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Utilizing the Growth Mindset to Boost Perseverance and Academic Achievement

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Utilizing the Growth Mindset to Boost Perseverance and Academic Achievement

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Abstract

In order to be successful in academics and life, children must have a certain level of perseverance, or willingness to work through challenges. Without perseverance, a child may quickly give up or request assistance and, thus, stunt his or her learning and potential. Due to its important implications for success, it would be beneficial for educators to develop perseverance in their students. One method for building perseverance in children is by fostering a growth mindset. A growth mindset is a belief that traits, such as intelligence, are malleable, often through effort and perseverance. When fostered by educators, a growth mindset in students may lead to greater academic success and achievement. The current author conducted a thorough literature review, analyzing quantitative and qualitative research to determine the potential benefits of the growth mindset on perseverance and academic achievement. Current research demonstrated that the growth mindset is positively correlated to perseverance and academic achievement, though to varying degrees. Furthermore, studies have shown that growth mindset interventions can positively impact both student mindsets and academic achievement. Based on the findings, it may be of value for educators and administrators to incorporate the ideas of the growth mindset in educational settings. Below, the current author described the findings of the literature review, expounded on their potential implications for education, and discussed its applications for the classroom, as well as the needs for future research.

Keywords: growth mindset, perseverance, academic achievement

Utilizing the Growth Mindset to Boost Perseverance and Academic Achievement

Chapter One: Introduction

One important goal of educating students is to develop their ability to solve problems, both academically and in the real world. In order to solve problems, students must have a certain level of perseverance, or willingness to move forward in the presence of a challenge. Without perseverance, students may give up prior to mastery or even advancement of knowledge. While some students may have an intrinsic motivation to persevere, others may struggle to continue working. Similarly, some students may see challenges as learning opportunities, while others may view them as a threat to their abilities or intelligence. Regardless, in order to best meet the needs of students, it would be of value for educators to take time to develop perseverance within students. Due to the fact that the growth mindset can be closely linked to perseverance, as will be discussed below, the growth mindset and its teachings can be one avenue for educators and administrators to increase students' perseverance and academic achievement. The link between the growth mindset, perseverance, and academic achievement will be discussed at length below.

Connecting Mindsets and Perseverance

In a study conducted by Hong, Chiu, Dweck, Lin, and Wan (1999), researchers sought to understand the connections among mindset theories, effort attribution, and remedial actions. The three-part study found that participants with an entity or fixed mindset more readily indicated results of a comprehension task were due to their innate abilities rather than their efforts (Hong et al., 1999). Additionally, participants with an incremental or growth mindset were more likely to take remedial or corrective actions towards improvement, even when given unsatisfactory performance feedback (Hong et al., 1999).

In regards to teaching and learning, the findings from the study conducted by Hong et al. (1999) have two important implications. Firstly, when given negative or less satisfactory feedback, students with an entity mindset may believe they lack the ability or intelligence to be successful. Secondly, they may believe the shortcomings cannot be changed and, therefore, negatively impact future efforts. Contrarily, students with an incremental mindset may be more willing to take necessary steps for improvements or learning, even when given unsatisfactory feedback. The results found by Hong et al. (1999) furthered the hypothesis that teaching the growth mindset may lead to positive academic changes for students.

Scope

The literature review at hand explored the connection between the growth mindset and perseverance. Additionally, the review examined how the growth mindset may impact student engagement and academic achievement. The studies selected mainly focused on children and adolescents, particularly within educational settings. Additional studies focused on an adult population may have provided valuable insight into the growth mindset and perseverance. However, the intended purpose of the review and the research was directed at the potential benefits of the growth mindset on perseverance and academic achievement for students. Educators and administrators could utilize the current review as a starting point to explore how integrating the ideas of the growth mindset in an educational setting may impact students and their achievement.

Importance

For decades, researchers like Dweck, her colleagues, and many like them, have sought to understand people's mindset orientation and its effect on their lives. Numerous studies have implicated people tend to fall into two mindset categories, though to varying degrees. A growth

mindset, or incremental theory mindset, is the belief in the malleability of traits, often through perseverance and effort (Bettinger, Ludvigsen, Rege, Solli, & Yeager, 2018; Dweck, Chiu, & Hong, 1995; Hong et al., 1999; Tuckwiller, Dardick, & Kutscher, 2017; Wang et al., 2018; Zeng, Hou, & Peng, 2016). Conversely, a fixed mindset, or entity theory mindset, is the belief that traits are fixed or relatively unchangeable, regardless of effort or strategies (Bettinger et al., 2018; Dweck et al., 1995; Hong et al., 1999; Tuckwiller et al., 2017; Wang et al., 2018; Yeager et al., 2016).

In a foundational study conducted by Dweck et al. (1995), researchers found that people with an entity mindset tend to be more self-deprecating and ineffective when working towards a goal when compared to those with an incremental mindset (Dweck et al., 1995). Furthermore, participants with an incremental mindset may be better able to change and adapt, even when challenged (Dweck et al., 1995). The findings of Dweck et al. (1995), aided in demonstrating that a person with a growth or incremental mindset may be more likely to adapt or change when faced with a need to do so. Essentially, should a person be unsatisfactory in completing a task, it may be necessary for him or her to change tactics or gain knowledge. A person with a fixed or entity mindset may be more resistant to change and, thus, less successful.

Given its implications for achievement, many researchers have explored the effects of the mindset within academic settings. For instance, Licht and Dweck (1984) examined how a child's ability to learn new material was impacted by his or her mindset orientation. When given appropriately-leveled, though somewhat confusing new material to learn, students with an incremental mindset were significantly more likely to master the material than their entity mindset counterparts (Licht & Dweck, 1984). Researchers hypothesized that students with an incremental mindset were better able to overcome the confusion and challenge due to their

outlook on challenging tasks (Licht & Dweck, 1984). As previously stated, fostering an incremental or growth mindset within students may be beneficial to their ability to persevere when academic material becomes confusing or challenging.

Research Question

Foundational studies, such as the research conducted by Dweck et al. (1995), and Licht and Dweck (1984), linked the growth mindset to perseverance and academic achievement. Based on such results, the current research question asked, in light of what is known about differentiated instruction, how does teaching elementary students about the growth mindset impact their academic achievement? Educating students on the growth mindset may provide students with a lens through which to examine learning. Students may utilize the growth mindset to persevere through challenges, which, could then deepen their learning and lead to positive changes in their academic achievement.

Definition of Terms

The terms and definitions provided here were carefully selected to aid in the overall literature review and discussion. Though not all terms are linked directly to the growth mindset, the definitions provided remain pertinent. Each term was selected and explained to deepen the understanding of not only the research being analyzed but also the research topic being discussed.

Growth mindset and perseverance. A mindset is a person's established attitudes and beliefs that he or she is most likely to utilize throughout life. These attitudes and beliefs may be working at an unconscious level and influencing a person's behaviors. A growth mindset, or incremental theory mindset, can be defined as a person's belief that his or her intelligence, skills, and basic attributes are malleable (Bettinger et al., 2018; Bostwick, Collie, Martin, & Durksen,

2017; Claro, Paunesku, & Dweck, 2016; Dweck et al., 1995; Gunderson et al., 2018; Hong et al., 1999; Mofield & Peters, 2018; Schleider et al., 2016; Tuckwiller et al., 2017; Wang et al., 2018; Zeng et al., 2016). Some studies further defined the growth mindset as a belief in the malleability of traits through effort, useful strategies, and asking for help (Bettinger et al., 2018; Gunderson et al., 2018; Mofield & Peters, 2018; Tuckwiller et al., 2017; Wang et al., 2018). A person with a growth mindset will be more likely to persevere when faced with challenges due to the belief that he or she can change his or her intelligence or skills through hard work, determination, and problem-solving. To contrast the growth mindset, the fixed mindset, or entity theory mindset, can be defined as a person's belief that his or her intelligence, skills, and basic attributes are not malleable (Bettinger et al., 2018; Claro et al., 2016; Dweck et al., 1995; Hong et al., 1999; Mofield & Peters, 2018; Schleider et al., 2016; Tuckwiller et al., 2017; Wang et al., 2018; Yeager et al., 2016). A person with a fixed mindset will be more likely to avoid challenges to reduce the risk of threatening his or her intelligence.

Bettinger et al. (2018) defined perseverance as a person's choice to consistently exert high effort. For the purpose of this literature review, the definition of perseverance can be extended to include the choice to apply high effort, even when faced with challenges. Through the analysis of the research, a connection between perseverance and grit was observed. Grit can be defined as the likelihood a person will sustain perseverance and drive for achieving long-term ambitions (Golden, 2017; Tuckwiller et al., 2017; Wang et al., 2018). Similarly, a connection between perseverance and resilience was observed. Mu, Hu, and Wang (2017) defined resilience as the ability to adapt successfully, regardless of challenges. A person who is willing to persevere in the face of a challenge would also have resilience.

Perfectionism. Perfectionism can be defined as a person holding him- or herself to high standards, demanding a higher quality performance than situations require (Mofield & Peters, 2018). Researchers described two main types of perfectionists: normal perfectionists and neurotic perfectionists (Chan, 2012; Mofield & Peters, 2018). A normal perfectionist has been described as a perfectionist that strives for excellence while maintaining enjoyment in the process and experiencing pleasure from his or her accomplishments (Chan, 2012; Mofield & Peters, 2018). Contrastingly, a neurotic perfectionist has been described as a perfectionist that strives for excellence while experiencing negative emotions, such as shame or guilt, and being unable to feel satisfied with his or her accomplishments (Mofield & Peters, 2018).

Inclusion. According to McLeskey, Rosenberg, and Westling (2018) in the text “Inclusion: Effective Practices for All Students,” educational inclusion can be described as ensuring all students, including those with disabilities, are viewed by other community members as valuable members of the school. A disability can point to a deficit, and a student with a disability or special educational needs refers to those who have difficulties engaging in education (Vuorinen, Erikivi, & Uusitalo-Malmivaara, 2018). Throughout the paper, the term students with specific learning disabilities will be used to describe any students with disabilities or special educational needs.

Inclusive educators are general education teachers who work to include, teach, and support students with disabilities (Mu et al., 2017). In order to include all students, an inclusive educator must work to adjust his or her classroom to meet their needs (McLeskey et al., 2018). Similarly, an inclusive educator must strive to create a welcoming and respectful classroom environment in which any student feels a sense of belonging (McLeskey et al., 2018). Due to the Individuals with Disabilities Education Act, many American classrooms currently include

students with disabilities and learning difficulties. With the prevalence of students with disabilities in a typical American classroom, most educators are inclusive educators working to meet the needs of all their students best. Regardless of whether or not an educator has students with disabilities in their classroom, striving for an inclusive environment can lead to being able to meet the needs of all students better.

Summary

In order to attempt to address the current research question and determine whether or not teaching elementary students about the growth mindset could positively impact their academic achievement, current research was evaluated. The paper at hand examined the potential impacts of developing a growth mindset in students through the literature review in chapter two, which included both quantitative and qualitative studies. The implications of the literature review findings are discussed while relating the research conducted to the essential question. Finally, a summary of the potential applications of utilizing the growth mindset to foster academic success is provided, with ideas for future research following.

Chapter Two: Literature Review

As chapter one discussed, the growth mindset can be described as the belief that a person can alter traits, such as intelligence, often through effort, problem-solving, and perseverance (Bettinger et al., 2018; Bostwick et al., 2017; Claro et al., 2016; Dweck et al., 1995; Gunderson et al., 2018; Hong et al., 1999; Mofield & Peters, 2018; Schleider et al., 2016; Tuckwiller et al., 2017; Wang et al., 2018; Zeng et al., 2016). A person with a fixed mindset believes traits, such as intelligence, are unchangeable regardless of efforts or strategies (Bettinger et al., 2018; Claro et al., 2016; Dweck et al., 1995; Hong et al., 1999; Mofield & Peters, 2018; Schleider et al., 2016; Tuckwiller et al., 2017; Wang et al., 2018; Yeager et al., 2016). For a person with a fixed

mindset, challenges may be viewed as an indication of a lack of intelligence, rather than an opportunity for learning and growth (Bettinger et al., 2018; Claro et al., 2016; Dweck et al., 1995; Hong et al., 1999; Mofield & Peters, 2018; Schleider et al., 2016; Tuckwiller et al., 2017; Wang et al., 2018; Yeager et al., 2016).

A person with a growth mindset may, therefore, be more apt to exert effort, even when challenged, because he or she believes in the potential benefits. Furthermore, a person with a growth mindset may experience greater success and achievement due to greater effort and perseverance. The growth mindset, when explored within the realm of an educational setting, could positively impact students' academic achievement. For instance, a student holding a growth mindset may be more likely to work through challenging material than a student who views challenges as a threat.

The current literature review explored the connection between the growth mindset, perseverance, and academic achievement, particularly for students in the educational setting. The research collected and the current review was guided by the essential question, in light of what is known about differentiated instruction, how does teaching elementary students about the growth mindset impact their academic achievement? Research indicated a positive relationship between the growth mindset, perseverance, and student achievement. The literature review included an analysis of existing research, which provided valuable insights for educators and administrators on how to positively impact student growth, learning, and achievement.

Perseverance and Inclusion

The following two articles were included in this literature review not only to illustrate the importance of building perseverance, especially for students with special educational needs, but also to highlight the role of inclusive educators in building that resilience. The first article to be

discussed is a study conducted by Al-Dababneh and Al-Zboon (2018), who used quantitative data to further the understanding of impulsivity for students with special education needs or specific learning disabilities. The researchers randomly recruited 103 special education teachers from 100 regular schools in Jordan (Al-Dababneh & Al-Zboon, 2018). Each special education teacher completed a survey intended to assess the behavior of one of their students with a specific learning disability (Al-Dababneh & Al-Zboon, 2018). The students selected attended inclusive settings within a general education school and ranged in age from 6 to 14 years old. The survey included 31 items addressing students' urgency, lack of premeditation, and lack of perseverance (Al-Dababneh & Al-Zboon, 2018).

Al-Dababneh and Al-Zboon (2018) analyzed the data to determine any correlations among the variables, to determine the level of impulsivity of the students, as well as rank the variables regarding seriousness. The analysis revealed that all three variables were significantly correlated to one another, and that students with specific learning disabilities displayed moderate levels of impulsivity (Al-Dababneh & Al-Zboon, 2018). The mean scores indicated that the most serious problem related to students' lack of premeditation, or limited ability to act based on thoughtful planning (Al-Dababneh & Al-Zboon, 2018). The second most serious issue dealt with student's lack of perseverance, or the ability to continue with action when faced with challenges (Al-Dababneh & Al-Zboon, 2018). The least serious issue related to the students' urgency or difficulties with self-control and making decisions too quickly (Al-Dababneh & Al-Zboon, 2018).

For the purpose of this literature review, the second most serious problem, the lack of perseverance, was the focus. The measurements regarding perseverance examined students' curiosity towards and engagement with puzzles, quizzes, and homework (Al-Dababneh & Al-

Zboon, 2018). According to the researchers, a lack of perseverance could affect the students' ability to complete a task on time or complete a task at all (Al-Dababneh & Al-Zboon, 2018). Difficulty completing a task on time, or at all, can have a significant effect on a student's academic success. Even when a student does complete the task at hand, a lack of perseverance may impact the quality of work being completed. Additionally, when a task cannot be completed on time, there may be penalties for late or incomplete work. Due to the potential negative effects of having a lack of perseverance, combined with the findings of Al-Dababneh and Al-Zboon (2018), the importance of building perseverance in students was further developed. Further research is necessary regarding a lack of perseverance and students with specific learning disabilities to truly understand its effects on academic success (Al-Dababneh & Al-Zboon, 2018).

To build on the premise presented by the study conducted by Al-Dababneh and Al-Zboon (2018), the study conducted by Mu et al. (2017) furthered the discussion on building perseverance in students with specific learning disabilities through their study on the role of the inclusive educator in building resiliency. Mu et al. (2017) utilized online self-reported surveys within schools located in China. The researchers used data collected from a separate research project on Chinese students' resilience and wellbeing as a starting point for the study in 2017. The original data included responses from 2,632 students and 175 educators (Mu et al., 2017). The study being discussed here selected 112 of those students who had self-reported disabilities, 112 students without disabilities for comparison purposes, and the selected students' teachers (Mu et al., 2017). The students were in grades fourth through ninth and ranged in age from 9 to 17 (Mu et al., 2017). The group of students with self-reported disabilities was made up of

approximately one-third females, while the comparison group was made up of approximately one-half females (Mu et al., 2017).

The surveys given to students were intended to measure students' resilience and well-being, with additional items regarding student's feelings on the support given by their teacher (Mu et al., 2017). The surveys administered to teachers intended to measure their agency, or teachers' effort to seek out help, support, and guidance to address students' needs (Mu et al., 2017). The data collected from the surveys were then analyzed to determine not only what adversities students with disabilities face, but also the role of students' teachers in the resiliency process (Mu et al., 2017).

For this literature review, the results regarding the role of the educator in the students' resilience process, specifically the students identified as having disabilities, was the focus. Mu et al. (2017) utilized regression analysis to determine the relationship between student resiliency, teacher support, and teacher agency. Through the analysis, researchers found that teacher support was significantly and positively correlated to student resilience (Mu et al., 2017). Similarly, students with disabilities that had high levels of resiliency were found to positively correlate with teachers who reported higher levels of agency (Mu et al., 2017).

The researchers then conducted a process analysis to explain the correlation between students with higher levels of resiliency and their teachers (Mu et al., 2017). The researchers found that the teachers who had reported higher levels of agency had students who reported high levels of teacher support (Mu et al., 2017). Furthermore, students who had reported higher levels of teacher support also reported higher levels of resilience (Mu et al., 2017).

According to Mu et al. (2017), findings indicated that educators can play a significant and positive role in influencing students' levels of resilience. The findings that educators can

positively influence students' resilience partially supported the current research question in that educators can help to increase student perseverance. In combining the findings from the studies conducted by Al-Dababneh and Al-Zboon (2018) and Mu et al. (2017), an educator could not only increase elementary students' perseverance but also should work to do so due to the possible implications for student success.

Mindsets and Perfectionism

Much like the study conducted by Al-Dababneh and Al-Zboon (2018), the following two articles are included here to further understand which students may benefit most from growth mindset interventions. Although the research presented focused on students classified as gifted and perfectionists, the findings still provided valuable insights. The research conducted by Chan (2012) further developed previous research on classifying gifted students in terms of perfectionism. More specifically, the study worked to classify 251 Chinese students as healthy perfectionists, unhealthy perfectionists, or non-perfectionists (Chan, 2012). Concerning the previously discussed perfectionism definitions, a healthy perfectionist could be considered a normal perfectionist, while an unhealthy perfectionist could be considered a neurotic perfectionist.

Two-hundred fifty-one students attending the University of Hong Kong, in grades 5 through 12, were nominated by educators to participate in the study (Chan, 2012). Students were nominated based on the teachers' judgment of giftedness in academics or other exceptional talents (Chan, 2012). In groups of 30 to 50, students were asked to complete several self-reported surveys regarding perfectionism, life-satisfaction, and happiness (Chan, 2012).

Chan (2012) utilized the Almost Perfect Scale-Revised, a 23-item survey intended to measure the students' perfectionistic tendencies, focusing on the three subscales of Discrepancy,

High Standards, and Order. The researcher then utilized an empirical approach to cluster scores and students into three categories of perfectionists: healthy, unhealthy, and non-perfectionist (Chan, 2012). Students scoring high on High Standards, but equally as low on Discrepancy, were clustered together and were considered healthy perfectionists (Chan, 2012). Students scoring equally as high on both High Standards and Discrepancy were clustered together and were considered unhealthy perfectionists (Chan, 2012). Students scoring low on both subscales of High Standards and Discrepancy were clustered together and were classified as non-perfectionists (Chan, 2012).

The importance of the classification portion of the study conducted by Chan (2012) addressed the ability to identify not only perfectionistic gifted students but also, more specifically, unhealthy perfectionists. While the study focused on gifted students, it may be possible to generalize the identification process to students who have not been identified as gifted. For instance, general education teachers could utilize the identification process within their classrooms to better understand which students may benefit most from growth mindset interventions. Additionally, the study focused on students in upper elementary or older (Chan, 2012). Younger elementary students may also benefit from the identification process, though more research would be necessary.

In regards to the current research question, the researcher found that the classification of being an unhealthy perfectionist was positively correlated with holding a fixed mindset (Chan, 2012). Identifying unhealthy perfectionism in gifted students, and possibly general education students, may allow educators to target those students and provide tailored growth mindset lessons to combat the unhealthy aspects of perfectionism.

To further the discussion on which students may benefit most from growth mindset interventions, the study conducted by Mofield and Peters (2018) compared gifted students to their advanced and typical peers in regards to three variables: perfectionism, mindset beliefs, and attitudes about achievement. Participants for the study were selected from 11 middle schools from a suburban district in the southeast region of the United States (Mofield & Peters, 2018). Of the 416 participants, 264 students were labeled as gifted, 66 students were considered advanced, and 86 students were considered typical (Mofield & Peters, 2018). Participants were asked to complete three surveys: The Mindset Assessment Profile Tool, the Goals and Work Habits Survey, and the School Attitudes Assessment Survey-Revised (Mofield & Peters, 2018).

Hierarchical regression analyses were conducted to determine any differences among group membership, gifted, advanced, or typical, and the variables of perfectionism, mindset beliefs, and attitudes about achievement (Mofield & Peters, 2018). For this literature review, the correlation between group membership and mindset beliefs was the focus. Through their study, Mofield & Peters (2018) found that gifted students as a group did not score higher on the subscale of the fixed mindset when compared to typical peers. Importantly, gifted students were more likely to hold a growth mindset (Mofield & Peters, 2018).

Although the findings from Chan (2012) and Mofield and Peters (2018) are specific to older, gifted students, and particularly perfectionists, the results provided valuable insights into which students may need a more targeted approach to the growth mindset. Unhealthy perfectionists and general education students may be more likely to hold a fixed mindset and, therefore, may be a more specific audience for growth mindset interventions.

Studying the Growth Mindset

For the research question at hand, research focused on children and adolescents. Studies focusing on other populations, such as adults, may have broadened the scope of the findings on the growth mindset. However, articles about students were more appropriate and pertinent. For all studies analyzed regarding the growth mindset, the ages of the participants ranged from approximately 3 years old to approximately 20 years old (Al-Dababneh & Al-Zboon, 2018; Bettinger et al., 2018; Bostwick et al., 2017; Chan, 2012; Claro et al., 2016; Gunderson et al., 2018; Mofield & Peters, 2018; Mu et al., 2017; Paunesku et al., 2015; Schleider et al., 2016; Taket, Nolan, & Stagnitti, 2014; Tuckwiller et al., 2017; Vuorinen et al., 2018; Wang et al., 2018; Yeager et al., 2016; Zeng et al., 2016). Additionally, the research focused mainly pertaining to the growth mindset within educational settings, with the exception of two studies; one focusing on children and families within their own homes and one study pertaining to the brain structure aspects of the growth mindset (Gunderson et al., 2018; Wang et al., 2017).

The familial ties to the growth mindset. Prior to investigating how the growth mindset may impact students' perseverance and academic achievement, it may be of value to examine how familial ties may impact perseverance, resiliency, and mindset development in children. Research indicated that families, and parents, in particular, can play an impactful role in the development of mindsets for children (Gunderson et al., 2018; Schleider et al., 2016; Taket et al., 2014). Understanding how a mindset may develop in young children lent itself well to future applications, such as how an adult could foster a growth mindset in children.

In the quantitative study conducted by Schleider et al. (2016), 131 parents with children ages 5-6 were recruited to explore whether or not parents' mindsets correlated to children internalizing problems. Participants were recruited from a larger study in a mid-sized

Midwestern city (Schleider et al., 2016). Researchers asked parents to complete an intelligence mindset scale, as well as the Penn State Worry Questionnaire and the Mood and Anxiety Symptom Questionnaire – Anhedonic Depression (Schleider et al., 2016). The self-reported surveys intended to measure the parents' tendencies towards either a growth mindset or a fixed mindset, parents' worry, and parents' depressive symptoms, respectively (Schleider et al., 2016). To measure each child's possible levels of anxiety and depression, parents also completed the Revised Children's Anxiety and Depression Scale-Parent Report (Schleider et al., 2016).

After the survey scores were analyzed, Schleider et al. (2016) conducted a hierarchical linear regression analysis to evaluate the relationship between parents' fixed mindset and children internalizing problems. The analysis revealed that a parental fixed mindset positively correlated with children internalizing problems, even when controlling for relevant factors (Schleider et al., 2016). Though the findings do not imply causation, the positive correlation is valuable in understanding how parents' intelligence mindsets may be affecting their children.

According to researchers, a parental fixed mindset had a positive correlation to children internalizing problems or having anxious and depressive characteristics (Schleider et al., 2016). Although the findings of Schleider et al. (2016) did not indicate a direct link to the development of a fixed mindset in children, the findings added value to the current discussion. A parent's fixed mindset may have a negative impact on children's overall emotional health. Furthermore, the negative effects on emotional health could, then, negatively impact the children's academic performance.

Building resilience. The following article did not relate directly to the growth mindset. However, the qualitative study added value to the greater discussion of building resilience in children, in that it demonstrated an ability to nurture resilience in children. Without the study, it

would be unclear as to whether or not an educator could work to develop resiliency in students. The study conducted by Taket et al. (2014) examined the ways in which families develop resiliency within their children. Preschool teachers from the Victoria region in Australia identified 26 children, 19 of whom were female, that demonstrated resiliency (Taket et al., 2014). The children and their families were facing at least two of the following adversities at the time of the study: "...financial insecurity or poverty, housing insecurity, employment insecurity, chronic health problems (either of the child or a family member), family violence, family breakdown, [or] bereavement" (Taket et al., 2014, pp. 291).

Researchers interviewed the children's mothers twice, once just before the children entered primary school and once in the first half of the child's second year in primary school (Taket et al., 2014). It was noted that only mothers were interviewed because they were the parents that responded to the researchers' requests (Taket et al., 2014). However, mothers were not the only parent aiding in the development of the children (Taket et al., 2014). Many mothers spoke of the fathers' roles in raising independent and resilient children (Taket et al., 2014).

Taket et al. (2014) utilized a topic guide for the interviews that focused on the resiliency of the children and strategies used in the overall development of the children. Following the interviews, researchers conducted a deductive thematic analysis to determine how families were supporting their children, their overall development, and their resiliency (Taket et al., 2014). Each analysis conducted by researchers was cross-checked and examined for consistency and validity, which were confirmed (Taket et al., 2014).

The analysis revealed several common strategies utilized by parents to support their child's development and resiliency (Taket et al., 2014). For instance, one theme discussed was the building of independence through routines and designated jobs for the child (Taket et al.,

2014). Additionally, mothers discussed talking with their children about challenging situations and how to handle those situations, which, in turn, boosted the children's confidence in being able to handle similar situations in the future (Taket et al., 2014). In discussing strategies with the children, the parents were not only developing the children's confidence, but they were also nurturing the children's resiliency (Taket et al., 2014).

Taket et al. (2014) also found that parents worked to build the children's resiliency through (a) practicing how to respond to situations, (b) teaching them how to problem-solve, (c) teaching them how to make friends, (d) encouraging relationships with adults other than themselves, and (e) involving the children in community activities. The researchers pointed out that the mothers within the study noted that they were not "helicopter parents," or overly involved in their children's lives to the point of intruding on their overall development (Taket et al., 2014).

In regards to the current research question, the results from Taket et al. (2014) provided evidence that resiliency is not a fixed trait, but rather one that can be nurtured and grown. The strategies discussed in the study conducted by Taket et al. (2014) could also be shared by educators and administrators with families as a means to help develop resiliency within their children.

Parental praise and its effects. Much like the study conducted by Schleider et al. (2016), Gunderson et al. (2018) investigated the relationship between parents and their children in regards to intelligence mindsets. However, the study conducted by Gunderson et al. (2018) differs in that it investigated the effects of parents' actions on their child's mindset and later academic achievement, rather than how parents' mindsets affect the behaviors of the child.

The quantitative research study involved 53 children and their caregivers recruited from a separate study researching parental praise and children's incremental motivational frameworks (Gunderson et al., 2018). The study being discussed here furthered the original study through evaluating how the parental praise not only related to the children's motivation frameworks three to four years later, but it also examined how the children's frameworks then associated with their academic achievement one to two years following (Gunderson et al., 2018).

The 53 families included in the results of the study had completed the three necessary components: the naturalistic parental praise observations, the incremental mindset measure, and the academic achievement measures (Gunderson et al., 2018). The naturalistic parental praise observations took place during three 90-minute sessions in the children's homes when the children were 14, 26, and 38 months old (Gunderson et al., 2018). Following the observations, praise was coded as being process praise, person praise, or other praise (Gunderson et al., 2018). Gunderson et al. (2018) defined the three categories of praise as follows: (a) process praise: praise focusing on the child's effort strategies or particular actions, (b) person praise: praise focusing on the child, indicating he or she has a fixed, positive quality, and (c) other praise: praise that does not focus on the process or the child, such as "Yay!"

The children's motivational frameworks, or mindset beliefs, were assessed in the children's second- or third-grade year (Gunderson et al., 2018). Frameworks were assessed utilizing two in-person out-loud interviews focusing on the children's beliefs on intelligence and its malleability. Academic achievement scores in mathematics, reading comprehension, and reading decoding were obtained in both second and fourth grade utilizing the Woodcock-Johnson III Tests of Achievement (Gunderson et al., 2018).

Following a path analysis, Gunderson et al. (2018) found that higher rates of process praise, when the children were 1 to 3 years of age, predicted an incremental motivational framework, or growth mindset, in second or third grade. Furthermore, an incremental motivational framework in second or third grade then positively predicted the achievement scores for mathematics and reading comprehension in fourth grade (Gunderson et al., 2018). The direct and indirect paths from process praise to incremental motivational frameworks and incremental motivational frameworks to achievement were significant (Gunderson et al., 2018).

The findings of the study conducted by Gunderson et al. (2018) were important to consider in terms of a child's academic achievement. Similar to the study conducted by Schleider et al. (2016), the findings do not point to causation, though the correlation between how parents speak to their young child and the child's later academic achievement may influence the way parents choose to interact with their children. It may be of value to educate parents on the effects their words could have on later academic achievement. Similarly, even if the children are older, parents could attempt to adjust their praise towards their children in hopes of shifting the children's mindsets and, possibly, their academic achievement.

Limitations for familial ties. While the findings discussed above were valuable, it is important to discuss each study's limitations and implications. For instance, the studies conducted by Schleider et al. (2016) and Taket et al. (2014) both involved samples that were not selected randomly. Additionally, the sample selected for the study conducted by Taket et al. (2014) was comprised of a majority of females. Gunderson et al. (2018) reported a relatively small sample size. All three samples led to reduced generalizability of results (Gunderson et al., 2018; Schleider et al., 2016; Taket et al., 2014). Larger sample sizes, randomly selected samples, and a more diverse sample could lead to more generalizable results.

The surveying methods utilized by Schleider et al. (2016) only allowed for self-reports for adult measures and for the adults to respond on behalf of the children, which could have led to a more biased assessment of both the adults and the children. For a more precise understanding, Schleider et al. (2016) could have utilized additional reporting methods, such as interviews with the children.

Similarly, Taket et al. (2014) were only able to interview the mothers to gather information regarding the children's development and strategies for developing resiliency. Valuable information may have been gained from interviewing the other parent, other adults close to the child, or the child. Gunderson et al. (2018) reported missing measures of academic achievement and limited observation time as study limitations. Both limitations indicated that the study may be missing valuable information, which, in turn, could have altered the overall results.

The studies conducted by Schleider et al. (2016) and Gunderson et al. (2018) could not account for all possible influencing factors. It was possible that other undetermined factors, such as parent anxiety influencing the children's anxiety or a change in praise as the children grew older, influenced the results of the studies. More research would be necessary to further validate the findings of the studies.

Implications for education. Based on the articles discussed, not only can parents' intelligence mindset influence children's emotional wellbeing, but parents' actions can also affect children's intelligence mindset and later academic achievement (Gunderson et al., 2018; Schleider et al., 2016). The research conducted by Gunderson et al. (2018) supported the current hypothesis that a growth mindset could have a positive influence on academic achievement. The additional information that parents could work to influence children's mindsets prior to school had significant implications on how to foster a growth mindset within students. Parents could

work to nurture a growth mindset within their children before the children even enter the education system. Educators and administrators could also partner with parents to extend growth mindset lessons conducted at school. In creating the partnership, the ideas and beliefs behind the growth mindset could be reinforced at home and possibly encourage the development of a growth mindset within the students.

Furthermore, educators and administrators could utilize the findings of all three studies as a basis for informing parents on how their beliefs and actions can impact their children's emotional well-being, intelligence mindsets, and even their academic achievement. For instance, by explaining to parents that their mindset may have a negative impact on their children's emotional health, parents may choose to adjust their intelligence mindset and possibly lower their children's anxious or depressive tendencies. Similarly, the studies could help support parents in how to praise their children, which may then help the children develop a growth mindset. Finally, the study conducted by Taket et al. (2014) could provide parents with strategies on how to support the overall development of their children.

It should be pointed out that through educating parents, it is not to say that educators and administrators should tell parents how to raise their children or imply that some parents are raising their children incorrectly. Educators and administrators could provide the information to the parents and allow parents to utilize the information in a manner that they see fit.

There was an important limitation in the research utilized for the literature review. Though the three articles discussed provided valuable information regarding intelligence mindsets, resiliency, and academic achievement of children, further research should be conducted to ensure that a complete understanding has been developed. The analysis of three

articles was not enough to come to an absolute conclusion of how parents and families may be influencing their children's well-being and development.

Linking the growth mindset to perseverance. Unlike the other research articles discussed here, the experiment conducted by Wang et al. (2018) did not take place in an educational setting, but rather a medical one. Researchers combined the use of self-reported surveys to measure grit, the growth mindset, self-control, and delayed gratification with the use of structural magnetic resonance imaging of the brain to explore the relationship between grit and the growth mindset, and brain structures (Wang et al., 2018). Specifically, researchers hypothesized that the growth mindset might mediate the relationship between grit and brain structures (Wang et al., 2018). Two hundred thirty-one students with a lack of self-reported psychiatric or neurological diseases were utilized to help determine the hypothesis (Wang et al., 2018). The self-reported surveys and brain imaging were then examined to determine if a relationship between the growth mindset, grit, and brain structures existed (Wang et al., 2018).

Researchers found that students' high grit scores related to a difference in brain structure when compared to those with lower grit scores (Wang et al., 2018). Differences in brain structure could predict individual differences in grit (Wang et al., 2018). Additionally, data gathered from the growth mindset survey led researchers to discover a significant correlation between the growth mindset and grit (Wang et al., 2018). The differences in brain structure could predict the differences in the growth mindset tendencies in students (Wang et al., 2018). The results of the study confirmed researchers' hypothesis that the growth mindset might mediate the relationship between grit and brain structures (Wang et al., 2018). The growth mindset may foster grit among adolescent students (Wang et al., 2018). The results of the study conducted by Wang et al. (2018)

further developed the current idea that teaching students the growth mindset could increase students' levels of grit or perseverance.

The growth mindset in educational settings. As previously mentioned, much of the research examined for this literature review took place in educational settings, as the educational setting pertained most directly to the essential research question. For instance, Zeng et al. (2016) investigated the relationship between the growth mindset, and psychological well-being and school engagement. The researchers hypothesized that the growth mindset would be positively related to psychological well-being and school engagement (Zeng et al., 2016). Researchers also hypothesized that resiliency would play a mediating role between the growth mindset, and psychological well-being and school engagement (Zeng et al., 2016).

Researchers utilized a diversified convenience sample of five schools in the Guangdong province in China (Zeng et al., 2016). Within each of the five schools, school administrators selected between five and six classes to participate in the study, resulting in a sample size of 1,260 students, ages 7-20, 658 of which were male (Zeng et al., 2016). Like many of the studies reported here, researchers utilized self-reported online surveys during school hours measuring students' growth mindset tendencies (Zeng et al., 2016). The surveys also included items intended to measure students' resiliency, psychological well-being, and school engagement (Zeng et al., 2016).

After analyzing the results, researchers found that all variables were significantly and positively related to one another (Zeng et al., 2016). The growth mindset positively predicted psychological well-being and school engagement, while the effects through resiliency were significantly related (Zeng et al., 2016). In relation to the current research question, the findings that the growth mindset, its relation to resilience, and its implications for positive academic

outcomes were significant. The ideas presented furthered the current hypothesis that the growth mindset may increase perseverance in elementary students.

Similarly, in the study conducted by Tuckwiller et al. (2017), the researchers studied the relationships among mindset, grit, and optimism in adolescents with learning disabilities. Through their literary research, Tuckwiller et al. (2017) had learned of the potential benefits on academic success by directly teaching mindset, grit, and optimism to students. However, the researchers discovered a significant gap in the literature regarding the benefits for students with learning disabilities, which then led to their study (Tuckwiller et al., 2017).

Much like the study conducted by Zeng et al. (2016), Tuckwiller et al. (2017) also utilized online self-reported surveys. One hundred twenty-eight ninth- through twelfth-grade students in a mid-Atlantic private school were invited to participate, though only 17 of those students chose to participate in the research (Tuckwiller et al., 2017). The school selected to participate in the study specifically served students with disabilities (Tuckwiller et al., 2017).

The online survey was intended to measure students' profiles regarding their mindsets, grit, and optimism (Tuckwiller et al., 2017). In regards to their mindsets, researchers measured students' beliefs in mindset related to others, as well as related to self (Tuckwiller et al., 2017). Once data had been collected, the researchers conducted a descriptive analysis to determine the correlation among the variables (Tuckwiller et al., 2017). The analysis found a significant correlation between the measures on mindset related to others and mindset related to self (Tuckwiller et al., 2017). There was a medium-to-large effect found between optimism and mindset related to others, optimism and mindset related to self, and optimism and grit, though the effects were not statistically significant (Tuckwiller et al., 2017). Unlike the findings from Zeng et al. (2016), only a small correlation between grit and mindset related to others was found;

however, there was no correlation between grit and mindset related to self (Tuckwiller et al., 2017).

The results of the research conducted by Tuckwiller et al. (2017) were unexpected. Previous research had indicated strong correlations among the variables, whereas the study conducted by Tuckwiller et al. (2017) found only one statistically significant correlation. The fact that the correlations were less significant for a population of students with disabilities may make the current research question less applicable to a typical American classroom, which often has students with disabilities. However, Tuckwiller et al. (2017) pointed out that the lack of statistical significance may be due in part to the small sample size.

Effects of the growth mindset on academic achievement. In the study conducted by Yeager et al. (2016), researchers first redesigned the growth mindset interventions being utilized at the time of the study. The researchers utilized both qualitative inquiries and a quantitative A/B experimental design to revise intervention materials intended for ninth-grade students (Yeager et al., 2016). After the intervention had been revised, researchers conducted an experiment within the educational setting to test the hypothesis that the revised intervention could lead to improved grades for ninth-grade students (Yeager et al., 2016). Researchers tested the hypothesis that prior high achievement would dampen the intervention effects (Yeager et al., 2016).

Researchers utilized a sample size of approximately 3,000 ninth-grade students attending 10 high schools across the United States (Yeager et al., 2016). The high schools were recruited based on meeting all of the following criteria: (a) being a public high school, (b) having a ninth-grade enrollment between 100 and 600 students, (c) being within an average range of poverty, and (d) having a moderate representation of students of color (Yeager et al., 2016). Females made up 48% of the sample population (Yeager et al., 2016).

The experiment took place within the schools at two separate sessions, one to four weeks apart, within the first 10 weeks of school (Yeager et al., 2016). Students utilized computers for the sessions and were randomly assigned to either the control group or the experimental group (Yeager et al., 2016). There were no significant differences between the control group and the experimental group (Yeager et al., 2016). Prior academic data was collected from the schools to compare prior achievement to post-experiment achievement (Yeager et al., 2016). The prior academic achievement also provided insights into how the intervention affected both high and low academic students (Yeager et al., 2016).

Both the control group and the experimental group were given self-reported surveys to measure their fixed mindset tendencies at both the first and second sessions (Yeager et al., 2016). The experimental group was given information and insights into the growth mindset, while the control group was given information and insights on the functions of the brain (Yeager et al., 2016). Additionally, both groups were asked to respond to a hypothetical situation to measure their challenge-seeking behaviors (Yeager et al., 2016). The hypothetical situation asked students to choose between a less challenging math assignment and a more challenging math assignment, both of which would be worth 30 points (Yeager et al., 2016).

The researchers found that the revised intervention led to higher academic achievement post-experiment when compared to those in the control group (Yeager et al., 2016). Additionally, the researchers found that students within the experimental group chose the more challenging math assignment in the hypothetical situation than the students in the control group (Yeager et al., 2016). It could be hypothesized that the increase in academic achievement and challenge-seeking behaviors from the experimental group was due to the growth mindset intervention. While the experiment did not measure perseverance directly, the study provided evidence that

the growth mindset may be linked to an increase in both academic achievement and challenge-seeking behaviors. If students are doing better academically and seeking out more challenges, it may mean that perseverance also increased, which would further develop the current research question. However, further research is needed to address the population of elementary students.

Bettinger et al. (2018) utilized elements from the study conducted by Yeager et al. (2016) to conduct their experiment. Bettinger et al. (2018) tested the hypothesis that a growth mindset treatment would have a positive effect on students' effort in a real effort task. The researchers had a sample size of 385 first-year high school students in Norway (Bettinger et al., 2018). The high school offered both academic and vocational tracks for students, with fifty-eight percent of the participating students on the vocational track (Bettinger et al., 2018). Forty-eight percent of the students were female in the first session of the experiment, and there were significantly more females in session two when compared to session one (Bettinger et al., 2018). Sessions two and three were not significantly different (Bettinger et al., 2018).

Like the experiment conducted by Yeager et al. (2016), the experiment conducted by Bettinger et al. (2018) utilized students' computers during school hours. Researchers implemented the first two sessions while teachers implemented the final session (Bettinger et al., 2018). The experiment involved a self-reported survey to measure the students' mindset tendencies, as well as information regarding either the growth mindset for the experimental group or the functions of the brain for the control group (Bettinger et al., 2018). The experiment also included tasks intended to measure students' challenge-seeking behaviors and perseverance (Bettinger et al., 2018). The methods utilized by Bettinger et al. (2018) mirror the methods utilized by Yeager et al. (2016).

One difference between the two experiments was the implementation of having students create a math worksheet (Bettinger et al., 2018). Students were asked to design a math worksheet, selecting from easier problems and more challenging problems (Bettinger et al., 2018). The intent was to measure the challenge-seeking behaviors of the students in the experimental group compared to the control group (Bettinger et al., 2018). An additional difference between the two studies was the use of a 34-question multiple-choice algebra activity in the third session (Bettinger et al., 2018). The purpose of the activity was to measure the students' achievement, as well as their perseverance, when faced with a real-life academic task (Bettinger et al., 2018).

Researchers found the results to be consistent with the hypothesis in that the experimental group showed an increase in perseverance during the real effort task given in the third session (Bettinger et al., 2018). For the 34 questions, researchers found that those in the experimental group had significantly more correct answers than those in the control group, but the effort produced by each of the groups was not significantly different (Bettinger et al., 2018). Researchers found that in the experimental group, students with an initial low-growth mindset showed significant and positive changes of correct answers and effort (Bettinger et al., 2018). Additionally, researchers found that when selecting question choices to create a worksheet, the experimental group was more likely to choose more challenging questions when compared to the control group (Bettinger et al., 2018). These findings are consistent with the findings of the experiment conducted by Yeager et al. (2016).

Much like the research conducted by Yeager et al. (2016) and Bettinger et al. (2018), Bostwick et al. (2017) explored how students' mindset beliefs impacted their academic engagement and achievement, particularly in regards to mathematics. Bostwick et al. (2017)

hypothesized that a students' growth orientation would positively predict mathematical engagement and achievement. Participants of the quantitative study included 4,411 seventh-through ninth-grade students attending various high schools across Australia (Bostwick et al., 2017). The participating schools were both urban and rural, Catholic and non-Catholic, and single-sex and coeducational (Bostwick et al., 2017). Fifty-four percent of participants were male, with an average age of 13.5 years old (Bostwick et al., 2017). Students' socioeconomic status was slightly above average, and 82% of students' primary home language was English (Bostwick et al., 2017).

Students' growth mindset, self-based growth goals, and task-based growth goals were measured utilizing Likert-type self-reported items (Bostwick et al., 2017). The growth mindset was measured with two items adapted from the Implicit Theories of Intelligence Scale (Bostwick et al., 2017). Self-based and task-based growth goals were measured utilizing one item from the Personal Best Scale and Achievement Goals Questionnaire each (Bostwick et al., 2017). All measures were combined to measure students' overall growth orientation. Three self-reported Likert-style items indicated students' level of academic engagement in regards to mathematics (Bostwick et al., 2017). A 10-question quiz, ranging from basic arithmetic to basic calculus, measured students' achievement in mathematics (Bostwick et al., 2017). Reliability for all measures was reported as good (Bostwick et al., 2017).

Bostwick et al. (2017) then conducted a confirmatory factor analysis and found a positive association between students' growth orientation, engagement, and achievement. Furthermore, when controlling for student background factors, such as gender and socioeconomic status, structural equation modeling showed a positive relationship between growth orientation, and engagement and achievement (Bostwick et al., 2017). Similar to the studies conducted by Yeager

et al. (2016) and Bettinger et al. (2018), Bostwick et al. (2017) found that the growth mindset can have a positive impact on students' academics. Researchers provided evidence that a growth mindset not only led to improved academic achievement but also improved levels of student engagement (Bostwick et al., 2017). The additional finding regarding engagement may have important implications for the current research question, as an increase in student engagement may also lead to improved academics. While the study targeted high school students, its findings may be applicable to elementary students, though more research would be necessary.

Impact of interventions on mindsets. Similar to the studies conducted by Yeager et al. (2016) and Bettinger et al. (2018), the study conducted by Vuorinen et al. (2018) utilized pre- and post-intervention measurements, as well as an intervention aimed at improving character strengths and students' mindsets. The researchers hypothesized that directly teaching students about character strengths, social skills and learning, grit, focusing only on interest and perseverance, and the growth mindset may increase social competence, grit, happiness, academic engagement, and a growth mindset, particularly for students with special educational needs (Vuorinen et al., 2018).

To test the hypothesis, Vuorinen et al. (2018) recruited 15 teachers, each teaching in a Finnish inclusive elementary classroom, grades fourth through sixth. The researchers then identified 11 intervention classrooms and four control classrooms (Vuorinen et al., 2018). Within the intervention group of 175 students, 17 students were identified as having special educational needs, while students with special educational needs could not be identified in the control group due to limited informed consents from parents (Vuorinen et al., 2018). Like the previously discussed studies, the students were given a pre- and post-intervention self-reported survey intended to measure social competence involving empathy and aggression, grit, strengths,

happiness, school engagement, and mindset orientation (Vuorinen et al., 2018). The intervention classrooms received a 16-week intervention intended to directly teach students the previously mentioned variables through weekly 45-minute lessons (Vuorinen et al., 2018).

The data collected from the self-report surveys were analyzed to determine any differences between the intervention group and the control group, particularly any changes for the students with special educational needs (Vuorinen et al., 2018). Like the study conducted by Tuckwiller et al. (2017), researchers found interesting and unexpected results (Vuorinen et al., 2018). All males showed progress in interest, with the most progress shown by males with special educational needs in the intervention group. The difference in the progress of the males with special educational needs in the intervention group is without statistical significance (Vuorinen et al., 2018). In regards to grit, the females without special educational needs in the intervention group were the only participants to show statistically significant progress (Vuorinen et al., 2018).

Unexpectedly, there were no significant changes in participants' happiness, strengths awareness, school engagement, or growth mindsets (Vuorinen et al., 2018). Like the study conducted by Tuckwiller et al. (2017), Vuorinen et al. (2018) indicated the unexpected results might have been due in part to the small sampling of students with special educational needs. Additionally, the short scales used in the surveys may not have been enough to truly represent the data or changes in students' beliefs (Vuorinen et al., 2018).

Unlike many of the previously discussed studies, the study conducted by Vuorinen et al. (2018) also included a qualitative method to deepen the information gathered regarding the hypothesis. The researchers interviewed seven of the educators assigned to the intervention group (Vuorinen et al., 2018). The semi-structured interviews allowed the educators to freely

recall their experiences and impressions of the intervention and its effects on the students (Vuorinen et al., 2018). In contrast to the quantitative data, the data collected through the interviews indicated more significant positive changes in students (Vuorinen et al., 2018). Overall, the teachers saw improved social skills, strength recognition, engagement, well-being, and mindsets (Vuorinen et al., 2018). While the educator interviews supported some of the quantitative data, the interviews also indicated more significant changes in the variables that had not shown significant changes from the data collected by the self-reported surveys (Vuorinen et al., 2018). According to Vuorinen et al. (2018), the differences in results may be due to the previously discussed limitation, the small sample size, or due to teacher enthusiasm, and therefore, positively biased accounts.

The studies conducted by Yeager et al. (2016), Bettinger et al. (2018), and Bostwick et al. (2017) found more statistically significant and positive results in response to the interventions, while the study conducted by Vuorinen et al. (2018) found less statistically significant changes in response to the intervention. Although the results of the study conducted by Vuorinen et al. (2018) were unexpected, when examining the results of the other three studies, a larger sample size of students with special educational needs may have led to more significant results. Further research is necessary regarding interventions aimed at improving social skills, positive educational experiences, learning skills, and mindset orientations for students with special educational needs, especially at the elementary level.

A quantitative study conducted by Paunesku et al. (2015) added to research by testing whether or not growth mindset interventions could be a scalable treatment option for academic underachievement. At the time of the study, and as the studies conducted by Yeager et al. (2016), Bettinger et al. (2018), and Vuorinen et al. (2018) demonstrated, much of the available research

on growth mindset interventions were conducted with small samples and with intensive researcher involvement (Paunesku et al., 2015). Paunesku et al. (2015) intended to fill a gap in research by implementing a growth mindset intervention on a larger scale and analyzing its effects on student achievement. Researchers recruited 13 high schools, located in the eastern, western, and southwestern regions of the United States (Paunesku et al., 2015). As a strength of the study, the recruited schools included public schools, charter schools, and one private school, and all schools widely varied in socioeconomic status (Paunesku et al., 2015). Schools provided semester, pre- and post-intervention grades for 1,594 students (Paunesku et al., 2015).

Similar to the study conducted by Vuorinen et al. (2018), students participated in two 45-minute online sessions, conducted in the schools' computer labs, though the sessions were implemented by classroom teachers (Paunesku et al., 2015). Participants were randomly assigned to the control group or one of three intervention groups (Paunesku et al., 2015). The control group intervention focused on educating students about the functions of the brain, much like the control group in the study conducted by Yeager et al. (2016) (Paunesku et al., 2015). The growth mindset intervention informed students on how hard work and good strategies during challenging tasks can affect the brain (Paunesku et al., 2015). The sense-of-purpose intervention helped students to understand the importance of schoolwork in accomplishing valuable life goals (Paunesku et al., 2015). The last intervention group combined the overall messages of the growth mindset and sense-of-purpose interventions (Paunesku et al., 2015). In addition to the online sessions, students' mindset beliefs and views on schoolwork were measured before the first session and after the entire intervention (Paunesku et al., 2015). Brief, self-reported surveys measure both mindset and schoolwork constructs (Paunesku et al., 2015).

Utilizing a linear regression analysis, Paunesku et al. (2015) found that the growth mindset intervention significantly changed student views on intelligence, in favor of intelligence being malleable, while the other interventions did not. Additionally, both the sense-of-purpose and growth mindset interventions led to students viewing academic work as more impactful, when compared to the combined intervention and control groups (Paunesku et al., 2015).

In regards to how the ideas of the growth mindset can impact student achievement, Paunesku et al. (2015) found that students in the intervention groups were significantly more likely to pass core academic classes post-intervention when compared to the control group. Furthermore, students in the intervention groups demonstrated a significant increase in satisfactory grades, based on pre-intervention and post-intervention semester grades (Paunesku et al., 2015). Grades of the control group students did not significantly improve following the intervention (Paunesku et al., 2015).

The study conducted by Paunesku et al. (2015) provided additional evidence that not only can a growth mindset intervention positively impact mindset and academic achievement, but it can also be effectively implemented on a large scale. Additionally, the study indicated that significant improvements could be achieved for a diverse set of underachieving students (Paunesku et al., 2015). When combined with the previous findings of Bettinger et al. (2018), Bostwick et al. (2017), Vuorinen et al. (2018), and Yeager et al. (2016), research supported the current research question that the ideas of the growth mindset can lead to improvements in students' academic achievement.

A discussion on grit, education, and socioeconomic status. While many of the previously discussed research indicated the growth mindset can have positive effects on academic achievement, it would be irresponsible not to discuss the role poverty can play on

achievement. Socioeconomic status is a strong indicator of academic achievement, often negatively impacting the academics of students with low-status (Claro et al., 2016). Claro et al. (2016) examined whether or not a growth mindset could temper the effects of a low socioeconomic status on student achievement. A large-scale quantitative study utilized the academic and mindset data of all tenth-grade students attending public schools in Chile (Claro et al., 2016). The outcomes of mathematical and language arts standardized tests represented academic data, while students' mindsets were measured with a short self-reported survey (Claro et al., 2016). Seventy-five percent of all Chilean tenth graders attending public schools made-up the study sample, as all data points were available for those students (Claro et al., 2016). Analyses revealed that students with a growth mindset had higher achievement than their peers for each socioeconomic status (Claro et al., 2016). That is to say, when comparing students of the same socioeconomic status, even a low status, students with a growth mindset outperformed students with a fixed mindset (Claro et al., 2016).

Researchers also scrutinized whether the greater academic achievement led to a growth mindset, rather than the growth mindset positively impacting achievement (Claro et al., 2016). An additional analysis was conducted, controlling for factors that may have impacted a reverse causation (Claro et al., 2016). Even with the additional controls, Claro et al. (2016) still found a highly significant relationship between mindset and achievement.

It was noted that the study conducted by Claro et al. (2016) found students in the lowest socioeconomic status were twice as likely to hold a fixed mindset. However, much like the studies conducted by Chan (2012) and Mofield and Peters (2018), results from Claro et al. (2016) provided insights into a targeted audience for growth mindset interventions. Students with

a low socioeconomic status may benefit more from growth mindset interventions than peers of a higher socioeconomic status.

In contrast to the study conducted by Claro et al. (2016), a narrative analysis conducted by Golden (2017) explored the idea of the grit narrative in relation to the educational world, where there are often discrepancies between schools with proper funding and schools without proper funding. The researcher was initially introduced to the participant through his work at the high school equivalency (HSE) program the participant attended at the time of the study (Golden, 2017). The participant joined the after-school men's group after being invited by the researcher, which allowed Golden to get to know him and his beliefs on grit and his educational experience (Golden, 2017). At the time of the study, the participant was a 20-year-old, self-identified Black American attending an HSE program in hopes of completing his high school education to go on to attend college to become a judge (Golden, 2017). The participant reported several occasions in which he felt he or his friends were treated unjustly due to the color of their skin (Golden, 2017). The researcher felt that the participant was well aware of the inequalities in the world outside of education (Golden, 2017).

Through group discussions and individual interviews that took place over the course of several months, Golden (2017) found themes within the participant's words connecting grit and his educational experiences. According to the researcher, the participant recognized the overcrowding and underfunding of the schools he had attended (Golden, 2017). However, when discussing the reasons that he and his classmates struggled to do well in school, he did not identify overcrowding and underfunding as possible explanations (Golden, 2017). The participant did not recognize that the inequalities within the greater education system may be the cause of the students' struggle to do well in school (Golden, 2017). The researcher reported that

the participant felt the reasons behind unsuccessful students were due to some students having a lack of wanting to learn and grit, while others were distracted by those without a desire to learn (Golden, 2017). Golden (2017) felt the participant was separating himself from the students with a lack of desire to learn, and he believed that with enough grit and perseverance, everyone had the capability of succeeding.

The researcher reported on the idea that teaching students grit and perseverance in the face of challenges would not be enough for them to overcome the inequalities of opportunities within the educational setting (Golden, 2017). For instance, a student would struggle to overcome academic challenges, regardless of grit, when there is an issue of overcrowding and underfunding. The narrative provided by Golden (2017) pointed out that policy-makers and politicians should not be using the grit narrative as a way to correct educational shortcomings.

The narrative did not address the perspective of educators utilizing the grit narrative to help students dealing with inequalities overcome their challenges, which was a limitation of the study. While the purpose of Golden's research was to address the issue of inequalities within the educational system as a whole, it may have been skewed towards a total opposition to the grit narrative. The grit narrative, along with the growth mindset, could be utilized to help all students overcome inequalities and challenges to be more successful. However, despite the findings of Claro et al. (2016), grit and the growth mindset would not be enough to completely overcome challenges, such as overcrowding and underfunding.

Limitations. Each of the studies discussed above come with limitations, some similar to one another. For instance, 13 of the studies presented utilized some form of self-reported surveys to measure students' growth mindset tendencies and students' resiliency, along with other variables (Al-Dababneh & Al-Zboon, 2018; Bettinger et al., 2018; Bostwick et al., 2017; Chan,

2012; Claro et al., 2016; Mofield & Peters, 2018; Mu et al., 2017; Paunesku et al., 2015; Tuckwiller et al., 2017; Vuorinen et al., 2018; Wang et al., 2018; Yeager et al., 2016; Zeng et al., 2016). While self-reported surveys are convenient and provide necessary information, they can lead to a level of error, as self-reports do not always accurately reflect true tendencies or behaviors. Additionally, Bostwick et al. (2017), Paunesku et al. (2015) and Claro et al. (2016), utilized shortened surveys, which may not have gathered enough data to accurately measure variables.

The surveys given to educators regarding students' behaviors in the study conducted by Al-Dababneh and Al-Zboon (2018) provided helpful insights, though the insights were limited. Al-Dababneh and Al-Zboon (2018) pointed out that additional surveys from the students' caregivers or additional qualitative methods would have furthered the information gathered. Information regarding the perseverance of students without specific learning disabilities could have provided insights into how the perseverance compared between the two groups. However, gathering information on students without specific learning disabilities for comparison may have led to a different study altogether.

The research conducted by Bettinger et al. (2018), Yeager et al. (2016), and Vuorinen et al. (2018) reported issues of experimental control. For instance, Bettinger et al. (2018) stated that there might have been an issue of contamination between the experimental group and the control group due to the timing of the experiment. Students from each group may have discussed the differences in content over the course of the weeks that the experiment took place (Bettinger et al., 2018). Similarly, Yeager et al. (2016) may have had some contamination through other interventions, such as educators teaching the growth mindset to students during class time. Students from each group could have had additional exposure to the growth mindset. Though it

was not reported, the study conducted by Paunesku et al. (2015) may have also had similar contamination. Vuorinen et al. (2018) reported that the data collected from the teacher interviews might have been unintentionally positively biased due to educators' enthusiasm with the intervention.

The studies conducted by Zeng et al. (2016) and Wang et al. (2018) were not able to determine the direction of the relationship between the growth mindset and psychological well-being and school engagement, and the growth mindset and grit, respectively. Other limitations included limited generalizability due to the small age range in the study conducted by Wang et al. (2018) and limited generalizability due to a lack of a diverse sampling in the studies conducted by Chan (2012), Mofield and Peters (2018), Mu et al. (2017), Paunesku et al. (2015), and Vuorinen et al. (2018). Similarly, Chan (2012), Tuckwiller et al. (2017), and Vuorinen et al. (2018), reported small sample sizes, which may have impacted results. Limitations also included a lack of academic records collected to determine students' academic achievement and a convenience sample in the study conducted by Zeng et al. (2016). Unlike the studies conducted by Tuckwiller et al. (2017) and Vuorinen et al. (2018), the study conducted by Yeager et al. (2016) reported a higher margin of error due to the large sample size.

The gifted students utilized in the study conducted by Mofield and Peters (2018) had individualized education programs, through which the schools are required by law to provide additional supports and resources to meet their needs best. Across the United States, many school districts lack the funds for gifted and talented resources, and therefore, not all gifted students are provided an individualized education program. The findings of Mofield and Peter's research may have had different results utilizing a gifted population without an individualized education program.

Summary

The guiding question for this literature review was, In light of what is known about differentiated instruction, how does teaching elementary students about the growth mindset impact their academic achievement? The research studies analyzed and reviewed were examined through the lens of answering whether or not the growth mindset could positively impact academic achievement, particularly for elementary students. The study conducted by Wang et al. (2018), though out of the educational setting, provided foundational evidence that linked the growth mindset to perseverance through an examination of brain structures.

The studies conducted by Al-Dababneh and Al-Zboon (2018), Chan (2012), Mofield and Peters (2018), and Claro et al. (2016) aided in understanding which students may benefit most from growth mindset interventions. Research revealed that students with specific learning disabilities, unhealthy perfectionists, students not identified as gifted, and those living in poverty may experience the most benefits (Al-Dababneh & Al-Zboon, 2018; Chan, 2012; Claro et al., 2016; Mofield & Peters, 2018). However, the research intended to measure the impact of growth mindset interventions on academics demonstrated more generalizable findings (Bettinger et al., 2018; Bostwick et al., 2017; Paunesku et al., 2015; Yeager et al., 2016). More specifically, research conducted by Bettinger et al. (2018), Bostwick et al. (2017), Paunesku et al. (2015), and Yeager et al. (2016) found that a diverse sampling of students benefited from growth mindset interventions.

Research also examined how parents may play an important role in children's mindset and resilience development, and later academic achievement (Gunderson et al., 2016; Schleider et al., 2016; Taket et al., 2014). Similarly, Mu et al. (2017) provided evidence in favor of the idea that educators can have a positive impact on students' perseverance. Zeng et al. (2016) found

that the growth mindset was positively related to academic engagement, while Yeager et al. (2016) and Bettinger et al. (2018) found that growth mindset interventions increased academic achievement and challenge-seeking behaviors. Furthermore, Bostwick et al. (2017) and Paunesku et al. (2015) proved that a growth mindset may increase both engagement and achievement. Contrastingly, Vuorinen et al. (2018) did not find significant differences in students' mindset beliefs post-intervention when examining quantitative data. Although Claro et al. (2016) provided evidence in favor of a growth mindset dampening the effects of a low socioeconomic status, Golden (2017) made an impactful argument against the grit narrative being a fix for broken educational systems. The next chapter provided a review of the discussed research, its importance to the role of educators and administrators, its impact on student achievement, and how the research addressed the essential question.

Chapter Three: Research Summary and Conclusion

Current research must be thoroughly and thoughtfully examined in order to best address the essential question: In light of what is known about differentiated instruction, how does teaching elementary students about the growth mindset impact their academic achievement? Through the literature review in chapter two, the growth mindset was found to be a potential avenue for building perseverance and boosting academic achievement in elementary students. Research indicated a positive correlation between both the growth mindset and perseverance, as well as academic achievement. Furthermore, growth mindset interventions not only boosted growth mindset beliefs for students, but also increased academic achievement. Though the growth mindset cannot make up for under-funded education systems, it may dampen the effects of a low socioeconomic status. The following chapter reviewed and summarized the research to

address the guiding question, while briefly reexamining the limitations and possible implications for differentiation.

Review of the Proposed Problem

In order to be successful learners, students must have a certain level of perseverance, or willingness to work through new, confusing, or challenging material. Without perseverance, students may stunt their learning, growth, and overall academic achievement. The qualitative study conducted by Taket et al. (2014) provided valuable insights into how perseverance can be developed in children. The insights gained were of particular value, as much of the reviewed research in the literature review was quantitative in nature.

By way of interviews with children's mothers and analysis, researchers learned that children's resilience may be grown through routines, designated jobs, and discussing with children how to persevere through challenges (Taket et al., 2014). Furthermore, resilience may be fostered by teaching children problem-solving strategies, rehearsing responses to difficult situations, and encouraging relationships with others (Taket et al., 2014). Taket et al. (2014) provided evidence in favor of the ability to nurture resilience, or perseverance, in children, which was foundational in examining whether or not a growth mindset could impact perseverance and academic achievement. Without evidence for developing resilience, the current research question may have been disregarded prior to being fully developed.

The study conducted by Wang et al. (2018) was unique within this literature review in that it was medical in nature, rather than educational. Wang et al. (2018) explored how grit related to brain structures and how a growth mindset may connect the two variables. Through the use of brain imaging and self-reported surveys, researchers discovered a significant difference in brain structure for participants scoring higher on grit scales (Wang et al., 2018). Additionally,

participants with differing brain structures were more likely to have a growth mindset (Wang et al., 2018). Wang et al. (2018) provided statistically significant evidence that grit may be developed through a growth mindset orientation. Educators hoping to increase students' perseverance may find some success in exposing students to growth mindset interventions. Much like the study conducted by Taket et al. (2014), without evidence linking the growth mindset to grit, or perseverance, the current research question may not have been explored.

Though much of the research examined focused on the impacts the growth mindset orientation and growth mindset interventions had on academic achievement, it was still of value to examine how parents may impact mindset and academic achievement, and how perseverance can be nurtured in children. The study conducted by Schleider et al. (2016) evaluated how parents' mindsets may influence their children. Utilizing surveys completed by parents, researchers discovered that parents with a fixed mindset were more likely to have children who internalized problems or demonstrated anxious or depressive characteristics (Schleider et al., 2016). Thus, parents with a fixed mindset could negatively impact a child's emotional health. The negative impact on children's emotional health may, then, play a role in their academic performance.

The study conducted by Gunderson et al. (2018) furthered the ideas presented by Schleider et al. (2016). However, rather than focusing on how parents' mindsets impacted children, Gunderson et al. (2018) investigated how parents influenced their children's mindset and later academic achievement. In the multi-year study, researchers first observed and gathered data on how parents praised children at young ages (Gunderson et al., 2018). Several years later, children's mindset frameworks were assessed, and academic achievement scores were gathered (Gunderson et al., 2018). Researchers found that when young children received more praise

based on their efforts or strategies, they were more likely to hold a growth mindset years later (Gunderson et al., 2018). Furthermore, achievement scores were positively correlated with holding a growth mindset (Gunderson et al., 2018). The manner in which parents encouraged children at 1 to 3 years of age may have implications for not only children's mindsets but also their future academic achievement. The findings of Gunderson et al. (2018) provided evidence that supported the current hypothesis; adults can impact children's mindset and that the mindsets can, in turn, positively impact academic achievement.

The study conducted by Mu et al. (2017) provided evidence that educators can build students' resilience or perseverance. Students with higher levels of resilience were more likely to have educators that demonstrated agency, or an effort to seek out support to address students' needs (Mu et al., 2017). Though the correlation does not indicate causation, the findings were still significant to the current research question. Educators that advocate for and persevere through helping students may be setting an example for those same students. Students may be learning resilience by watching their teachers persevere through the challenges of teaching. Additionally, the study conducted by Mu et al. (2017) provided evidence in favor of the current hypothesis; educators can positively impact students' perseverance and, possibly, their academic achievement.

Importance of the Topic

Prior to discussing the growth mindset, it may be of value to first discuss perseverance and its role in the classroom. In a study conducted by Al-Dababneh and Al-Zboon (2018), educators reported a lack of perseverance to be a serious issue for students diagnosed with a specific learning disability. The lack of perseverance could prevent students from completing tasks, which may, in turn, negatively impact students' academic achievement (Al-Dababneh &

Al-Zboon, 2018). For instance, a student may be unable to complete an academic task within the allotted time. The student may then become discouraged and abandon the task and learning altogether. Even if completed, a tardy, incomplete, or ill-completed assignment may negatively impact academic grades and outcomes. Though the study focused on students with specific learning disabilities, students without a diagnosis may also struggle with perseverance and suffer from the same consequences.

Though research has found that diverse populations can benefit from having or learning about the growth mindset, the following articles provided insights into which students may benefit most from growth mindset interventions. In a study conducted by Chan (2012), brief surveys were utilized to classify gifted students as healthy perfectionists, unhealthy perfectionists, or non-perfectionists. Unhealthy perfectionists, or people who experience negative emotions while being unsatisfied with accomplishments, were more likely to hold a fixed mindset when compared to healthy and non-perfectionists (Chan, 2012). The survey process demonstrated by Chan (2012) allowed for a straightforward identification process for types of perfectionists, which could then be applied to a more generalized population of students, not just those identified as gifted.

To further understand which students may benefit most from the growth mindset, the study conducted by Mofield and Peters (2018) examined the mindset beliefs of both gifted and typical students. Researchers found that when compared to typical peers, gifted students were more likely to hold a growth mindset (Mofield & Peters, 2018). The finding could be furthered to say that typical students may be more likely to hold a fixed mindset. Though the study did not examine causation, the correlation led to a better understanding of which students may be facing challenges due to a fixed mindset (Mofield & Peters, 2018).

A large-scale quantitative study conducted by Claro et al. (2016) analyzed how a growth mindset may impact academic achievement through the lens of poverty. Researchers tested whether or not having a growth mindset predicted higher academic achievement for high school students (Claro et al., 2016). When compared to peers in the same socioeconomic status, students with a growth mindset outperformed those with a fixed mindset in standardized exams (Claro et al., 2016). However, it was noted that students in the lowest socioeconomic status were more likely to hold a fixed mindset (Claro et al., 2016). Students that experience poverty may benefit most from growth mindset interventions, given the positive correlation between a growth mindset and academic achievement.

The studies conducted by Al-Dababneh and Al-Zboon (2018), Chan (2012), Mofield and Peters (2018), and Claro et al. (2016) provided marginal insights into a targeted audience for growth mindset interventions. According to the studies, students with specific learning disabilities, unhealthy perfectionists, typical, or average, students, and students with a low socioeconomic status may benefit most from growth mindset interventions when compared to their peers (Al-Dababneh & Al-Zboon, 2018; Chan, 2012; Claro et al., 2016; Mofield & Peters, 2018).

In contrast, the qualitative study conducted by Golden (2017) explored the idea that grit and the growth mindset cannot make up for a broken infrastructure. The participant of the study explained that students may struggle to succeed in school due to a lack of grit and a lack of a desire to learn (Golden, 2017). However, Golden countered the idea by pointing out that the overcrowding and underfunding of schools may play a more impactful role in students' lack of academic success (Golden, 2017). Educating students to have more grit, or in regards to the current research question, a growth mindset, cannot overcome inequalities in school systems

(Golden, 2017). That is to say, no level of grit, perseverance, and growth mindset could outweigh a classroom with too few supplies and a high student-to-teacher ratio.

Summary of the Main Points of the Literature Review

As discussed in chapter two, the research selected for the current literature review focused on children and adolescents mostly within the educational setting. However, two studies took place outside of the educational setting, with one in a medical setting and another within the homes of the participants. While the participants ranged in age from approximately 3 years old to approximately 20 years old, the majority of the studies focused on adolescents.

In a quantitative study conducted by Zeng et al. (2016), researchers explored how the growth mindset related to psychological well-being, school engagement, and resilience. Zeng et al. (2016) discovered significant positive correlations among all variables through self-reported student surveys. In regards to the current research question, the growth mindset may positively impact both psychological well-being and school engagement (Zeng et al., 2016). The positive impacts may, in turn, lead to more academic achievement. Furthermore, the significant link to resilience deepened the current hypothesis that the growth mindset related to building resilience in a positive direction.

Similar to Zeng et al. (2016), Tuckwiller et al. (2017) utilized self-reported surveys with students to study the relationship between the growth mindset, grit, and optimism. However, unlike Zeng et al. (2016), researchers did not find a statistically significant correlation between mindset and grit (Tuckwiller et al., 2017). Though the sampling of students was small, results from Tuckwiller et al. (2017) demonstrated that the growth mindset and grit may not be positively correlated for all students. Growth mindset interventions may not always improve students' perseverance and academic achievement.

The study conducted by Yeager et al. (2016) not only redesigned the growth mindset intervention commonly used at the time of the study, but also measured whether or not the new intervention could positively influence students' academic achievement. Through the use of intervention and control groups, Yeager et al. (2016) found that students exposed to the growth mindset had higher academic achievement following the interventions when compared to those in the control group. Furthermore, in an option to choose an assignment worth 30 points, students in the intervention group were more likely to choose the more challenging option (Yeager et al., 2016). Results from the study provided evidence for the current research question that growth mindset interventions could positively affect academic achievement and increase challenge-seeking behaviors (Yeager et al., 2016). The challenge-seeking behaviors may indicate more willingness to persevere through more difficult learning experiences.

The redesigned growth mindset interventions developed by Yeager et al. (2016) were utilized in a similar study conducted by Bettinger et al. (2018). Researchers tested whether or not the growth mindset interventions could positively impact students' effort, academic achievement, and perseverance. (Bettinger et al., 2018). The high school students that received the growth mindset intervention had more correct answers on a real-life academic task (Bettinger et al., 2018). Additionally, students with a low initial growth mindset in the intervention group showed significant positive changes in both academic performance and perseverance (Bettinger et al., 2018). Finally, students in the intervention group created more challenging worksheets when compared to the worksheets created by students in the control group (Bettinger et al., 2018). Like the study conducted by Yeager et al. (2016), the study conducted by Bettinger et al. (2018) provided evidence that growth mindset interventions can positively influence academic achievement, perseverance, and challenge seeking behaviors in students.

Bostwick et al. (2017) conducted an experiment to examine how students with a growth mindset differed from students with a fixed mindset in academic engagement and achievement in mathematics. Students completed surveys to measure growth mindset and academic engagement, as well as a short quiz to measure academic achievement (Bostwick et al., 2017). Through factor analysis, Bostwick et al. (2017) found a positive correlation between the growth mindset and student engagement and achievement, even when controlling for influencing factors, such as gender and socioeconomic status. Students with a growth mindset may be more likely to be engaged in their academic learning. Additionally, students with a growth mindset may be more academically successful. The academic engagement and achievement findings from Bostwick et al. (2017) further developed the current research question by providing evidence that the growth mindset can positively impact students' academic achievement.

The following two studies examined how growth mindset interventions could influence students' mindset orientations (Paunesku et al., 2015; Vuorinen et al., 2018). Both studies measured students' mindset orientations pre-intervention and post-intervention, utilizing self-reported surveys (Paunesku et al., 2015; Vuorinen et al., 2018). Students in the experimental groups received interventions teaching on the malleability of intelligence, the potential impacts of effort and good strategies, and grit, among other things (Paunesku et al., 2015; Vuorinen et al., 2018). Vuorinen et al. (2018) discovered no significant differences in students' mindset orientation following the interventions. However, qualitative interviews with educators indicated slightly different results (Vuorinen et al., 2018). Educators reported observing significant and positive differences in students' engagement and mindset, along with social skills, strength-recognition, and well-being (Vuorinen et al., 2018). The lack of statistical significance in the quantitative data may have been due to a small sample size (Vuorinen et al., 2018).

Contrastingly, the study conducted by Paunesku et al. (2015) provided evidence to support growth mindset interventions positively affecting students' mindset orientations. Students in the intervention group were more likely to view intelligence as malleable when compared to both pre-intervention measurements and the post-intervention measurements of students from the control group. The study conducted by Paunesku et al. (2015) also measured intervention effects on academic achievement. Through examining pre-intervention and post-intervention grades, researchers discovered that academics improved significantly more for students in the intervention group when compared to the grades of those in the control group (Paunesku et al., 2015). Paunesku et al. (2015) provided support to the current research question that the growth mindset can positively impact academic achievement for students.

Summary

In regards to the guiding question, the current literature review found evidence that teaching students about the growth mindset can positively impact their academic achievement (Bettinger et al., 2018; Bostwick et al., 2017; Yeager et al., 2016.) Furthermore, research indicated that growth mindset interventions are capable of changing students' mindset orientations in favor of a growth mindset (Paunesku et al., 2015). Educators and administrators may be able to utilize the ideas of the growth mindset and growth mindset interventions to not only influence students' mindset orientations but also positively impact their academic achievement. Chapter four discussed how the research findings examined here can be applied to both educational practices and future studies.

Chapter Four: Discussion and Application

The research examined in this paper regarding the guiding question, In light of what is known about differentiated instruction, how does teaching elementary students about the growth

mindset impact their academic achievement?, provides valuable insights into whether or not the growth mindset can have a positive impact on academic achievement. The growth mindset may provide educators with an additional process through which students can learn. The lens of the growth mindset may allow students to be more academically engaged, to better persevere through challenging academic work, and view those challenges as learning opportunities, rather than threats to their intelligence and skills. The following chapter will provide insights into how the research examined could be applied within the educational setting and what additional research opportunities may be essential.

Insights Gained from the Research

Overall, the reviewed research provides evidence to support the current hypothesis. The research conducted by Taket et al. (2014), Schleider et al. (2016), Gunderson et al. (2018), and Mu et al. (2017) provides evidence that adults, like parents, educators, and administrators, can positively impact students' perseverance, mindsets, and academic achievement. Furthermore, Al-Dababneh and Al-Zboon (2018), Chan (2012), Mofield and Peters (2018), and Claro et al. (2016) provide valuable insights into which students may benefit most from growth mindset interventions. While diverse populations of students may experience positive impacts on their academic achievements, students with specific learning disabilities, unhealthy perfectionists, average students, and students living in poverty may benefit the most from growth mindset interventions (Al-Dababneh & Al-Zboon, 2018; Chan, 2012; Claro et al., 2016; Mofield & Peters, 2018).

The study conducted by Zeng et al. (2016) found that a growth mindset is positively correlated to psychological well-being and school engagement. Studies like those conducted by Yeager et al. (2016), Bettinger et al. (2018), and Bostwick et al. (2017) supports the hypothesis

that teaching students about the growth mindset can positively impact students' achievement. Furthermore, educators and administrators can utilize growth mindset interventions to foster students' growth mindset orientations. Though the studies conducted by Tuckwiller et al. (2017) and Vuorinen et al. (2018) demonstrates that the growth mindset may not be successful for all students, studies like the one conducted by Paunesku et al. (2015) provides support for the current research question. Educating students on the growth mindset may positively impact their perseverance and academic achievement.

Application

Though much of this literature review focuses on educators impacting students' perseverance and growth mindsets, the studies conducted by Schleider et al. (2016), Taket et al. (2014), and Gunderson et al. (2018) provides information for educators and administrators on how parents may also influence children's' mindsets and perseverance. Educators and, perhaps more likely, administrators can utilize the insights into parental mindsets, resilience-building strategies, and parental praise in a variety of ways. For instance, educators and administrators could incorporate resilience-building techniques in the educational setting. When working with children, educators and administrators could teach students how to persevere through challenges, rehearse responses to challenging situations, and problem-solving strategies. Through educating students on resilience techniques, educators and administrators could also work to build resilience in children. Educators and administrators could also provide parents with information on how to boost resilience within their children at home.

Furthermore, educators and administrators could work with families to extend growth mindset lessons out of the classroom and into homes. For instance, parents could be encouraged to utilize growth mindset language within the home to deepen students' exposure. Additionally,

parents could encourage growth mindset thinking when helping children persevere through challenges, such as a difficult assignment. Educators and administrators could also send home activities for students and parents to work through that could help develop a growth mindset and perseverance.

Educators and administrators could also educate parents on how their mindsets or praise may be impacting their children's' emotional well-being, perseverance, mindsets, and academic achievement. In providing parents with information on how they may be impacting their children's' mindsets and future academic achievement, educators and administrators could help to encourage parents to foster more resilience within their children. For instance, upon learning how praise can impact children's' mindset orientations, parents may decide to adjust their praising techniques to encourage effort, problem-solving strategies, and perseverance. It is important to note that the sharing of information with parents should be conducted thoughtfully, so as not to upset parents. If done incorrectly, parents may feel offended at being told how to parent or feel accused of negatively impacting their children and their academics.

Mu et al. (2017) provide evidence in favor of educators being able to influence resilience in students. Though the study did not relate the growth mindset to building students' resilience, Mu et al. (2017) still connect educators to students' resilience. Students with an educator who demonstrates resilience and agency score higher in resilience. The students may be learning resilience through the examples of their teachers. Similarly, a student with an educator who demonstrates a growth mindset could also learn by their teacher's example. An educator could demonstrate a growth mindset by using growth mindset language and responses when faced with challenges. For instance, when an educator makes a mistake in the classroom, he or she could

use that as an authentic opportunity to demonstrate a growth mindset orientation. Students could, then, witness and learn from a real-life example of a growth mindset.

The research studies conducted by Bettinger et al. (2018), Bostwick et al. (2017), and Yeager et al. (2016) show that diverse populations can benefit from growth mindset interventions. Paunesku et al. (2015) provide evidence that growth mindset interventions can be implemented on a larger scale and without intensive researcher involvement. Whole groups of students could experience positive changes in academic achievement following growth mindset interventions. Educators and administrators could work to incorporate growth mindset interventions into classrooms and schools.

Students with specific learning disabilities, unhealthy perfectionists, non-gifted students, and those living in poverty may benefit most from growth mindset interventions (Al-Dababneh & Al-Zboon, 2018; Chan, 2012; Claro et al., 2016; Mofield & Peters, 2018). Many of the factors are easily identifiable, such as students diagnosed with specific learning disabilities or those living in poverty. Educators and administrators could utilize brief self-reported surveys to identify which students may be unhealthy perfectionists, though that may require parental permission. In knowing a more targeted audience, educators and administrators could focus on growth mindset interventions for those students should resources be short.

One significant limitation of the current literature review is a lack of information regarding the growth mindset interventions. Little is known beyond the context of the interventions themselves. While the online interventions utilized by Bettinger et al. (2018), Bostwick et al. (2017), and Yeager et al. (2016) may be useful for upper elementary or high school students, they may be less successful for younger elementary students. However, many resources about the growth mindset have been developed for educators to utilize within the

classroom. Resources include, but are not limited to, children's books, short video series, and pre-made lesson plans. An educator could incorporate the resources as a way to teach students about both the growth mindset and perseverance.

Recommendation for Future Studies

Though much of the research reviewed here has helped to answer the guiding question, there are still some gaps in research and additional information that could deepen the level of understanding. For instance, additional research should be examined in order to better understand the role families play in building resilience, developing mindset orientations, and academic achievement. Three studies are not enough to determine familial impacts with certainty. Additional studies would not only deepen educators' and administrators' understanding, but could also provide them with more evidence and ideas on how to develop students' mindset and incorporate families into said development.

An additional and significant limitation to the current literature review is a lack of studies targeting elementary-aged students. In conducting the literature review, the current author was unable to find many studies about the growth mindset, perseverance, and academic achievement focusing only on elementary students. It may be of value to the field of education for future studies to target younger students. If younger elementary students are taught about growth mindset and perseverance, perhaps students may have a positive change in academics earlier in their academic careers. Earlier interventions may also prevent students from falling as far behind or falling behind at all.

In addition to studies focusing on elementary-aged students, it may be beneficial if future studies could include more qualitative data. As the study conducted by Vuorinen et al. (2018) demonstrates, qualitative data can provide valuable insights that quantitative data cannot offer.

For instance, qualitative data, such as interviews with students or educators, could provide greater understanding of how or why the growth mindset interventions are influencing them. Furthermore, in understanding how or why the growth mindset interventions work for students, educators and administrators could create better or more effective interventions.

The studies conducted by Al-Dababneh and Al-Zboon (2018), Mu et al. (2017), Tuckwiller et al. (2017), and Vuorinen et al. (2018) provides evidence that students with special education needs may benefit from perseverance building and growth mindset interventions. For instance, Al-Dababneh and Al-Zboon (2018) found that students with specific learning disabilities may lack perseverance, which could negatively impact their ability to complete academic tasks to satisfaction. However, results from Tuckwiller et al. (2017) and Vuorinen et al. (2018) were statistically insignificant, which may have been because of small sample sizes. Due to the inconsistencies between the results of Tuckwiller et al. (2018) and Vuorinen et al. (2018) when compared to studies with diverse populations, it would be of value for future studies to further examine the relationship between students with special educational needs and perseverance and the growth mindset. Additional studies, especially ones with larger sample sizes, would aid in better understanding of whether or not perseverance and growth mindset interventions are truly beneficial for students with special educational needs.

As previously mentioned, the study by Mu et al. (2017) has possible implications for how educators' growth mindsets may influence students' mindset orientations. While the idea that students could develop a growth mindset through the example of their teachers is grounded in the findings of Mu et al. (2017), it is not based on direct evidence. Future studies could explore the relationship between educators' mindsets and the mindsets of their students.

Conclusion

In light of what is known about differentiated instruction, how does teaching elementary students about the growth mindset impact their academic achievement? According to the research analyzed here, teaching elementary students about the growth mindset could positively impact students' academic achievement, often through the development of resilience. Though students with specific learning disabilities, non-gifted students, unhealthy perfectionists, and students living in poverty may benefit most from the ideas of the growth mindset, studies show all students could experience positive changes in their psychological well-being, academic engagement, and academic achievement. Educators and administrators should work to incorporate the growth mindset within educational settings due to its positive impacts on both students and their academics. While good grades are not everything, the potential of a growth mindset on students' well-being, effort, and belief that they can create positive changes for themselves is too great to ignore.

Educators and administrators can utilize the growth mindset as a lens through which students can view challenges, both academic and otherwise. The new lens may increase students' willingness to persevere through challenges. Students may also begin to experience challenges as opportunities to learn and grow, rather than obstacles or threats against their intelligence. The potential benefits of the growth mindset orientation are limitless in terms of how it could impact students' lives in the long term. Though a review such as this cannot conclusively answer a question such as, In light of what is known about differentiated instruction, how does teaching elementary students about the growth mindset impact their academic achievement?, it can provide valuable insights into its possibilities. Given the findings presented here, the growth

mindset and growth mindset interventions should be incorporated into elementary classrooms as a means to positively impact students and increase their academic achievement.

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