

## Exploring Resiliency Effects of Growth Mindset in Education

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### **Abstract**

The presence of a growth mindset has many benefits, especially for adolescents in the education system. Students that embody a growth mindsets are able to perceive challenging experiences to be opportunities for learning and growth. When a growth mindset is not present, students can be very critical of themselves and give up on their goals. This study explored the presence of a growth mindset among high school students exposed to risk factors such as homelessness, low parental support, and an active special education status to see if a growth mindset was a form of resiliency that buffered the negative effects of these risk factors. In particular, we were interested in seeing if students with a growth mindset would attend a traditional high school or continuation high school when such risk factors are present. We found no difference in levels of growth mindset between school type nor the number of risk factors the student was exposed to. Special education status was a risk factor for a decrease in growth mindset, while homelessness was a risk factor for attending a continuation high school. However, parental support was protective for a stronger growth mindset as well as in prevention of attending a continuation high school. These findings suggest that social initiatives that could strengthen the parental relationship could be beneficial for youth through their schooling.

*Keywords:* resiliency, growth mindset, risk factor, high school, education, continuation high school, homeless, parental support, special education.

### **Exploring Resiliency Effects of Growth Mindset in Education**

When children are born into poverty and experience homelessness, are they bound to poor education outcomes? What about if they have low parental support or an active special education status? Research shows that students that attend continuation high schools are more likely to have experienced various risk factors (Denny, Fleming, Clark, & Wall, 2004). Continuation high schools are increasingly growing in size, across the state of California (CDE, 2019). These schools are an alternative learning environment for students that have not met their required credits and are at risk for failing out of high school (Warren, 2016).

Risk factors are experiences that predispose individuals to a negative outcome (SAMHSA, 2019). The risk factors these students experience may be contributing to them being required to leave their traditional school setting in order to receive their education at a continuation high school. However, not all students exposed to the same risk factor are bound to the same education trajectory. So, what protects these students from undesirable outcomes?

This study will explore how mindset impacts adolescents with various risk factors. Specifically, we will focus on how the presence of a growth-oriented mindset can be protective for students who have experienced homelessness, low parental support, and an active special education status. The presence of a growth mindset, in which the individual's state of mind views challenges as learning opportunities rather than inabilities, is conceptualized to be a factor that enhances students' resiliency in order to help them overcome difficult or adverse experiences. Whereas the presence of a fixed mindset consists of the belief that individuals are born with a finite amount of knowledge to be used within similar challenges, potentially preventing growth from occurring.

### **Mindsets**

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This study focuses on two specific mindsets, growth and fixed, which are drawn from the research on implicit theory and its impact on self-concept (Yeager & Dweck, 2012). Implicit theories are defined as subconscious belief systems that stem from core assumptions an individual has about the world they interact with (Molden & Dweck, 2006; Murphy & Dweck, 2010; Yeager & Dweck, 2012). The growth and fixed mindsets we focus on for this research draw upon the literature surrounding incremental and entity theories respectively, which provide a foundation for the understanding of how each of these mindsets impact the way an individual sees their world and themselves (Yeager & Dweck, 2012).

The incremental theory, paving the way for the concept of the growth mindset, posits that the world provides an infinite amount of opportunities to learn and grow (Yeager & Dweck, 2012). On the other hand, the entity theory, leading to a fixed mindset, comes from the perspective that everything is a measure of ability such that when an individual encounters a challenging situation, it becomes an evaluation of their worth and capabilities (Yeager & Dweck, 2012). Though these theories are subconscious, the impact of these implicit mindsets result in individuals making attributions about themselves and their value and worth based on the outcome of the situation (Weiner, 1993).

When comparing these two mindsets, those with a growth mindset demonstrated fewer attributions of helplessness with regards to their intellectual capabilities when compared to those with a fixed mindset (Blackwell, Trzesniewski, & Dweck, 2007). The growth mindset is associated with higher social and emotional learning, which is essential when collaborating with teachers and peers in school (Hamedani & Darling-Hammond, 2015). When high schoolers that had previously experienced peer victimization cultivate a growth mindset, their teachers recognize a decrease in aggression and conduct issues in class (Yeager, Trzesniewski, & Dweck,

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2013). Additionally, individuals with a growth mindset tended to believe that they can increase their knowledge and have the ability to grow, whereas those with a fixed mindset believed that their intellectual abilities are permanent and unchangeable (Brougham & Kashubeck-West, 2017; Dweck & Yeager, 2019).

The presence of a fixed mindset has a host of long-term implications including the potential to negatively alter an individual's goals, perceived effort necessary in a given circumstance, causal attributions of situations, and learning outcomes in the face of adversity (Yeager & Dweck, 2012). The implications of a fixed mindset within an evaluative context are vast, particularly one which is universally applicable and experienced by all individuals at a young age – the school system. When schools are continuously increasing the difficulty of their academic curriculum without strengthening resiliency within their students, the students' mindset toward their educational abilities may be influenced toward a more fixed approach that prioritizes success and performance as inherently linked to their worth and value (Yeager & Dweck, 2012). Actions such as reinforcing a student for being “smart” may be seen as encouraging and helpful on the part of the reinforcer, however doing so may inhibit the promotion of a resilient, growth-focused mindset centered on the importance of learning and opportunity (Muller & Dweck, 1998). While intentions here may be positive in encouraging the student to feel academically accomplished, the presentation of outcome-based praise can subject the student to a shift in mindset in which outcomes such as letter grades are more valued than the effort put into the learning process. This shift may continue to have implications when praise is no longer offered and the student is instead faced with adversity. The student's understanding of adversity may then be influenced by a performance-based approach that is fixed and absolute, contributing to how they see themselves and the implications of their failures, as well as their

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successes. Alternatives to praising individuals for their intelligence may be to praise the process of arriving at an answer through acknowledgment of their strong effort. Praising the process of the action has been linked to greater resilience and less helplessness when an individual deals with difficulties later on (Kamins & Dweck, 1999; Muller & Dweck, 1998).

Alongside the ability for an individual to hold a growth or fixed mindset in their approach to the world, organizations and groups can also have a mindset of their own that can strongly shape the mindsets of people in that environment through implicit messaging (Murphy & Dweck, 2010). One study demonstrated that in order to gain acceptance in a group, members would portray characteristics of themselves that they deemed most appropriate. When clubs that individuals were interested in belonging to portrayed attributes of a fixed mindset, the members would emphasize their intelligence and capabilities through specific accomplishments such as SAT scores or grades. However, when a club emphasized a growth mindset, the members expressed stories in which they have overcome adversities or hardships as a method of gaining entrance. When explored further, participants expressed preferring to belong in organizations that endorsed a growth mindset and that being a part of these organizations strengthened the individual's sense of self (Murphy & Dweck, 2010). Even if the individual did not appreciate the mindset of the organization, the impact of the group's mindset was highly influential. When members from these groups were in different settings, individuals from the fixed mindset group continued with this mentality and would evaluate others based on defined achievements, whereas the individuals from the growth mindset group continued to use perseverance through hardships as their method of evaluation (Murphy & Dweck, 2010).

Once mindset is recognized as a critical contributor to peoples' perspectives about an organization, the organization can then determine if they would like to modify the mindset they

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portray and the implicit messages it carries with it. If these perspectives are brought to awareness and there is concern about their effects, then just like a habit, these implicit thoughts can be altered (Devine, Forscher, Austin, & Cox, 2012). Teaching the nuances of the brain's malleability and creating the connection to personalities having growth potential has the power to alter mindsets to be growth-oriented (Yeager et al., 2013). By including knowledge that the brain is not static in its ability, interventions attempting to promote growth mindset have significant results which are differentiated from coping skills trainings and simple control groups (Yeager et al., 2013).

### **Growth Mindset as a Resiliency Factor**

Resiliency has been described as a state in which mind, body, and spiritual balance are maintained when an internal or external stressor is presented (Richardson, 2002). It is the process by which an individual responds to an adverse situation through the use of protective factors or by coping positively rather than engaging in problematic behaviors (Richardson, 2002). By recognizing and utilizing assets rather than focusing on shortcomings, adolescents can grow and increase their resilient state (Zimmerman, 2000).

The presence of a growth mindset can increase resiliency as it better equips students to deal with unforeseen social challenges. One particular study taught high school students in an intervention group how to embody a growth mindset. They found that when interacting with a growth mindset, previously aggressive students behaved resiliently when provoked by victimization (Yeager et al., 2013). Despite the way these students interacted before the intervention, afterwards they engaged with less aggression and more prosocial behavior both in and out of the classroom (Yeager et al., 2013).

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When students embody a growth mindset, they not only enhance resiliency in social situations, but also in academic settings. As students integrate their growth mindset in school, they are also incorporating a social and emotional learning process in their education (Baharav, Leos-Urbel, Obradovic, & Bardack, 2017). When compared to a control group, students that transitioned from embodying a fixed mindset to a growth mindset experienced improvements in the areas of classroom motivation and engagement (Blackwell et al., 2007). These students who engaged in a growth mindset showed an improvement in their grades over time, while those with a fixed mindset stayed consistent in their academic performance (Blackwell et al., 2007). Additionally, when failing a task, students with a growth mindset were more likely to develop a new strategy for the next time, rather than attribute the failure to their inability (Blackwell et al., 2007).

### **Risk and Protective Factors within Vulnerable Populations**

Students from vulnerable populations are more likely to experience risk factors due to the added stressors they have in their lives. Individuals who experience a higher number of negative life events such as homelessness, having a parent involved in risky behaviors such as substance use, or being exposed to violence at home, can see an increase in their cortisol levels (Cutuli, Wiik, Herbers, Gunnar, & Masten, 2010). When these youth are faced with a new psychosocial task, their higher cortisol levels indicate they are experiencing a greater stress response when compared to youth that have not experienced these life events (Cutuli et al., 2010). An increased stress response makes it more difficult for learning and memory to occur in adolescents and in chronic cases this can last through adulthood (McCormick & Mathews, 2010). This increase in cortisol also makes the child more susceptible to future traumatic experiences, as early developmental issues can be particularly damaging through life (Cutuli et al., 2010). While these



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risk factors may predispose a student to engage in problematic behaviors, protective factors can prevent such occurrences from happening (Ostaszewski & Zimmerman, 2006). Both risk and protective factors can influence an individual's outcome, however risk factors tend to have a slightly stronger effect than protective factors when predicting problematic behaviors for adolescents (Ostaszewski & Zimmerman, 2006).

*Homeless and Foster Youth.* Homeless youth are at higher risk for experiencing mental health problems, engaging in unprotected sex, exhibiting emotional distress, experimenting with substance use, and partaking in delinquent behaviors (Milburn et al., 2009). Protective factors for these same youth include regularly attending school, being employed, having survival skills (e.g., functioning independently by recognizing safe places and people, getting necessities with no money, etc.), and having supportive friendships (Milburn et al., 2009). Since these youth experience such high stressors, extrinsic motivation can help them maintain their goals and can act as a protective factor. A study among homeless youth found that teachers and positive role models are often viewed as extrinsic motivators – with their mere presence helping youth maintain their motivation to continue achieving academically and hope that they can break the cycle of poverty (Begg, Levitt, & Hayden, 2017).

Compared to approximately 3% of individuals with stable housing, almost half of students with housing instability were at risk of failing a course or refraining from enrollment (Silva et al., 2017). School can be a safe or stable place for homeless youth. However, these youth are more prone to worrying about or anticipating when they will be in danger which interferes with their learning process (Begg et al., 2017). Indeed, youth with unmet basic safety and physiological needs such as food and sleep are likely to have hindered learning processes

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(Begg et al., 2017; Maslow, 1943). They must recognize that they are safe before they are able to relax and focus on their education.

*Parental Support.* Research has shown that parental mindset has a direct effect on their adolescent's mental health. When parents have a fixed mindset, their children have more difficulty in their academics, motivation, and self-regulation skills (Schleider et al., 2016). Specifically, parents that embody a growth mindset have adolescents with lower depressive symptoms (Ohtani et al., 2020), while parents with fixed mindsets were more likely to have children with higher depressive and internalizing symptoms (Schleider et al., 2016). However, simply because parents may have a growth mindset, the mindset is not inherently passed on (Haimovitz & Dweck, 2017). In order to pass on a growth mindset to the child, parents and other role models, such as teachers must maintain a persistent emphasis on the process of learning rather than the outcome (Haimovitz & Dweck, 2017).

Beyond mindset, parental involvement and communication can protect their child from engaging in problematic behaviors and can increase academic performance. The presence of a parent-child conflict is correlated with an increase of internalization and child aggression, while positive parental support acts as a protective factor that decreases internalizing behaviors among their child (Smokowski et al., 2017). The influence parents have is reliant on the strength of their relationship with their child. In fact, the presence of parental support had a greater influence on academic goals, when compared to teachers or peer support (Legault, Green-Demers, & Pelletier, 2006). When parents develop a secure relationship with their child, motivation in school performance strengthens (Legault et al., 2006). However, if the reverse occurs where there is a conflict in that parental relationship, the youth then undervalues their academics (Legault et al., 2006). Students perform better when they perceive their parents have strong and positive

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expectations for their education (Wettersten et al., 2005; Yan & Lin, 2005). Students of at-risk demographics are extremely benefited when their parents develop strong academic goals with them (Yan & Lin, 2005). When doing so, facilitating the expression of academic expectation using warmth and active engagement in the youths' life help the student perform better in school (Yan & Lin, 2005). When parents fail to be involved in their child's life, the adolescent is more likely to engage in dangerous activities such as gang activity (S. E. Kelly & Anderson, 2012). However, when parents were actively involved and communicating with their child, the presence of gang activity was less severe and influential on the youth (S. E. Kelly & Anderson, 2012).

*Special Education.* Students with intellectual disabilities are at higher risk for social, academic, and psychological problems (Verberg, Helmond, & Overbeek, 2018). When these students embody a fixed mindset, they are more likely to minimize the types of goals they set for themselves (Baird, Scott, Dearing, & Hamill, 2009). Even when completing the goal, these youth are more likely to provide a maladaptive attribution regarding the amount of time required to complete the task means about them (Baird et al., 2009). Such attributions can be along the lines of "since I took more time, I'm not smart". While some research indicates that children with a learning disability are more likely to express a growth mindset (Tuckwiller, Dardick, & Kutscher, 2017), others claim that they are more likely to have a fixed mindset (Baird et al., 2009; Verberg et al., 2018).

The education system requires the use of nonacademic, regulatory skills in addition to intelligence in order for the student to succeed (Garcia, 2016). The student's self-regulation skills influences their motivation and performance abilities while learning; and youth with learning disabilities tend to have poorer self-regulatory patterns (Baird et al., 2009). If these youth end up

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transitioning into an adult education system, a growth mindset would be essential to enhance internal motivation for academic achievement (Candy, 2019).

### **Continuation High Schools**

In 2013, there were 62,830 students enrolled in 468 continuation high schools in California during the fall starting-term (Warren, 2016). This number, however, does not include those that enroll during alternative terms in the school. By 2017, there were 435 continuation high schools with an enrollment of 51,811 students with 85,343 students predicted to attend throughout the year (CDE, 2019). The required factors for all students attending continuation high schools were that they were at least 16 years old and were significantly deficient in credits (de Velasco, 2008; De Velasco et al., 2008). Additionally, these schools are targeted to students that are at risk of not graduating and would benefit from the short-term services offered by alternative schools (Warren, 2016).

Continuation high schools are designed to provide students a setting in which they can earn additional credits when they fall behind due to academic or behavioral reasons (de Velasco, 2008; De Velasco et al., 2008). Students that attend a continuation school are given the opportunity to transition back to their original school when adequate credits are achieved or to graduate from the continuation school if applicable. These schools initially were intended to allow students of vulnerable populations to receive more support and flexibility to achieve their goal of graduation (De Velasco et al., 2008). However, at risk students are more prevalent in California continuation high schools than other high schools in the state (De Velasco et al., 2008). Some groups highly represented at these schools are students in the foster care system, living without their biological parent, highly mobile in their schooling, in a gangs, using alcohol or drugs, victimized by or engaging in violent behaviors, and English language learning students

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(De Velasco et al., 2008). These risk factors impact their academic progress, causing many of them to attend a continuation high school (De Velasco et al., 2008). Though continuation high schools may still function as a flexible learning environment, this may be reserved for those schools in wealthier neighborhoods (Kelly, 1993). In other areas they have become a school for students that are not meeting educational standards and for students that need to work to help support their families (CDE, 2019; Kelly, 1993). Rather than dropping out of high school, students that are legally mandated to attend school can attend a continuation school to complete their high school requirements. Continuation high schools have attempted to minimize dropout rates by providing smaller class-sizes, more personalized education, and more flexible learning (Bridgeland, DiIulio Jr, & Morison, 2006).

There are a variety of reasons students may drop out of high school. Some of which include a lack of connection to the school, personal difficulties, and lack of motivation (Bridgeland et al., 2006). Findings have shown that reasons for dropping out can be overcome with added support and policy changes (Bridgeland et al., 2006). Additionally, most individuals who end up dropping out could have excelled in school if such supports were provided (Bridgeland et al., 2006). Among a sample of focus group participants that dropped out of high school, 88% reported having passing grades, 70% had confidence they could have graduated, and almost all of them had ideas of ways they could have been supported to prevent their drop out (Bridgeland et al., 2006). For instance, they reported that assistance both at home and in school could have increased their chances of graduating (Bridgeland et al., 2006). These individuals had a number of thoughts on what could have made their school experience more pleasant and more likely to lead to graduation: (1) having course work that was more applicable to their lives, (2) having more interesting and better teachers, (3) receiving smaller and more personalized

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instruction, (4) increased school-parent communication, (5) more parental monitoring to make sure they attended school, and (6) more school supervision (Bridgeland et al., 2006). Focus group data from a continuation high school indicated that students had differing perspectives from their teachers regarding their student-teacher relationships as well as their point of view of student safety on campus (Vogel, 2020). While teachers believed the students felt safe on campus and they had strong relationships with their students, the students indicated the opposite sentiment (Vogel, 2020). The stressors these students face, impact their concentration, motivation, attendance, trust in others, and lead them to increased drug and alcohol use (Vogel, 2020).

### **Current Study**

Through this study, we have examined the prevalence of growth mindset across high school students within San Bernardino City Unified School District (SBCUSD). SBCUSD serves a diverse student population, with a majority of their students coming from low socioeconomic backgrounds. Specifically, we have looked at how risk factors relate to the presence of a growth mindset. The three risk factors we have focused on in this study are homelessness, low parental support, and an active special education status. Furthermore, we analyzed how the presence of a growth mindset can buffer some of the negative effects of these risk factors, potentially preventing these students from needing to transition to a continuation high school. The primary aims and hypotheses are as follows:

**Aim 1:** Describe rates of growth mindset among high school students in the San Bernardino City Unified School District.

**Hypothesis 1:** We expect significantly lower levels of growth mindset for students in continuation high schools compared to traditional high schools

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**Aim 2:** To determine if there is a relationship between the number of risk factors experienced by a youth, and their growth mindset.

**Hypothesis 2:** We predict that the higher the number of risk factors, the lower the youth's growth mindset will be.

**Aim 3:** To determine under what conditions risk factors lead to students attending continuation high schools.

**Hypothesis 3:** We predict that the higher the number of risk factors, the higher the probability of attending a continuation high school.

**Aim 4:** To analyze the moderating effect of growth mindset on the relationship between risk factors and attendance of a continuation high school.

**Hypothesis 4.1:** We predict that as growth mindset increases, students who are homeless are less likely to attend a continuation high school.

**Hypothesis 4.2:** We predict that as growth mindset increases, students who have low parental support are less likely to attend a continuation high school.

**Hypothesis 4.3:** We predict that as growth mindset increases, students in special education are less likely to attend a continuation high school.

## Methods

### Participants

San Bernardino City Unified School District (SBCUSD) has a student population that is predominantly Hispanic. Across the entire school district, 74% of students are Hispanic, 12% African American, 6% white, 6% another race, and 2% Asian. Additionally, approximately 89% of the student population comes from a socioeconomically disadvantaged background. English

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language learners comprise 27% of the student body and 11% fall into the special education category.

The district has a total of 10 high schools with two continuation high schools. For hypotheses 1 and 2, we used the full high school sample of SBCUSD. For hypotheses 3 and 4, we only reviewed data from youth who met the age criterion to attend a continuation high school. This restricted sample contains data from 16 and 17 year-olds. Students that were 18 years old when the survey was conducted were excluded since they may be able to attend a tradition high school, but are often transitioned out of continuation high schools and into adult school if they do not make adequate progress to graduate.

The full high school population consisted of 11,533 students with fairly similar racial breakdowns as the rest of the district. Within the high school sample, 76% of students were Hispanic and 11% were African American. The restricted high school sample had a total of 5,401 students. The percentages of the racial breakdown for the sample from the age-restricted sample also matched the demographics represented through the entire district with 76% of students being Hispanic and 11% African American. Both in the full high school sample and the age-restricted sample, there were approximately 10% of students with an active special education status, 9% that identified as homeless, and 1% involved in the foster system. Additionally, in both sample populations, about 87% of students qualified for free or reduced price lunches, as indicated by their family's income status.

However, for the 537 students at the two continuation high schools, some of the demographics differed while others were fairly similar. Free and reduced priced lunch and special education status closely matched the full and restricted high school samples. Differences included the percentage of students' gender at a continuation high school being 60% male and



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37% female while the full high school population was more closely split at 51% to 48% respectively. Additionally at the continuation high school Hispanic students composed of 71% of the population while African American students increased to 18%, the rest of the race demographics remained similar to the overall population. Lastly, there is a far greater percent of homeless students at the continuation high schools with 19% identified as homeless compared to 9% from the overall high school demographics.

### **Procedures**

The SBCUSD Panorama survey is a district-wide survey that is administered yearly to all students, with students completing it within a single class period in the fall term. Each individual school within the district determined the most appropriate time to administer the survey, with all schools doing so within the timeframe of the same week. Students take this survey every year, with the survey slightly altered to match the appropriate reading levels for students of each grade level. The responses to the survey are then connected to each individual student's records, including suspensions, grades, and attendance. All responses were deidentified and provided to researchers. The data included in this study is from high school students of the 2017-2018 academic year.

### **Measures**

The following measures were all found within the SBCUSD Panorama survey completed by the students at the start of each academic year.

**Demographics.** Demographic data such as gender and race were collected through self-report survey items. Respondent's free or reduced priced lunch is identified when federal eligibility standards were met. Free or reduced priced lunch serves as a proxy for family's income status. When this is indicated, families meet federal poverty status and our participants

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are recognized as coming from a socioeconomic disadvantaged background. Each demographic has an individual question with a categorical answer option. Students either identify with the demographic asked or in the case of free/reduced priced lunch are identified by the district.

**School Type.** Within SBCUSD only two high schools are considered continuation schools, the rest are traditional high schools.

**Growth Mindset.** The growth mindset questionnaire came from Panorama Education's social and emotional learning survey. It consisted of eight questions in which students respond using a five-point Likert scale ranging from "not at all true" or "not at all confident" to "completely true" or "completely confident". For example: "My intelligence is something that I can't change very much." Of those eight questions, four were reverse scored with higher scores indicating a growth mindset. Growth mindset remained a continuous variable in order to see the potential nuanced changes in mindset expressed among the students. When all items were answered, the lowest score an individual could get would be a 0 and the highest score would be a 32. The social and emotional learning survey from Panorama were found to be reliable ( $\alpha = .78$ ) (Education, 2016). An example of the questionnaire is shown in Table 1 of the appendices.

**Homelessness.** The district's dichotomous identification of homeless students (yes/no) will be merged with students' self-report on a single item regarding the type of home environment they live in. Students were asked to self-report about their home environment with answer choices ranging from "a home with one or more parents" to "transitional temporary housing." The risk factor of homelessness was indicated when the student has identified as living in housing that is temporary or transitional such as when living in a car, motel, or shelter. This variable remained dichotomous for our analyses (Homelessness: Yes / No).

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**Special Education Status.** This risk factor was indicated when the district identified the student as having an active individualized education plan (IEP). This variable remained dichotomous for our analyses (Special Education Status: Yes / No).

**Parental Support.** The parental support measure was based on the California School Climate, Health, and Learning Survey as well as the California Healthy Kids Survey which is required under the No Child Left Behind Act, Title IV and is supported by the California Department of Education (CalSCHLS, 2020; WestED). Students reported parental support via a three-item questionnaire. Students were instructed to answer questions about the support they receive from an adult who resides in their home. For instance: “In my home, there is a parent or some other adult who talks with me about my problems”. A four-point Likert scale was provided for responses, with answers ranging from “not at all true” = 0 to “very true” = 3. Parental support was analyzed as a continuous variable with the outcome score averaged, with a low score indicating that a student does not have an adult at home who shows interest in them, talks with them, or listens to them ( average score of a 0-1). When all questions are answered the lowest score an individual can get on the parental support survey is a 0 and the highest score is a 9. An example of the questionnaire is shown in Table 2 of the appendices.

### Analysis

Descriptive statistics for each of the three risk factors (homelessness, special education, growth mindset) were run with the overall high school sample; the age-restricted sample; students attending a traditional high school as well as a continuation high school.

*Aim 1: Describe rates of growth mindset among high school students in the San Bernardino City Unified School District.* We used the full high school sample in order to explore the presence of a growth mindset in the community. We used a t-test to compare scores on the

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growth mindset questionnaire among students from traditional high schools and continuation high schools.

*Aim 2: To determine if there is a relationship between the number of risk factors experienced by a youth, and their growth mindset.* We conducted a multiple linear regression with homelessness, parental support, and special education status entered simultaneously in the models as predictors of growth mindset.

*Aim 3: To determine under what conditions risk factors lead to students attending continuation high schools.* A logistic regression was conducted to determine what conditions lead students to attend a continuation high school. For hypothesis 3 we have independently regressed each of the three risk factors in order to assess how their impact on students affected the type of school attended.

*Aim 4: To analyze the moderating effect of growth mindset on the relationship between risk factors and attendance of a continuation high school.* We conducted three separate logistic regressions to analyze if growth mindset is a moderator between each present risk factor and school attended. A moderation model was determined most appropriate to use in order to see the buffering effect growth mindset may have on the relationship between risk factors and school type attended. One model with all three risk factors and moderators was utilized in order to reduce type 1 statistical error.

## Results

*Hypothesis 1: We expected significantly lower levels of growth mindset for students in continuation high schools compared to traditional high schools.* We found no significant differences in levels of growth mindset between continuation high school students and traditional high school students (Cohen's  $d = 0.05$ ,  $p > 0.05$ ).

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*Hypothesis 2: We predicted that the higher the number of risk factors, the lower the youth's growth mindset will be.* A stepwise multiple linear regression analysis was used to determine the influence of the number of risk factors on growth mindset. Overall, the optimal linear combination of homelessness, parental support, special education status, the two-way interactions between them, and three-way interaction did not account for a significant proportion of the variance in growth mindset,  $p > .05$ . The optimal linear combination of special education status, homelessness, and parental support explains 8.5% of the variance in growth mindset (see Table 4). No additional variance was explained by adding the two-way interactions between homelessness and parental support, homelessness and special education status, parental support and special education status, or the three way interaction between parental support, special education status, and homelessness. Parental support uniquely accounted for 6.25% of the total variance in growth mindset; a one-unit increase in parental support was associated with a 0.64-unit increase in growth mindset,  $sr^2 = 0.06$ ,  $p < 0.001$ . Special education status uniquely accounted for 0.06% of the total variance in growth mindset; a shift from an inactive to an active special education status was associated with a 1.19-unit decrease in growth mindset,  $p < 0.01$ . Homelessness uniquely accounted for 0.004% of the total variance in growth mindset, but was not a significant independent predictor ( $p > 0.05$ ). Homelessness and growth mindset were not found to be significantly correlated; see Table 3.

*Hypothesis 3: We predicted that the higher the number of risk factors, the higher the probability of attending a continuation high school.* A stepwise binomial logistic regression analysis was used to determine the influence of the increase in amount of risk factors influencing the likelihood of attending a continuation high school. Overall, the increase in number of risk factors did not account for a significant difference in continuation high school attendance,  $p >$

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0.05. However, parental support and homelessness were significant predictors of students attending a continuation high school (see Table 5). For every one-point increase in parental support there was a 5.7% decrease in the odds of attending a continuation high school compared to attending a mainstream high school ( $OR = 0.94$ , 95% CI [.91, .98],  $p < .01$ ). The odds of attending a continuation high school were 194% greater for people who are homeless compared to those who are not ( $OR = 2.94$ , 95% CI [ 1.70, 5.10],  $p < 0.001$ ).

*Hypotheses 4: We predicted that as growth mindset increases, students who have a risk factor (homelessness, special education, or parental support) are less likely to attend a continuation high school.* We conducted a stepwise binomial logistic regression to determine the moderating effect of growth mindset on continuation high school attendance when homelessness, parental support, and special education status were independent predictors.

Growth mindset moderated the likelihood of students with a special education status to attend a continuation high school; see Table 6. For every one-point increase in growth mindset, there was an 11.4% increase in the odds of attending a continuation high school when compared to students without an active special education status ( $OR = 1.11$ , 95% CI [1.04, 1.20],  $p < 0.01$ ). There was a 91.5% decrease in the odds of attending a continuation high school for students who have an active special education status compared to those that do not, when controlling for growth mindset, parental support and homelessness ( $OR = 0.09$ , 95% CI [0.02, 0.37],  $p < 0.01$ ). The moderation of growth mindset on parental support or homelessness did not significantly predict continuation high school attendance,  $p > 0.05$ .

### Discussion

The aim of this study was to explore factors that increase growth mindset and understand how having a growth mindset impacts high school students in their academic trajectories.

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Although we initially predicted that the influence of a growth mindset would protect students from the influence of contextual risk factors, we found that these contextual factors are far more impactful than growth mindset. In other words, having a growth mindset is not sufficient to counteract the effects of certain contextual and individual risk factors. Our results demonstrate that parental support is beneficial for both having a higher growth mindset and a decreased likelihood of attending a continuation high school. Students with an active special education status are at risk for having lower levels of a growth mindset. Students that experience homelessness are far more likely to attend a continuation high school – regardless of their growth mindset. These findings illustrate the powerful impact of contextual and individual risk factors, that can have both a protective effect (parental support) or detrimental effect (homelessness, special education status). Indeed, as outlined in Maslow’s hierarchy of needs, until basic needs such as nourishment and safety are met, psychological improvement cannot be attained (Maslow, 1943).

### *Homelessness*

A related finding from our study shows that students who are homeless are far more likely to attend a continuation high school. While part of this reasoning may be that the parental support is missing, students that deal with housing instability may constantly be moving between schools and their respective districts which also impacts their overall attendance (Milburn et al., 2009). Initiatives such as Housing First that provide homes for individuals in order get them off the streets and meet those basic safety needs have the potential to increase mental health simply by securing that sense of safety (Stergiopoulos et al., 2014). When these initiatives combine providing of a home with giving the individual a reason to interact with their surrounding community and engage others, the benefits are even stronger (Stergiopoulos et al., 2014). For

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homeless youth, this could be finding a home for the entire family which would provide the adolescent with both their basic need of safety and the close relationship provided with family. Schools and community centers should explore these forms of initiatives in order to fully support the populations they serve. In order to provide for these individuals, the contextual factors of community care can be highly beneficial.

Additionally, youth that are homeless report having difficulty focusing while at school and retaining information (Begg et al., 2017). However, despite homeless youth being far more likely to attend a continuation high school, there was no notable difference in their growth mindset. For the most part, a growth mindset did not influence the type of school that youth would attend. Rather, contextual factors such as being homeless or having parental support were more influential on mindset and type of school attended. When it comes to educational trajectory with adolescents, external and environmental factors need to be further explored to determine what protects them and ensures their success.

### *Parental Support*

This study supports the fact that youth with supportive parental relationships have stronger growth mindset. Adolescents that feel like they have a parent that is interested in their school work and would listen to them when they have a problem are more likely to retain a growth mindset and believe in their academic abilities when working through a challenging experience. Prior research has shown that students with this mindset are more engaged and motivated in the classroom while also being better equipped to regulate themselves emotionally when being bullied (Blackwell et al., 2007; Yeager et al., 2013). Additionally, these results demonstrate that when youth experience stronger parental support, they are less likely to have attended a continuation high school. This finding establishes the protective role parental support



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has in regards to students' academic success and high school being attended. Though continuation high schools can be beneficial for some students, they were not intended to be the primary education pathway. The support of parents protects their child from transitioning to a continuation high school.

When considering these findings within the larger SBCUSD demographic context, 89% of these families are faced with economic disadvantage. Our study showed how beneficial parental support is for their developing youth, but when families need to prioritize earning an income to feed one another, how much time in the day is left for parents to be supportive figures for their adolescents? When a parent's mind is filled with worries about how they will pay for housing or their family's next meal, how much empathy or emotional space do they have to hear their child's worries? In fact, maternal worry is correlated with being detached from the child's desires and needs, while joy is related to being more in tune with the child (Dix, Gershoff, Meunier, & Miller, 2004). So, when it comes to parental support for the well-being of their children, some of the focus may also be needed to be placed on parental well-being. As the saying goes, "you can't pour from an empty cup."

*Special Education Status*

Surprisingly, students with an active special education status were less likely to attend a continuation high school; unless they had a growth mindset – which made it more likely that they would attend a continuation school. It is unclear why special education status was not a risk factor for attending continuation high school unless growth mindset was factored in. Many different forms of learning disabilities and diagnoses are included in special education status – making it difficult to interpret this finding. Though it is interesting to note that the percentage of students with an active special education status at a continuation high school, which has a

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smaller student population compared to a mainstream school, is proportionate to those at a mainstream high school.

While some students with an active special education status receive their education in special day classes, other students attend a mainstream classroom and have alternative accommodations. Anecdotally, the accommodations each student receives is dependent on their needs and the ways their advocates, such as parents, lawyers, and educators; fight for their needs. The culture of the school entity is also a determinant factor in how educators and the administrators handle special education services (Hudgins, 2012). Depending on the awareness and ability for these advocates to support these youth, different accommodations will be provided for these students. Therefore, it is possible that while special education status alone was not a risk factor for attending an alternative high school (perhaps because enough accommodations are available in the mainstream high school for these youth) –those with a growth mindset explored the alternative high school option as a way to gain additional support and graduate faster.

Though this finding was not initially hypothesized, the added support of a growth mindset can be beneficial for special education students. The ability to recognize the areas of growth while in a challenging academic situation allows for more flexibility and prevents these students from staying static in their education. Another possible reason these students may be more likely to attend a continuation high school could be due to the beneficial aspects of support these schools may provide. Students at continuation high schools are provided with smaller class sizes, which allows the teacher to have a more personalized relationship with each student. For these students, attending a continuation high school may aid them in their goals of achieving a high school diploma (Bridgeland et al., 2006). The support these alternative schools can provide

has the ability to further these students in their goals and provide them with impactful adult mentors.

### **Limitations and Future Directions**

The findings of this study provide valuable information that can further explain the educational trajectories adolescents may experience. A significant limitation to the current study was the large sample size which can increase the likelihood of having significant findings. Though findings may be significant the effect size may not be as strong and there could be greater chances of a false positive finding. Another limitation of this study was the variability in the definition of homelessness and that homelessness was not significantly correlated with special education status or growth mindset potentially hindering the effects of the study. To some, students who are living in doubled up homes with multiple families can be interpreted as stable housing, however other researchers have indicated this to be a form of homelessness and housing instability (Milburn et al., 2009). Though our data did not include doubled up homes, this information could have been very valuable. The varying degrees of homelessness status should be more thoroughly explored in order to recognize how housing instability may impact the presence of a growth mindset. Students that formerly experienced homelessness should be included to recognize the lasting impact of housing instability. Additionally, future longitudinal studies could help elucidate how students' mindsets shift either as a cause of transitioning to a continuation school or after the transition and due to the new school's culture. A limitation of our study is the inability to see where mindset shifted or grew due to these contextual factors. This can be a potential reason as to why youth with an active special education status and a growth mindset were more likely to attend a continuation high school.

### **Conclusion**

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As students work through their education in the school systems, there are both internal and external factors that impact their prosperity on this journey. A number of challenging experiences may impact the student's learning and education. Learning how to grow through these challenging moments while developing skills of resiliency is essential. Although many interventions focus on intervening at the individual level, recognizing the familial and environmental factors that may propel or hinder a student are essential, if not more influential. Focusing on community-care rather than solely on self-care can propel these students further in their resiliency process. Strengthening the system the youth lives in can benefit the individual's life even though it may not be the main focus.

## Appendices

Table 1

### *District-wide Growth Mindset Questionnaire*

My intelligence is something that I can't change very much.	Not at all true
Challenging myself won't make me any smarter	A little true
There are some things I am not capable of learning	Somewhat True
If I am not naturally smart in a subject, I will never do well in it	Mostly True Completely True
I can earn an A in my classes	Not at all confident
I can do well on all my tests, even when they're difficult	A little confident
I can master the hardest topics in my classes	Somewhat confident
I can meet all the learning goals my teachers set	Mostly confident Completely confident

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Table 2

*District-wide Parental Support Questionnaire*

How true are these statements about your HOME or the ADULTS WITH WHOM YOU LIVE?	
In my home, there is a parent or some other adult...	Not at all true
Who is interested in my school work	A little true
Who talks with me about my problems	Pretty much true
Who listens to me when I have something to say	Very much True

**Table 3.** Bivariate Correlation Between Variables

	Homeless	Parental Support	Special Ed Status	Growth Mindset	School type
Homeless	-				
Parental Support	-0.04**	-			
Special Ed Status	0.01	-0.08**	-		
Growth Mindset	-0.02	0.28**	-0.11**	-	
School Type	-0.02*	0.04**	0.01	-0.01	-

Note. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

**Table 4.** Regression Results for Aim 2

Predictor	$\Delta R^2$	$R^2_{\text{adj}}$	$\beta$	$B$	95% CI	$pr^2$	$sr^2$
Model 1	0.09	0.09					
Homeless			-0.03**	-0.61	[-1.00, -0.23]	0	0
Parental Support			0.27***	0.63	[0.59, 0.67]	0.07	0.07
Special Education Status			-0.09***	-1.84	[-2.22, -1.45]	0.01	0.01
Model 2	0.09	0.09					
Homeless			-0.01	-0.23	[-1.12, 0.67]	0	0
Parental Support			0.28***	0.65	[0.60, 0.69]	0.06	0.06
Special Education Status			-0.05**	-1.14	[-1.97, -0.30]	0	0
Homeless X PS			-0.02	-0.06	[-0.21, 0.09]	0	0
Homeless X SPED			-0.01	-0.52	[-1.81, 0.76]	0	0
PS X SPED			-0.04	-0.13	[-0.28, 0.02]	0	0
Model 3	0.09	0.09					
Homeless			-0.61	-0.29	[-1.23, 0.65]	0	0
Parental Support			26.91***	0.64	[0.60, 0.69]	0.06	0.06
Special Education Status			-2.68**	-1.19	[-2.06, -0.32]	0	0
Homeless X PS			-0.65	-0.05	[-.21, 0.11]	0	0
Homeless X SPED			-0.001	-0.05	[-2.60, 2.50]	0	0
PS X SPED			-0.03	-0.12	[-0.28, 0.03]	0	0
PS X SPED X Homeless			-0.01	-0.10	[-0.58, 0.38]	0	0

*Note.* PS is Parental Support; SPED is Special Education Status; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

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**Table 5.** Regression Results for Aim 3

Predictor	<i>B</i>	Exp(B)	95% CI
Parental Support	-0.06**	0.94	[0.91, 0.98]
Homeless	1.08***	2.94	[1.70, 5.10]
Special Education Status	-0.22	0.81	[0.38, 1.74]
Homeless X PS	-0.04	0.97	[0.87, 1.07]
Homeless X SPED	-0.67	0.51	[0.09, 2.98]
PS X SPED	-0.02	0.98	[0.84, 1.13]
PS X SPED X Homeless	0.14	1.15	[0.82, 1.60]

*Note.* PS is Parental Support; SPED is Special Education Status; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$



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**Table 6.** Regression Results for Aim 4

Predictor	<i>B</i>	Exp(B)	95% CI
Parental Support	-0.06**	0.94	[0.91, 0.98]
Homeless	1.08***	2.94	[1.70, 5.10]
Special Education Status	-0.22	0.81	[0.38, 1.74]
Homeless X PS	-0.04	0.97	[0.87, 1.07]
Homeless X SPED	-0.67	0.51	[0.09, 2.98]
PS X SPED	-0.02	0.98	[0.84, 1.13]
PS X SPED X Homeless	0.14	1.15	[0.82, 1.60]

*Note.* GM is Growth Mindset; PS is Parental Support; SPED is Special Education Status;  
 \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

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