

The European Journal of Social and Behavioural Sciences
EJSBS Volume XXIV, Issue I (e-ISSN: 2301-2218)

OVERCOMING STUDENTS' LIMITING VIEWPOINTS VIA LEARNER & STRESS MINDSET TEACHING INTERVENTIONS

Jason Gold^{a*}

^a *Kwansei Gakuin University, 1-155 Uegahara Ichibancho, Nishinomiya, Hyōgo, 662-8501, Japan*



Abstract

The mindsets, or core beliefs students hold towards learning, intelligence, challenge, resilience and stress can greatly influence their academic behaviours and achievement. However, students entering university may (inadvertently) have appropriated negative or self-limiting mindsets, which can adversely influence not only their academic success but also their overall mental and physical well-being. Constructively stated, these mindsets can be taught by targeting students' core beliefs. Educational interventions have shown to transform students' experiences and achievements in school. This case study has two overall purposes. First, to ascertain to what extent university students' mindsets are self-limiting. Second, to discover if classroom mindset interventions throughout a semester can be effective in helping students realize and overcome any such self-limiting viewpoints. The interventions were separated into four distinct sessions based on four key areas of academic tenacity: 1) Learner Mindsets (Fixed vs Growth); 2) Performance vs Learning Goals; 3) Grit/resilience; and 4) Stress Mindsets. A mixed method research design was employed to collect data from 53 Japanese university ESL students. Questionnaires given before and after the intervention were employed for data collection. To support the quantitative data, qualitative data analysis was conducted at the end of the semester through student reflections. Results from baseline questionnaires showed a notable percentage of students initially did have self-limiting viewpoints regarding academic tenacity factors. However, final questionnaires and reflections showed a significant shift in awareness, and the desire by students to utilize positive mindsets in their academic, professional, and personal lives.

Keywords: Mindset, stress, intervention, lifelong learning

© 2019 Published by Future Academy. Peer-review under responsibility of Editor(s) or Guest Editor(s) of the EJSBS.

*Corresponding author.

E-mail address: jasongold526@gmail.com

doi: 10.15405/ejsbs.246



This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.

1. Introduction

The purpose of school is to foster and maximize student growth and learning. As such, researchers and educators are constantly seeking accurate predictors that will result in higher academic achievement. Often these take the form of cognitive skills, such as language skill improvements, or in enhancing things like student attention, memory, problem-solving abilities, etc. However, focusing just on cognitive factors is not enough. “Research shows that non-cognitive factors are critical for ongoing academic success. These factors include students’ self-efficacy, their goals in school, their feelings of social belonging, and their self-regulatory skills” (Dweck, Walton, & Cohen, 2014, p. 5). These non-cognitive factors that promote long-term learning and achievement can be brought together under the label ‘academic tenacity.’ “Academic tenacity is about working hard, and working smart, for a long time. More specifically, academic tenacity is about the mindsets and skills that allow students to: look beyond short-term concerns to longer-term or higher-order goals, and withstand challenges and setbacks to persevere toward these goals” (Dweck et al., 2014, p. 4).

However, while non-cognitive factors are just as vital to students’ academic success, they are often overlooked, either due to the assumption our students already possess them or because they are viewed as out of scope for the classroom. This oversight can prove adverse to our students, since “if learners do not believe in their potential to improve, no matter how pedagogically sound teaching materials or curricula may be, they may fail to connect and motivate learners on their core beliefs” (Leung, 2018, p. 17). Furthermore, success is not just a matter of having intelligence or ability. “As students move through our educational system, all of them will face adversity at one time or another, whether it is social or academic in nature. Thus, a central task for educators is to prepare students to respond resiliently when these inevitable challenges arise” (Yeager & Dweck, 2012, p. 312).

Especially crucial to this are ‘mindsets,’ or cardinal beliefs that bias how we think, feel, and act. “There is more to student success than cognitive ability, curriculum and instruction. Students’ mindsets—their beliefs about themselves and the school setting—can powerfully affect whether students learn and grow in school” (Yeager, Paunesku, Walton, & Dweck, 2013, p. 2). These mindsets act like filters we see everything through based on a certain theory about how the world works; for example, money will make you happy, everything happens for a reason, or people cannot change. “All of these beliefs have the potential to shape how you interpret experiences and make decisions. When a mindset gets activated it sets off a cascade of thoughts, emotions, and goals that shape how you respond to life. This, in turn, can influence

long-term outcomes, including health, happiness, and even longevity” (McGonigal, 2016, pp. 11-12).

Thus, while school places heavy emphasis on cognitive skills, it often neglects to address these core beliefs students hold, some of which may be detrimental to their learning and success. The mindset students hold towards things like learning, intelligence, stress, etc. can greatly influence their academic behaviors and achievement, because “students need to think of themselves and school in certain ways in order to want to learn and in order to learn successfully” (Dweck et al., 2014, p. 2). Some of our students may have naturally acquired these mindsets and skills along the way and come to our classrooms equipped with them, but a potentially large number of students will not have, or will have appropriated instead negative mindsets which suppress their full potential from being realized.

The good news though, is that these mindsets and skills can be taught. Research continues to reveal that academic interventions targeting these factors can result in improved student GPA, test scores, and overall achievement not just in the short-term, but also months and even years later (Dweck et al., 2014). The next section will introduce four key areas of academic tenacity – 1) learner mindsets and praise/feedback; 2) performance vs learning goals; 3) grit/resilience; and 4) stress mindsets – and illustrate that explicitly teaching mindset interventions in these areas have been shown to cause a paradigm shift in student learning, persistence, confidence, and success.

2. Learner Mindsets

Neuroscience research since the advent of imaging technology (MRI, PET, EGG, etc.) has shown that our brains are surprisingly malleable, and can continue to adapt, change, and be improved throughout our lives (Willis, 2010). Yet despite such findings regarding our brain’s plasticity, “many children, as well as many adults, mistakenly think that intelligence is determined at or before birth by their genes and that their effort will not significantly change their potential for academic success” (Willis, 2010, pp. 61-62).

The Learner Mindset Theory, first posited by Stanford researcher Carol Dweck, states that students generally fall into one of two categories, a fixed mindset or a growth mindset, related to how they view intelligence and ability. Which of these two mindsets our students possess has huge ramifications on their learning, as well as how they will respond to challenges, effort, feedback, and setbacks (Figure 1).

Fixed mindset students believe that intelligence and ability is an innate and fixed trait, like one’s eye color or height, and there isn’t much that can really be done to change it. “Learners with fixed mindsets are more likely to engage in maladaptive learning behavior such

as avoiding challenges which risk failure, setting themselves lower goals, and being discouraged to continue learning due to mistakes and failure” (Leung, 2018, 11). Conversely, growth mindset students believe that one’s intelligence isn’t fixed or set in stone, and that but can be cultivated through effort. Even though everyone has different initial abilities, aptitudes, and temperaments everyone can also change and grow through application and experience Growth mindset students tend to seek critical feedback in order to learn from mistakes and failures, as well as display resilience and perseverance when faced with challenges or setbacks (Dweck, 2006).

FIXED MINDSET		GROWTH MINDSET
<ul style="list-style-type: none"> • Fixed, something you’re born with 	SKILLS	<ul style="list-style-type: none"> • Come from hard work • Can always improve
<ul style="list-style-type: none"> • Something to avoid • Could reveal lack of skill • Tend to give up easily 	CHALLENGE	<ul style="list-style-type: none"> • Should be embraced • An opportunity to grow • More persistent
<ul style="list-style-type: none"> • Unnecessary • Something you do when you are not good enough 	EFFORT	<ul style="list-style-type: none"> • Essential • A path to mastery
<ul style="list-style-type: none"> • Get defensive • Take it personal 	FEEDBACK	<ul style="list-style-type: none"> • Something to learn from • Identify areas to improve
<ul style="list-style-type: none"> • Blame others • Get discouraged 	SETBACKS	<ul style="list-style-type: none"> • Use a wake-up call to change strategies or work harder

Figure 1. Fixed vs Growth Mindset (adapted from Dweck, 2006)

Research has demonstrated that teaching and cultivating a growth mindset boosts motivation, resilience, self-efficacy and self-esteem, and ultimately leads to higher academic achievement, and that even brief interventions that convey a growth mindset can have important, lasting effects on student learning and performance. For example, underperforming high school students who participated in an online growth mindset program had significantly higher GPAs and passed more courses than students in a controlled condition (Romero, Master, Paunesku, Dweck, & Gross, 2014), and participants who read a growth-mindset-inducing article had stronger growth beliefs than participants who read a fixed-mindset-inducing article, indicating that even a small intervention (a mock magazine article) was able to shift the participants’ learning mindsets (Noels & Lou, 2015). Students’ mindset is therefore, key.

Connected to learner mindsets is feedback and praise. Often without realizing or intending to do so, at times we may unintentionally promote the fixed mindset through our feedback and praise. Natural intuition is to laud students for being smart and for their positive

abilities. However, this sends the wrong message, because we are ultimately emphasizing natural intelligence or ability (fixed), not their efforts. Research has shown that “praising students for their ability taught them a fixed mindset and created vulnerability, but praising them for their effort or the strategy they used taught them the growth mindset and fostered resilience” (Dweck et al., 2014, p. 6). Studies conducted by Gunderson et al. (2013) revealed that children who received effort praise tended to be more persistent at sticking with problems, while children receiving ability praise gave up quicker. “Even subtle verbal feedback from adults, such as saying a student is “smart,” can put children in a fixed mindset and undermine motivation, since it put students in a world in which people evaluate intelligence. In contrast, praising the student’s “process” (their effort or strategies) fosters resilience” (Yeager et al., 2013, p. 7).

3. Performance vs Learning Goals

The next key area of academic tenacity has to do with two different kinds of goals: performance goals, or ways of proving one’s ability, and learning goals, or ways of improving one’s ability. Which of these goals our students predominantly endorses can predict their academic achievement. “Students who see intelligence as fixed often worry about how much intelligence they actually have. For this reason, they tend to focus on performance goals—to perform well (a performance approach goal) and to avoid performing poorly (a performance avoidance goal). They also aim to exert as little effort as possible, because they tend to believe that high effort will be seen as a sign of low ability” (Dweck et al., 2014, p. 8). Particularly harmful for students is focusing on avoiding failure. Students who endorse performance avoidance goals prefer easy work that helps them to avoid mistakes and setbacks, but such goals do not challenge or stretch the student, and thus affords no new opportunity to learn.

However, students who operate on a growth mindset value overall learning and constantly want to improve, and thus, focus more on learning goals. “Students who endorse learning goals tend to seek out academic challenges, persist on difficult academic tasks more, and develop their abilities more readily, learning goals promote academic tenacity” (Dweck et al., 2014, p. 8).

4. Grit/Resilience

Another key factor of academic tenacity is grit/resilience. “Resilience - or whether students respond positively to challenges—is crucial for success in school and in life” (Yeager & Dweck, 2012, p. 302), as is grit, the ability to resist temptation and control impulses in the short-term, in addition to perseverance and passion for long-term goals (Duckworth, Peterson,

Matthews, & Kelly, 2007). Because high levels of achievement often require sustained effort on difficult tasks, grit (which is unrelated to IQ) has been shown to be an important positive predictor of students' academic success, GPA, and performance and retention in demanding situations (Dweck et al., 2014, p. 13). Studies have shown that what students need the most is "mindsets that represent challenges as things that they can take on and overcome over time with effort, new strategies, learning, help from others, and patience. When we emphasize people's potential to change, we prepare our students to face life's challenges resiliently" (Yeager & Dweck 2012, p. 312).

5. Stress Mindsets

The last key area has to do with how our students view and respond to stress. Throughout our lives, we have learned that stress is bad for us both mentally and physically. Past research studies have shown that stress can make us sick, increase the risk of everything from common cold to heart disease, depression, and addiction, kill brain cells, damage our DNA, and make us age faster (Crum, Salovey, & Achor, 2013). A 2015 U.S. stress study showed that 85% of Americans believe stress has a negative impact on their health, family life, and work, and most people perceive their own stress levels as unhealthy (McGonigal, 2016).

However, recent research has shown this isn't entirely accurate. In one breakthrough study (Keller et al., 2012), 30,000 adults in the US were asked how much stress they had experienced in the past year, as well as if they believed stress was harmful to their health. Eight years later researchers searched public records to find out who among the 30,000 had died. The results showed that high levels of stress had increased the risk of dying by 43%, but shockingly, this only applied to people who had also believed that stress was harming their health. "People who reported high levels of stress but who did not view their stress as harmful were not more likely to die. In fact, they had the lowest risk of death of anyone in the study, even lower than those who reported experiencing very little stress....researchers concluded it wasn't stress alone that was killing people. It was the combination of stress and the belief that stress is harmful" (McGonigal, 2016, xii).

This Stress Mindset Model illustrates that different ways of dealing with stress lead to either enhancing or debilitating outcomes. "People who believe stress is enhancing are less depressed and more satisfied with their lives than those who believe stress is harmful. They have more energy and fewer health problems. They're happier and more productive at work. They also have a different relationship to the stress in their lives: They are more likely to view stressful situations as a challenge, not an overwhelming problem. They have greater confidence

in their ability to cope with those challenges, and they are better able to find meaning in difficult circumstances” (McGonigal, 2016, p. 16).

Mindset shifts in how we think about our stress can actually transform the effect that stress has on us in the moment. “When you face difficulties head-on, instead of trying to avoid or deny them, you build your resources for dealing with stressful experiences. You become more confident in your ability to handle life’s challenges. You create a strong network of social support. Problems that can be managed get taken care of, instead of spiraling out of control. Situations that you can’t control become opportunities to grow. In this way, as with many mindsets, the belief that stress is helpful becomes a self-fulfilling prophecy” (McGonigal, 2016, p. 18).

6. Mindset Interventions

In the US, “educators, psychologists, and even economists have come to recognize the importance of non-cognitive factors in achievement both in school and in the labor market” (Dweck, Walton, & Cohen, 2014, p. 2), and that targeted mindset interventions can be effective in promoting such non-cognitive skills. Furthermore, “the new field of mindset science shows that a single brief intervention, designed to change how you think about something, can improve your health, happiness, and success, even years into the future” (McGonigal, 2016, p.4). This is because “academic-mindset interventions target students’ core beliefs about school and learning. In so doing, they can change how students interpret and respond to challenges in school and set in motion positive recursive cycles that increase success over time” (Paunesku et al., 2015). Furthermore, explicit mindset interventions hold much potential because even short sessions can be effective: “Research shows that successfully addressing each of these mindsets, sometimes using brief (1-2 session) theory-based interventions, can improve student performance and reduce achievement gaps in a way that endures over time” (Yeager et al., 2013, p. 4).

7. Problem Statement

Many of us became educators because we enjoyed learning and school. During our school years, we acquired the strategies and mindsets necessary to succeed in our academic endeavors: we developed good study habits, changed our strategies if/when they didn’t work, sought out help from others when needed, developed grit, and managed to persevere through difficult times of disappointment, stress, and failure, knowing that as long as we put in the time, effort and energy we could succeed.

By the time students reach the university stage, it is often assumed that they too (should) have already acquired the same learning strategies and mindsets necessary for academic success. However, this assumption is often unfounded—in fact students entering university may not have developed academic tenacity or possess a growth mindset, but still (inadvertently) hold self-limiting viewpoints of intelligence and ability, and perceive effort and stress as negative and things to be avoided. This may be especially true in Japan due to its education system, which is heavy on passive learning and an extreme emphasis on memorization of facts and knowledge for standardized testing, which could further stymie non-cognitive growth. This can negatively influence not only their academic success but also their overall mental and physical well-being.

“Many educational reform efforts have focused on increasing rigor in curricula and instruction, but if they do not also address resilience in the face of these more challenging standards, then making such improvements may be less effective than hoped” (Yeager & Dweck, 2012, p. 306). Furthermore, “Addressing social and emotional learning in the curriculum and in pedagogical practices may be one important way to enhance the motivation, resilience and academic self-efficacy of students that have previously experienced educational disadvantage, and potentially boost their academic achievement and retention outcomes” (Lisciandro, Jones, & Strehlow, 2016, p. 8).

8. Research Questions

This paper will seek to answer the following research questions:

1. Do Japanese university students have self-limiting mindsets regarding learning and stress?
2. Are brief mindset interventions effective in allowing students to realize and overcome such self-limiting viewpoints?

9. Purpose of the Study

Various research has been done on learner and stress mindsets, but “research in the field of mindset interventions for L2 learners are relatively few” (Leung, 2018, p. 13). This study has two overall purposes. First, the study will attempt to ascertain initially if (Japanese) university students’ possess mindsets regarding intelligence, learning and stress which are enhancing or self-limiting. Second, it will attempt to discover if classroom mindset interventions throughout a semester can be effective in realizing and overcoming students’ self-limiting viewpoints.

10. Research Methods

According to Yeager et al. (2013), “Mindset interventions have three essential qualities: They (1) successfully target students’ beliefs about themselves and their educational environments, (2) are delivered in a psychologically precise and potent way, and (3) tap into recursive processes in school (virtuous cycles) that sustain the effects of the initial intervention” (p. 15).

The mindset interventions used for this study were introduced and interwoven into Japanese university students’ regular ESL classes via short ‘Mindset Modules.’ The modules were separated into four distinct sessions over the course of the semester based on the aforementioned factors of academic tenacity: 1) Learner Mindsets (Fixed vs Growth); 2) Performance vs Learning Goals; 3) Grit/resilience; and 4) Stress Mindsets. Each mindset intervention consisted of prelection questions, YouTube videos (ex. TED Talk, etc.), customized handouts, PowerPoint lessons, class discussions, and reflection assignments. Instructor feedback throughout the course also focused on growth mindset strategies such as emphasizing effort and learning goals over fixed mindset strategies such as praising intelligence, ability, or performance goals.

This case study employed mixed methods of data collection in three classes among 53 second and third year participants. To establish a baseline of student reasoning, quantitative data collection via questionnaires was employed before each mindset intervention lesson. At the end of the semester, again quantitative data collection via questionnaires was employed to gauge changes in student thinking, as well as the students’ perceived usefulness of each Mindset Intervention. Yeager et al. (2013) also affirm that, “rather than simply presenting an appeal to a student, mindset interventions frequently enlist students to generate the intervention itself...interventions provide a built-in element of personalization - individual students respond to intervention prompts in ways that customize the intervention message for themselves...increasing the robustness of the intervention across diverse students” (p.18). Therefore, qualitative data analysis was also conducted via student reflection assignments to get a more in-depth look at the thinking and reasoning of student responses.

11. Findings

Pre-intervention baseline questionnaires showed a notable percentage of students initially had self-limiting viewpoints regarding learning, intelligence, and stress.

12. Before Learner Mindset Interventions – Quantitative Data Results

Before beginning the learner mindset interventions, students were shown eight statements (Table 1) related to their views of intelligence, ability, effort, failure, and praise (Brock & Hundley, 2016), and asked to choose whether or not they believed them to be true. Results varied but overall showed a notable percent of students held some potentially self-limiting viewpoints.

Table 1. Before Learner Mindset Lessons: Quantitative Data (n=53)

LEARNER MINDSET STATEMENT	TRUE	FALSE
1. We can learn new things, but we can't really change our basic intelligence.	18 (34%)	35 (66%)
2. Intelligence is the major cause of academic success in school.	40 (75%)	13 (25%)
3. Praising intelligence ("You're so smart!" "You're a natural at this!") builds confidence and motivation to learn.	47 (89%)	6 (11%)
4. If I have to work hard at something, it means that I'm not smart.	3 (6%)	50 (94%)
5. I usually quit if something gets difficult or frustrating.	16 (30%)	37 (70%)
6. I don't mind making mistakes. They help me learn.	40 (77%)	12 (23%)
7. Anyone can learn something if they work hard at it.	49 (92%)	4 (8%)
8. People are born either stupid, average, or smart, and they can't change it.	5 (9%)	48 (91%)

Regarding intelligence/ability, 34% of students believed they couldn't really change their basic level of intelligence, and 75% of students believed intelligence was the major cause of academic success in school (both of which are untrue). 89% believed in the fixed mindset assumption that praising intelligence builds confidence and motivation to learn. Regarding effort and mistakes, 30% claimed to quit if something they were doing became difficult or frustrating, with another 23% holding a fixed mindset towards making mistakes, answering negatively the statement "I don't mind making mistakes. They help me learn." These results were worrying, since nearly a quarter to a third of students in the classes had negative viewpoints towards putting in effort to learn, didn't believe they could improve their intelligence, and had a tendency to quit vs persevering and having grit towards learning.

For the remaining statements, the majority of the students seemed to hold positive mindsets upon beginning the semester, but a handful of students' responses also revealed a fixed mindset view, with 9% believing people were born either stupid, average, or smart, and they couldn't change it, 6% feeling they weren't smart if they had to work hard at something,

and 8% not believing in the statement “anyone was capable of learning something as long as they worked hard at it.”

These results can support the claim that without explicit mindset interventions, student learning could be hindered due to their negative thinking, as well as the resulting actions (or lack of) that would arise during learning and related to effort given, response to constructive feedback, setbacks, and failure. Such students may benefit from mindset interventions related to growth mindset and grit.

13. Before Stress Mindset Interventions – Quantitative Data Results

Like the Learner Mindset Modules, before beginning the stress mindset intervention lessons, students were shown six statements (Table 2) related to their views of stress (Crum et al., 2013; McGonigal, 2016) and asked to choose which they believed were true. Again, overall the baseline questionnaire showed a large percent of students held potentially self-limiting viewpoints regarding stress. This was as predicted, since most people grow up learning that stress is bad.

Table 2. Before Stress Mindset Lessons: Quantitative Data (n=53)

If you had to sum up how you feel about stress, which statement would be more accurate?	NUMBER OF STUDENT RESPONSES
A) Stress is harmful and should be avoided, reduced, and managed.	39 (74%)
B) Stress is helpful and should be accepted, utilized, and embraced.	14 (26%)
Which statements do you agree with? Write the NUMBER ONLY of EACH statement you agree with in the space below:	NUMBER OF STUDENT RESPONSES
1) Experiencing stress negatively affects my health and vitality.	33 (62%)
2) Experiencing stress negatively affects my performance and productivity.	27 (51%)
3) Experiencing stress negatively affects my learning and growth.	11 (21%)
4) Experiencing stress positively affects my performance and productivity.	14 (26%)
5) Experiencing stress positively affects my health and vitality.	7 (13%)
6) Experiencing stress positively affects my learning and growth.	24 (45%)

74% of students stated they felt stress was harmful and negative. To explain further, 62% of students agreed that stress negatively affects their health (ex. exhaustion), 51% felt that it negatively affects their performance (ex. sports activities), and 21% that it negatively affects their learning and growth. These results support the claim that students’ learning and health may be adversely impacted by their negative viewpoint of stress on their mind and bodies. Such students may be able to benefit from an explicit mindset intervention regarding the new science and findings related to stress.

14. End of Semester Learner Mindset Lessons: Quantitative Data Results

End-of-semester questionnaires and reflection writings showed a striking shift in student awareness, and a strong desire to utilize positive mindsets in their studies and lives going forward.

At the end of the semester, quantitative as well as qualitative data was collected to gauge changes in student thinking and the effectiveness of the mindset interventions. First, students were given five questions (below) and asked to score the effectiveness of different aspects of the mindset interventions on a scale of 0-10 (0=not at all effective, 10= very effective), as well as provide some reasoning for their choice.

Table 3. Final Mindset Module Quantitative Data (n=50)

Score (0-10; 0=not effective, 10=very effective)	0	1	2	3	4	5	6	7	8	9	10	% 7-10
Questions:												
1. How useful were the Mindset Lessons about Fixed and Growth Mindset?	0	0	0	3	1	5	8	11	11	6	5	66%
2. How useful were the Mindset Lessons about Performance Goals, Learning Goals and SMART Goals?	0	0	0	1	1	5	8	12	10	8	5	70%
3. How useful were the Mindset Lessons about Challenge, Failure, and GRIT?	0	0	0	0	4	5	5	14	10	7	5	72%
4. How useful were the Mindset Lessons about Stress?	0	0	0	0	5	6	6	13	9	6	5	66%
5. Overall, how interesting and useful did you find the Mindset Lessons? Why?	0	0	0	0	2	2	8	10	10	10	8	76%

Overall, students asserted that overall the mindset interventions had been useful, with two-thirds or more of the students rating each intervention with a score of 7 or higher (Table 3). Student comments revealed that the majority of students hadn't been aware of the importance of mindsets in and out of school, as well as their own limiting viewpoints regarding them. A number of comments displayed shock at never having learned these mindsets before, and how they resulted in a paradigm shift in their overall thinking. The comments for scores less than 6 were almost entirely related to the difficulty of understanding either the English used during each mindset intervention, or the content of the mindset intervention themselves. This shows a need to further simplify the English and explanations used in each intervention to reach all ability levels of Japanese ESL students.

However, anecdotal evidence alone is not sufficient to gauge the effectiveness of the mindset interventions. In an attempt to justify the influence of the interventions, qualitative data via a Final Mindset Reflection Assignment was also collected. Students were asked to

give their beliefs/opinions about intelligence, ability, effort, challenge, failure, grit, and stress before they began the semester, then again upon the completion of the mindset interventions and the semester. Finally, they were asked to share how what they learned could possibly be useful in their lives or the real world, and if the lessons might influence their thinking or actions going forward. Each question response was also coded as either 1) being positive or holding a growth mindset view, or 2) being negative or holding fixed mindset view, based on the content in each student’s reply.

Before the mindset interventions, responses revealed a notable number of students held self-limiting, fixed mindset views. 55% of students had a negative view regarding intelligence/ability, and 50% had a fixed mindset. The belief that people are born with a certain amount of intelligence/ability and can’t do much to change that was prevalent. Representative sample student responses further elucidated this (see Table 4). Students fared better regarding effort, challenge, grit and failure, with around 25% of student responses negative. However, while many deemed effort and challenge as a necessary component of success, many students deemed failure to be wholly negative, and took measures to avoid it, such as limiting or avoiding new, challenging, or difficult endeavors. Lastly, nearly all students (98%) held negative views of stress, citing anecdotes about how stress makes them mentally and physically sick and exhausted.

Table 4. Final Mindset Reflection Assignment: Before Intervention Student Fixed Mindset Responses

PART I: I Used to Know/Think... semester,	<u>BEFORE</u> we began this
<p>A. <u>Intelligence/Ability:</u> <u>Negative/Fixed Mindset</u></p> <p>1. What were your beliefs/opinion about intelligence/ability? (55%)</p> <ul style="list-style-type: none"> • <i>“I thought that human intelligence and ability were decided since birth. Each person is useful in his or her own way and it was never changed by the effort.”</i> • <i>“I used to think that intelligence or ability is limited depending on person. For example, I used to think that smart people are smart but not smart people cannot be smart even if they study hard. Because of that thought, I sometimes stop trying to understand difficult questions.”</i> <p>2. In general, do you think you were mainly a <u>fixed mindset</u> or <u>growth mindset</u>? (50%)</p> <ul style="list-style-type: none"> • <i>“I thought I was relatively fixed mindset. During the period from elementally school to high school, I couldn’t feel my study skill improve, and I always thought I was stupid.”</i> • <i>“I used to think that ability was something we are given when born. For example, some people can higher grade in a test than others with same amount of study. I think I was generally fixed mindset because there are few things that I can say I made an effort for.”</i> 	

B. Effort/Challenge/Failure/Grit:

Negative/Fixed Mindset

1. **What were your beliefs/opinion about effort, challenge and failure?**
(24%)
2. **In general, did you think positively or negatively about effort/challenge/failure?**
(26%)
 - *“I like to challenge new things. However, I’m always afraid failure so I don’t try to do difficult things.”*
 - *“I thought effort, challenge and failure were negative. I suffered from them and they sometimes made me sad.”*
 - *“Actually I thought negatively about effort, challenge and failure. That’s because I didn’t want to have those experiences as those experiences would cause me trouble.”*

C. Stress:

Negative/Fixed Mindset

1. **What were your beliefs/opinion about stress?**
(98%)
 - *“I used to think stress is bad thing for me because I sometimes feel bad from too much stress.”*
 - *“I thought stress should be removed from our mind because stress can cause us to be sick. A teacher in my junior high school got stress too much and he became sick so that he quit his job.”*
 - *“Before I took this class, I used to think stress is very bad for the health and we should avoid it. I tend to bottle up the stress inside myself and tried not to talk to people about it because I used to think talking about stress is something negative, something that others would not like listening to. I also thought stress is the evidence of that person’s weakness. Therefore, people who don’t show stress are strong.”*

After the mindset interventions, responses revealed a significant number of students now understood the importance of the academic tenacity factors and had altered their opinions to embrace enhancing or growth-mindset views. Nearly 100% of students claimed to have positive views of intelligence/ability (up by 53%), and 88% now had a growth mindset (up by 38%). Responses showed students had replaced their erroneous belief that intelligence/ability is immutable to one where effort can influence it. 100% of students also now held positive mindsets regarding effort, challenge, grit, and especially failure, where student reflections showed marked changes in thinking (see Table 5). Lastly, 74% of students demonstrated a positive mindset to stress (up by 72%). This particular intervention seemed to have the biggest shock factor for students, with many writing that they hadn’t known there were different kinds of stress, and that the way one thinks about stress can influence how it affects them, or that stress could actually be beneficial.

Table 5. Final Mindset Reflection Assignment: After Intervention Student Growth Mindset Responses

PART 2: Now I Know/Think...	AFTER finishing this semester,
<p>A. <u>Intelligence/Ability:</u> <u>Positive/Growth Mindset:</u></p> <p>1. Now what are your beliefs/opinions about intelligence/ability? (98%)</p> <p>2. In general now, do you think you are mainly a <u>fixed mindset</u> or <u>growth mindset</u>? (88%)</p> <ul style="list-style-type: none"> • <i>“I wish I could know about this earlier, so I could try my best when I was believing that intelligence/ability are things that I cannot improve.”</i> • <i>“Now I think intelligence can improve if I make efforts. People who have intelligence and ability often make hard efforts without having them be noticed by others.”</i> • <i>“After learning about growth mindset and fixed mindset, I realized that the limit in people are caused by the fixed mindset. Also, now I believe everyone is born with special abilities but it’s their action that’s killing the abilities. With the mind always wanting to achieve something, not by comparing with others but with themselves, anyone can grow and become talented.”</i> 	
<p>B. <u>Effort/Challenge/Failure/Grit:</u> <u>Positive/Growth Mindset:</u></p> <p>1. What are your beliefs/opinions about effort/challenge/failure/grit? (100%)</p> <p>2. In general now, do you think positively or negatively about effort? Challenge? Failure? (100%)</p> <ul style="list-style-type: none"> • <i>“I learned failure is important for success so I want to have a grit to fail.”</i> • <i>“I think effort, challenge and failure are important and related with each other. We challenge our goal, make a lot of effort to realize the goal, fail to fulfill the goal, then make more efforts and realize the goal.”</i> • <i>“In the class, we learned “if people don’t challenge, they cannot reach goal.” I was impressed by this. I thought challenge was important before, but I didn’t challenge, and I always escaped from doing difficult. I was able to feel the importance of challenge again.”</i> 	
<p>C. <u>Stress:</u> <u>Positive/Growth Mindset:</u></p> <p>1. Now what are your beliefs/opinions about stress? Do you feel differently about stress? (74%)</p> <p>*OR, if your beliefs are still the same as PART 1 (above) for any of these, explain why*</p> <ul style="list-style-type: none"> • <i>“I learned the effect which stress gives us is changed by how to think about stress. If I think stress is harmful for my health, that would be true, but if I do not think so, that is also true. This means that it is up to me. Therefore, I should change my mind about stress to be positive, and I will try to get along well with stress.”</i> • <i>“This section, stress, most surprised me this semester. I was believing that stress is always harmful for me, especially my health. However, this class taught me that stress body reactions are actually signs that I’m preparing for the challenges I’ll face. High blood pressure, fast heart-beating and sweating, all these body reactions actually help me.”</i> • <i>“I was surprised to hear that oxytocin makes social contact and support. I think if people know about it, people help each other more and we can make good relationships with</i> 	

stress....I want to change my mind about stress. We often are stressed, so I don't want to think that stress is needed to decrease in my life."

- *"Now I believe that if I could change the way of thinking, stress is something that is making me get ready for whatever event, I can stay healthy. In addition, I realized that whenever I feel stress, I always want to talk about it to others. This is my body seeking help from others and I shouldn't be ashamed of it. In class, it was said that stress will make people more social and now I would not be afraid to talk about it. Expressing stress is not weakness and hiding stress is not strength too."*

For the final section (Real World Importance/Use), 100% of students answered positively to the questions, elucidating how it would help them with a) their classes, b) club/sport activities, and c) especially with upcoming job hunting. As two students put it:

- *"Firstly, I have to be a growth mindset. I have to believe that the efforts that I'm making will definitely help me to improve myself. Secondly, I need specific plans to achieve my goals before trying. That's what I learned in 'grit' section. Thirdly, I understand stress is my friend. It's helpful to endure challenges that suffer me. I had always thought stress is harmful, and I usually gave up when challenges are so tough for me because I thought that was not good for me. Therefore, I can say that the ideas for stress change my mind most in the future."*
- *"After learning mindsets, I think about everything positively. In my life, a lot of negative things happened and will happen, but they all are chances to grow up after overcoming them. I also will try a lot of things actively and make a lot of mistakes, because many failure and challenge will make me stronger."*

The purpose of initiating this study was to discover if Japanese university students (unknowingly) held self-limiting, fixed mindsets related to (their) intelligence, learning and stress and to try and positively alter any such beliefs. Overall, the reflective feedback from students indicated that they were highly engaged with the idea of mindsets and it has, in many cases, seemingly transformed their beliefs and confidence. Obviously these are just the students' own opinions, and it was out of the scope of this study to see if/how they will utilize them in their lives going forward, but it is clear before the interventions many students were not aware of some of the self-limiting views they held. Explicitly teaching about enhancing mindsets during the semester via short class-time interventions helped them become more cognizant of the importance and benefits of positive learner and stress mindsets.

Despite the positive outcomes attained, this study clearly indicates the need for further inquiry with a larger sample size, including control classes. Also, this study was held during one semester for second and third year students only, so it would prove useful in the future to conduct a longitudinal study, either following students throughout all their years in university,

or potentially tracking them during the arduous job-hunting process during their third and fourth years to see the long-term effects of the interventions.

15. Conclusion

This paper has posited that explicit mindset interventions can lead to improved student learning, motivation, perseverance, and self-confidence. Studies show the potential that brief but theoretically informed methods to communicate a positive mindset to students can affect their views of academic performance and resilience. “Academic success requires more than ability. It requires the application of ability and the growth of ability through sustained hard work. Mindsets, goals, and self-regulatory skills—non-cognitive factors that contribute to academic tenacity—play key roles in this enterprise” (Dweck et al., 2014, p. 13). In conclusion,

In education, early success begets more success. When an intervention leads a student to study, learn, and build academic skills, they are better prepared to learn and perform in the future. As students feel more comfortable in school, they build better relationships with peers and with teachers—relationships that support higher levels of achievement in the future.....well-timed, well-targeted mindset interventions can improve students’ relationships, experiences, and performance at a critical stage and thus improve students’ trajectory through their school careers. (Yeager et al., 2013, p. 18).

By utilizing these strategies we can better harness our students’ potential and foster an efficient environment for maximized learning and success.

Acknowledgements

The author(s) declare that they have no conflict of interest.

References

- Brock, A., & Hundley, H. (2016). *The growth mindset coach: a teacher's month-by-month handbook for empowering students to achieve*. Berkeley: Ulysses Press.
- Crum, A. J., Salovey, P., & Achor, S. (2013). Rethinking stress: The role of mindsets in determining the stress response. *Journal of personality and social psychology*, 104(4), 716. <https://doi.org/10.1037/a0031201>
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: perseverance and passion for long-term goals. *Journal of personality and social psychology*, 92(6), 1087. <https://doi.org/10.1037/0022-3514.92.6.1087>
- Dweck, C. (2006). *Mindset: The new psychology of success*. Random House
- Dweck, C. S., Walton, G. M., & Cohen, G. L. (2014). *Academic Tenacity: Mindsets and Skills that Promote Long-Term Learning*. Bill & Melinda Gates Foundation.
- Gunderson, E. A., Gripshover, S. J., Romero, C., Dweck, C. S., Goldin-Meadow, S., & Levine, S. C. (2013). Parent praise to 1-to 3-year-olds predicts children's motivational

- frameworks 5 years later. *Child Development*, 84(5), 1526-1541.
<https://doi.org/10.1111/cdev.12064>
- Keller, A., Litzelman, K., Wisk, L. E., Maddox, T., Cheng, E. R., Creswell, P. D., & Witt, W. P. (2012). Does the perception that stress affects health matter? The association with health and mortality. *Health Psychology*, 31(5), 677. <https://doi.org/10.1037/a0026743>
- Leung, R. C. Y. (2018). Psychological Interventions to Foster Growth Mindsets among Japanese University EFL Learners. 実践女子大学文学部紀要= *The Faculty of Letters of Jissen Women's University annual reports of studies*, 60, 10-18.
- Lisciandro, J., Jones, A., & Strehlow, K. (2016, June). Addressing social and emotional learning: fostering resilience and academic self-efficacy in educationally disadvantaged learners transitioning to university. *Paper presented at the Students Transitions Achievement Retention and Success (STARS) conference*, Perth, Australia.
- McGonigal, K. (2016). *The upside of stress: Why stress is good for you, and how to get good at it*. New York, NY: Avery.
- Noels, K. A., & Lou, M. (2015). Mindsets, goal orientations and language learning: What we know and what we can do. In *Contact—Refereed Proceedings of TESL Ontario Research Symposium*, 41(2), 41-52.
- Paunesku, D., Walton, G. M., Romero, C., Smith, E. N., Yeager, D. S., & Dweck, C. S. (2015). Mind-set interventions are a scalable treatment for academic underachievement. *Psychological science*, 26(6), 784-793.
<https://doi.org/10.1177/0956797615571017>
- Romero, C., Master, A., Paunesku, D., Dweck, C. S., & Gross, J. J. (2014). Academic and emotional functioning in middle school: The role of implicit theories. *Emotion*, 14(2), 227. <https://doi.org/10.1037/a0035490>
- Willis, J. (2010). *The Current Impact of Neuroscience on Teaching and Learning*. In *Mind, Brain, & Education: Neuroscience Implications for the Classroom* (pp. 61-62). Bloomington: Solution Tree.
- Yeager, D. S., & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can be developed. *Educational psychologist*, 47(4), 302-314.
<https://doi.org/10.1080/00461520.2012.722805>
- Yeager, D. S., Paunesku, D., Walton, G. M., & Dweck, C. S. (2013, May). How can we instill productive mindsets at scale? A review of the evidence and an initial R&D agenda. White paper prepared for the White House meeting on “Excellence in Education: The Importance of Academic Mindsets”. Available at [http://homepage.psy.utexas.edu/HomePage/Group/YeagerLAB/ADRG/Pdfs/Yeager et al R&D agenda-6-10-13](http://homepage.psy.utexas.edu/HomePage/Group/YeagerLAB/ADRG/Pdfs/Yeager%20et%20al%20R&D%20agenda-6-10-13)