support; PIE = Parental Involvement in Education; * p < .005

Discussion

Original aims

The original aim of this study was to see if the homeschool learning environment produced more students with a growth mindset than those in traditional schooling. This was our first research question. We had hypothesized this to be the case due to the nature of homeschooling, though there is no direct research about this currently (Jackson, 2016). As formal grades are not normally used in homeschooling as they are in traditional schooling, the homeschool curriculum can be tailored closer to the students' academic needs (Valiente et al., 2022; Firmin et al., 2019; Riley, 2016). The factors that influence growth mindset development are not black and white (Dweck & Yeager, 2019). Though the strongest predictor of a growth mindset is through parents' reaction to their child's failures, according to current research (Haimovitz & Dweck, 2016). This predictor is also seen from teachers in traditional schooling (Mesler et al., 2021).

Given this, we hypothesized that homeschooling may create a better learning environment for students to develop a growth mindset.

We also aimed to see what other factors may influence a growth mindset, if not school type. Informed by current research we included personal factors (loneliness, competence, relatedness, and autonomy), support factors (friend/special person support, familial support, and familial strain), and SES.

Key Findings

To answer our first research question of the study, ultimately there was no significant difference between mindset type and schooling type, seen in our ANOVA (table 3). Furthermore, we still did not see any significant differences in schooling type when it came to mindsets even after controlling for a variety of factors, including personal, support and SES, as seen in our ANCOVA's (table 4). As our groups were very uneven in size, it was difficult to make

a comparison that is accurate to the true population of homeschoolers, so this lack of significant difference may be due to a small sample size. In this case, we cannot conclude that schooling type has an impact on mindset type.

The true population size of homeschoolers in New Zealand aged between 16-18 as of July 2023 was 897; with there being 10,777 homeschoolers overall (Ministry of Education New Zealand, 2024). In New Zealand, as of July 2023, there are 831,038 students total, 180,062 being ages 16-18 (Ministry of Education New Zealand, 2023). Homeschoolers only make up 1.3% of students nation-wide. Our homeschool sample of 21 accounts for 2.3% of the true target population of homeschoolers (ages 16-18) and my traditional school sample accounts for .1% of the target population of traditional schoolers (ages 16-18).

Given the lack of evidence of any difference between students' mindset type and their schooling type in our sample, we decided to look at our second research question, to see if any of the other variables we measured were better predictors of mindset type than schooling.

Loneliness and SES school (i.e. school quality) were found to have a significant influence on both growth and fixed mindset, regardless of schooling type. Though in opposing directions for each mindset. Higher loneliness was associated with a lower growth mindset, but also with a higher fixed mindset. This finding is in line with previous research that finds growth mindset as a buffer against loneliness, and a more fixed mindset often being associated with loneliness (Mosanya, 2021; Wang et al., 2024). We also found that a higher level of perceived friend support was associated with a higher growth mindset, regardless of school type. This finding aligns with the finding that lower levels of loneliness is associated with a growth mindset (Wang et al., 2024). A final significant finding was that a higher level of competence was associated with a lower fixed mindset, regardless of schooling type. This aligns closely to literature on mindsets, as discussed by Dweck herself (Dweck & Molden, 2017). Dweck posits that competence is perceived differently in different people, depending on what they attribute

that feeling of competence to. Those with a growth mindset are more likely to believe in competence-acquisition, where mistakes show effort and progress; yet those with fixed mindset are more likely to believe in competence-validation, where failure is a sign of inability (Dweck & Molden, 2017). Our study adds to this literature and reinforces this finding. There was a similar but inverse finding for SES school (school quality). A higher school quality was associated with a higher growth mindset, but also with a lower fixed mindset. This finding aligns with other research about the link between SES and mindset (Svensen, 2023; Claro, et al., 2016). A growth mindset can prevail against the negative effects of poverty, and a low SES (Claro, et al., 2016); though a link between higher ranking schools and higher levels of growth mindset is yet to be researched. This study adds to the literature surrounding SES and mindset levels.

Our first hypothesis was not supported in the data analysis, potentially due to small sample size.

To answer our second research question, we decided to see if any of our variables explained the variance in each mindset. Two hierarchical regression analyses were run in order to test this, one looking at the growth mindset and one looking at the fixed mindset.

We had hypothesized those with a growth mindset would report higher levels of competence, relatedness, and autonomy (self-determination theory). We also hypothesized that a fixed mindset would be associated with a higher level of loneliness and the opposite for a growth mindset.

In the growth mindset hierarchical regression analysis, the model is only significant at the first step, where the only variable that was significant within that step was Loneliness. This shows us that as loneliness increases, the level of growth mindset decreases. This supported our hypothesis, which had been informed by prior research (Wang et al., 2024). Wang and colleagues (2024) found that those with growth mindsets had more positive emotional coping skills and were better at managing stressors, likely leading to their finding that those with a

growth mindset reported a lower level of loneliness. Interestingly, our growth mindset model was no longer significant in the following steps. So once support factors and SES were controlled for, loneliness no longer partially explained the variance in growth mindset, perhaps being mitigated by the support factors. Our hypothesis on loneliness is also supported by the fixed mindset hierarchical regression analysis, where loneliness was significant at all three steps. Loneliness remained significant through all three steps, which aligns well with current literature regarding loneliness and fixed mindset (Ko et al., 2022). Ko and colleagues (2022) found those who were lonelier tended to have more of a fixed mindset, believed they could not change themselves, and tended to avoid novel tasks to avoid failure. Our findings showed that as loneliness increases, the level of fixed mindset increases too. This model was significant at all three steps, so even when controlling for all other variables loneliness remained a strong predictor of fixed mindset within our sample.

In terms of our hypothesis relating to self-determination theory we did not find any of those factors (competence, relatedness, and autonomy) to have a significant impact on level of growth mindset in our population. Although, we did find that competence had a significant impact on fixed mindset levels, when controlling for other personal factors, and for support factors, but was no longer significant at the third step when we controlled for SES. We found that as competence increases, fixed mindset decreases. This change in significance in competence from step two to three could mean that SES makes enough of a contribution to the variance in fixed mindset, that Competence no longer predicts fixed mindset as accurately. Meaning competence's effect on fixed mindset could be impacted by the individual's SES. Both SES variables were not highly correlated ($r > .8$) with any other variable (table 2), so a violation of multicollinearity is not the reason for this change in the third step. A higher level of competence being associated with lower levels of fixed mindset makes sense, as participants who rated themselves as having higher competence levels may feel more control over their life,

and that their traits are not so 'fixed'. Competence being a good predictor of fixed mindset, even when controlling for support factors aligns well with literature, though it is surprising we did not find increased competence to relate to an increase in growth mindset (Dweck & Molden, 2017). The next step would be to assess those students again, to understand how they view competence, and what they attribute the feeling of 'being competent' to.

Strengths

The significance of these findings on existing literature is that it adds to current homeschool literature, and mindset literature. There is a gap in current research on homeschooling compared to traditional schooling and their respective mindsets towards learning (Valiente et al., 2022). A lot of current homeschooling research is parent-led or from the students themselves (Valiente et al., 2022). It also contributes to current literature on what influences mindsets in young people.

Looking at what students are saying of their experiences is highly valuable, as Haimovitz and Dweck (2016) found, a parent or teacher simply having a certain mindset was not enough to impart that same mindset onto a student. The students' perceptions of their parents' or teachers' reaction to their failures can be a good assessment of how the students' self-concepts are developing (Haimovitz & Dweck, 2017). This study used students' answers on multiple subjective scales, giving insight into how they are perceiving their own mindset. Our study looks into which environment might be best suited for growth mindsets to develop, which is valuable to current mindset research even though our hypothesis was not supported (Dweck & Yeager, 2019).

Our study adds to current homeschooling research in New Zealand which, as compiled by Glenda Jackson, is fairly minimal (Jackson, 2020). Many studies were done by students at a postgraduate level (Jackson, 2017), with private research and research by government

agencies having taken place only in the last 30 years. The common themes in the New Zealand homeschooling research covers parental choice, use of public libraries, school refusal, the legal aspect, and the cultural aspect of homeschooling, as of 2017 (Jackson, 2017). Jackson (2017) also discusses the difficulty of compiling all homeschool research, due to most of the research being unpublished by their respective universities. Jackson (2017) goes on to identify areas of homeschooling research that need more study, including any sort of quantitative analysis, student self-concepts, and focusing on the learning experiences of homeschooled students (Jackson, 2017). Those three areas are what our study targeted and sought to add research to.

Significance within the wider world

Our finding that loneliness is a good predictor of fixed mindset, even when controlling for many other factors, provides parents and teachers with insight into what may be impacting a student's mindset development. Recognising high levels of loneliness in youths, could lead to earlier growth mindset interventions, hopefully providing a buffer to the negative effects of loneliness (Wang, et al., 2024). Also, working on strategies to increase a sense of competence in students would be highly valuable to growth mindset development, as lower levels of competence were found to be a good predictor of fixed mindset. Although our study had similar findings to other literature in terms of loneliness, the support factors did not align with current literature (Wang & Wang, 2024). Support factors, including support from both friends and family, did not impact mindset type in our study. In our growth mindset hierarchical regression analysis, 'loneliness' was no longer a significant negative predictor of growth mindset, after the addition of support factors at step two. This could show that support factors may play a mediating role between loneliness and growth mindset.

Even though previous research has shown links between SES and mindset, this was not found in our study. In our last analysis, we saw that competence was no longer a significant predictor of fixed mindset, after controlling for SES which could tell us that competence may

have a link to SES. This would be interesting future research, as Dweck has already highlighted the link between mindset and perceptions of competence (Dweck & Molden, 2017), so the interplay of SES and competence levels may tell us more about mindset development.

Limitations

The main limitation of our study was the small sample size of our target group homeschoolers (n = 21). This also meant our two groups were very uneven in size. The difficulty of contacting homeschooled students meant we struggled to get an even number of participants. Having such a small sample meant we were not able to compare the two groups in a way that would be accurate to the true population of homeschoolers. The homeschooled students were mainly contacted via their homeschool organisations, limiting our participants to being part of an organisation. Participants from traditional schooling were mainly recruited via Facebook and Instagram through paid advertisements, which limited our population to those who use those social media sites.

Suggestions for future research

Future research into how friendship support relates to growth mindset for homeschoolers would offer good insight into the factors that impact growth mindset. Wang and colleagues (2024) reported that the growth mindset acted as a buffer to loneliness, as higher levels of friendship were associated with a growth mindset.

Loneliness proved to be a good predictor of fixed mindset, yet no variables stood out as good predictors of growth mindset, after controlling for personal factors, support factors, and SES. Another study looking at homeschool vs traditional schoolers using an equal ratio of each group would provide a clearer answer as to whether there is a difference between the level of growth mindset in different school environments. Also continuing research into factors that

predict growth mindset would also be valuable and may make growth mindset interventions stronger.

For example, looking into other schooling types in New Zealand, such as public school versus private school, and the levels of each mindset. In our study we grouped anything other than homeschooling into 'traditional schooling', but a study that takes apart these school types may add more insight into the factors that predict a growth mindset.

As mentioned, research on homeschooling in New Zealand is not vast (Jackson 2020). Research that looks at homeschooled students' perceptions of their parents' feedback, analysis of different homeschooled learning environments, and how homeschooled students perceive their parents' reactions to their failures would add a lot of literature to homeschooling in New Zealand, and the wider world. As well as adding to current literature about how mindsets develop.

We found SES education (i.e. school quality) to have some significance in terms of impact on mindsets, though this was not seen with SES society. Further study into why SES education is more crucial to students' mindsets than SES society would provide new ways of understanding youth's self-perception.

Conclusion

Overall, the results show that loneliness was a highly significant predictor for a fixed mindset. Competence also plays a large role in predicting fixed mindset, with a higher level of competence showing a lower level of fixed mindset. We also found a higher level of perceived friend support was associated with a higher growth mindset, regardless of school type. The main aim of our study was to look at if there was a difference between the level of growth mindset in school types. We crafted a survey to assess homeschooled and traditional schooled participants' level of growth and fixed mindset, in order to compare between them to see which learning environment was more conducive to a growth mindset. We also assessed personal factors, support factors, and SES in order to control for these, and see if they had an impact on

mindset. The findings were in line with current research, and contributes to literature about homeschoolers in New Zealand, and general mindset research in regards to young people. The findings bring attention to the differences in learning environments, and the impacts these environments have on students. This study did not focus on teaching practices within either learning environment, and may not be accurate to the target population of homeschoolers. Further research into the role of friendship on growth mindset, school quality and its impact on mindset development, and the common teaching practices and methods within homeschooling would give further insight into how mindsets develop and what influences them.

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Appendices

Appendix A

Dweck Mindset Scale statements (Dweck, 2000)

- 1 You have a certain amount of intelligence, and you really can't do much to change it.
- 2 Your intelligence is something about you that you can't change very much.
- 3 You can learn new things, but you can't really change your basic intelligence.
- 4 No matter who you are, you can change your intelligence a lot.
- 5 You can always greatly change how intelligent you are.
- 6 No matter how much intelligence you have, you can always change it quite a bit.
- 7 To be honest, you can't really change how intelligent you are.
- 8 You can change even your basic intelligence level considerably.

Appendix B

Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet, et al, 1988)

1. There is a special person who is around when I am in need.
2. There is a special person with whom I can share joys and sorrows.
3. My family really tries to help me.
4. I get the emotional help and support that I need from my family.
5. I have a special person who is a real source of comfort to me.
6. My friends really try to help me.
7. I can count on my friends when things go wrong.
8. I can talk about my problems with my family.
9. I have friends with whom I can share my joys and sorrows.
10. There is a special person in my life who cares about my feelings.
11. My family is willing to help me make decisions.
12. I can talk about my problems with my friends.

Appendix C

Perceived Parental Involvement in Education (Barwegan et al., 2004)

My parent(s):

1. Ask me about school work
2. Support me in doing school work
3. Volunteer at various school functions
4. Served on school committees or groups
5. Assisted me in making decisions about my future after high school
6. Expect me to maintain a high grade in all subjects
7. Expect involvement in extra curricular activities such as clubs or sports

Appendix D

Family Support and Strain Scale by (Schuster et al., 1990)

Family support:

1. How much do members of your family really care about you?
2. How much do they understand the way you feel about things?
3. How much can you rely on them for help if you have a serious problem?
4. How much can you open up to them if you need to talk about your worries?

Family strain:

1. How often do members of your family make too many demands on you?
2. How often do they criticize you?
3. How often do they let you down when you are counting on them?
4. How often do they get on your nerves?

Appendix E

Short-form Loneliness Scale (ULS-8) (Hays, & DiMatteo, 1987)

1. How often do you feel you lack companionship?
2. How often do you feel there is no one you can turn to?
3. How often do you feel outgoing and friendly?
4. How often do you feel left out?
5. How often do you feel isolated from others?
6. How often do you feel you can find companionship when you want it?
7. How often do you feel shy?
8. How often do you feel that people are around you but not with you?

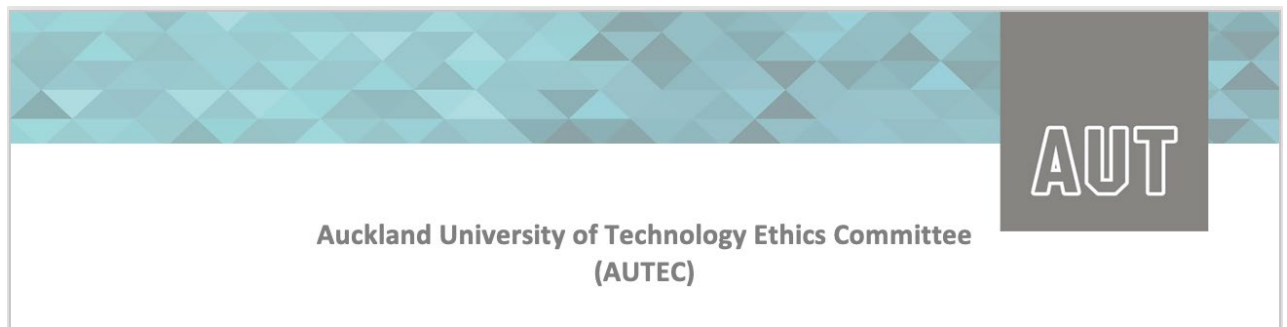
Appendix F

Short-form Psychological Needs Satisfaction scale (BPNS) (Girelli et al., 2019)

1. I feel free to decide for myself how to do my things.
2. I feel good at doing many things.
3. I like the people I interact with.
4. I feel like I am free to decide for myself how to live my life.
5. I am able to learn interesting new skills.
6. I get along with people I meet.
7. Generally, I feel free to express what I really think.
8. I get many chances to show how capable I am.
9. I consider the people I regularly interact with to be my friends.
10. I feel like I can pretty much be myself.
11. People tell me that I am good at what I do.
12. People are generally pretty friendly towards me.

Appendix G

Ethics Form



15 May 2024

Ying Wang

Faculty of Culture and Society

Dear Ying

Re Ethics Application: **24/119 A study on students' mindsets**

Thank you for your responses to AUTEK's conditions.

Your ethics application has been approved for three years until 15 May 2027.

Standard Conditions of Approval

1. The research is to be undertaken in accordance with the [Auckland University of Technology Code of Conduct for Research](#) and as approved by AUTEK.
2. All public facing documents must have the AUTEK approval number and be of a high standard of spelling and grammar. Dates on the Information Sheet(s) and Consent Form(s) must be consistent.
3. Any amendments to the project must be approved by AUTEK prior to being implemented.

4. A progress report is due annually on the anniversary of the approval date.
5. A final report is due at the expiration of the approval period, or, upon completion of project.
6. Any serious or adverse events must be reported to AUTEK, this includes unforeseen issues that might affect continued ethical acceptability of the project.
7. AUTEK grants ethical approval only. You are responsible for obtaining management permission for access from any institution or organisation at which your research is being conducted and you need to meet all ethical, legal, public health, and locality obligations or requirements for the jurisdictions in which the research is being undertaken.

The application number and title need to be referenced on all correspondence related to this project.

All forms are available online <http://www.aut.ac.nz/research/researchethics>

For any enquiries, please contact ethics@aut.ac.nz

(This is a computer-generated letter for which no signature is required)

The AUTEK Secretariat

Auckland University of Technology Ethics Committee

Cc: Xfw0397@autuni.ac.nz; erik.landhuis@aut.ac.nz

Appendix H

Participant information sheet for principals and administration



AUT

TE WĀNANGA ARONUI
O TĀMAKI MAKĀU RAU

Participant Information Sheet

For Principals and administration

Date Information Sheet Produced:

18 April 2024

Project Title

A study on students' mindsets

An Invitation

My name is Isabel, and I invite you to have your students participate in my research project. I am in the final year of my Master of Arts in psychology at Auckland University of Technology, doing my thesis. This research is to complete my MA qualification. No specific school information will be used, so whether you choose to participate or not will neither advantage nor disadvantage you, I am just reaching out to find students to participate in my research.

What is the purpose of this research?

I am wanting to find out which type of schooling gives students a growth or fixed mindset approach to learning; if students feel they have control over their own cognitive processes or not. I want to find out if home schooling produces more growth mindset students than traditional schooling. This research will be valuable for parents and schools when assessing learning environments for their children/students, and contribute to current research on both home schooling and mindsets in adolescents. The findings of this research may be used for academic publications and presentations. This research contributes to the completion of my Master of Arts in Psychology at AUT.

How was I identified and why am I being invited to participate in this research?

Most participants are being recruited through their school's administration. Your school was chosen because you are local to me or part of a random selection of schools in the Auckland area. You are being

asked to send this survey to any of your students who are between the ages of 16-18 (inclusive) and has been enrolled in schooling at least the past two years at public or private school.

How do I agree to participate in this research?

If you are happy to participate, please sign the 'permission to access' form that is attached to this email. Once that form is sent back, I will then send you a link to the anonymous online survey, which you can then send out to all students that fit the above criteria. You can do this via a poster in your school, or through sending the survey link straight to their emails. I can provide a poster to put up if needed, just mention it when sending back the 'permission to access' form. My target group of participants is over 16 years old so I do not need parental consent, but the students will give their consent when they click the link and have a read through of the participant information sheet. If they don't consent, they simply do not do the survey. If they proceed to the survey, that counts as their consent, as to ensure anonymity is maintained. Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you as a school. You are able to withdraw from the study at any time. If you choose to withdraw from the study, then you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

What will happen in this research?

This study involves having homeschooled students and students from public or private schools fill out an anonymous survey. The information given in this survey will inform us about how schooling types may be impacting students' attitude towards their own learning. This survey can be done at any time of day and is completely online and anonymous, so it can be done from anywhere with an internet-connected device.

What are the discomforts and risks?

Some questions on the survey involve questions about family dynamics, and feelings of loneliness which might lead to some discomfort for some participants. Students have the right to withdraw from the survey at any time if it makes them uncomfortable. Furthermore, as outlined in the participant information sheet that students receive, if they need to talk to anyone, we offer the links to services below.

How will these discomforts and risks be alleviated?

- Lifeline 0800 543 354 (available 24/7)
- Suicide crisis helpline 0508 828 865 (available 24/7)
- Youthline 0800 376 633/ text 234 (available 24/7)
- Whatsup 0800 942 8787 (available 12pm-11pm)
- Depression helpline 0800 111 757/ text 4202 (available 24/7)
- Anxiety helpline 0800 269 4389 (available 24/7)
- Rainbow youth 09 376 4155

What are the benefits?

This research will assist me in obtaining my Master of Arts in Psychology as this is the final thesis project. This research will be beneficial for schools and schooling groups to see how their school environment may be impacting students' mindsets towards learning. Researching about student's viewpoints towards their

learning and how this might contribute to their success at school will be valuable to both teachers and students.

How will my privacy be protected?

No identifiable information will be collected about schools in this research. Students' participation in the study is also completely anonymous. No results will be linked to any specific school, and the names of schools will not be included anywhere in the results or publications.

What are the costs of participating in this research?

The only cost to your students as participants is about 15 minutes of their time needed to complete the survey.

What opportunity do I have to consider this invitation?

The survey will be open until 20th June 2024

Will I receive feedback on the results of this research?

Yes, all schools administrations that were initially contacted and sent out the survey will be given a summary of the findings.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, *Dr Erik Landhuis*. email: erik.landhuis@aut.ac.nz; telephone 09 921 9999 extension 6645.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, ethics@aut.ac.nz , (+649) 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Isabel Howard: xfw0397@autuni.ac.nz

Project Supervisor Contact Details:

Ying Wang: y.wang@aut.ac.nz

Appendix I

Permission for access form sent to school principals and administration



Permission for researchers to access organisation school staff / students.

Project title: A study on students' mindsets

Project Supervisor: Ying Wang

Researcher: Isabel Howard

I have read and understood the information provided about this research project in the Information Sheet dated 18 April 2024.

I give permission for the researcher to undertake research within _____

I give permission for the researcher to access the staff /students / employees of _____

Principal's CEO's signature:

Principal's CEO's name:

Principal's CEO's Contact Details (if appropriate):

.....

.....

.....

.....

Date:

Approved by the Auckland University of Technology Ethics Committee on 15 May 2024, AUTEK Reference number 24/119.

Note: The head of the organisation should retain a copy of this form.

Appendix J

Participant information sheet presented to students at the start of the survey



Participant Information Sheet

Date Information Sheet Produced:

17 April 2024

Project Title

A study on students' mindsets

An Invitation

My name is Isabel, and I invite you to participate in my research project. I am in the final year of my Master of Arts in psychology at Auckland University of Technology, doing my thesis. This research is to complete my MA qualification.

What is the purpose of this research?

I am wanting explore students' perceptions of their mindsets: that is, if students feel they have control over their own cognitive processes or not and how this might differ for students of different schooling backgrounds. This research will be valuable for parents and schools when assessing learning environments for their children/students. findings of this research may be used for academic publications and presentations. This research contributes to the completion of my Master of Arts in Psychology at AUT.

How was I identified and why am I being invited to participate in this research?

You are invited to participate as you have expressed interest to take part in this research by using the URL or QR code on advertisements from participating schools/schooling groups or posted on social media, or on posters around the AUT campuses, or provided this link by someone you know. To participate, you must be between the ages of 16-18 and have been a student for the past years (at least).

How do I agree to participate in this research?

If you choose to participate in this study, simply continue onto the survey after reading this information sheet. Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. Consent will be assumed when you complete the survey. You can withdraw from the study at any time by exiting the browser window. However, As the study is anonymous, it is not possible for us to remove your data if you choose to withdraw from the study partway through.

What will happen in this research?

This study involves a questionnaire that should take no longer than 15 minutes to complete. The questionnaire will ask basic questions about you and your schooling type. It will then cover a range of questions, all of which will be on agree/disagree scales. At the end of the questionnaire, you will have the option to click a link taking you to a separate survey where you can input your email to enter into a prize draw for 1 of 8 \$50 Prezzy cards. This is an optional step. This survey can be done at any time of day and is completely online and anonymous, so it can be done from anywhere with an internet-connected device.

What are the discomforts and risks?

Some questions on the survey involve questions about family dynamics, and feelings of loneliness which might lead to some discomfort for some participants. You have the right to withdraw from the survey at any time if it makes you uncomfortable.

How will these discomforts and risks be alleviated?

If you need to talk to someone you can contact:

- Lifeline 0800 543 354 (available 24/7)
- Suicide crisis helpline 0508 828 865 (available 24/7)
- Youthline 0800 376 633/ text 234 (available 24/7)
- Whatsup 0800 942 8787 (available 12pm-11pm)
- Depression helpline 0800 111 757/ text 4202 (available 24/7)
- Anxiety helpline 0800 269 4389 (available 24/7)
- Rainbow youth 09 376 4155

What are the benefits?

This research will assist me in obtaining my Master of Arts in Psychology as this is the final thesis project. As a thank you for your time, you will be given the option at the end of the survey to enter into a prize draw for 1 of 8 \$50 Prezzy gift cards.

How will my privacy be protected?

No identifiable information will be collected in this research. If you choose to enter the prize draw, you will need to provide an email address to be sent the gift card. This information will not be linked to the survey just completed as it is a separate 'survey'.

The study is anonymous. We will not be collecting any information that could identify you. Nor will there be any form of follow-up. The data will only be used for understanding students' perceptions of their mindsets. If you choose to enter the prize draw, you will need to provide an email address to be sent the gift card. Your email collected as part of the prize draw will be kept completely separate from your survey responses to ensure anonymity. To protect the privacy of participants, while the questionnaire is ongoing,

the anonymous electronic data will be stored on Qualtrics. During post analysis, electronic data will be stored on secure AUT network drives. The data from Qualtrics are numbers on a spreadsheet which cannot be used to identify any participants and is not linked to any other data we have. We will not sell the data. Non-identifiable data may be made available to scientific journals in the field for the purposes of ensuring the rigour of research. This is a norm in psychology research. Anyone uncomfortable with the data policy for the project should not proceed with the survey.

What are the costs of participating in this research?

The only cost to you as a participant is about 15 minutes of your time needed to complete the survey.

What opportunity do I have to consider this invitation?

The survey will be open until 20th June 2024.

Will I receive feedback on the results of this research?

Due to the anonymous nature of the study, we will not be able to give you feedback about your individual data and responses, however, a summary of our findings will be made available on request. Furthermore, all schools/groups administrations that were initially contacted and sent out the survey will be given a summary of the findings.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, *Dr Erik Landhuis*. email: erik.landhuis@aut.ac.nz; telephone 09 921 9999 extension 6645.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, ethics@aut.ac.nz, (+649) 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Isabel Howard: xfw0397@autuni.ac.nz

Project Supervisor Contact Details:

Ying Wang: y.wang@aut.ac.nz

Appendix K

Advertisement sent to schools and homeschool groups to advertise the study to their students.



Take Part in
Our
Research
Study!

**Calling all 16-18
year old students**

WE ARE LOOKING AT STUDENTS APPROACHES TO LEARNING. ALL STUDENTS BETWEEN THE AGES OF 16-18 WHO HAVE DONE THE LAST TWO YEARS AT SCHOOL OR DOING HOME SCHOOLING CAN TAKE PART! 8 \$50 PREZZY CARDS TO WIN!



SCAN QR
CODE TO
ACCESS
STUDY INFO
AND TAKE
PART

