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The Effects of a Growth Mindset on Student Learning, Achievement, and Mental Health

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DEDICATION

To Jake: Thank you for your encouragement throughout this journey, your patience through the stressful moments, and your understanding during the long nights and busy weekends. I couldn't have done it without you.

To my students: Whether we were together in-person or through a screen, each and every one of you played a special part in this journey. Thank you for being my "guinea pigs" and for always being eager to try out new ways of learning. You have helped shape me into the educator I am today, and you have all impacted my life in ways you may never know. Dream big and remember that you are capable of *anything*.

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Abstract

This paper analyzed research on the impact of a growth mindset on student learning, achievement, and mental health. This topic was explored through research regarding the impact of growth and fixed mindsets, what shapes students' mindsets, and the impact of mindsets on mental health. Research has examined the impact of growth mindset interventions on students and has determined that these interventions improve academic success and increase task importance and interest in students. Additional research discussed a correlation between mindset and mental health and stated that children who believe their intelligence is malleable may feel the same about their emotions, and therefore believe that they are in control of their emotions. Lastly, this paper analyzed the impact of others' mindsets and how they shape students' mindset beliefs. Research concluded that the mindsets of teachers, parents, and peers can influence students' mindsets, and suggested that schools and educators should consider providing resources and tools to both students and their families when working to support a growth mindset. Further research is needed to determine the impact of mindset interventions on younger elementary students, as the current research aims to examine mindset interventions with older students. Additional research regarding the impact of interventions on parent mindsets would also be helpful to understand how parents' mindsets can be changed to better support their children.

Keywords: fixed mindset (entity theory), growth mindset (incremental theory), mental health

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Chapter One: Introduction

Carol Dweck's theories of intelligence suggest there are two ways individuals view their own intelligence, fixed or malleable (Dweck, 2000). In the classroom, educators often refer to these theories as fixed and growth mindsets. The theory of a fixed mindset supports the idea that intelligence is a fixed trait and cannot be changed. Students with this mindset may struggle to recognize their talents and show signs of frustration or failure when given a challenge outside of their comfort zone. Having a fixed mindset can also "make students worry about how much of this fixed intelligence they have, and it can make them interested first and foremost in looking and feeling like they have enough" (Dweck, 2000, para. 12). On the contrary, the theory of malleable intelligence, or a growth mindset, suggests that intelligence can be shaped or grown through practice and effort. Students with a growth mindset may show stronger perseverance when completing difficult tasks or facing new obstacles. Students with a growth mindset can, too, face repercussions, as Dweck states "students with this view will readily sacrifice opportunities to look smart in favor of opportunities to learn something new" (Dweck, 2000, para. 14).

It is important to note that individuals may have different mindsets in different domains. A student may display a fixed mindset with academic activities such as math or reading but show a growth mindset regarding athletic abilities. It is crucial educators identify their students' strengths and mindsets and adapt their instruction to their students' needs. Identifying students' mindsets is as important as understanding their learning preferences and interests. By doing so, educators can create an inclusive environment that focuses on students' strengths, interests, and learning preferences to support all students.

Importance of Topic

Students come to classrooms from a variety of different backgrounds. Family and home life, socioeconomic status, and support both inside and outside of the classroom often heavily influence students' academic and behavioral success. In addition to these factors, it is important for educators to consider how their own actions and beliefs impact their students. Schmidt et al. (2015) states that alongside other factors such as instructional strategies, motivational strategies, and student feedback, teachers' personal beliefs about mindsets shape their students' mindsets. "When teacher behaviors were observed to be supportive of a growth mindset, students adopted stronger mindset beliefs and were more likely to maintain these beliefs over time" (Schmidt et al., 2015, p. 31). Knowing this, how can educators adopt a growth mindset within themselves to better support their students' mindsets?

While there aren't clear numerical statistics regarding how many students hold a growth mindset versus a fixed mindset, research has suggested that children's mindsets about abilities and intelligence can "set them on different trajectories of motivation and learning" (Haimovitz and Dweck, 2017, p. 1849). A study done by the National Study of Learning Mindsets evaluated how mindset interventions can positively impact student performance (Yeager and Dweck, 2020). The study included 12,490 ninth grade students in the United States. The online growth mindset intervention "improved grades for lower-achieving students and improved the rate at which students overall chose and stayed in harder math classes" (Yeager and Dweck, 2020, p. 1270). Recognizing that fostering a growth mindset can impact students in school and beyond, it is crucial for educators to identify steps for supporting this mindset in students.

As mental health disorder rates in both adults and adolescents continue to rise in the U.S., it is important for educators to consider how students' mindsets can impact their mental health.

As of 2013, the Centers for Disease Control and Prevention (CDC) estimated that nearly 13-20% of students face mental health problems in any given school year (Korinek, 2020). This number jumps to 50% for students in socioeconomically disadvantaged areas, and these students are more likely to experience trauma that may be linked to mental health disorders later in their school years (Korinek, 2020). "The broad spectrum of mental health problems for the typical school-aged child 5 to 18 years of age includes stress, anxiety, mood disorders, bullying, family problems, depression, a learning disability, and/or alcohol and substance abuse" (Shelton and Owens, 2020, p. 71). Research from Beck (1987) and Dweck (2000) suggest, "When faced with adversity, youths with entity theories may be less able to self-regulate thoughts, feelings, and behaviors, and more likely to grow hopeless about their ability to change. Together, these vulnerabilities may increase risk for a wide array of psychopathology" (Schleider et al., 2015, p. 3). Knowing the impact that a child's mindset can have on their mental health, it is important for educators to support students with mindset interventions early on in their academic careers.

Scope of Research

This research investigates qualitative, quantitative, and mixed-methods studies regarding the impact of students' mindsets on learning, achievement, and mental health. This paper will discuss two themes, and three subthemes within each theme. The first theme will examine the impact of students' mindsets on motivation and success. Within this theme, research will investigate the impacts of growth mindsets, the impacts of fixed mindsets, and the correlation between student mindset and mental health. This information will inform educators of the strengths students may have and the challenges they may face with both fixed and growth mindsets. It will also support educators in understanding the connection between students' mindsets and mental health, which can provide teachers and school staff with adequate

knowledge to better support their students. The second theme will examine external factors that shape students' mindset beliefs. Within this theme, research will examine how the mindsets of teachers, parents, and peers can influence students' mindsets. This information will identify the importance of teachers fostering growth mindsets and inform teachers about the impacts of their feedback on students' mindsets. It will also inform educators about how parents' mindsets can impact their children's mindsets. By recognizing the external influences that impact students' mindsets, schools can work to better support students and their families in having a growth mindset.

Research Question

In light of what is known about differentiated instruction, how can teachers use a growth mindset approach to support students' own mindsets, as well as their academic and social emotional learning in the classroom? This research question aims to examine the impact of student mindsets on achievement in the classroom. By identifying student mindsets, teachers can recognize the differences in students' mindset beliefs, differentiate their instruction, and teach to *all* students. This connects to the differentiated instruction program essential question at Concordia University, St. Paul, "In light of what is known about differentiated instruction, how shall professional educators effectively teach every student?"

Definition of Terms

Fixed mindset (entity theory) is the idea that intelligence is a fixed trait that cannot be changed (Dweck, 2000).

Growth mindset (incremental theory) is the idea that intelligence is malleable and can be increased through continuous learning and effort (Dweck, 2000).

Mental health is defined broadly as "symptoms of internalizing (e.g., anxiety, depression) or externalizing (aggression, conduct disorder)" (Schleider et al., 2015, p. 3).

Summary

It is important educators recognize the differences between fixed and growth mindsets and the impacts they can have on students in the classroom. Educators must also be aware of their own impact on their students' mindsets, as well as the mindsets students bring into the classroom. Just as home life and parental support can impact students' academic success and behavior, educators must be aware of how external factors like these can influence students' mindsets and attitudes. Lastly, educators must understand the implications that can arise from fostering both fixed and growth mindsets in the classroom.

The literature review in chapter two will analyze the impacts that students' mindsets can have on their motivation and academic success in the classroom. It will discuss the impacts growth and fixed mindsets can have on students. It will also analyze the correlation between student mindset and mental health. Lastly, the research will evaluate external factors that can influence students' mindsets including how teachers', parents', and peers' own mindset beliefs can shape students' mindsets.

Chapter Two: Literature Review

Recognizing that students come into classrooms with different mindset beliefs, it is important for educators to understand what can influence students' mindsets as well as the impact mindsets have on student motivation and success. This literature review will discuss the impact both growth and fixed mindsets can have on students, as well as how a student's mindset can impact their mental health. It will also analyze how students' mindsets are shaped through external factors such as the influence of parent and teacher mindset beliefs, as well as peer

mindsets. By identifying the impacts external factors can have on mindsets, as well as how they affect student motivation, success, and mental health, teachers can better support students from all walks of life in their classrooms.

The first section of the literature review examines the impact of fixed and growth mindsets. Specific to education, students' mindsets have been proven to show correlation to academic success. Degrees of evidence proves that fostering a growth mindset can "improve students' motivation; raise grades; and reduce racial, gender, and social class gaps" (Rattan et al., 2015, p. 721). When implemented into classroom cultures, growth mindsets can teach students skills such as problem-solving, perseverance, and resiliency. Several studies from Yeager et al. (2013) support the idea that growth mindset interventions improve student achievement outcomes.

This section also examines the correlation between growth and fixed mindsets and mental health. Research from Burnette et al. (2020) suggests that students with growth mindsets are less likely to suffer from mental health illnesses because of their ability to recognize the malleability of a person's mental state. Romero et al. (2014) confirms this idea, stating that "middle-school students who reported that they believed that emotions were in their control reported fewer depressive symptoms" (p. 227). This idea suggests that the idea of malleability of intelligence may be related to the malleability of emotions (Kapasi and Pei, 2021).

The second section of the literature review examines external factors that shape students' mindsets. This section analyzes the impact of teacher mindsets and beliefs, including how teachers provide feedback to students and its impact on student mindsets. It also discusses the impact parental mindsets have on children, and how their feedback can determine a child's mindset. Lastly, this section will discuss how peers can influence each other's mindsets.

Impact on Student Motivation/Success

Today's classrooms are home to high levels of diversity, with students coming together from various cultures, backgrounds, and home lives. Similarly, students come into classrooms with different academic, social, and emotional needs. Fostering growth mindsets in students has been proven to increase student motivation, ownership of learning, and academic achievement. Researchers Schmidt et al. (2016), Paunesku et al. (2015), and Blackwell et al. (2007) conducted studies to identify the impacts growth mindset interventions can have on academic achievement. This theme is broken into subthemes *Growth Mindset Impacts*, *Fixed Mindset Impacts*, and *Mental Health* to recognize the impacts different mindset beliefs can have on students.

Growth Mindset Impacts

Two research studies from Schmidt et al. (2016) and Blackwell et al. (2007) aimed to identify the impacts mindset interventions had on student achievement, specifically for students in grades 7th and 9th. Research from Paunesku et al. (2015) also examined the impact mindset interventions had on students but focused on high school students. Schmidt et al. (2016) conducted a quasi-experimental study with 726 science students in 7th and 9th grade. The study took place in a large midwestern metropolitan area with a single school. 51% of the participants received a mindset intervention, *Brainology*, for 50 minutes per week. These students completed an online intervention through computer modules and reflections in an eJournal. The study found that the mindset interventions improved perception of control, skill, learning, and interest in 9th grade students, but did not positively impact the 7th grade students. Schmidt et al. (2016) suggested that the 7th grade students started the intervention with "more optimistic views" that changed as research continued. They also suggested that "9th graders may be more cognitively ready to apply the concepts learned in the intervention program to their own educational

experiences" and that "older adolescents may be more able than younger ones to recognize a need for change in their academic behaviors, which might cause them to be more open to the suggestion to change these behaviors" (Schmidt et al., 2016, p. 597). This limitation is important for educators to recognize, as it may impact how students perceive growth mindset interventions in class. Schmidt et al. (2016) also reported that though the sample size was diverse, it was drawn from one school and suggested to replicate the study with other samples for better results. It was also noted that teacher characteristics were not shown in the results. Schmidt et al. (2016) suggested that future research should examine how "teachers moderate the impact of mindset interventions on students' daily classroom experiences" (p. 599). This theme will be discussed later in the literature review.

Blackwell et al. (2007) conducted two mixed-methods study with varying sample sizes of 373 students for study one, and 91 students for study two. Both studies included 7th grade students from public secondary schools in New York City. Study one measured students' mindset beliefs over time, identifying how students' mindsets changed between the beginning and end of junior high. Unlike the study from Schmidt et al. (2016), participants in study one from Blackwell et al. (2007) did not receive a mindset intervention. Blackwell et al. (2007) claimed that students who believed their intelligence was malleable, or held a growth mindset, "affirmed learning goals more strongly, and were more likely to believe that working hard was necessary and effective in achievement" compared to their peers with fixed mindsets (p. 253). Blackwell et al. (2007) stated that 2 years after the study, the students who held a growth mindset at the beginning of junior high were outperforming their peers in the key subject of math, and that these students "had more positive motivational beliefs, which in turn were related to increasing grades" (p. 253).

Study two from Blackwell et al. (2007) was similar to the study from Schmidt et al. (2016), as these participants completed a mindset intervention. Unlike the study from Schmidt et al. (2016), these participants completed an in-person mindset intervention, rather than an online intervention. It is important to note that the students in both the experimental and control groups did not differ significantly in their academic achievement (Blackwell et al., 2007). Students in both groups received an eight-week session intervention that taught them about the brain, study skills, and "antistereotypic thinking" (Blackwell et al., 2007, p. 254). Students in the experimental group were taught about the science behind incremental theory, and malleability of intelligence and skills. In contrast, the control group received a lesson on memory and had discussions about academic issues that were relevant to them (Blackwell et al., 2007). Research from this study suggested that students with fixed mindsets got the most benefit out of the mindset intervention, as students from the experimental group displayed more motivation in their math class and a lack of decline in their math performance, as opposed to the decline in grades from the students in the control group (Blackwell et al., 2007). "The fact that promoting an incremental theory seemed to have the effect of generating increased motivation in the classroom again supports the idea that students' theory of intelligence is a key factor in their achievement motivation" (Blackwell et al., 2007, p. 258).

Results from Schmidt et al. (2016) and Blackwell et al. (2007) yielded similar results, recognizing the positive impacts mindset interventions can have on student achievement. Research from Blackwell et al. (2007) suggested that mindset interventions can increase student motivation, and therefore increase grades, while research from Schmidt et al. (2016) connected the idea of students feeling in control of their learning and performance to holding an incremental theory. Research from Paunesku et al. (2015) supports both of these studies,

claiming that “among students at risk of dropping out of high school (one third of sample), each intervention raised students’ semester grade point averages in core academic courses and increased the rate at which students performed satisfactorily in core courses by 6.4 percentage points” (p. 784). This mixed-methods study examined the impact a growth mindset intervention had on 1,594 high school students from 13 geographically diverse high schools (Paunesku et al., 2015). Contrary to research from Schmidt et al. (2016) and Blackwell et al. (2007), this study used two types of mindset interventions, including a growth mindset intervention and a sense-of-purpose intervention. The growth mindset intervention suggested to students that intelligence can grow “when students work hard on challenging tasks-and thus that struggle is an opportunity for growth, not a sign that a student is incapable of learning” (Paunesku et al., 2015, p. 785). The sense-of-purpose intervention “encouraged students to reflect on how working hard and learning in school can help them accomplish meaningful goals beyond the self” (Paunesku et al., 2015, p. 785). Students were randomly distributed into three different groups, one where students received the growth mindset intervention, one where students received the sense-of-purpose intervention, and one that received both types of interventions. Students in all three groups completed various online tasks regarding their intervention. Results from this study showed that students who participated in the growth mindset intervention later held a more “malleable view of intelligence” versus students who completed only the sense-of-purpose intervention (Paunesku et al, 2015). Students in both the growth mindset group and the sense-of-purpose group “perceived mundane academic tasks as more relevant to learning and growth” as compared to their peers in the control group (Paunesku et al., 2015, p. 788). Regarding grade point average, students in both of the intervention groups showed an increase in four core subject areas (English, Math, Science, and Social Studies), with the highest GPA increase in math. It is

important to note that students who received both interventions did not have a significant change in mindset beliefs or task meaningfulness, and also did not show an increase in grade point average. Paunesku et al. (2015) suggested that this could have been due to the fact that "it may have been difficult for students to fully incorporate two simultaneous and distinct changes to their basic beliefs about schoolwork; that is, students may have received only a partial 'dose' of each intervention" (p. 789). Similar to the limitations from Schmidt et al. (2016) that student age and cognitive readiness may impact mindset interventions, introducing students to too many mindset interventions at once may not have as strong of an impact.

Fixed Mindset Impacts

Research in the literature review thus far has focused on the positive impacts growth mindsets can have on students in the classroom. While recognizing the benefits of this type of mindset is impactful, it is also crucial for educators to understand the complications that can arise from fixed mindsets. Research from Kim and Park (2021) suggests that fixed mindsets can impact students academically and behaviorally. Kim and Park (2021) conducted a mixed methods study using the Gyeonggi Education Panel Study (GEPS) with 3,541 students from 80 schools in the Gyeonggi Province in South Korea. This study examined how fixed mindsets impacted students from elementary to middle school, focusing on students between 4th and 9th grade. Their study assessed fixed mindsets, behavior engagement, and academic achievement. Unlike research from Schmidt et al. (2016), Blackwell et al. (2007), and Paunesku et al. (2015), Kim and Park (2021) did not use a mindset intervention. Instead, they assessed student growth to determine the impacts fixed mindsets could have on students as they progressed from elementary to middle school. Kim and Park (2021) reported that behavior engagement was an "essential mediator" that impacted how much a student's fixed mindset could influence academic

achievement. "Students who showed a high level of increased fixed mindset showed a low level of increased behavior engagement in middle school. This means that students with rapidly declining growth mindsets might be particularly vulnerable in their academic engagement and achievement" (Kim and Park, 2021, p. 2184). Similar to the claim from Schmidt et al. (2016) regarding how students perceive and apply mindset interventions depending on their age and development cognitively, Kim and Park (2021) encouraged educators to support students transitioning from elementary to middle school with growth mindset interventions. Though Kim and Park (2021) suggested that mindsets can vary and change situationally, interventions are crucial for middle school students as they begin to face more difficult academic tasks. Recognizing this, educators should be intentional when implementing growth mindset interventions and strategies into their teaching, ensuring to support students with age-appropriate goals specific to students' needs in mind.

Mental Health

Research from Schmidt et al. (2016), Blackwell et al. (2007), Paunesku et al. (2015), and Kim and Park (2021) have discussed the impact mindsets can have on academic achievement, but only Kim and Park (2021) has discussed the emotional impact mindsets can have on students. As mental health disorder rates continue to rise in students, it is important for educators to understand how students' mindsets can impact their mental health. Research from Schleider et al. (2015) and Burnette et al. (2020) both suggest that there is a correlation between mental health and mindset. Schleider et al. (2015) and Burnette et al. (2020) both conducted studies using a meta-analysis approach to identify correlations between youth mental health and mindset. Schleider et al. (2015) analyzed youths ranging from 4-19 across 45 effect sizes from 17 research reports. Burnette et al. (2020) used studies published between 1988 and 2019 to

investigate the correlation between growth mindsets and psychological distress, treatment, and coping. Research from Schleider et al. (2015) stated that students who held entity theories regarding their intelligence and personality traits were more likely to feel unable to control their life events, and more likely to experience mental health problems. For example, a student who has a peer conflict with a friend may view the situation as a result from her lack of social skills or an "unchangeable problem" that affects her life in many aspects (Schleider et al., 2015). Rather than focusing on a trait that the student can work to improve on, they may view it as something they cannot fix. On the contrary, youth who held incremental theories, or growth mindsets, about their personal traits are less likely to develop mental health problems due to the desire to strengthen their abilities when faced with challenges. "Rather than feeling helpless to change their circumstances, youths who view their personal traits as malleable might believe that they can actively improve their future outcomes through targeted efforts" (Schleider et al., 2015, p. 2). Burnette et al. (2020) also recognized the correlation between mindsets and mental health outcomes and stated that growth mindsets are negatively related to psychological distress, but positively related to treatment value and active coping. Just as educators need to recognize student mindset beliefs to support academic outcomes in the classroom, they should also consider students' beliefs regarding malleability of emotions. "The growth mindset literature analyzed here suggests that it may be useful to directly elicit and address clients' beliefs about the degree to which their problematic and distressing emotions and other symptoms are malleable through their efforts, by seeking help from others, and by adopting adaptive coping strategies (Burnette et al., 2020, p. 9). Though implied through a clinical lens, this suggestion could be applied to a classroom setting when working with students with mental health needs.

A final research study regarding the correlation between mental health and student mindset beliefs includes research from Romero et al. (2014). This qualitative study examined the impact of mindsets regarding academic and emotional functioning, with attention to mental health for middle school students. Similar to the participant population in research by Schmidt et al. (2016) and Blackwell et al. (2007), this study included 115 middle school students from a suburban public school. This study used intelligence-theory, emotion-theory, and emotional outcome scales that included a variety of statements for students to assess and rate. Statements included ideas such as, "You can learn new things, but you can't really change your basic intelligence" (intelligence-theory scale), "The truth is, you have very little control of your emotions" (emotion-theory scale), and "I am someone who feels a lot of negative emotion (such as sadness, anger, and nervousness)" (emotion outcome scale) (Romero et al., 2014, p. 229). This study also looked at academic outcomes with grades for students in addition to the intelligence-theory scale. This study suggested that students who had growth mindsets received higher grades which was consistent over time. Students' beliefs about malleability of intelligence also led them to be more likely to enroll in more challenging math courses. Romero et al. (2014) also stated that students who perceived emotions as malleable reported fewer depressive symptoms as peers that did not report said beliefs.

Research from Kapasi and Pei (2021) agrees with research from Schleider et al. (2015), Burnette et al. (2020), and Romero et al. (2014). Kapasi and Pei (2021) states, "When faced with adversity, youth with fixed mental health-related mindsets may be more likely to be helpless about their ability to change, and this can increase the risk for psychopathology" (p. 65). Students who hold fixed mindsets are unable to view their traits as changeable. This may lead students to feeling hopeless, therefore leading them to blame their problems on said

unchangeable traits. Having a growth mindset can support students' psychological well-being by supporting the belief against the "fixedness of a person's mental state" (Kapasi and Pei, 2021, p. 66).

When working with students, it may be helpful to assist them in identifying their emotions and supporting them by providing ways to cope when facing challenging emotions. Rather than supporting a fixed mindset and allowing students to feel helpless, educators should help students recognize that they are in control of their feelings and reactions to difficult situations.

External Influences

Understanding the impact that students' mindsets can have on academic and behavioral success in the classroom, as well as its impact on mental health, one might wonder, how does a child adopt a certain mindset in the first place? The second theme of this literature review will identify three external factors that can influence students' mindset beliefs. The following theme is broken into three different subthemes including *Teacher Mindsets, Parent Mindsets,* and *Peer Mindsets*. Researchers Schmidt et al. (2015), Truax (2017), Rattan et al. (2011), and De Kraker-Pauw et al. (2017) discuss the correlation between teacher mindset beliefs and student feedback, while Jeffs et al. (2021) examines the impact of feedback for educators themselves. Research from Schleider et al. (2016) supports the idea that parental mindset and feedback can also impact student mindset beliefs. King (2019) and Sheffler and Cheung (2019) examine how peers can influence each other's' mindsets in the classroom.

Teacher Mindsets

Alongside other factors such as instructional and motivational strategies, teachers' personal beliefs about mindsets shape their students' mindsets (Schmidt et al., 2015). Research

from Schmidt et al. (2015) identifies the importance of teachers understanding their own mindsets, as well as being aware of how their own personal mindset beliefs can impact their students' mindsets. Schmidt et al. (2015) conducted a quantitative study to examine the effects of a mindset-focused classroom intervention, as well as the impacts that teacher mindset perspectives and practices had on the success of the program. The focus sample for this study included 160 7th grade students across seven classrooms and two classroom teachers. Student participants in the study completed surveys that measured mindset beliefs before, immediately after, and months after completion of the intervention. These surveys measured malleability of intelligence, mastery goal orientation, and achievement. Surveys were also given to the teachers that measured professional practices in the areas of mindset, along with instructional and motivational strategies. Teachers were surveyed prior to implementation of the intervention on the efficacy of motivational strategies. Teachers were also observed throughout the intervention and rated on a variety of different instructional strategies. The surveys given to teachers also focused on teachers' personal mindset beliefs and practices and determining if they correlated with their students' survey results. "When teacher behaviors were observed to be supportive of a growth mindset, students adopted stronger mindset beliefs and were more likely to maintain these beliefs over time" (Schmidt et al., 2015, p. 31). One of the most significant measures to this study included mindset messages, which measured the feedback teachers provided to students and the correlation they had on student mindset beliefs. This idea leads into the next theme, regarding the influence of teacher feedback on student mindset beliefs.

A common theme among the research regarding teacher mindset beliefs is the correlation between teacher mindset, feedback, and student motivation. Research from Truax (2017), Rattan et al. (2011), and De Kraker-Pauw et al. (2017) analyzed how teacher feedback impacts students'

mindset beliefs. Truax (2017) conducted a 25-week mixed-methods study that measured motivational growth in writing at the beginning and end of the study. The sample included 56 second grade students and four teacher participants. Teachers in the experimental group received professional development regarding growth versus fixed mindsets prior to the study. Beginning in September, all four teachers began holding individual writing conferences with their students twice per month. Teachers in the experimental group were required to include growth mindset feedback in their conferences with support from a script, while the control group did not receive any supports. Following the writing conferences, students completed exit slips reflecting on their conferences. Data showed that students in a classroom with a teacher in the experimental group showed increased motivation through the writing conferences, with an emphasis on growth mindset feedback. The study shows explicit examples of students in the experimental group connecting their objective feedback with mastery experiences through reflection recorded on the exit slip (Truax, 2017). On the contrary, students in the control group experienced a decrease in writing motivation. Truax (2017) points out that feedback that focuses on what the teacher likes about the writing, rather than what the student did well, decreases student writing motivation. This can lead to unproductive feedback that does not support student growth towards goals. Because of the incorporation of the teacher's own personal judgements and views of their students' writing, Truax (2017) states that this could "be a contributing reason as to why the control group students did not increase in their motivation as much as the experimental group" (p. 143).

Rattan et al. (2011) conducted four quantitative studies that analyzed educators' mindsets in relation to the feedback they provided regarding math intelligence. For the purpose of this literature review, studies 3 and 4 will be analyzed as they represent findings that support the idea

that teacher feedback is connected to mindset beliefs. Study 3 included forty-one graduate students who were either instructors or teaching assistants at a private West coast university. Participants completed measures involving a 4-item implicit theories of math intelligence and an 8-item questionnaire about their attitudes towards teaching (Rattan et al., 2011). Both measures used six-point scales ranging from strongly disagree to strongly agree to rate participant perceptions. Participants also read a scenario that had them imagine they were meeting with an undergraduate student to discuss their low performance on a test. The study found that graduate students that had a fixed mindset, or endorsed an entity theory, often attributed a student's grade to their "lack of math intelligence" versus a "lack of hard work" (Rattan et al., 2011, p. 733). The study also found that "instructors who held a more entity theory readily expressed significantly lower expectations for this students' future performance based on just one low test score, compared with those who held a more incremental theory" (Rattan et al., 2011, p. 734). Study 4 relates to study 3, but instead focuses on the perceptions of undergraduate students when placed in the same situation as the participants in study 3. Study 4 included fifty-four students at the same private university as the graduate students in study 3. These participants completed an online study where they imaged a scenario of being in a calculus course. Students were told they scored low on the test and were going to meet with their instructor to discuss their progress. Students were then given feedback, ranging from comfort feedback (that focused on their strengths), strategy feedback (that provided concrete suggestions), or control feedback (that contained two statements of caring that were present in the other conditions) (Rattan et al., 2011). Results from study 4 suggested that students who received comfort feedback believed their instructor held a stronger entity theory, or fixed mindset. Research also proved that the comfort feedback led students to "perceive their professor as having significantly lower

expectations and investment" (Rattan et al., 2011, p. 735). Students' motivation also differed depending on the feedback they received, as those who received comfort feedback felt significantly less encouraged. Lastly, those who received comfort feedback had lower expectations for their own performances (Rattan et al., 2011).

Research from both Truax (2017) and Rattan et al. (2011) suggests that educators that hold an entity theory, or fixed mindset, tend to provide unproductive feedback that can often "backfire." Instead of providing comforting feedback that encourages a fixed mindset, teachers must work towards providing objective feedback as mentioned by Truax (2017). Both studies support the idea that teacher mindset impacts the feedback they provide their students, which in-turn impacts student mindset beliefs and motivation.

De Kraker-Pauw et al. (2017) conducted two quantitative studies that yielded similar results as those mentioned in the studies above. Study 1 included 106 teachers. Participants completed the Theory of Intelligence Questionnaire which measured beliefs about intelligence malleability in relation to Dweck's entity theory and incremental theory. (De Kraker-Pauw et al., 2017). Similar to the study done by Rattan et al. (2011), the participants in this study also read about scenarios with fictional students and test scores. The participants were required to evaluate the student test results as "good achievement" or "poor achievement." Study 1 revealed a "positive correlation between mindset and the appraisal of achievement for the increasing marks but not for the non-increasing marks" (De Kraker-Pauw et al., 2017, p. 5). Study 2 included a subgroup of 23 teachers used in study 1. For this study, participants participated in video observations showing feedback between teacher and student. The study showed a variety of feedback interventions used between the participants. These feedback types are similar to those listed in the study done by Rattan et al. (2011): comfort, strategy, and control feedback. It

is important to note that research from De Kraker-Pauw et al. (2017) suggests that teachers with a growth mindset generally provided less feedback, though teachers with a fixed mindset don't necessarily provide effective feedback, even if they do provide more. Instead, the study points out that the relationship between mindset and feedback is intricate and that "students with different mindsets may respond differently to feedback" (De Kraker-Pauw et al., 2017, p. 10). This is unique to the results of the earlier studies in this review, as the research from Truax (2017) and Rattan et al. (2011) emphasize the impact teacher feedback has on student perception of said feedback. De Kraker-Pauw et al. (2017) instead suggests that students' perceptions of feedback may differ solely based on their own mindset beliefs. One significant commonality between all three studies is the importance of educators identifying their own mindsets, as this may have a positive impact on the growth feedback they provide for their students.

Each of the three studies mentioned show correlation between teacher mindset, teacher feedback, student perception of feedback, and student motivation. It is important that educators recognize the impact their own mindset beliefs can have on students. It is also important for teachers to understand the implications their feedback can have on students, regardless of their mindsets. Ensuring productive feedback can help set students on the right track of having a growth mindset approach to learning.

Feedback for Teachers. Much of the research in this literature review thus far has been related to feedback teachers provide their students. The following study provides an insight to the effect that feedback for teachers impacts their own mindset beliefs. Jeffs et al. (2021) conducted a mixed-methods study to examine levels of distress educators feel when receiving feedback on their own teaching. The study included 39 participants with an average of 10-14 years of teaching experience, though did include participants with 0-2 years at minimum.

Researchers used a pre-test-post-test design to measure distress levels when thinking about receiving feedback on teaching (Jeffs et al., 2021). Prior to receiving professional development on this specific topic, participants completed the pre-test measure where they "drew a line on the paper through the distress thermometer to indicate their level of distress when thinking about receiving feedback on their teaching" (Jeffs et al., 2021, p. 5). Participants then were provided with an opportunity to complete a one-day event that was "devoted to exploring and learning feedback processed for teaching development" with a broad focus on "acknowledging that feedback can cause fear, distress, and anxiety, and at the same time develop capacity and strategies regarding this normative part of academia" (Jeffs et al., 2021, p. 3). After each workshop or event, participants completed an identical post-test. Comparing the pre- and post-test data, participants reported lower distress levels after completing the workshops. Common themes arose from this research including fixed versus growth mindsets. The change between pre- and post-test data indicates a decrease in fixed and mixed mindsets amongst educators. "While the percentage of participants who demonstrated a growth or mixed mindset in the pre-test started at very similar levels, the post-tests reveal a marked increase in growth mindsets" (Jeffs et al., 2021, p. 9). With this in mind, educators can think about how they may relate to students regarding distress levels when receiving feedback. If educators can identify their own mindset and be mindful of it when working with students, they will have an opportunity to provide meaningful feedback for students that supports a desired mindset belief.

Parent Mindsets

Knowing that teacher mindset beliefs can impact student mindsets, it is no surprise that parent mindsets can have a similar effect on students. Research from Schleider et al. (2016) confirms research from Truax (2017), Rattan et al. (2011), and De Kraker-Pauw et al. (2017),

recognizing that parent feedback can impact students' mindset beliefs, similarly to how teacher feedback can impact students' mindset beliefs. Schleider et al. (2016) conducted a mixed-methods study to analyze the correlation between parents' mindsets and mental health in children. 131 parents of children ages 5-8 were recruited from a mid-size Midwestern city. Participants completed surveys that were measured using scales to assess their feelings towards specific statements. These measures included the following scales and statement examples including an Intelligence Mindset scale (ex: "You have a certain amount of intelligence and there is not much you can do to change it"), the Revised Children's Anxiety and Depression Scale - Parent Report (ex: "fears being alone at home," "worries in bed at night"), the Penn State Worry Questionnaire (ex: "I worry all the time"), and finally the Mood and Anxiety Symptom Questionnaire - Anhedonic Depression (ex: "Felt really happy") (Schleider et al., 2016, pp. 3629-3630. Data from Schleider et al. (2016) concluded that parents with fixed mindsets showed correlation between mental health issues in children, specifically linked to "higher child internalizing symptoms, and most strongly with child social anxiety" (p. 3631). Though research has shown that factors such as genetics, as well as neurobiological and psychosocial factors, play a role in mental health problems in youth, increasing evidence supports the idea that "parental cognitions or belief systems" are also a factor in predicting these problems (Schleider et al., 2016).

Parental mindsets can influence a child's mindset, as children may mimic their parents' responses to challenges. For example, if a child struggles with homework, and their parent responds with fixed mindset feedback (i.e., "It's okay, this is just too hard of homework anyways"), the child may develop similar mindset beliefs. Parents who provide answers to challenging homework for children may also suggest that failure is bad and should be avoided.

As a result, this could lead to the child having a heightened sense of anxiety when facing challenges, wanting to avoid such failure (Schleider et al., 2016). This connects with internalizing problems, which is related to mental health problems such as anxiety or depression.

In contrast, Schleider et al. (2016) states that children of parents who have a growth mindset are more likely to receive messages from their parents about the process of learning, strategies for problem-solving, and effort. Rather than focusing on successes and failures, parents with growth mindsets may emphasize the importance of learning, and therefore support their children with this belief.

Teachers and parents have been shown to have a direct impact on student mindset beliefs. Schleider et al. (2016) states, "Messages from parents and teachers regarding malleability of personal traits and importance of effort in improvement can influence their motivational frameworks and responses to setbacks" (p. 3628). It is important for teachers to be aware of their own mindset beliefs, and teachers can work alongside families to support them in identifying their own beliefs, too.

Peer Mindsets

Similar to how parents' and teachers' mindsets can influence children's mindsets, another factor that can influence an individual's mindset belief are peers and classroom environment. Socialization in the classroom can impact students' mindsets, not only through student-teacher interactions, but through peer interactions and cultural norms (Haimovitz and Dweck, 2017). A study conducted by King (2019) aimed to examine the relationship between students' mindsets and their peers' mindsets. This mixed-methods study included two studies that surveyed 676 students from 19 classes and 848 students from 30 classes. All student participants were part of two public secondary schools in the Philippines. The study used Dweck's Theories of

Intelligence Scale, which included questions such as “I think that people have a certain amount of intelligence and they cannot really do much to change it” to analyze classmates’ mindsets (King, 2019, p. 352). This is similar to the scale used in the study mentioned previously by Schleider et al. (2016) regarding parents’ mindsets. For the second study, King (2019) used the same Theories of Intelligence scale, but also used the Achievement Goal Questionnaire-Revised (Elliot and Murayama, 2008) to examine goals for students. These statements included ideas such as, “I want to learn as much as possible this semester” (King, 2019, p. 356). A social desirability scale was also used, the Marlowe-Crowne Social Desirability Scale (Reynolds, 1982), to measure students’ responses to true or false questions such as, “Are you always willing to admit when you make a mistake?” (King, 2019, p. 356). Data from King (2019) found that fixed mindsets are contagious among students. King (2019) suggested that to combat this, “educators must find ways to shift students from believing that intelligence is fixed to believing that it can be improved through effort and the use of appropriate strategies” (p. 359). It is interesting to note that this study also discussed how mindset influences can shift as children age. King (2019) suggested that older students may be more likely to be impacted by peer mindsets, aside from solely teacher and parent mindsets. “As students grow into adolescence, they spend less amount of time with adults and more time with their peers” (King, 2019, p. 360). A mixed-methods study conducted by Sheffler and Cheung (2019) examined the effects of peers’ mindsets on student learning with 134 undergraduate students enrolled at a research university in Southern California. Research from Sheffler and Cheung (2019) suggests that while peer mindsets do not correlate directly to an increase in task performance, it does increase task value and importance for students. Sheffler and Cheung (2019) define task value as “an important component of learning because it is strongly tied to students’ mastery goal orientation.” Participants completed

two surveys, the first including "demographic questions, general academic self-competence, and implicit theory of intelligence" while the second survey measured perceptions of "peers' competence, task value, and task effort" (Sheffler and Cheung, 2019, p. 21). Participants in the study interacted with research assistants who were trained to act as "confederates." These assistants memorized phrases to support wither a growth or fixed mindset point of view regarding the tasks. Research from Sheffler and Cheung (2019) found that a "peer growth mindset environment led to increases in task value" (p. 27). When students interacted with peers who showed growth mindsets and perceived the tasks as meaningful, students were in-turn more likely to exhibit similar mindsets. Though peers can influence students' academic lives, Sheffler and Cheung (2019) prompts educators to consider impacts that can affect this. "In order to evaluate the effects of peer influence on the individual, one most take into account not only peers' beliefs but also the individual's perceptions of their peers, as both factors can drive the effects of peer influence" (Sheffler and Cheung, 2019, p. 19).

Review of the Importance of the Topic

Every day, educators impact their students in many ways. From creating inclusive classroom environments to building strong relationships, educators play a major role in helping to shape students throughout their educational journeys. It is important for educators to be aware of how they can impact their students, as well as what other factors can influence students' success in the classroom. While students bring different life experiences and outside support into their classrooms, educators must be mindful of how their own expectations, mindset, and behaviors can influence their students. Recognizing the effects both fixed and growth mindsets can have, while considering the effect on children's mental health, is imperative to supporting all

students. Being reflective of their own mindset can help educators support students' in developing their mindsets, too.

Review of the Proposed Problem

When working with students, educators are well-versed on creating different supports based on students' needs. As no two students learn the same way, educators must recognize that students are not likely to approach all tasks the same way. Identifying and supporting students in discovering their mindsets, and shaping these mindsets to better support students academically, behaviorally, and social-emotionally, is one of the many jobs of an effective educator. In light of what is known about differentiated instruction, how can teachers use a growth mindset approach to support students' own mindsets, as well as their academic and social emotional learning in the classroom? By answering this question, teachers will be better equipped to teach to *all* students with differentiation in mind.

Summary of Findings

Degrees of evidence have shown the impact both fixed and growth mindsets can have in the classroom. Students who hold a fixed mindset face difficulties when receiving feedback and have also been proven to struggle academically and behaviorally. While holding a growth mindset is not the "end-all" solution for academic and behavioral challenges, research has suggested that having a growth mindset increases student motivation, perceived importance of tasks, and academic performance. Mindsets have also been linked to mental health. Students with fixed mindsets are more likely to struggle with their emotions, as they may view them as fixed and unchangeable, whereas students with growth mindsets may feel more in control of their emotions.

Research has also indicated that amongst many other factors, mindsets of others can impact students' mindsets. Teachers', parents', and peers' mindsets can all influence a child's mindset. Recognizing this is beneficial for educators, as they can work to assess their own mindset beliefs and create a classroom environment supportive of a growth mindset. Schools can also work to support parents and families with mindset beliefs and provide resources to support a growth mindset approach.

Conclusion

In conclusion, students' mindsets can impact them in many aspects of their life. From academic success to mental health, educators must be cognizant of the mindsets students bring into the classroom and how to support each type of mindset. Promoting a growth mindset in the classroom has been proven to be beneficial for both students and teachers alike.

The next chapter will discuss the insights gained from the research and how educators can work towards supporting students' mindsets, as well as their own, in the classroom. This chapter will also discuss implications for practice, as well as suggestions for future research studies to foster growth mindsets in students and educators.

Chapter Three: Discussion and Application

Insights Gained from Research

The studies included in the literature review each support different insights regarding student mindsets. The first insight gained from the research was that mindset interventions can improve students' motivation and academic success when implemented correctly, at an age-appropriate and cognitively appropriate time. Schmidt et al. (2016) discussed the importance of recognizing that older students may be more aware of their academic skills and behaviors, and as a result, may be more willing to make changes in said behaviors due to being better equipped to

identify a need for change. Though not to dismiss research from Kim and Park (2021), as their study focused on students ranging from grades 4th through 9th, this research supported the idea that students transitioning from elementary to middle school may benefit most from mindset interventions. Educators must consider their students' needs and cognitive skills when considering implementing a mindset intervention.

A second insight gained from the research was that growth mindset approaches can impact students' mental health. Research from Kim and Park (2021), Schleider et al. (2015), and Burnette et al. (2020) all discussed the correlation between mindset and mental health. Students who can recognize that their intelligence is not fixed and can be grown may also view their personal traits and emotions in a similar way (Schleider et al., 2015). Teaching students that they are in control of their emotions ties into social-emotional learning and supports students in self-awareness, self-control, and interpersonal skills that will benefit students far beyond the classroom walls. Considering the mental health issues that students currently face, it is important for educators to recognize the influence students' mindsets have on their mental health.

A final insight gained from the research was that there are several factors that can influence students' mindsets, aside from teachers' mindsets alone. Educators must be aware of this before working to change or encourage certain mindset behaviors. Though teachers' mindsets and teacher feedback influence students' mindsets, parent and peer mindsets also have an impact on shaping students' mindsets. Knowing this, students who come from families with fixed mindsets may struggle to adopt a growth mindset approach in the classroom. Similar to supporting struggling learners with academic interventions, teachers may need to work with these students on individual mindset interventions to assist them in learning growth mindset skills and behaviors.

Application

There are many ways that schools and educators can go about approaching growth mindset interventions. First, it may be helpful to introduce growth mindset interventions early on, starting in kindergarten as children first begin school. Working with students early on may help to support stronger growth mindsets in students as they grow older, possibly eliminating some of the struggles older students may face with fixed mindsets. The same can be said regarding mindsets and mental health. Supporting younger students with mindset interventions may allow educators to encourage mental health discussions as they occur naturally in the classroom. Familiarizing students to the idea of mental health at a young age could be beneficial for supporting students academically, behaviorally, socially, and emotionally. It could also be beneficial for growth mindset interventions to be revisited at transitional periods of times for students, for example when students are transitioning between elementary and middle school, and between middle school and high school. The only downfall to this is that younger students may not be ready for these skills, although if introduced in a way that is suitable for younger students from their first years of school, it may become common language for all students.

Regarding how to teach students about mindsets, Robinson (2017) suggested to teach students about the brain development, neuroplasticity, and how the brain changes during learning. Robinson (2017) also suggested to allow students to explore an interactive 3-D brain map online to learn more about the brain while teaching about mindsets. It is also important for students to be comfortable with making mistakes and for teachers to normalize failures. One way educators might do this is to "celebrate mistakes." Robinson (2017) gave a few ideas of how to do this, including creative a "failure bulletin board," watching videos of famous failures, or simply taking time to talk about failures as they happen naturally in the classroom (ex: when a

student makes a mistake when solving a math problem on the board) (p. 19). Another way to teach growth mindset in the classroom is to support students in positive self-talk and to reframe their language and responses to situations. For example, educators may teach students to say, "What am I missing?" instead of "I am not good at this." Creating a bulletin board or classroom décor that shows students growth mindset responses to situations over fixed mindset responses can support this. "Explicitly teaching students how to use positive self-talk helps them develop essential skills and the confidence necessary to be successful" (Robinson, 2017, p. 19).

Knowing that schools and educators are not the only ones who impact students' mindsets, it is important for schools to support parents and families in growth mindset approaches outside of school. One way to do this may be to offer classes or specific resources for parents and families to learn about growth and fixed mindsets. Parents with fixed mindsets may not realize the implications of fostering fixed mindsets, and may, too, benefit from learning about brain development and neuroplasticity. Supporting families with similar language that is used in schools regarding growth mindset approaches can create a commonality between school and home life. Schools and families must work together to support students in all areas, including academically, behaviorally, and social-emotionally.

Future Studies

Much of the research regarding student mindsets and interventions has included students between middle and high school, as well as college students. It would be beneficial to research the effects of growth mindset interventions on younger students, specifically students between kindergarten through second grade. It would also be beneficial to examine the long-term effects beginning growth mindset interventions early on in a child's schooling may have. It would also be interesting to examine the impact of parental influence on students as young as three to four

years old regarding the malleability of intelligence and/or emotions. As stated in research from Schleider et al. (2016), parents' mindsets can influence a child's mindset, as children often mimic what they see in their parents. This may be even more true for younger students, who may be even more likely to be influenced by their parents and others around them. Additional research regarding parental and peer mindset influences on younger students may be beneficial for educators and families to consider.

Understanding the impact that parents' mindsets can have on children's mindsets, additional research about parent mindset interventions would be helpful. Though research has demonstrated the positive effects of growth mindset interventions for students, it would be useful to examine the effects that growth mindset interventions have on parents and families. Can growth mindset interventions help to change parent mindset perspectives? It would be interesting to know if individuals' mindsets can be changed, even if they have held said mindset beliefs for a long time. Exploring the impact of interventions for parents and families could be beneficial for schools looking to provide support for families wanting to assist their children in fostering growth mindsets.

In addition to the potential studies mentioned above, there are a few more studies that could help to further investigate growth mindset interventions for students. Much of the research included in the literature review was in regard to math and science growth mindset interventions, as well as one with writing instruction. It would be beneficial to see how growth mindset interventions support students in other academic content areas, such as reading. In addition, exploring how growth mindset interventions impact other subject areas such as music, physical education, or art would be helpful. Lastly, there is not much evidence that proves the impact peer mindsets have on student mindsets for elementary-aged students. Research from King

(2019) suggested that older students are more likely to be influenced by peer mindsets. It would be helpful to know if this is true from additional research regarding peer mindsets and younger students.

Conclusion

Classrooms today are full of diversity. Students bring different skills, interests, backgrounds, and life experiences into their classrooms. Students also bring their mindsets or intelligence theories with them. Students may hold fixed mindsets, leading them to believe that their intelligence is a fixed trait and cannot be changed with practice and effort. Students may also come into classrooms with growth mindsets, or the belief that their intelligence can be shaped or grown as they face challenges and new tasks. It is important for educators to help students identify their mindset beliefs, and even more important for educators to support students in fostering a growth mindset approach.

Students' mindsets are influenced by a variety of factors including teacher mindsets, parent mindsets, and peer mindsets. Schools should work to support parents and families in understanding fixed and growth mindsets and the implications of each. It is also important for teachers to be aware of their own mindset beliefs, and teachers can work alongside families to support them in identifying their own beliefs, too.

Educators should be mindful of the mindsets students bring into the classroom, as it may help teachers to better understand student behaviors and choices in the classroom. Encouraging students to adopt a growth mindset approach can increase student motivation, foster ownership of learning, and improve academic achievement. To support students with fixed mindsets, school staff should assist students in recognizing that their intelligence and abilities are *not* fixed through interventions and varying supports. Challenging students' beliefs can help them with

this change in mindset. If students can recognize that their intelligence is malleable, they may feel the same about the malleability of their emotions. As Kapasi and Pei (2021) stated, "Promoting a growth mindset in students is a worthwhile endeavor to help students experience academic success and mental wellness" (p. 11).

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