

**MENTAL HEALTH AND ACADEMIC ACHIEVEMENT: THE EFFECT OF
SELF-EFFICACY**

By

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ABSTRACT OF THE DISSERTATION

Mental health and academic achievement: the effect of self-efficacy

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Academic success can be considered a core metric by which to measure the relative success of a youth's childhood as the skills conveyed and measured in school are such as to foster positive long-term outcomes. Therefore, all efforts ought to be made towards encouraging this achievement. School success however, is a complex phenomenon shaped by a wide variety of factors and many Latino adolescents are missing opportunities to develop their full potential in the United States educational system. The goal of this project was to present a perspective on students' relationship to their academic outcomes that emphasizes the role of the mental health and self-efficacy of Latino youth towards their learning and academic success. The present study examined the relationship between students' broad mental health risk, general self-efficacy, and achievement outcomes. The district in which this study was conducted has one of the lowest graduation rates in the state of New Jersey (under 60%) and reading and math testing scores ranking below the 15th percentile. The high school was comprised of 1397 students, grades 9 through 12 of whom 485 met criteria for further analysis by virtue of

being Latino, completing the Pediatric Symptom Checklist (PSC) and the General Self-Efficacy Scale (GSE) as well as meeting other demographic criteria. The results of this study indicated that mental health risk's impact on academic achievement outcomes are mediated by perceived general self-efficacy. This finding appears most significantly for the relationship between internalizing symptoms and final Language Arts grade as well as GPA. Specifically, the current study found that when an adolescent's self-reported internalizing symptoms go up by 1, the indirect, mediated effect by self-efficacy is that final Language Arts grade goes down by .16 and GPA goes down by .01. Broadly, the effect sizes reflecting these findings are small, but add to the field suggesting that academic self-efficacy is a predictor of school success for Latino students. The findings here offer an important potential area for intervention that can and ought to be explored in furtherance of the goal of encouraging school achievement in at-risk populations.

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Introduction

The skills conveyed in high school are essential for success. Students who do not achieve these skills are likely to experience long-term consequences. Particularly, the completion of high school is an important milestone of adolescent development and a critical predictor of future success and overall well-being. School success however, is a complex phenomenon, shaped by a wide variety of factors both intrinsic to students and existing in their external environment. Although the number of students who complete high school is rising, dramatic differences in school success remain across racial/ethnic groups. Disparities in the United States educational system mean that many Latino adolescents are missing opportunities to develop their full potential. Latino students drop out from high school at a higher rate than Whites (14% vs. 5%) and Latino students are less likely than their White counterparts to enroll in a four-year college, to be enrolled in college full time, or to complete a bachelor's degree (Fry & Taylor, 2013). The consequences of these disparities are stark, as individuals with lower levels of education are more likely to be unemployed and earn lower incomes than those with higher levels of education (U.S. Census Bureau, 2012a). Indeed, it has been reported that the poverty rate was about 2.7 times greater for Latinos than for Whites: 23.2% for Latinos versus 8.6% for Whites (DeNavas-Walt, Proctor, Smith, & US Census Bureau, 2009). Academic success can therefore be considered a core metric by which to measure the relative success of a youth's childhood in relation to their long-term outcomes, and as such, all efforts ought to be made towards encouraging school achievement.

This project aimed to provide insight on the relationship between Latino youths' self-efficacy and their mental health risk, with a goal of understanding how this

interaction may influence academic achievement. The proposed model is grounded in the understanding of mental health risk that can be improved by the incorporation of concepts of general resilience, focusing on what happens when students present a global confidence in their coping ability across a range of situations. The same personal and interpersonal resources that promote perseverance may shape students' reactions to challenges and obstacles as well as be reflected by teachers' perception of student effort. Thus, the present study examined the relationship between students' broad mental health risk, general self-efficacy, and achievement outcomes.

Substantial empirical evidence suggests that children's ability to regulate emotional, behavioral and attentional impulses paves the way for success in school. Specifically, inhibition of negative behaviors or thoughts as well as the activation of positive behaviors and strategies is critical to academic learning skills, staying in school, and graduating from high school (Duckworth & Carlson, 2013; Lleras, 2008). Interconnected to this, the development of students' mental health and wellbeing has progressively become considered critical to effective education (Elias, 1997; World Health Organization, 2005). While mental health has traditionally been identified by the absence of disorder or negative outcomes, there are indications that lack of pathology in youth does not equate to optimal mental health. Rather, mental wellness can be conceptualized as both requiring the absence of psychopathology as well as the presence of positive indicators of mental health (e.g., subjective well-being). Studies with children and adolescents support the superior physical, social, and academic functioning of youth with both higher perceptions of well-being and lower levels of psychopathology (Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008). To this, increasing evidence

also suggests that successful schools integrate promotion of youth's social and emotional learning along with academics in their educational mission (Farrington et al., 2012; Zins, Bloodworth, Weissberg, & Walberg, 2004). The relationship between the social, emotional and academic domains is particularly salient given the findings that serious problem behaviors arise from a complex interaction of risk and protective factors across domains, and that these cluster differently depending on the type of behavior (Stoddard et al., 2013; Stoddard, Zimmerman, & Bauermeister, 2012; van der Laan, Veenstra, Bogaerts, Verhulst, & Ormel, 2010). Therefore, it is clear that when schools neglect the social and emotional needs of their students, students are placed at an increased risk of academic failure.

Latino Students

Particularly for minority students, social and emotional needs may be thwarted via internalized oppression. This internalized oppression can result when children are in an environment in which they feel devalued and inferior and perceive little or no likelihood of their status changing (Garcia Coll et al., 1996; Kloos et al., 2012). In such situations, youth are likely to ascribe to an attitude of academic defeat, rather than the mindset of perseverance that has been empirically linked to their success (Blackwell, Trzesniewski, & Dweck, 2007; Farrington et al., 2012). As result of these negative academic self-beliefs, students may engage in a cycle of lowering academic aspirations, which eventually, if indirectly, leads to the informal enforcement of anti-achievement norms and stereotype threat that serves as a self-fulfilling prophecy for those who attempt to break out of the pattern (Ou & Reynolds, 2008). Added to this, teacher perceptions of children's achievement, whether accurate or not, impact students' grades and scores on

standardized achievement tests (Jussim & Harber, 2005; Jussim, Robustelli, & Cain, 2009; Liang & Zhang, 2009). Critically, these expectancy effects appear strongest for minority and for low SES youth (Fitzpatrick, Côté-Lussier, Pagani, & Blair, 2013; McKown & Weinstein, 2008). Specifically, teachers have been found to hold lower expectations for Latino students than for White students, including greater negative and fewer positive report card comments directed at Latino students (Tenenbaum & Ruck, 2007). Thus, Latino students may receive messages from teachers, intentionally or not, that they are not as capable to perform academically as are their White peers.

The Latino population accounts for over 12.5% of the total population in the United States, representing the largest ethnic minority group in the country and is growing rapidly (Pew Hispanic Center, 2011a). It is projected that by the year 2050, Latinos will make up 24% of the U.S. population (Umaña-Taylor, 2009) and in addition to being the largest minority group, Latinos are the youngest group, with 23.1% of those 17 and under (Pew Hispanic Center, 2011a). Additionally, and disproportionately, Latino children make up the largest percent of children living in poverty – 35%, reflecting 5.6 million children (Jiang, Ekono, & Skinner, 2015). However, it must be noted that Latinos in the US are not a homogenous group. Instead the Latino population of the United States is comprised of individuals from a variety of backgrounds including Mexican (64.3%), Puerto Rican (9.3%), Cuban (3.5%), Central American (8.1%), South American (5.9%), and other (8.9%; U.S. Census Bureau, 2012b). A significant portion of the Latino population was born outside of the US (35.7%) relative to the total U.S. population (12.9%). Additionally, a greater percentage of Latino individuals speak a language other than English in their homes (78.5% as opposed to 19.6% among the total U.S.

population), and 40.6% of Latinos report speaking English less than “very well” (U.S. Census Bureau, 2012b). Higher percentages of Dominican and Salvadoran students (88% and 87%, respectively) spoke a language other than English at home when compared with South American (79 %), other Central American (78%), Mexican (72 %), and Cuban (70 %) students. In addition, the percentages of Mexican, Dominican, Salvadoran, and other Central American students (ranging from 18 to 20 %) who had difficulty speaking English were higher than the percentages of Cuban (13%), South American (14%), Puerto Rican (8 %), and Other Hispanic or Latino (8%) students who had difficulty speaking English (Aud, Fox, & KewalRamani, 2010). In 2007, approximately 7.2 million Latino elementary and secondary school students spoke a language other than English at home (U.S. Census Bureau, 2012b).

The context of the diversity within the Latino population is important to understand, especially when considering the bio-ecological model of human development, which posits that inherent qualities of an individual dynamically interact with varied environments, both proximal and distal, to shape development (Bronfenbrenner & Morris, 2006). This is particularly salient in the framework of the present study, given the contextual influences, namely, that Latino youth are more likely to live in low income, urban school districts (Swanson, 2008) such as the one utilized for this study. Further, Latino students’ achievement scores in reading and math in the 4th and 8th grades lag significantly behind those of their White counterparts (National Center for Education Statistics, 2010). Thus, the larger cultural milieu potentially places low expectations for academic achievement on Latino adolescents and additionally, such

environments generally include parents and schools equipped with few resources to assist adolescents (National Center for Education Statistics, 2010).

Discrimination also negatively impacts the income and educational attainment, academic motivation as well as mental health, of Latinos in the United States (Araújo & Borrell, 2006; Huynh & Fuligni, 2010; Perreira, Fuligni, & Potochnick, 2010).

Experiences of discrimination occur in multiple settings and have been linked to a number of negative outcomes, including depression (Hwang & Goto, 2009), anxiety (Alamilla, Kim, & Lam, 2009), and psychological distress (Moradi & Risco, 2006).

Indeed, Flores, Tschann, Dimas, Pasch, and de Groat (2010) argued that incidents of discrimination are experienced as traumas for Latinos and found that posttraumatic stress symptoms are significantly correlated with experiences of discrimination. Additionally, and perhaps relatedly, Latino youth engage in many risky behaviors that can hinder positive development and wellbeing. For example, national statistics reveal that Latino youth have higher rates of attempted suicide, lifetime cocaine use, and unprotected sex than White youth (Centers for Disease Control and Prevention, 2013), and Latinas have the highest teen pregnancy rate among major ethnic groups in the United States (Umaña-Taylor, 2009). Moreover, after unintentional injury, homicide is the leading cause of death for Latino youth (Shetgiri et al., 2009), and Latino gangs make up 46% of all gangs in the United States (Kuperminc, Wilkins, Roche, & Alvarez-Jimenez, 2009). To the effect of this, adolescents living in violent neighborhoods have been found to be more likely to internalize low self-efficacy beliefs, including beliefs of their powerlessness to succeed in the future (Dupéré, Leventhal, & Vitaro, 2012). Finally, there is a largely unmet need for mental health services among Latino families (Kataoka, Zhang, & Wells,

2002; Leslie et al., 2003) despite being at particularly high risk for mental health problems and risky behavior (Abraído-Lanza, Chao, & Flórez, 2005; Potochnick & Ferreira, 2010; Talashek, Norr, & Dancy, 2004; Twenge & Nolen-Hoeksema, 2002).

Self-Efficacy

In sum, the Latino population in the United States is neither homogenous nor without a diverse range of experiences. Many of these experiences further reflect difficulties that reflect a critical and necessary opportunity for positive intervention. If perceived self-efficacy, a multidimensional construct that conceptualizes individuals as being agentic, purposeful, proactive, self-evaluative, and self-regulatory (Bandura, 1977), can be shown to impact the impact of mental health risk on academic achievement, this would have important implications for school-based interventions for both mental health and academic outcomes of Latino youth. A basic premise of self-efficacy theory is that it represents individuals' belief in their capability to produce a desired effect by their own actions. While it can and has been argued that self-efficacy should be specific to the domain of interest, given that individuals can hold different levels of confidence by area (Bandura, 2006), a generalized sense of self-efficacy that refers to global confidence in one's coping ability across a wide range of demanding or novel situations also has been conceptualized (Schwarzer & Jerusalem, 1995, 2009).

Broadly, self-efficacy beliefs are important because they can influence other cognitions, affect, and behaviors and may also help to deal with stressful circumstances (Bandura, 1997). General self-efficacy (GSE) reflects individuals' belief in their ability to succeed across situations and domains of functioning, and has been found to be an important predictor of psychological and physical functioning (Zumberg, Chang, &

Sanna, 2008). It is important, however, to note that this construct of general self-efficacy has been questioned (Bandura, 2006), and particularly that arguments have been made that general self-efficacy does not differ from other self-evaluative constructs, like self-esteem (Judge, Erez, Bono, & Thoresen, 2002; Scherbaum, Cohen-Charash, & Kern, 2006; Stanley & Murphy, 1997). Nevertheless, these findings are not conclusive, considering that there are data supporting the distinction between general self-efficacy and other related constructs, as well as the predictive validity of GSE independent of such constructs (Chen, Gully, & Eden, 2001, 2004; Judge et al., 2002; Zumberg et al., 2008). Schwarzer and Warner (2013) suggest that as individuals experience successes and failures across multiple domains, they would develop a more global perception of their ability to succeed. A generalized sense of self-efficacy can therefore be thought of as representing a more stable perception of an individual's mastery beliefs across domains. Thus, individuals with high GSE would expect to succeed across a variety of tasks, and would be more resistant to having those expectations undermined by individual failures.

Generalized self-efficacy should also be able to be considered a universal construct as it characterizes a belief inherent in all individuals regardless of culture. The original measure of general self-efficacy was developed in Germany (Schwarzer & Jerusalem, 1995), and has since been used widely internationally, translated into 32 other languages and been found to be reliable (Scholz, Doña, Sud, & Schwarzer, 2002). Indeed, a study exploring the relations between general self-efficacy and social-cognitive variables (intention, implementation intentions, outcome expectancies, and self-regulation), behavior-specific self-efficacy, health behaviors, well-being, and coping strategies among 1,933 respondents in Germany, Poland and South Korea found that

across countries and samples, there was diverse evidence suggesting that general self-efficacy appears to be a universal construct that yields meaningful relations with other psychological constructs (Luszczynska, Scholz, & Schwarzer, 2005). An additional study of over 8,000 participants from Costa Rica, Germany, Poland, Turkey, and the U.S. also found evidence for the relationship between GSE and, positively, optimism, self-regulation, and self-esteem; and negatively, with depression and anxiety (Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005).

Further, general self-efficacy can be applied and observed as a broader aspect of student character. This is particularly relevant within the context of academia, as academic performance can reflect a spectrum of attributes, from academic achievement and skills (Baker, 2006; Jerome, Hamre, & Pianta, 2009) to broader characteristics, such as ability and motivation (Blacher, Baker, & Eisenhower, 2009; Jerome et al., 2009). In fact, students' characteristics may influence the organization of a classroom for instruction (Corno, 2008) and contribute to teachers' classroom management strategies (Colwell & Lindsey, 2003; Martin, 2004; Rimm-Kaufman, Voorhees, Snell, & La Paro, 2003). Similarly, students' social and emotional characteristics, such as shyness and problem behavior, influence teachers' responses and teacher-student relationships (Coplan & Prakash, 2003; Pianta, 2006). One meta-analysis found that, when interacting with students showing high levels of motivation and engagement, teachers reported less conflict and more closeness in teacher-student relationships (Nurmi, 2012).

A meta-analysis conducted by Huang (2013) also found that there were gender, and, to some extent, age differences among students' perceived self-efficacy, specifically with regards to academic self-efficacy. Overall, males reported somewhat higher

academic self-efficacy than females, but that the self-efficacy content domain (e.g. math vs writing self-efficacy) assessed explained much of the variation in gender differences in academic self-efficacy (Huang, 2013). These findings reflect prior inconsistencies in self-efficacy by gender depending on the specific academic area being examined— for example, males have been found to endorse higher levels of self-efficacy in mathematics (Pajares, 2005) while females have higher self-efficacy for writing (Pajares, 2003) and self-regulated learning (Pajares, 2002). Further, according to Pajares (2002, 2005), different patterns emerge as students age, whereby males consistently express higher rates of mathematics self-efficacy while the gender gap in writing self-efficacy disappears or reverses. However, again, the findings for the effect of age on academic self-efficacy are inconsistent (as reviewed by Huang, 2013).

Regardless, self-efficacy has generally been shown to positively impact academic achievement (Lane, Lane, & Kyprianou, 2004; Multon, Brown, & Lent, 1991; Sullivan & Guerra, 2007; Zajacova, Lynch, & Espenshade, 2005). Particularly, studies have also found evidence that perceived self-efficacy during high school contributes to high-school grades (Caprara, Vecchione, Alessandri, Gerbino, & Barbaranelli, 2011; Maddux & Volkmann, 2010). Another study of high school students found that self-efficacy significantly affected level of motivation which then affected drop-out rates (Alivernini & Lucidi, 2011). In the big picture, self-efficacy beliefs can aid an individual in persevering despite difficulties and setbacks (Maddux & Volkmann, 2010). Few studies of self-efficacy have been conducted with school-aged Latino samples; however, existing research suggests that academic self-efficacy is a predictor of school success for Latino students (Niehaus, Rudasill, & Adelson, 2012). Ultimately, the global beliefs that

adolescents hold regarding their ability to succeed may be the key to their development of durable academic and emotional assets and provide support for positive teacher perceptions of their character.

The impact of mental health risk on academic achievement

The current study relies on a broad definition of mental health. The problems covered include the two major dimensions of emotional and behavioral problems: internalizing problems and externalizing problems. Broadly, internalizing problems can be understood through symptoms of anxiety and depression, and indeed these disorders are highly comorbid (Merikangas et al., 2010). Externalizing problem behavior in broader sense can be understood as aggressive or antisocial behavior (e.g. cursing, fighting, stealing, or destroying property) and is engaged in by many adolescents engage without becoming pathological (Moffitt, 2008). However, misbehaving students are at risk of dropping out of school and are less likely to participate in and complete a postsecondary education (Finn, Fish, & Scott, 2008). Additionally, for the current study, a dimension of learning problem that frequently impacts attainment, attention, is addressed with the project's measure of mental health (Gardner et al., 1999). Duncan et al. (2007) have documented the longitudinal association of children's attention problems at school entry with academic achievement at the end of primary school, based on data from six studies. The evidence on the longitudinal association between attention and academic achievement has been subsequently extended up to the conclusion of high school (Breslau et al., 2009). In these studies, children's attention problems were correlated with externalizing and internalizing problems and all three types of problems predicted subsequent academic achievement.

It is important to note that many children with externalizing problems also show internalizing problems and/or attention problems. For example, clinical diagnoses of conduct disorder or oppositional defiant disorder often co-occur with diagnoses of anxiety and depression (Barker, Oliver, & Maughan, 2010; Wolff & Ollendick, 2006). Additionally, co-occurring mental health problems are the norm, rather than the exception, among children and adolescents with ADHD in both community and clinic samples (Barkley, 2005). Approximately 45–84% of youth with ADHD meet criteria for comorbid oppositional defiant disorder (ODD) or conduct disorder (CD), and up to half of youth with ADHD have a comorbid anxiety or depressive disorder (Barkley, 2005). These rates of comorbidity are much higher than would be expected by chance, suggesting that ADHD places youth at risk for the development of other mental health problems (Wilens, Biederman, & Spencer, 2002). Finally, ADHD comorbidity is associated with greater social impairment than ADHD in isolation (Becker, Langberg, Vaughn, & Epstein, 2012). Such findings suggest the need to explore these three broad constructs of mental health, internalizing, externalizing and attention problems, together as well as independently.

Mental health risks - internalizing, externalizing and attention problems - have long term and complex interactions with academic outcomes. Overall mental health risk has been found to be predictive of significantly worse academic achievement 3 years later where students identified as at risk in first grade saw 4th grade tests results approximately 1/3 of a standard deviation lower than their non-risk peers (Guzman et al., 2011). Using a broad definition of mental health, Suldo, Thalji, and Ferron (2011) found that mental health troubled students GPAs declined at a significantly faster rate over the course of a

school year than those youth without any psychopathology. Of note, those students who possessed moderate or high sense of well-being as well as elevated mental health symptoms did not experience this decline in academic functioning. Further, in middle and high school students, positive screening scores on a broadband mental health screen, mental health risk have been shown to be related to higher rates of school absence, poor grades and/or repeating a grade in school (Gall, Pagano, Desmond, Perrin, & Murphy, 2000; Murphy, Jellinek, & Milinsky, 1989).

For immigrant Latinos, adjusting to the culture and language of the United States can be stressful and have a long-term impact on physical and psychological well-being (Finch, Hummer, Kol, & Vega, 2001; Flores et al., 2008). Study findings suggest that very recent immigrants may experience higher levels of internalizing and emotional distress that diminish in intensity over time however, youth problem behaviors increase with growing acculturation (Cervantes, Padilla, Napper, & Goldbach, 2013; Martinez, McClure, Eddy, & Wilson, 2011). It has specifically been demonstrated that Latino youth report higher levels of depression in comparison to youth from other ethnic backgrounds (McClelland, Acock, & Morrison, 2006; Twenge & Nolen-Hoeksema, 2002), and that these differences are not accounted for by socioeconomic circumstances (Polo & Lopez, 2009; Wight, Aneshensel, Botticello, & Sepúlveda, 2005). Additionally, Latinas have been found to report high rates of victimization, bullying, depressive symptoms, suicide ideation, suicide plans, and suicide attempts (Eaton et al., 2011), and these factors can further negatively affect their academic outcomes.

It has also been theorized that the differential and disproportionate rate of school disciplinary actions, including suspension and expulsion of students by ethnicity may

account for some of the achievement gap between Latino and White students (Gregory, Skiba, & Noguera, 2010). A study exploring social competence skills - self-control, interpersonal skills, approaches to learning, internalizing and externalizing problem behaviors – found that teachers rated Latino children significantly lower than White children. However, this skill disparity only held true in the economically poorest Latino families, as differences between White and Latino children were not evident for children from middle-class Latino homes (Galindo & Fuller, 2010). Finally, Hosp and Reschly (2003) found that 106 Latino students are referred to special education for every 100 White students. These findings suggest that that Latino students may be, or may be being perceived by their teachers, as at greater mental health risk in the academic context.

Further, and specifically within Latino youth, there has been some evidence of a relationship between greater mental health risk and academic achievement. In a 2013 study of 5th – 7th grade Latino both student GPA and standardized test scores were significantly and negatively correlated with the students' depression symptoms (Zychinski & Polo, 2012). A finding that, in connection with a prior similar finding for high school Latinos (Alva & de Los Reyes, 1999), suggests a pervasive relationship between these constructs. Further, there is also evidence that academic self-efficacy, as well as achievement orientation, can mediate the impact of internalizing problems on academic achievement in Latino youth and that these findings were not moderated by cultural/contextual factors (Zychinski & Polo, 2012). Particularly, self-efficacy has been shown to positively impact various facets of mental health (Bandura, Pastorelli, Barbaranelli, & Caprara, 1999; Barchia & Bussey, 2011; Bramham et al., 2008; Dupéré et al., 2012; Gaudiano & Herbert, 2007; Kelly & Greene, 2013; Muris, 2002; Norwalk,

Norvilitis, & MacLean, 2009). Such results contribute to a depth of understanding regarding the higher rates of depressive symptoms and lower academic achievement that Latino youth display relative to their peers. Further, such findings suggests that improvement in self-efficacy may also serve to reduce the negative impact of depression on achievement and potentially interrupt the reinforcement of the development of an academic mindset of despair.

The Current Study

The present study proposed to examine the relationship between students' self-reported mental health risk, perceptions of their general self-efficacy, and student achievement. The goal of this project is to present a perspective on academic outcomes that emphasizes the role Latino youth's self-efficacy plays on mental health risk. The model proposed is grounded in the understanding that mental health risk can be improved by the incorporation of concepts of general resilience, such that students who present a global confidence in their coping ability across a range of situations will influence their own abilities and behaviors, potentially reciprocally encouraged by teacher perceptions of these same behaviors. General self-efficacy was selected because, in the urban Latino population under study, there are so many non-academic factors that influence academic performance that operate inside and outside the school setting. Focusing on academic self-efficacy alone was judged to be too narrow and might also artificially limit the scope of both theorizing and intervention.

It has been established, in general and Latino populations, that mental health risk impacts academic achievement. However, the role that perceived self-efficacy may play in that relationship is less clear. While prior studies have found self-efficacy to mediate

between depression and academic achievement (Zuffianò et al., 2013; Zychinski & Polo, 2012), this relationship has not been tested with general mental health risk, nor with externalizing or attention problems. Because externalizing, attention, and internalizing problem behaviors elicit a similar negative pattern in the teacher–student relationship, and teachers report less conflict and more closeness in teacher–child relationships when interacting with students showing high levels of motivation and engagement as compared to other children (Nurmi, 2012), it is possible that the impact of students’ mental health risk on their grades may be affected by their self-efficacy, with teachers perceiving high self-efficacy as a positive academic characteristic. Therefore, the same agentic resources that may shape students’ reactions to challenges and obstacles may also reflect positively on teachers’ perception of student effort and protect against the negative impact of mental health on academic success. If these results of the present study are supported, future then examine these dynamics specifically, to better understand the trajectory of how they contribute to the development of durable academic and emotional assets, such as self-regulated learning and proactive coping, and an academic identity that supports Latino students’ success in school.

Hypothesis 1. General perceived self-efficacy will impact the negative impact of total mental health risk on final grades for language arts and math as well as GPA, in that the negative impact of total mental health risk will be reduced by greater levels of self-reported self-efficacy. This hypothesis was tested using both moderation and mediation (see Figures 1 and 2). While the primary interaction model proposed was moderation, a mediation path was also tested. This is because, while self-efficacy may alter the strength

of the relationship between mental health and academic achievement, it follows that self-efficacy could alternatively simply explain the relationship.

Hypothesis 2. Given the well-established relationship between all subscales and academics, it was expected that high self-reported behavioral symptoms (e.g. internalizing, externalizing and attention symptoms) will evidence lower academic grades. However, it is possible that there will be differential impacts on achievement across the domains, whereby externalizing or attention symptoms have a greater negative impact on achievement than internalizing symptoms. This was proposed because, unlike behavior problems, internalizing behaviors often go unnoticed by others, especially in the classroom (Gresham & Kern, 2004). Whereas externalizing or attention problems may be perceived as disruptive, and therefore interfering in academics, internalizing problems may be misperceived as conformity to positive classroom expectations, particularly in low income school settings. Thus, internalizing behaviors may have less impact on grades as teachers are less likely to notice these behaviors as problems. Regardless, it was hypothesized that self-efficacy will both independently improve academic grades and reduce the negative impact of these mental health symptoms on grades.

In order to test the potential model, path analysis was used to test a “structural model” (e.g., a model based upon theoretically based statements of relationships among constructs; Cohen, Cohen, West, & Aiken, 2013). This model tested potential pathways between self-efficacy and the subscales of mental health risk with final grades for language arts and math as well as GPA. A full confirmation for Hypothesis 2 was tested first, with all latent variables set as predictors for final grades and GPA, moderated by perceived self-efficacy (see Figure 3). As the non-experimental nature of these data

cannot rule out other possible models of academic achievement, an alternative model of mediation was also tested (see Figure 4).

Methods

Procedure

The current study utilized data collected as part of a larger study at a New Jersey High School during the 2013 to 2014 academic year. Students and their parents were informed that students would be asked to complete a survey with questions about their perception of their own self-efficacy, pro-social attitudes, identity, their sense of safety and support in the school, and their problem solving skills. In furtherance of reaching as many students as possible, surveys were administered during their Language Arts classes over the course of two consecutive days (due to rotating schedules). Students completed a demographic questionnaire and were provided a survey packet to complete. As the school has a high percentage of Spanish speaking students, surveys were provided in both English and Spanish so students had the option of which language they preferred to read the survey items. Surveys were administered in November 2013 and May 2014; the initial time point was used in the present analysis. Students were given the opportunity to opt out of the screening both through a passive consent form sent home to the parents and an assent form given to the students prior to survey administration. This study was approved by the Rutgers University Institutional Review Board for the Protection of Human Subjects in Research.

Participants

Based on the 2010 Census data, New Jersey ranks 7th in the nation in Latino population with 17.7% of the state identifying as Latino, compared to 16.3% of the nation (Pew Hispanic Center, 2011a). Latinos of Mexican origin make up 14% of the New Jersey Latino population (Pew Hispanic Center, 2011b). Of note, Latino children in New

Jersey represent 22.3% of the state's population and growth in the Latino population accounted for all of New Jersey's population growth (Pew Hispanic Center, 2011a). The annual personal earnings of Latinos in New Jersey is \$24,000 compared to \$44,000 for Non-Hispanic Whites and \$31,000 for Non-Hispanic Blacks. Further, 27% of Latinos 17 and younger live in poverty in New Jersey vs. 7% of non-Hispanic Whites (Pew Hispanic Center, 2011b). The district in which this study was conducted has one of the lowest graduation rates in the state of New Jersey (under 60%) and reading and math testing scores ranking below the 15th percentile.

The high school. The high school was comprised of 1397 students, grades 9 through 12. Students were defined as active in the school system if there was a recorded GPA for the 2013-2014 school year. Course data were collected for all students in the school. For the purpose of analyses, a student was counted as having a Math or Language Arts grade only if they received a grade in each of the four quarters for a single course. Thus, in the complete school sample, there were 75(5%) students who did not meet the requirements of having completed a Math or Language Arts course; 85(6%) students who only met the requirements for having a Math course, 62(4%) students who only met the requirements for having a Language Arts course (See Appendix 1). This resulted in 1,322 students who, based on school records, received a grade in each of the four quarters for a single Math or Language Arts course. These numbers do not necessarily suggest that these students were not enrolled in a Math or Language Arts course particularly as several Language Arts courses were structured as two quarters only. Thus, a student could have taken a full year of Language Arts, but as two different and distinct courses and therefore not be considered part of the current study's sample. Additionally, students

were permitted to take two of the same course type in any year. This suggests that students might elect to take or not take a Math or Language Arts, and the data suggest that this might have been specifically prevalent among older students, given fewer upperclassmen taking these classes most frequently ($F(3,1393) = 39.12, p < .001$).

Demographic differences across the sample. In the fall of 2013, 810 students completed the survey (58% of the total school), however, 30 of these students did not meet the criteria described above to have a recorded grade for a Math or Language Arts course. Therefore, as detailed in Table 1, 780 students completed the survey during the fall of 2013 and had either a Math or Language Arts final grade (56% of the school population as a whole; 59% of students with a Math or Language Arts grade). The students who completed the survey with a grade were more likely to be in an earlier grade level (9th or 10th) and Latino, than the school population as a whole ($\chi^2(3) = 8.20, p = .042$; $\chi^2(1) = 12.30, p < .001$ respectively). Additionally, while students who completed the survey with a grade were significantly younger ($t(1395) = 3.96, p < .001$), the real difference was not meaningful (Mean Difference = .28 years). These students were also less likely to have a special education classification ($\chi^2(1) = 8.63, p = .003$), and special education students who did complete the survey with a grade were more likely to spend a higher proportion of the day with their peers ($\chi^2(3) = 14.35, p = .002$) than those in the school as a whole. There were no significant differences between those students with a recorded grade who responded to the survey and those who did not on gender, immigration, or lunch status. As the current study sought to explore academic outcomes in Latino youth, the survey sample was further reduced to the 669 students identified by the school system as Hispanic/Latino (Appendix 2 provides details regarding country of

origin for Latino students). Latino students who completed the survey and evidenced either a final Language Arts or final Math grade represented 48% of the total school population.

Further, students with a special education classification were excluded from the final analysis sample (Appendix 3 provides descriptive data regarding special education classification across samples). This exclusion is the result of a significantly different grading pattern within the high school itself for final Language Arts grade ($t(1235) = -3.44, p = .001$) and final Math grade ($t(1258) = -5.62, p < .001$) that suggests that students with a classification were not being graded relative to their school peer reference group. Specifically, the mean for final Language Arts grade for students with a special education classification was 76.69(SD=7.54) while for students without a classification it was 74.27(SD=10.01); while the mean final Math grade for students with a special education classification was 79.53(SD=9.40) while for students without a classification it was 74.92(SD=11.02). The difference increased within the sample of 669 Latino students who took the survey, so that a special education classification student within this group earned, on average, a C+ in Language Arts and a B- in Math for their non-classified peers' respective Cs. Therefore, the final analysis sample was, for the purpose of this study, defined as comprised of those Latino students without a special education classification, and both a final Math and a final Language Arts grade. This resulted in a final sample for analysis of 493 students, representing approximately 35% of the total school.

Analysis Sample relative to students in the school and students who took the survey

Students in the analysis sample were, consistent with the difference between the analysis sample and the school population as a whole, more likely to be in an earlier grade ($\chi^2(3) = 22.82, p < .001$), Latino ($\chi^2(1) = 160.43, p < .001$) and younger than the school population as a whole, though the real difference in age was not meaningful (Mean Difference = .42 years; $t(1395) = 5.80, p < .001$). Students in the analysis sample were slightly more likely to be born outside the U.S. than the school population as a whole ($\chi^2(1) = 3.94, p = .047$) which was very likely a result of the Latino selection criteria. Finally, those students in the analysis sample were more likely to have an academic support such as an LEP or 504 plan ($\chi^2(1) = 5.67, p = .017$).

Students in the analysis sample were more likely to be in an earlier grade ($\chi^2(3) = 17.33, p = .001$) and receiving free rather than reduced or full price lunch ($\chi^2(1) = 13.72, p < .001$) relative to students who completed the survey. Again, the real difference in age between these groups was not meaningful (Mean Difference = .41 years; $t(778) = 4.25, p < .001$). Additionally, students in the analysis sample were more likely to have an academic support such as an LEP or 504 plan ($\chi^2(1) = 6.52, p = .011$) relative to their peers who took the survey but did not meet criteria for analysis. Overall, these differences suggest that the analysis population is, expectedly given the Latino selection criteria, more likely to be receiving additionally language support services. The analysis population is also over-representative of earlier grade levels and slightly younger aged students.

Measures

The General Perceived Self-Efficacy Scale. (GSE; Schwarzer & Jerusalem, 1995). This measure was originally developed in Germany and has been adapted to 31

languages. In contrast to other scales that were designed to assess optimism, this measure explicitly refers to personal agency, i.e., the belief that one's actions are responsible for successful outcomes. This scale includes 10 items using a 1-4 Likert scale with possible responses of 'not at all true' (1), 'hardly true' (2), 'moderately true' (3), and 'exactly true' (4), yielding a total score between 10 and 40. A typical item is, "Thanks to my resourcefulness, I can handle unforeseen situations." High reliability, stability, and construct validity of the GSE scale have been found across studies and cultures (Kasler, White, & Elias, 2013; Luszczynska, Gutiérrez-Doña, et al., 2005; Luszczynska, Scholz, et al., 2005; Scholz et al., 2002; Schwarzer & Jerusalem, 2009) including Latina/o adults (Driscoll & Torres, 2013). This measure yields one global dimension, which in the current study has a Cronbach's α of .84 for all the students who completed the measure, as well as .84 for students within the analysis sample (see Appendix 4 for complete measure).

The Pediatric Symptom Checklist-17-Youth. (PSC-17-Youth; Gardner et al., 1999). The PSC-17, based on the PSC-35-Youth (Jellinek et al., 1988), is a psychosocial screen designed to facilitate the recognition of cognitive, emotional, and behavioral problems on three subscales: internalizing, attention and externalizing as well as provide an overall rating of mental health risk. In the field of mental health, the PSC-35 has been used as an outcome measure in an outpatient child psychiatry clinic and has demonstrated preliminary validity and utility for both global and subscale scores (Murphy et al., 2012). The 17-item version of the PSC has also been validated and used successfully to identify psychosocial impairment in youth (Borowsky, Mozayeny, & Ireland, 2003; Duke, Ireland, & Borowsky, 2005; Gall et al., 2000; Gardner, Lucas, Kolko, & Campo, 2007).

For the PSC-17, a total cut-off score of 15 has been recommended as identifying students who are considered at-risk and who may therefore benefit from further screening by a mental health professional (Gardner et al., 2007). The properties of this shortened version are similar to those of the original PSC 35 form (Gardner et al., 2007; Gardner et al., 1999).

The PSC-17 consists of 17 items that are rated by the student as ‘Never’ (0), ‘Sometimes’ (1) or ‘Often (2)’ present. The instructions ask youth to rate how often the behaviors described occur for them, with a typical item being, “Feel hopeless.” The total score is calculated by adding together the score for each of the 17 items. Items that are left blank are simply ignored (i.e., score equals 0). If four or more items are left blank, the questionnaire is considered invalid. The Cronbach’s α for this measure in the current study was .82 for all students who completed the measure as well as .82 within the analysis sample. The Cronbach’s α for the internalizing subscale of this measure was .77 overall, and .77 for the analysis sample. The Cronbach’s α for the externalizing subscale of this measure was .71 overall, and .72 for the analysis sample. The Cronbach’s α for the attention subscale of this measure was .71 overall, and .72 in the analysis sample. The reliabilities reflected acceptable levels for further analysis (see Appendix 5 for complete measure).

Demographic Information. All demographic information was obtained from official school records, including information on the students’ grade level, age, race, free or reduced lunch status, limited English proficiency, 504 or special education status, and gender.

Grades and GPA. Final and quarter grades for math and language arts grades were obtained from official school records. Grades were used in their numeric form, rather than as letter grades (i.e., 95, not “A”), in order to preserve the continuous nature of the data. Each student’s grade point average (GPA) is computed by multiplying the numerical grade equivalent ($A+ = 4.3$, $A = 4.0$, $A- = 3.7$, $B+ = 3.3$, $B = 3.0$, $B- = 2.7$, $C+ = 2.3$, $C = 2.0$, $C- = D+ = 1.3$, $D = 1.0$ and $F = 0.0$) by the credits attempted and then dividing by the amount of credits. GPA includes all academic classes and all graded subjects were counted by the school in this averaging process. The unweighted GPA scores in the present sample ranged from 0.13 to 4.0.

Ability. A construct of ability was created for the purpose of this study from the available information in order to control for the baseline ability of each student. For Language Arts ability course level was weighted (e.g. students in a remedial course lost a point while students in an honors course gained a point) and then having LEP or 504 plan was accounted for negatively (e.g. a 1 point were reduction from “ability” for LEP and 0.5 for a 504 plan), while also being in a honors or AP Math course was weighted positively (e.g. 0.5 points were added to ability for being in an advanced course in Math as well as Language Arts). Similarly, for Math ability, course level was weighted (where remedial evidenced reduced ability and honors evidenced increased ability) and then LEP or 504 plan was accounted for negatively (for Math both LEP and a 504 plan reduced “ability” 0.5), while also being in an honors or AP Language Arts course was weighted positively. Special education classification was not used to create the Ability construct due a positive relationship between classification and grade, whereby, paradoxically, a more severe classification consistently resulted in a higher grade. For example, a student

with an LEP in honors Language Arts and Math would have a Language Arts Ability of 0.5 and a Math Ability of 1.0 (where having an LEP was weighted to reflect a greater impact on Language Arts ability over Math ability).

This “ability” construct thus utilized evidence of students’ application of skill (ability to gain entrance or not to more rigorous instruction) as well as external labels that formally recognized academic deficit (special education classification, LEP or 504 plan). As detailed in results, Language Arts and Math Ability both positively correlated with Language Arts and Math final grade as well as with GPA. Therefore, this suggests that this theoretical “ability” variable allowed for a rough statistical control of students’ baseline academic competence in the two subject areas.

Data analytic strategy

Preliminary analyses were conducted to understand the relationships among study variables. In addition, as path modeling is sensitive to non-normality, each variable was examined for skewness and kurtosis (± 2) and extreme outliers (± 3 standard deviations from the mean were excluded). All predictor variables were standardized before being entered into the modeling analyses. T-tests and One Way Analysis of Variance were run to examine differences between the potential demographic variables (gender, grade level, immigrant status, and if the student received support such as a 504 plan or LEP) and both predictor (general self-efficacy, Pediatric Symptom Checklist total and subscale scores) and outcome variables (GPA and final grade). Subsequently, Pearson Correlations were utilized to understand the relationship between study predictor variables and GPA and grade. Issues of multicollinearity were also tested.

The nature of the relationships between mental health risk, self-efficacy and academic achievement was investigated utilizing PROCESS, a computational tool for path analysis-based mediation and moderation, to test a moderation model with bias-corrected bootstrapping for the indirect effect (Hayes, 2009). Controlling for gender, grade level, and academic ability, a model corresponding to the total effect in addition to the path coefficients and the direct and indirect effects for self-efficacy on mental health risk and academic achievement was generated for both moderation and mediation pathways. Subsequently, hierarchical regressions were conducted to better illustrate the interactions between the variables so as to more effectively test the model in path analysis. The control for relative ability, gender, grade level, and, in the language arts sample, special education classification were entered first. This was followed by total score on the Pediatric Symptom Checklist, and General Self-Efficacy, independently; in the last step, interaction terms for mental health by self-efficacy were entered to help determine whether the relationship between mental health and academic achievement is moderated by self-efficacy. The same sequence for entering predictor variables was used for each grade type and GPA.

In order to test both moderation and mediation models whereby Language Arts grade, Math grade and GPA as well as all control and predictor variables are entered into the sample model, path analysis was used to test a “structural model” (Cohen et al., 2013). Path analysis, while similar to regression analyses, is considered to be more powerful as it examines linear causal relationships with path coefficients calculated simultaneously for all endogenous variables, rather than sequentially as in multiple regression models, as well as accounting for measurement error. Before proceeding with

the modeling analyses, preliminary curve estimation analyses were conducted to ensure the linear relationship. This was followed by the examination of the structural model. Both direct and indirect effects are estimated in the structural model (Kline, 2011). Good fitting models generally have non-significant chi-square values, TLI at or above .90, CFI at or above .95, and RMSEA at or below .06. Parameters were established as statistically significant with $\alpha < .05$.

The direct effect examines the impact of a particular variable X on a particular variable Y. The indirect effect, or mediation effect, examines the impact of X on Y via another specified variable. The total indirect effect is the sum of all indirect effects of X on Y via all tested mediators. To test the statistical significance of the mediation paths, the Bias-Corrected Percentile Bootstrapping approach was utilized. Bootstrapping is a resampling technique that accounts for non-normality of data (Preacher & Hayes, 2008). The bootstrap estimates were calculated on 1000 bootstrap samples, generating 95% confidence intervals in each sample to determine the significance of the total indirect effect; if the lower and upper bounds of the confidence interval do not contain zero, then the mediation effect is found to be significant.

The non-experimental nature of these data cannot rule out other possible models of academic achievement, therefore alternative models were also tested. Specifically, alternative models testing whether self-efficacy mediates the relationship between mental health and achievement were also tested. Type and level and mental health risk may effect a differential impact on academic achievement, as well as interact with self-efficacy differently. As the hypothesized model was nested within the alternative model, a chi-square difference test was used to test which model fit the data better. In addition,

Akaike information Criterion (AIC) and Browne-Cudeck Criterion (BCC) were used to compare model fit, with a 10 unit decrease in AIC or BCC indicating a better fitting model. All preliminary analyses were conducted using SPSS software, version 21 (IBM Corporation, 2012) and the modeling analyses was conducted with AMOS software (Arbuckle, 2006).

Results

Preliminary Analyses

Sample difference on grades and GPA. As detailed in Table 1, the students who completed the survey had significantly higher final Language Art grade ($t(1235) = -4.25$, $p < .001$), higher final Math grade ($t(1258) = -2.11$, $p = .035$) and higher unweighted GPA than the school as a whole ($t(1395) = -2.79$, $p = .005$). This GPA difference reflected approximately a tenth of a point difference (Mean Difference = .12), while final Language Arts grade difference was approximately 2 points (Mean Difference = 2.34) and final Math approximately 1 point different (Mean Difference = 1.32). The students in the analysis sample only differed from their peers in the high school as a whole with a significantly higher GPA ($t(1395) = -2.12$, $p = .034$; Mean Difference = .09). Finally, students in the analysis sample only differed from their peers who completed the survey but did not meet inclusion criteria in final Math grade ($t(1395) = 2.08$, $p = .038$; Mean Difference = 1.71) which was significantly lower.

Within the analysis sample, initial descriptive analyses were conducted on outcome and predictor variables. As detailed in Table 2, students in the analysis sample saw their Language Arts grades significantly increase over the course of the school year ($F(3,490) = 11.90$, $p < .001$) evidencing a significant ($t(492) = -4.911$, $p < .001$) increase from a first quarter mean grade of 74.05 to a fourth quarter mean grade of 76.77 (Mean difference = 2.72). Conversely, students in the Math sample saw their Math grades significantly decrease over the course of the school year ($F(3,490) = 19.57$, $p < .001$) evidencing a significant ($t(492) = 6.82$, $p < .001$) decrease from a first quarter mean grade of 77.52 to a fourth quarter mean grade of 73.79 (Mean difference = 3.72). It

should be noted that this is not an artifice of the sample, but a school-level pattern by which students significantly improve in Language Arts and significantly deteriorate in Math. Neither Language Arts or Math grade, quarter nor final, evidenced skewness or kurtosis scores greater than plus or minus two, and thus no further transformations were indicated for these data.

Sample difference on mental health and self-efficacy. Relative to their peers who completed the survey but did not meet inclusion criteria, the students in the analysis sample had significantly lower Externalizing problems ($t(808) = 3.67, p < .001$). No other significant differences were found between the Language Arts and Math samples on the constructs. No continuous predictor variable evidenced skewness or kurtosis scores greater than plus or minus two, thus no further transformations were indicated thereby (see Table 3). The data were examined for outliers and each variable was standardized to examine whether any data point was greater than or equal to plus or minus three standard deviations away from the mean score of each variable. It was found that eight students' scores were outside three standard deviations. The GSE scale had three scores greater than three standard deviations below the mean (SD: -4.01 to -3.21; raw scores: 10, 12, and 14). The PSC had two scores greater than three standard deviations above the mean (SD: 3.60 and 3.64; raw scores: 31.73 and 32.00). Finally, the PSC Externalizing Subscale had five scores greater than three standard deviations above the mean (SD: 3.05 to 4.14; raw scores: 11.20, 13 and 14). Although these scores were in the range of expected scores on these measures, the potential for these extreme outliers to influence the analyses required that they be deleted from the dataset, resulting in a sample N of 485. Neither the Final Language Arts grade, Final Math grade nor the Internalizing or

Attention subscales of the PSC had scores that could be classified as outliers. Descriptive data for predictive variables subsequent to removal of outliers are presented in Table 4.

Removal of the 8 students with outlier scores did not significantly change any demographic information (see Appendix 6) nor the previously described demographic and grade/GPA relationships between the samples.

The PSC includes standardized cut-points that suggest the presence of significant behavioral or emotional problems indicating a potential need for intervention. Of the 485 students, 146(29.6%) of students' responses indicated an overall mental health risk; 179(36.3%) of student responses indicated a risk for internalizing problems; 59(12.0%) students' ratings reflected risk on the externalizing subscale; while 97(19.7%) students indicated they are experiencing enough attention issues to be considered at-risk. Not surprisingly given the removal of externalizing outliers, a significant difference between the students in the analysis sample was found with regards to risk on the PSC externalizing subscale ($\chi^2(1) = 4.44, p = .035$) and their peers.

Impact of demographic factors on study variables. Tests of significant differences across all study variables by gender, grade level, immigrant status, and support status were conducted using Independent Samples T-Tests and One-Way Analysis of Variance. In addition, Pearson correlations were used to establish the relationships between study variables. The results of these analyses are detailed for the 485 students who met criteria for analysis.

Female students were found to have a significantly higher final Language Arts grade ($t(483) = -3.41, p = .001$), final Math grade ($t(483) = -3.01, p = .003$) and unweighted GPA ($t(483) = -3.51, p < .001$). Female students also reported significantly

lower General Self-Efficacy ($t(483) = 2.16, p = .031$). Grade level was found to influence final Language Arts grade ($F(3,481) = 7.45, p < .001$), final Math grade ($F(3,481) = 6.29, p < .001$) and unweighted GPA ($F(3,481) = 9.67, p < .001$). Specifically, Bonferroni *post hoc* testing revealed that students in the 11th grade had a significantly higher Language Arts and Math grade while students in the 9th grade had significantly lower GPAs. Students born outside of the US reported higher General Self-Efficacy ($t(483) = 1.98, p = .049$) but immigration status did not impact grades or GPA. Students with a 504 plan or limited English proficiency had significantly lower final Language Arts grade ($t(483) = -4.77, p < .001$), and unweighted GPA ($t(483) = 6.23, p < .001$), however as these comparisons reflect serious size differences (61 vs 424 students), these findings must be interpreted with care. See Table 5A.

Regarding the mental health constructs, females were found to have significantly higher internalizing problems ($t(483) = -5.08, p < .001$) and lower externalizing problems ($t(483) = 2.88, p = .004$). Grade level had no significant impact on general mental health of any of the specific subscales. Students born outside the US reported significantly lower attention problems ($t(483) = -3.15, p = .002$). Students with a 504 plan or limited English proficiency had a significantly lower total mental health problems ($t(483) = 2.86, p = .004$), as well as significantly lower attention problems ($t(483) = 3.17, p = .002$). See Table 5B.

Final language arts grade was significantly and positively correlated with final Math grade ($r(485) = .59, p < .001$), unweighted GPA ($r(485) = .79, p < .001$), the control for language ability ($r(485) = .35, p < .001$), and general self-efficacy ($r(485) = .13, p = .005$), as well as negatively correlated with externalizing problems ($r(485) = -.11, p =$

.013). Final Math grade was significantly and positively correlated with unweighted GPA ($r(485) = .78, p < .001$), and the control for math ability ($r(485) = .29, p < .001$), as well as negatively correlated with general mental health ($r(485) = -.10, p = .031$) and externalizing problems ($r(485) = -.16, p = .001$). Unweighted GPA was significantly positively correlated with the control for language ability ($r(485) = .49, p < .001$), Math ability ($r(485) = .32, p < .001$) and general self-efficacy ($r(485) = .13, p = .004$), as well as negatively correlated with externalizing problems ($r(485) = -.17, p < .001$). General self-efficacy was significantly negatively correlated with the total score for mental health problems ($r(485) = -.24, p < .001$), and each subscale ($r(485) = -.28, -.11, -.18; p < .001, p = .018$, and $p < .001$ respectively). See Table 6.

These findings suggested that ability, gender, grade level – specifically a control for grade 11 relative to other grades – were potentially important variables to include in the hypothesized models. Immigration status did not appear to have a meaningful effect on either outcome or predictor variables and was thus not included. Support status (e.g. having a 504 plan or LEP), while evidencing significance on these factors, reflected a very unequal a sample distribution (e.g. 87% vs 13%). Therefore, support status was not included in hypothesis testing models.

Hypothesis 1

PROCESS, a computational tool for path analysis-based mediation and moderation to test a moderation model with bias-corrected bootstrapping for an indirect effect (Hayes, 2009), was used to test for moderation of mental health risk on grade by self-efficacy. Gender, grade level and ability were entered as covariates in the model in order to control for their potential impact. All continuous predictor variables were

centered to reduce multicollinearity. This study used listwise case deletion in sample determination which resulted in having no missing data for the analyses.

Moderation. For final Language Arts grade, the PROCESS moderation analysis model (Figure 1), while significant ($R^2 = .19$; $F(6,478) = 18.41$, $p < .001$), only found a main effect for general self-efficacy ($B = 0.27$, $SE = 0.09$, $p = .002$). Neither mental health ($B = -0.12$, $SE = 0.08$, $p = .123$), nor the interaction between mental health and self-efficacy ($B = -0.02$, $SE = 0.02$, $p = .203$) had a significant impact on grade. Critically for a hypothesis of moderation, the interaction term did not produce a significant R^2 change ($R^2\Delta = .003$; $F(1,478) = 1.47$, $p = 1.63$; See Table 7). These analyses suggest that self-efficacy had a positive relationship with final Language Arts grade but that neither mental health nor an interaction with mental health had an impact.

For final Math grade, the PROCESS moderation analysis model, while significant ($R^2 = .08$; $F(6,5478) = 7.22$, $p < .001$), did not reveal a main effect for general self-efficacy ($B = 0.11$, $SE = 0.10$, $p = .262$), though mental health did evidence significance ($B = -0.22$, $SE = 0.09$, $p = .016$), negatively impacting final Math grade. Specifically for moderation however, the interaction was neither significant ($B = -0.01$, $SE = 0.02$, $p = .616$) nor did it produce a significant R^2 change ($R^2\Delta = .001$; $F(1,478) = .25$, $p = .616$; See Table 8). These analyses suggest that greater levels of mental health problems have a negative relationship with final Math grade, but that neither self-efficacy nor an interaction between mental health and self-efficacy has an impact.

The PROCESS moderation analysis for GPA revealed an overall significant model, ($R^2 = .30$; $F(7,485) = 29.66$, $p < .001$) and both general self-efficacy and mental health evidenced a significant main effect (GSE: $B = 0.02$, $SE = .01$, $p = .007$; PSE: $B = -$

0.02, $SE = .01$, $p = .002$). However, regarding moderation, the interaction was neither significant ($B = 0.000$, $SE = .001$, $p = .973$) nor produced a significant R^2 change ($R^2\Delta = .00$; $F(7,485) = .001$, $p = .973$; See Table 9). These analyses suggest that self-efficacy has a positive relationship with GPA and mental health problems have a negative relationship with GPA but that there is no interaction between these constructs producing an impact on GPA.

Mediation. The mediation analysis model utilizing PROCESS was then assessed (Figure 2), whereby the hypothesis that self-efficacy mediates the negative impact of poor mental health on final Language Arts grade was tested. Results indicated that mental health had a significant negative impact on self-efficacy ($B = -0.21$, $SE = .04$, $p < .001$) as well as a significant negative total effect on final Language Arts grade ($B = -0.17$, $SE = .08$, $p = .02$). When the indirect effect of mental health on final grade via self-efficacy was tested using a bootstrap estimation approach with 1000 samples (Shrout & Bolger, 2002), the findings indicated the indirect coefficient was significant ($B = -0.06$, $SE = .02$, 95% CI $[-0.11, -0.02]$). Further, the direct effect of mental health on final Language Arts grade was non-significant subsequent to the inclusion of the mediator ($B = -0.12$, $SE = .08$, $p = .137$). This pattern of results indicates a full mediation. Thus, the negative impact of mental health on grade is fully mediated through self-efficacy, suggesting that the negative impact of mental health risk is reduced via self-efficacy (Figure 5).

The mediation analysis model utilizing PROCESS was then assessed (Figure 2), whereby the hypothesis that self-efficacy mediates the negative impact of poor mental health on final Math grade was tested. Results indicated that mental health was a significant predictor of self-efficacy ($B = -0.21$, $SE = .04$, $p < .001$) and that mental

health was a significant predictor of Math grade ($B = -0.24$, $SE = .09$, $p = .006$). The indirect effect was tested using a bootstrap estimation approach with 1000 samples; however, these results indicated the indirect coefficient was not significant ($B = -0.02$, $SE = .02$, 95% CI $[-0.07, 0.018]$) and mental health maintained a significant direct effect on Math grade ($B = -0.21$, $SE = .08$, $p = .009$). These results do not support a mediational hypothesis, as mental health maintains significance as predictor of final Math grade after including self-efficacy mediator (Figure 6).

Finally, the PROCESS mediation model was tested for GPA. Both Math and Language ability constructs were included as analyses variables, as well as grade level. Mental health remained a significant predictor of self-efficacy ($B = -0.21$, $SE = .04$, $p < .001$) and was a significant negative predictor of GPA ($B = -0.02$, $SE = .01$, $p < .001$). When the indirect effect of self-efficacy was tested using a bootstrap estimation approach with 1000 samples, the results indicated a significant, though small, indirect coefficient ($B = -0.004$, $SE = .002$, 95% CI $[-0.01, 0.001]$). While these results do not indicate a full mediation, as poor mental health maintains significance as predictor of GPA after including self-efficacy mediator ($B = -0.02$, $SE = .01$, $p < .001$), they do suggest that there may be some mediation of mental health risk by self-efficacy for GPA.

Given this pattern of results, hierarchical regressions were conducted to better illustrate the interactions between the variables so as to more effectively test the model in path analysis. The control for relative ability, gender, and grade level were entered first. This was followed by total score on the Pediatric Symptom Checklist, and General Self-Efficacy, independently; in the final step, interaction terms for mental health by self-efficacy were entered to evaluate if the relationship between mental health and academic

achievement is moderated by self-efficacy. The same sequence for entering predictor variables was used for each grade type, and GPA. All continuous predictor variables were centered to reduce multicollinearity for hierarchical regression.

Hierarchical Linear Regression. For Language Arts Final grade (Table 10), the control for ability in Step 1 accounted for 12% of the variance in final language grade. The inclusion of gender and grade level in Step 2 accounted for a further 4% of the variance in final language grade. The addition of the total PSC score in Step 3 significantly improved the prediction ($R^2 \Delta = 0.01$, $F(1,480) = 5.01$, $p = 0.024$), further, the inclusion of GSE in Step 4 significantly accounted for an additional 2% of the variance in final language grade ($R^2 \Delta = 0.02$, $F(1,479) = 8.94$, $p = 0.003$), for a total overall variance explained of 19%. Finally, the inclusion of the interaction between mental health and self-efficacy did not add significantly to the model ($R^2 \Delta = 0.003$, $F(1,478) = 1.63$, $p = 0.203$). Notably, the unstandardized coefficient for PSC was significant ($B = -0.17$, $p = 0.024$) in Step 3, but, following the significant inclusion of GSE in Step 4 ($B = 0.27$, $p = 0.003$), mental health lost all significance ($B = -0.12$, $p = 0.137$). This supports the PROCESS findings that, rather than moderation, there may be a mediational effect of self-efficacy on mental health as it related to final Language Arts Grade.

For Math Final grade (Table 11), the control for ability in Step 1 accounted for 1% of the variance in final Math grade. The inclusion of gender and grade level in Step 2 accounted for a further 5% of the variance in final Math grade. The addition of the total PSC score in Step 3 significantly improved the prediction ($R^2 \Delta = 0.02$, $F(1,480) = 7.57$, $p = 0.006$), and accounted for an additional 1% of the variance in final Math grade.

However, the inclusion of GSE in Step 4 did not significantly account for the prediction of final Math grade ($R^2\Delta = 0.002$, $F(1,479) = 1.21$, $p = 0.272$). Finally, the inclusion of the interaction between mental health and self-efficacy did not add significantly to the model ($R^2\Delta = 0.000$, $F(1,478) = 0.253$, $p = 0.616$). The total overall variance explained for final Math grade was thus 8% suggesting the model may be a better fit for final Language Arts grade.

For GPA within the Language Arts sample (Table 12), the controls for Math and Language ability in Step 1 accounted for 23% of the variance in students' GPA. The inclusion of gender and grade level in Step 2 accounted for a further 4% of the variance in GPA. The addition of the total PSC score in Step 3 significantly improved the prediction ($R^2\Delta = 0.02$, $F(1,479) = 14.80$, $p < 0.001$). Additionally, GSE in Step 4 significantly accounted for further 1% of the variance in GPA ($R^2\Delta = 0.01$, $F(1,478) = 7.46$, $p = 0.007$), for a total overall variance explained of 30%. This suggests the model may better predict overall GPA than final Language Arts or Math grades independently. Finally, the inclusion of the interaction between mental health and self-efficacy did not add significantly to the model ($R^2\Delta = 0.000$, $F(1,477) = 0.000$, $p = .973$). Notably, the significance of the unstandardized B coefficient for PSC ($B = -0.023$, $p < 0.001$) in Step 3, lost some significance following the inclusion of GSE in Step 4 ($B = -0.019$, $p = .002$) in Step 4. This indicates that, rather than moderation, there may be a mediational effect of self-efficacy on mental health problems as related to GPA, though it may not full mediate the negative impact of PSC on GPA.

Hypothesis 2

Path analysis allows for the review of the results of what would be multiple regressions to predict academic outcomes within one model, providing an easier comparison of the parameters between groups (Cohen et al., 2013). The initial model proposed and tested for Language Arts, Math and GPA based upon the initial hypothesis of moderation. However, a mediation model was additionally tested in order to evaluate for all potential pathways of impact. Each model included final grades, unweighted GPA, and gender, grade level and ability were included in the model in order to control for their potential impact. For all models, the continuous predictor variables were centered to reduce multicollinearity. In order to test the hypothesized model, path analysis was used. The proposed model was identified, as it was recursive, and furthermore met the requirements for the t-rule and Null B rule (Kline, 2011). Although not depicted in the figure, disturbances were included on all endogenous variables. The following fit indices were examined to determine the goodness of fit of models: chi-square, TLI, and CFI and RMSEA following recommended standards (Kline, 2011).

Prior to path analysis, the multivariate assumptions of linearity and multicollinearity were tested for all proposed paths. A curve estimation was done for all the proposed relationships in the model. The determination was that all predictor variables either evidenced a sufficiently linear relationship or evidenced no other significant relationship type (e.g. quadratic or cubic) with final Language Arts grade, final Math grade and. Thus, these variables were acceptable for use in the model. Linear regressions to evaluate for multicollinearity were tested for self-efficacy, internalizing, externalizing and attention problems and all were found to have sufficiently independent relationships ($VIF < 3.0$ for all).

Path analysis for Moderation Model. It was hypothesized that self-efficacy would both independently improve academic outcomes and moderate the negative impact of internalizing, externalizing and attention problems on grades and GPA (Figure 3). The hypothesized model shown in Figure 3 showed a significant chi-square ($\chi^2(55) = 180.26$, $p < .001$), which did not indicate adequate model fit. However, as chi-square tests are highly susceptible to large sample sizes, additional measures of model fit were examined which indicated a fair, though not adequate fit to the data: $CFI = .937$, $NFI = .914$, $RMSEA = .069$, 90% CI [.058, .080], $AIC = 310.26$. Examining the squared multiple correlations, it was estimated that 13.1% of the variance in Language Arts grade, 7.6% of the variance in Math grade and 18.5% of the variance in GPA was explained by the predictors in the model (significant pathways shown in Figure 8; coefficients of the model in Table 13). In this model, General Self-Efficacy significantly positively predicted both final Language Arts grade ($B=.31$, $SE = .09$, $\beta = .16$, $p < .001$) and GPA ($B=.02$, $SE = .01$, $\beta = .14$, $p < .001$) and evidenced a trend towards significance in final Math grade ($B=.17$, $SE=.10$, $\beta=.07$, $p = .089$). Additionally, Externalizing problems significantly negatively predicted both final Math grade ($B=-.58$, $SE=.16$, $\beta=-.13$, $p = .010$) and GPA ($B = -.05$, $SE=.02$, $\beta=-.15$, $p = .001$) and evidenced a trend towards significance in final Language Arts grade ($B = -.37$, $SE=.20$, $\beta=-.09$, $p = .061$). Internalizing problems had a significant positive impact on final Language Arts grade ($B = .41$, $SE=.20$, $\beta=.10$, $p = .043$). It should be noted, that this reflects a positive relationship between Internalizing problems and grade, whereby higher self-reported problems suggests higher Language Arts grade. Attention problems did not evidenced any significance in predicting final Language Arts grade, final Math or GPA. Of the

interaction terms that would suggest moderation, only the interaction of attention problems with self-efficacy produced a significant pathway and only with final Math problems GPA ($B = -.10$, $SE = .05$, $\beta = -.11$, $p = .045$). However, given the lack of direct pathways between either attention problems or general self-efficacy and final Math grade, this finding is inconclusive. Overall, this model does not support the hypothesis of moderation, as self-efficacy does not interact with any of the mental health subscales to impact academic outcomes.

Path analysis for Mediation Model. It was alternatively hypothesized that self-efficacy would improve academic grades and mediate the negative impact of internalizing, externalizing and attention problems on grades (Figure 4). The hypothesized model shown in Figure 4 showed a significant chi-square ($\chi^2(30) = 63.48$, $p < .001$), which did not indicate adequate model fit. However, as chi-square tests are highly susceptible to large sample sizes, additional measures of model fit were examined which indicated an adequate fit to the data: $CFI = .981$, $NFI = .965$, $RMSEA = .048$, 90% CI [.031, .064], $AIC = 159.48$. Examining the squared multiple correlations, it was estimated that 18.0% of the variance in Language Arts grade, 14.0% of the variance in final Math grade, and 29.0% of the variance in GPA was explained by the predictors in the model (significant pathways shown in Figure 9; coefficients of the model in Table 14). In this model, General Self-Efficacy significantly positively predicted both final Language Arts grade ($B = .30$, $SE = .09$, $\beta = .15$, $p < .001$) and GPA ($B = .02$, $SE = .01$, $\beta = .12$, $p < .002$) but not Math grade. Additionally, Externalizing problems significantly negatively predicted both final Math grade ($B = -.57$, $SE = .22$, $\beta = -.13$, $p = .009$) and GPA ($B = -.05$, $SE = .02$, $\beta = -.14$, $p = .001$) and evidenced a trend towards significance in final

Language Arts grade ($B = -.37$, $SE = .20$, $\beta = -.09$, $p = .056$). Internalizing problems had a significant positive impact on final Language Arts grade ($B = .41$, $SE = .21$, $\beta = .10$, $p = .046$) and self-efficacy ($B = -.52$, $SE = .10$, $\beta = -.26$, $p < .001$).

Subsequently, the Bias-Corrected Percentile Bootstrapping approach was used to test whether Self-Efficacy mediated the relationship between mental health problems and final Language Arts grade, Math grade or GPA. The standardized indirect effect of Internalizing problems on Language Arts grade via Self-Efficacy was significant ($B = -.16$, $SE = .05$, 95% CI $[-.28, -.06]$, $p < .001$); additionally an indirect effect of Internalizing problems on GPA via Self-Efficacy was found ($B = -.01$, $SE = .01$, 95% CI $[-.02, -.01]$, $p = .002$). This suggests that in addition to the positive direct effect of Internalizing problems on Language Arts grade, it also has a significant and negative indirect effect on grade through its impact on Self-Efficacy. Additionally, with regards to GPA, this suggests while Internalizing problems do not directly influence GPA, they do have a significant and negative indirect effect on GPA through the impact on Self-Efficacy. Thus, when an adolescent's self-reported internalizing symptoms go up by 1, the indirect, mediated effect by self-efficacy is that Final Language Arts grade goes down by .16 and GPA goes down by .01 (Figure 11).

As this model was not nested within the original hypothesized moderation model, the model fit statistics were compared to assess for superior model fit. In examining, the AIC and BCC values, there were meaningful differences between the mediation model ($AIC = 159.48$, $BCC = 162.13$) and the moderation model ($AIC = 310.26$, $BCC = 314.70$) which suggested that the mediation model was a superior fit to the data.

Similarly, the NFI, CFI, and RMSEA statistics suggested a better fit to the data using a mediation model.

Additional Model Comparisons

Path analysis allows for samples to be split, whereby model fit is provided for the overall model, and then pathways are calculated separately for the targeted variable.

Thus, the model fit reflects the average of two groups while path coefficients are independently analyzed to provide insight into how the hypothesized model functions for each group. It is standard practice to utilize an N of at least 200 (Kline, 2011) for each group in order to have sufficient strength to test the model fit. Other alternative models were tested using the mediation model as the template given prior analyses indicated the superior fit of the mediation model.

As there was potential for significant differences between male and female students across a number of study variables, gender was tested as a moderator of the structural model. Individual parameters were examined to see if there were changes in significance or directionality of relationships. Ability and grade level continued to be controlled in the modeling analysis. This model had a significant chi-square ($\chi^2(48) = 91.17, p < .001$), which did not indicate adequate model fit. However, the model was found to be an acceptable fit to the data when examining other fit indices (CFI = .98, NFI = .95, RMSEA = .04). Examining the squared multiple correlations, it was estimated that for males 27.1% of the variance in GPA, 15.1% of the variance in final Language grade, and 14.9% of the variance in final Math grade was explained by the predictors in the model, while for females 29.3% of the variance in GPA, 20.4% of the variance in final Language grade, and 12.6% of the variance in final Math grade was explained by the

predictors in the model. The minimal difference between these predictions suggests that the relationships found in the overall model are strong. Of note, the mediation of internalizing by self-efficacy for final Language Arts was reduced to marginal significant for females ($B = -.10$, $SE = .07$, 95% CI $[-.28, .003]$, $p = .057$). These findings suggest that the hypothesized model, where self-efficacy mediates the negative impact of internalizing problems on academic outcomes, works similarly in male and female students.

As there was potential for significant differences between students who met “risk” (score of 15 or greater) criteria on the PSC across a number of study variables, being at risk on the PSC was tested as a moderator of the structural model. Individual parameters were examined to see if there were changes in significance or directionality of relationships. However, the hypothesized model was run in an exploratory manner only, given that under 200 students ($n=133$) met criteria for risk. Gender, ability, and grade level continued to be control variables in the following modeling analysis. This model had a significant chi-square ($\chi^2(60) = 89.08$, $p = .009$), which did not indicate adequate model fit. However, the model was found to be an acceptable fit to the data when examining other fit indices ($CFI = .98$, $NFI = .95$, $RMSEA = .03$). Examining the squared multiple correlations, it was estimated that for non-at-risk students, 26.9% of the variance in GPA, 16.8% of the variance in final Language grade, and 12.6% of the variance in final Math grade was explained by the predictors in the model, while for at-risk students 31.5% of the variance in GPA, 20.8% of the variance in final Language grade, and 15.8% of the variance in final Math grade was explained by the predictors in the model. The difference between these predictions suggests that the strength of relationships found in the overall model may not account similarly for the variance in each group. Of note,

however, is that there was no significant mediation of internalizing by self-efficacy for GPA ($B = -.10$, $SE = .01$, 95% CI $[-.03, .002]$, $p = .098$) or final Language Arts grade ($B = -.12$, $SE = .11$, 95% CI $[-.43, .04]$, $p = .124$) for students who met “risk” criteria on the PSC. However, the mediation remained significant in the non-at-risk sample for both GPA and final Language Arts grade. These findings suggest that the hypothesized model, where self-efficacy mediates the negative impact of internalizing problems on academic outcomes, works best in students whose mental health struggles are not as severe.

As there was potential for significant differences between students born within the US and those born outside of it across a number of study variables, immigrant status was tested as a moderator of the structural model. Individual parameters were examined to see if there were changes in significance or directionality of relationships. Gender, ability, and grade level continued to be control variables in the following modeling analysis. However, the hypothesized model was run in an exploratory manner only given that under 200 students ($n = 174$) were born outside the US. This model had a significant chi-square ($\chi^2(60) = 96.16$, $p = .002$), which did not indicate adequate model fit. However, the model was found to be an acceptable fit to the data when examining other fit indices ($CFI = .98$, $NFI = .95$, $RMSEA = .04$). Examining the squared multiple correlations, it was estimated that for students born outside the US, 29.7% of the variance in GPA, 19.9% of the variance in final Language grade, and 16.0% of the variance in final Math grade was explained by the predictors in the model, while for native born students, 31.6% of the variance in GPA, 26.1% of the variance in final Language grade, and 13.5% of the variance in final Math grade was explained by the predictors in the model. The difference between these predictions suggests that the strength of relationships found in

the overall model may not account similarly for the variance in each group. Specifically, there was no significant mediation of internalizing by self-efficacy for GPA ($B = -.007$, $SE = .01$, 95% CI $[-.03, .01]$, $p = .219$) for students born within the United States.

However, mediation effects remained in evidence for final Language Arts within the naturalized sample and mediation remained for both in those students born outside the US. These findings suggest that more research may be needed to understand how immigration status impacts the relationships between mental health, self-efficacy and academic outcomes.

Discussion

The skills conveyed in high school are essential for life success, and students who do not achieve these skills are likely to experience long-term negative consequences. Academic success can therefore be considered a core metric by which to measure the relative success of a youth's developmental trajectory. However, success in school is a complex phenomenon, shaped by individual abilities, cognitions, and behaviors, which are both intrinsic to students and reinforced by their external environment. Unfortunately, disparities in the United States educational system mean that many Latino adolescents are missing opportunities to develop their full potential. The goal of this project was to present a perspective on student engagement with academic achievement that emphasizes the role of the mental health and self-efficacy of Latino youth in their learning and academic success. The proposed models were based in the understanding of mental health as improved by an individuals' incorporation of concepts of general resilience. By focusing on what happens when students present a global sense of confidence in their coping ability across a range of situations, this study hoped to examine a potential pathway for positive intervention for, particularly, low-income Latino youth.

The results of this study indicated that mental health risk's well-documented negative impact on academic achievement outcomes are mediated by perceived general self-efficacy. This finding appears most significantly for the relationship between internalizing symptoms and final Language Arts grade, as well as GPA. Specifically, the current study found that when an adolescent's self-reported internalizing symptoms go up by 1, the indirect, mediated effect by self-efficacy is that final Language Arts grade goes down by .16 and GPA goes down by .01. Broadly, the effect sizes reflecting these

findings are small, but represent present and persistent relationships in an understudied sample of high-risk youth.

This study was able to find support for mediation rather than moderation in both hypothesis 1 and hypothesis 2. It appears that the general perceived self-efficacy of Latino students in a majority minority, low-income urban school is a pathway by which mental health, and specifically internalizing problems, evidence a negative impact on academic outcomes. These findings reflect those of prior research indicating that self-efficacy beliefs can contribute to school success in Latino youth (Niehaus et al., 2012) and that poor mental health can impede achievement (Gall et al., 2000; Murphy et al., 1989). Further, the results of the current study expand on prior research indicating a mediational relationship between depressive symptoms and academic self-efficacy (Zychinski & Polo, 2012), to include wider indices of mental health and a more global perception of self-efficacy.

Additionally, the current study confirms prior indications that there is a particularly high risk for internalizing, externalizing and attention problems (Abraído-Lanza et al., 2005; Potochnick & Perreira, 2010; Talashek et al., 2004; Twenge & Nolen-Hoeksema, 2002) in Latino youth that is largely unmet by mental health services (Kataoka et al., 2002; Leslie et al., 2003). In the current sample of 485 Latino students, 29% endorsed enough problems of mental health to be broadly considered at risk, including 36% indicating internalizing problems, 11% indicating externalizing and 19% at-risk for attention problems. While the Pediatric Symptom Checklist is a screener for risk, 68% of the children identified as PSC positive will also be identified as impaired by an experienced clinician (Jellinek et al., 1988). Of note, there was a significant

correlation between internalizing and externalizing problems and the pathway between externalizing problems and academic outcomes was both strong and negative. This finding links the current study with prior longitudinal research documenting “cascading” effects from early aggressive/disruptive behavior through impairments in academic and social competence, to symptoms of depression and anxiety (Burt & Roisman, 2010).

Externalizing problems have been found to dually impact children’s social and learning experiences, as aggressive children may lack the competencies to interact positively with their peers (Barker et al., 2008; Snyder et al., 2008) and to follow teachers’ instructions carefully (Crosnoe et al., 2010; Sonnenschein, Stapleton, & Benson, 2010). However, given that academic achievement, including basic math, spelling/early writing and reading skills have been found to also be weaker in students with significant internalizing problems (Lundy, Silva, Kaemingk, Goodwin, & Quan, 2010; Rapport, Denney, Chung, & Hustace, 2001), it was surprising to see positive direct pathways between internalizing problems and academic outcomes. It is posited that internalizing behaviors often go unnoticed by others in a child’s social environment, especially in the classroom as teachers may not recognize internalizing behavior problems compared to students whose behavior is more disruptive to classroom routines and direct instruction (Gresham & Kern, 2004). Externalizing behavior therefore may have a pronounced effects on teachers’ judgments of students’ achievement such that teachers’ perceptions of students’ classroom behavior are reflected in school grades (Loveland, Lounsbury, Welsh, & Buboltz, 2007). Indeed, externalizing problems were found to be more strongly associated with achievement than was depression (McLeod, Uemura, & Rohrman, 2012).

The findings of the present study suggest that, perhaps particularly in a low-income majority minority population, students with externalizing problems are penalized for their behaviors while students with internalizing problems are rewarded for theirs. However, this positive boost is only felt when students' are not also evidencing low self-efficacy. Thus, a general sense of agency is here found to be a mechanism by which internalizing problems are expressed on Language Arts grade and GPA.

Specifically, student behaviors directly influence grade (e.g. students who externalize negative mental health are punished while students who internalize either benefit from their lack of misbehavior or have their mental health issues go unnoticed). However, when a students' global mindset of agency is accounted for, those students who internalize and who report lower self-efficacy suffer negative academic consequences. This suggests that students' poor mental health negatively impacts their belief in their ability to achieve their goals and, for Language Arts and GPA, their actual ability to achieve. That this same pattern was not found significantly in Math grades may be a reflection of different issues of ability and teacher evaluation for Mathematics. That the construct of Math "ability" accounted for less variance in both Math grade and GPA than did Language Arts "ability" suggests that Math may require a more specific control. In furtherance of this, Math grade is likely derived more greatly from testing than is Language Arts, and thus General Self-Efficacy may not have as much impact on the ability to take such content specific tests. Alternatively, given the relationship between Math and Language Arts grade, it is possible that the effect on Math grade is not as significant because self-efficacy has already impacted language ability (a necessary skill for Math achievement) and as a result all the variance left is to innate Math ability.

Limitations

This study includes several limitations. Firstly, analysis of sample characteristics found some significant demographic differences between the samples of students used in the present data analyses and those who were not included. The analysis sample is also but a small reflection of the school population as whole as it represents only approximately 35% of the school. The distinction between sample and school occurred because students did not complete the survey at all, were missing pertinent information, or they were not identified as Latino/Hispanic. While some of these differences were consistent with sample selection such as greater percentage born outside the U.S. or classified as Limited English Proficient, others differences can only be explained through conjecture. For example, that students in the analysis sample were statistically younger may reflect greater rates of compliance in younger individuals. Additionally, while the observed difference in GPA and final grades were not clinically meaningful, they do suggest a need to replicate the model in samples of students who are not significantly different from their peers for demographic and outcome variables.

To the point of sample selection, students in this study were from a high school that was predominantly low SES and had a nearly overwhelming majority percentage of Latino students in the school (82.6%). The findings of the current study may differ for Latino adolescents in schools that are more or less (i.e., where Latino students are in the minority) ethnically diverse. Also, the ethnic identity of Latino was here used as a convenience term and the Latino population in the United States is neither homogenous nor without a diverse range of experiences not adequately identified or addressed via

such terminology. Therefore, it will be critical for future studies to explore these pathways in more broad and detailed settings.

Finally, the construct of “ability” was created and utilized by this study in an effort to control for baseline academic competence. Ideally, equivalent prior scores would be available to be used as covariates to control for academic competence (e.g. IQ scores or standardized achievement scores). That said, there is no doubt that experiences over the course of years of testing may affect expectancies and effort, resulting in scores that likely underestimate “ability.” Thus, even statistically appropriate covariates for academic competence must take into account the psychological and reinforcement component of those scores.

Implications and Future Directions

Future research should utilize these results to examine how these effortful dynamics may contribute to the development of durable academic and emotional assets, such as self-regulated learning and proactive coping; as well as an academic identity that supports Latino students’ mental health and success in school. Given that children who evidence skills of self-control, persistence, attentiveness, independence, and responsibility at kindergarten entry can be predicted to have future academic success (Duncan et al., 2007; Li-Grining, Votruba-Drzal, Maldonado-Carreño, & Haas, 2010; Pagani, Fitzpatrick, Archambault, & Janosz, 2010; Wight et al., 2005), it is imperative to study the longitudinal impact of self-efficacy. The stability and variation of these constructs might be explored in a longitudinal study whereby a group of Latino students are followed from elementary to high school for the purpose of evaluating the cumulative impact on academic achievement of self-efficacy, mental health and their interaction. The

potential for positive intervention based on these findings is also significant, and therefore future research should evaluate if and how Latino youths' self-efficacy might be increased, particularly for youth at-risk for or evidencing internalizing problems. Within this line of research, it may be important to understand if a universal prevention program confers the benefit or if general self-efficacy is better encouraged in targeted groups. Regardless, given both the direct and indirect benefits of general self-efficacy evidenced here, future research should explore facets of these findings both in Latino and other populations.

In addition to content knowledge and academic skills, students must develop sets of behaviors, skills, attitudes, and strategies that are crucial to academic performance in their classes. Learning is the interplay between cognitive and social-emotional factors, and intelligence is product of the environment and mental processes. It stands to reason that when students are attempting to learn new content and competencies, impairments in their cognitive and/or social-emotional functioning would interfere with learning, retention of what was learned, and application of what was learned.

Therefore, the findings of this study suggest some potential implications for both policy and practice. When policy makers think of so-called failing schools, they must take note that such schools are populated by youth who are often in crisis and in need of social-emotional support. Targeting the students' self-efficacy beliefs reflects an area of intervention with potentially broad outcomes including achievement, cognitive and social-emotional factors, and mental processes. It is imperative that interventions are guided by research that is tailored to specific school populations, particularly ethnic minority groups with a history of risk for failure. Such interventions ought to also take

note of such potentially complicated or even counterintuitive meditational pathways as have been suggested by the present study when being designed.

Summary and Conclusion

Broadly, self-efficacy beliefs are important because they can influence other cognitions, affect, and behaviors and may also help to deal with stressful circumstances (Bandura, 1997). General self-efficacy (GSE) reflects individuals' belief in their ability to succeed across situations and domains of functioning. In the big picture, self-efficacy beliefs can aid an individual in persevering despite difficulties and setbacks (Maddux & Volkmann, 2010). The present study found that the impact of students' mental health risk on their grades, particularly internalizing problems was mediated by their sense of self-efficacy. The coping behaviors that adolescents engage in to deal with stress may help explain why certain adolescents experiencing stressors adapt effectively. Thus, if general self-efficacy can be conceptualized, in part, as a positive interpretative coping strategy, then it stands to reason that this construct might alter the negative impact of poor mental health on achievement outcomes. The same agentic resources that may shape students' reactions to challenges and obstacles may as well reflect positively on teachers' perception of student effort and protect against the negative impact of mental health on academic success. The current study adds to the field suggesting that academic self-efficacy is a predictor of school success for Latino students (Niehaus et al., 2012; Zuffianò et al., 2013; Zychinski & Polo, 2012). Ultimately, the global beliefs that adolescents hold regarding their ability to succeed may be the key to their development of durable academic and emotional assets and provide support for positive teacher perceptions of their character. Finally, such interventions that would target a global sense

of self-efficacy are modifiable across populations, scalable so as to present an opportunity to target at the micro level or universally buffer at the school level. This presents an important potential area for intervention that can and ought to be explored in furtherance of the goal of encouraging school achievement in at-risk populations.

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Tables

Table 1 Comparison of Sample Characteristics: Full School, Survey & Grade Sample, and Analysis Sample

		School <i>N</i> =1397	Survey & Grade Sample <i>N</i> =780		Analysis Sample <i>N</i> =493		
		<i>N</i> (%)	<i>N</i> (%)		<i>N</i> (%)		
Gender							
	Male	728(52.1%)	391(50.1%)		242 (49.1%)		
	Female	669(47.9%)	389(49.9%)		251(50.9%)		
Grade Level							
	9 th grade	467(33.4%)	275(35.3%)		184(37.3%)		
	10 th grade	335(24.0%)	199(25.5%)		139(28.2%)		
	11 th grade	311(22.3%)	159(20.4%)		97(19.7%)		
	12 th grade	284(20.3%)	147(18.8%)		73(14.8%)		
Race (according to HS)							
	White	9(.6%)	5(.6%)		--		
	Black	224(16%)	102(13.1%)		--		
	Hispanic	1154(82.6%)	669(85.8%)		493(100%)		
	Other	10(.7%)	4(.5%)		--		
Origin							
	South America	7(.5%)	5(.6%)		4(.8%)		
	Central America	96(6.9%)	49(6.3%)		33(6.7%)		
	Caribbean	159(11.4%)	102(13.1%)		60(12.2%)		
	Mexico	165(11.8%)	97(12.4%)		78(15.8%)		
	Africa	17(1.2%)	6(.8%)		--		
	Eurasia	1(.1%)	--		--		
	USA	948(68.1%)	521(66.8%)		318(64.5%)		
Classification							
	No Classification	1136(81.3%)	655(84.0%)		493(100%)		
	Classification	261(18.7%)	125(16.0%)		--		
Support (504 or LEP)							
	No support status	1260 (90.2%)	700(89.7)		432(87.6%)		
	Support status	137(9.8%)	80(10.3)		61(12.4%)		
Meal Status							
	Full Price	126(9.0%)	78(10%)		34(6.9%)		
	Reduced	88(6.3%)	51(6.5%)		29(5.9%)		
	Free Price	1183(84.7%)	651(83.5%)		430(87.2%)		
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age		15.95	1.31	15.83	1.30	15.68	1.28
Final Grade. LANG		74.72	9.64	75.70	9.52	75.33	10.04
Final Grade. MATH		75.68	10.90	76.21	10.73	75.63	10.87
GPA (unweighted)		2.28	0.81	2.33	0.80	2.34	0.82

Table 2 Descriptive Statistics of quarter and final Language Arts and Math grades ($N=493$)

	Analysis Sample $N= 493$				
	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>Skewness</i>	<i>Kurtosis</i>
1 st Quarter Language Arts Grade	74.05	11.96	50 - 100	-.27	-.59
2 nd Quarter Language Arts Grade	74.75	11.93	50 - 100	-.35	-.44
3 rd Quarter Language Arts Grade	75.74	11.42	50 - 99	-.51	-.21
4 th Quarter Language Arts Grade	76.77	12.73	50 - 100	-.42	-.51
Final Language Arts Grade	75.33	10.04	50 - 98.50	-.22	-.23
1 st Quarter Math Grade	77.52	10.98	50 - 100	-.42	-.41
2 nd Quarter Math Grade	75.65	12.66	50 - 100	-.39	-.57
3 rd Quarter Math Grade	75.56	13.03	50 - 100	-.41	-.64
4 th Quarter Math Grade	73.80	14.03	50 - 100	-.21	-1.00
Final Math Grade	75.63	10.87	50 - 98.50	-.25	-.65

Table 3 Descriptive Statistics of Continuous Predictor Variables (N=493)

	Analysis Sample N=493				
	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>Skewness</i>	<i>Kurtosis</i>
General Self Efficacy	30.00	4.99	10 - 40	-.38	.42
Pediatric Symptom Checklist	11.53	5.62	0 - 32	.38	.23
PSC – Internalizing	3.67	2.39	0 - 10	.39	-.44
PSC – Externalizing	3.33	2.58	0 - 14	1.08	1.46
PSC – Attention Problems	4.54	2.29	0 - 10	.03	-.43

Table 4 Descriptive Statistics of Continuous Predictor Variables subsequent to removal of outliers ($N=485$)

	Analysis Sample $N=485$				
	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>Skewness</i>	<i>Kurtosis</i>
General Self Efficacy	30.10	4.82	16 - 40	-.16	-.27
Pediatric Symptom Checklist	11.39	5.43	0 – 26.71	.22	-.24
PSC – Internalizing	3.65	2.37	0 - 10	.37	-.45
PSC – Externalizing	3.21	2.39	0 - 11	.80	.24
PSC – Attention Problems	4.53	2.28	0 - 10	.02	-.44

Table 5A Final Language Arts and Math grade, unweighted GPA and Self-Efficacy by Demographic Variables (N=485)

		Final Grade Language Arts		Final Grade Math		GPA		General Self- Efficacy	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Gender									
	Male	73.77	10.23	74.12	10.73	2.20	.83	30.58	4.71
	Female	76.84**	9.57	77.06**	10.74	2.46***	.79	29.64*	4.88
Grade Level									
	9 th grade	73.72	10.32	74.27	10.71	2.09***	.93	29.46	5.12
	10 th grade	75.10	9.49	74.25	10.92	2.42	.72	30.64	4.65
	11 th grade	79.45***	10.66	79.61***	10.29	2.57	.75	30.35	4.26
	12 th grade	74.44	7.64	76.31	10.45	2.48	.64	30.36	4.95
Immigrant Status									
	Born Outside the US	75.50	10.32	75.22	11.28	2.30	.86	30.68	4.86
	Born in the US	75.26	9.84	75.85	10.57	2.36	.80	29.78*	4.77
Support									
	No 504 Plan or LEP	76.15	9.64	75.97	10.83	2.42	.78	29.96	4.86
	504 Plan or LEP	69.76***	10.77	73.25	10.57	1.76***	.89	31.10	4.43

Note. *p<.05, **p<.01, ***p<.001

Table 5B Mental Health Total Score and Subscores by Demographic Variables ($N=485$)

		PSC – Total Score		PSC – Internalizing		PSC – Externalizing		PSC – Attention	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Gender									
	Male	11.079	5.73	3.10	2.37	3.53	2.49	4.44	2.38
	Female	11.68	5.13	4.17***	2.26	2.91***	2.27	4.61	2.17
Grade Level									
	9 th grade	11.46	5.49	3.72	2.42	3.38	2.53	4.36	2.21
	10 th grade	11.25	5.02	3.52	2.18	3.14	2.08	4.60	2.31
	11 th grade	11.66	5.62	3.53	2.14	3.28	2.67	4.85	2.25
	12 th grade	11.07	5.86	3.86	2.87	2.85	2.22	4.37	2.40
Immigrant Status									
	Born Outside the US	10.81	5.47	3.47	2.139	3.24	2.48	4.10	2.39
	Born in the US	11.71	5.39	3.75	2.49	3.20	2.35	4.77**	2.18
Support									
	No 504 Plan or LEP	11.65	5.41	3.72	2.41	3.29	2.44	4.65	2.25
	504 Plan or LEP	9.54	5.24	3.16	1.98	2.71	1.98	3.67**	2.32

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 6 Correlations Among All Study Variables ($N=485$)

	1	2	3	4	5	6	7	8	9
1. Final Language Arts Grade	--	--	--	--	--	--	--	--	--
2. Final Math Grade	.59***	--	--	--	--	--	--	--	--
3. GPA Unweighted	.79***	.78***	--	--	--	--	--	--	--
4. Language Arts “Ability”	.35***	.29***	.48***	--	--	--	--	--	--
5. Math “Ability”	.25***	.17*	.32***	.54***	--	--	--	--	--
6. General Self-Efficacy	.13**	.06	.13**	-.02	-.04	--	--	--	--
7. PSC–Total Score	-.05	-.10*	-.09 ^t	.12**	.09 ^t	-.24***	--	--	--
8. PSC–Internalizing	.06	.01	.01	.12**	.08 ^t	-.28***	.75***	--	--
9. PSC–Externalizing	-.11*	-.16**	-.17***	.04	.03	-.12*	.75***	.27***	--
10. PSC–Attention	-.04	-.07	-.04	.13**	.09*	-.18***	.82***	.45***	.46***

Note. ^t $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 7 PROCESS procedure for moderation of total mental health impact on final Language Arts grade by Self-Efficacy($N=485$)

	<i>B</i>	<i>SE B</i>	<i>p</i>	<i>Lower Limit Confidence Interval</i>	<i>Upper Limit Confidence Interval</i>
(Constant)	45.72	3.57	.000	38.70	52.74
GSE	.27	.09	.002	.10	.45
PSC	-.12	.08	.124	-.28	.03
Interaction	-.02	.02	.203	.05	.01
Ability Control	5.36	.71	.000	3.97	6.75
Gender	2.87	.84	.001	1.23	4.52
Grade 11 Control	4.36	1.05	.000	2.31	6.42

Table 8 PROCESS procedure for moderation of total mental health impact on final Math grade by Self-Efficacy ($N=485$)

	<i>B</i>	<i>SE B</i>	<i>p</i>	<i>Lower Limit Confidence Interval</i>	<i>Upper Limit Confidence Interval</i>
(Constant)	57.86	5.63	.000	46.80	68.91
GSE	.11	.10	.262	-.09	.32
PSC	-.22	.09	.016	-.40	-.04
Interaction	-.01	.02	.616	-.04	.03
Ability Control	2.97	1.11	.008	.78	5.14
Gender	3.15	.96	.001	1.26	5.04
Grade 11 Control	5.30	1.91	.000	2.95	7.64

Table 9 PROCESS procedure for moderation of total mental health impact on GPA by Self-Efficacy ($N=485$)

	<i>B</i>	<i>SE B</i>	<i>p</i>	<i>Lower Limit Confidence Interval</i>	<i>Upper Limit Confidence Interval</i>
(Constant)	-1.34	.39	.001	-2.10	-.57
GSE	.02	.007	.008	.01	.03
PSC	-.02	.006	.002	-.03	-.007
Interaction	.00	.001	.973	-.002	.002
Gender	.20	.06	.002	.08	.33
LA Ability Control	.57	.06	.000	.45	.70
MA Ability Control	.15	.09	.086	-.02	.32
Grade 9 Control	-.26	.07	.000	-.39	-.13

Table 10 Summary of hierarchical linear regression analysis predicting final Language Arts grade (N=485)

	Model 1			Model 2			Model 3			Model 4			Model 5		
Predictor Variable	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>B</i>	<i>SE</i> <i>B</i>	<i>B</i>	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>B</i>	<i>SE</i> <i>B</i>	β
(Constant)	45.98 ***	3.67		46.86 ***	3.59		45.91 ***	3.60		45.96 ***	3.57		45.72 ***	3.57	
Ability Control	5.79* **	.72	.35	5.20* **	.71	.31	5.38* **	.71	.32	5.35* **	.71	.32	5.36* **	.71	.32
Gender				2.48* *	.84	.12	2.56* *	.84	.13	2.77* *	.84	.14	2.87* *	.84	.14
Grade 11 Control				4.34* **	1.06	.17	4.37* **	1.05	.17	4.29* **	1.04	.17	4.36* **	1.05	.17
PSC Total							-.17* *	.08	-.10	-.12	.08	-.06	-.12	.08	-.07
GSE										.27** **	.09	.13	.27** **	.09	.13
PSC*GSE													-.02	.02	-.05
R ²		.12			.16			.17			.19			.19	
R ² Change		.12			.04			.01			.02			.003	
F for R ² change		65.11***			12.07***			5.01*			8.94**			1.62	

Note. ^t p<.10, *p<.05, **p<.01, ***p<.001

Table 11 Summary of hierarchical linear regression analysis predicting final Math grade ($N=485$)

	Model 1			Model 2			Model 3			Model 4			Model 5		
Predictor Variable	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
(Constant)	60.82***	5.77		59.34***	5.64		57.98***	5.62		57.91***	5.62		57.86***	5.63	
Ability Control	2.92*	1.13	.12	2.72*	1.11	.11	2.97* *	1.11	.12	2.97* *	1.11	.12	2.97* *	1.11	.12
Gender				2.89* *	.96	.13	3.01* *	.95	.14	3.10* *	.96	.14	3.15* *	.96	.15
Grade 11 Control				5.20* **	1.20	.19	5.30* **	1.19	.20	5.26* **	1.19	.19	5.30* **	1.19	.20
PSC Total							-.24**	.09	-.12	-.22*	.09	-.11	-.22*	.09	-.11
GSE										.11	.10	.05	.12	.10	.05
PSC*GSE													-.01	.02	-.02
R^2		.01			.06			.07			.07			.07	
R^2 Change		.01			.05			.015			.002			.000	
F for R^2 change		6.64*			13.44***			7.56**			1.12			.25	

Note. ^t $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 12 Summary of hierarchical linear regression analysis predicting GPA (N=485)

	Model 1			Model 2			Model 3			Model 4			Model 5		
Predictor Variable	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>B</i>	<i>SE</i> <i>B</i>	<i>B</i>	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>B</i>	<i>SE</i> <i>B</i>	β
(Constant)	-1.50 ***	.40		-1.15 **	.39		-1.31 **	.39		-1.34 **	.39		-1.34 **	.39	
Language Ability Control	.60** *	.07	.43	.56***	.06	.40	.58 ***	.06	.42	.57 ***	.06	.42	.57 ***	.06	.42
Math Ability Control	.16 ^t	.09	.08	.14	.09	.07	.14 ^t	.09	.08	.15 ^t	.09	.08	.15 ^t	.09	.08
Gender				.18**	.07	.11	.19 **	.06	.11	.20 **	.06	.12	.20 **	.06	.12
Grade 9 Control				-.28 ***	.07	-.17	-.28 ***	.07	-.16	-.26 ***	.07	-.15	-.26 ***	.07	-.15
PSC Total							-.02 ***	.01	-.15	-.02**	.01	-.12	-.02 **	.01	-.12
GSE										.02**	.01	.11	.02 **	.01	.11
PSC*GSE													.00	.00	.00
R ²	.23			.27			.29			.30			.30		
R ² Change	.23			.04			.02			.01			.00		
F for R ² change	73.43***			12.18***			14.80***			7.46**			.00		

Note. ^t p<.10, *p<.05, **p<.01, ***p<.001

Table 13 Moderation model path analysis expressing unstandardized path coefficients of structural model ($N=485$)

From	To	<i>Estimate</i>	<i>SE</i>	<i>CR</i> [^]	<i>p</i>
Self-Efficacy	Language Arts Grade	0.312	0.085	3.65	<.001
	Math Grade	0.166	0.097	1.699	0.089
	GPA	0.022	0.007	3.344	<.001
Internalizing problems	Language Arts Grade	0.409	0.203	2.021	0.043
	Math Grade	0.258	0.231	1.117	0.264
	GPA	0.015	0.016	0.96	0.337
Externalizing problems	Language Arts Grade	-0.37	0.197	-1.876	0.061
	Math Grade	-0.582	0.225	-2.588	0.01
	GPA	-0.049	0.015	-3.225	0.001
Attention problems	Language Arts Grade	-0.259	0.22	-1.175	0.24
	Math Grade	-0.182	0.251	-0.725	0.469
	GPA	-0.008	0.017	-0.47	0.639
GSE x Internalizing	Language Arts Grade	-0.018	0.039	-0.447	0.655
	Math Grade	0.063	0.045	1.421	0.155
	GPA	0.002	0.003	0.565	0.572
GSE x Externalizing	Language Arts Grade	0.003	0.038	0.084	0.933
	Math Grade	0.027	0.044	0.608	0.543
	GPA	0.002	0.003	0.597	0.55
GSE x Attention	Language Arts Grade	-0.03	0.045	-0.661	0.508
	Math Grade	-0.103	0.051	-2.004	0.045
	GPA	-0.002	0.003	-0.698	0.485
<i>Controls</i>					
Gender	Language Arts Grade	2.416	0.859	2.812	0.005
	Math Grade	2.488	0.98	2.539	0.011
	GPA	0.178	0.066	2.699	0.007
	Internalizing problems	1.002	0.186	5.39	<.001
	Externalizing problems	-0.65	0.191	-3.404	<.001
Grade Level	Language Arts Grade	3.469	0.691	5.022	<.001
	Math Grade	3.647	0.769	4.741	<.001
	GPA	-0.234	0.033	-6.993	<.001
Language Ability	Language Arts Grade	3.325	0.613	5.421	<.001
	GPA	0.346	0.038	9.072	<.001
Math Ability	Math Grade	1.175	0.964	1.218	0.223
	GPA	0.127	0.054	2.361	0.018

[^]Critical ratio is the equivalent of the *t*-statistic in regression model to compute the statistical significance of the coefficient estimates

Table 14 Mediation model path analysis expressing unstandardized path coefficients of structural model ($N=485$)

From	To	<i>Estimate</i>	<i>SE</i>	<i>CR</i> [^]	<i>p</i>
Self-Efficacy	Language Arts Grade	0.302	0.088	3.423	<.001
	Math Grade	0.133	0.099	1.345	0.179
	GPA	0.021	0.007	3.101	0.002
Internalizing problems	Language Arts Grade	0.409	0.205	1.993	0.046
	Math Grade	0.176	0.229	0.769	0.442
	GPA	0.011	0.016	0.702	0.483
	Self-Efficacy	-0.522	0.1	-5.249	<.001
Externalizing problems	Language Arts Grade	-0.373	0.195	-1.909	0.056
	Math Grade	-0.568	0.218	-2.607	0.009
	GPA	-0.048	0.015	-3.248	0.001
	Self-Efficacy	-0.03	0.099	-0.308	0.758
Attention problems	Language Arts Grade	-0.328	0.218	-1.505	0.132
	Math Grade	-0.321	0.243	-1.321	0.187
	GPA	-0.015	0.017	-0.874	0.382
	Self-Efficacy	-0.11	0.112	-0.984	0.325
<i>Controls</i>					
Gender	Language Arts Grade	2.094	0.853	2.456	0.014
	Math Grade	2.049	0.952	2.151	0.031
	GPA	0.157	0.065	2.419	0.016
	Internalizing problems	-0.7	0.191	-3.664	<.001
	Externalizing problems	0.991	0.187	5.31	<.001
Grade Level	Language Arts Grade	3.546	0.688	5.153	<.001
	Math Grade	3.129	0.756	4.137	<.001
	GPA	-0.234	0.034	-6.989	<.001
Language Ability	Language Arts Grade	5.373	0.685	7.849	<.001
	Math Grade	5.959	0.871	6.843	<.001
	GPA	0.627	0.057	11.082	0.019
Math Ability	Math Grade	-2.509	1.066	-2.353	0.019
	GPA	0.003	0.056	0.062	0.951

[^]Critical ratio is the equivalent of the *t*-statistic in regression model to compute the statistical significance of the coefficient estimates

Figures

Figure 1. Proposed moderation model for hypothesis 1- The impact of general self-efficacy on overall mental health risk and academic outcomes

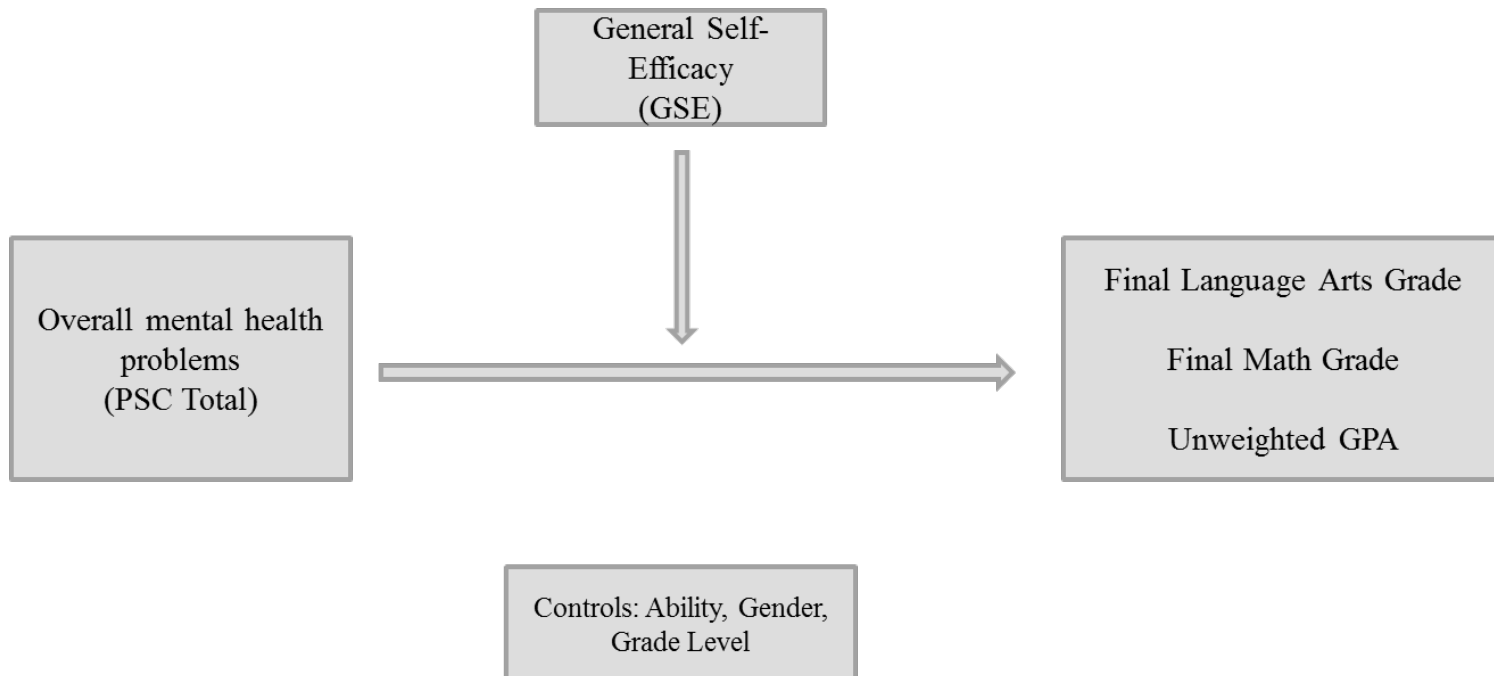


Figure 2. Proposed mediation model for hypothesis 1- The impact of general self-efficacy on overall mental health risk and academic outcomes

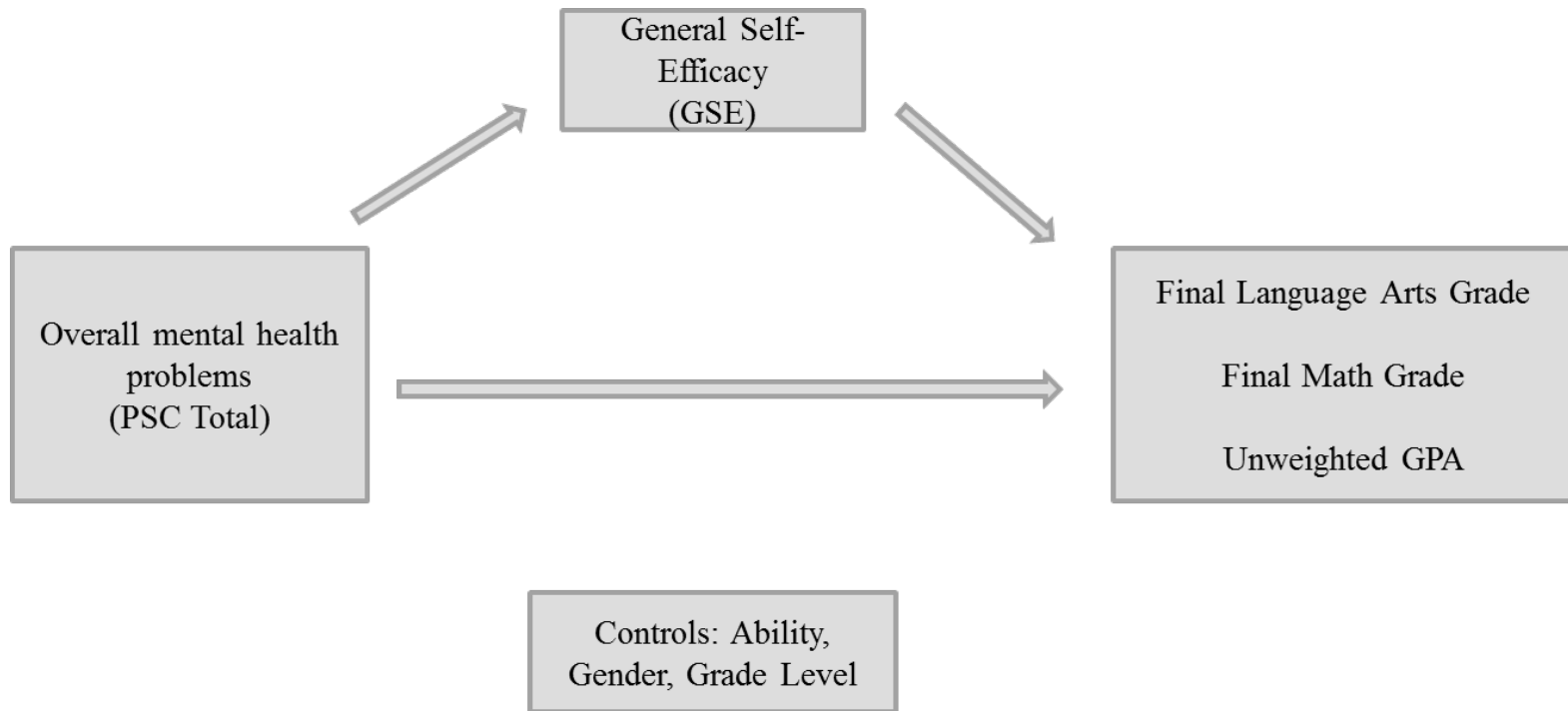


Figure 3. Proposed moderation model for hypothesis 2 - The impact of general self-efficacy on mental health risk subscales and academic outcomes

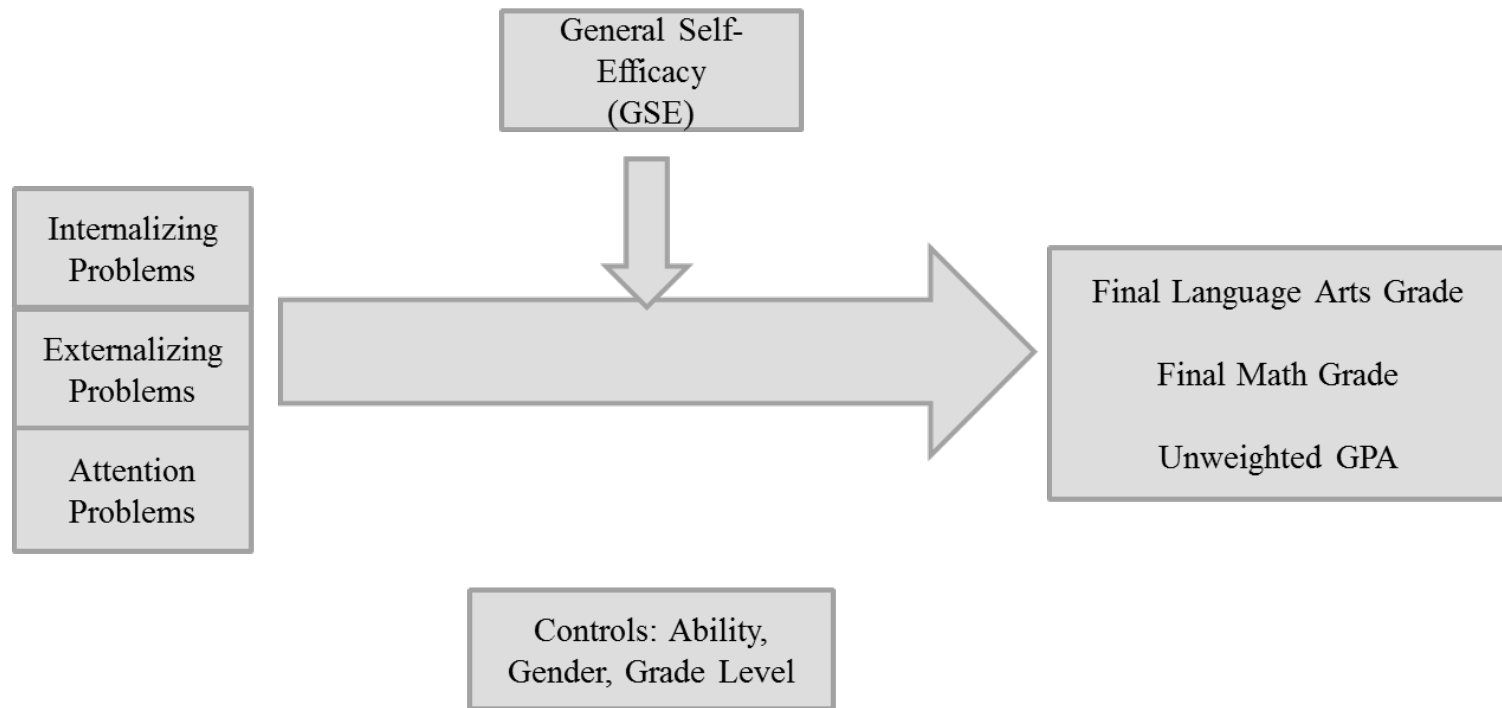


Figure 4. Proposed mediation model for hypothesis 2 - The impact of general self-efficacy on mental health risk subscales and academic outcomes

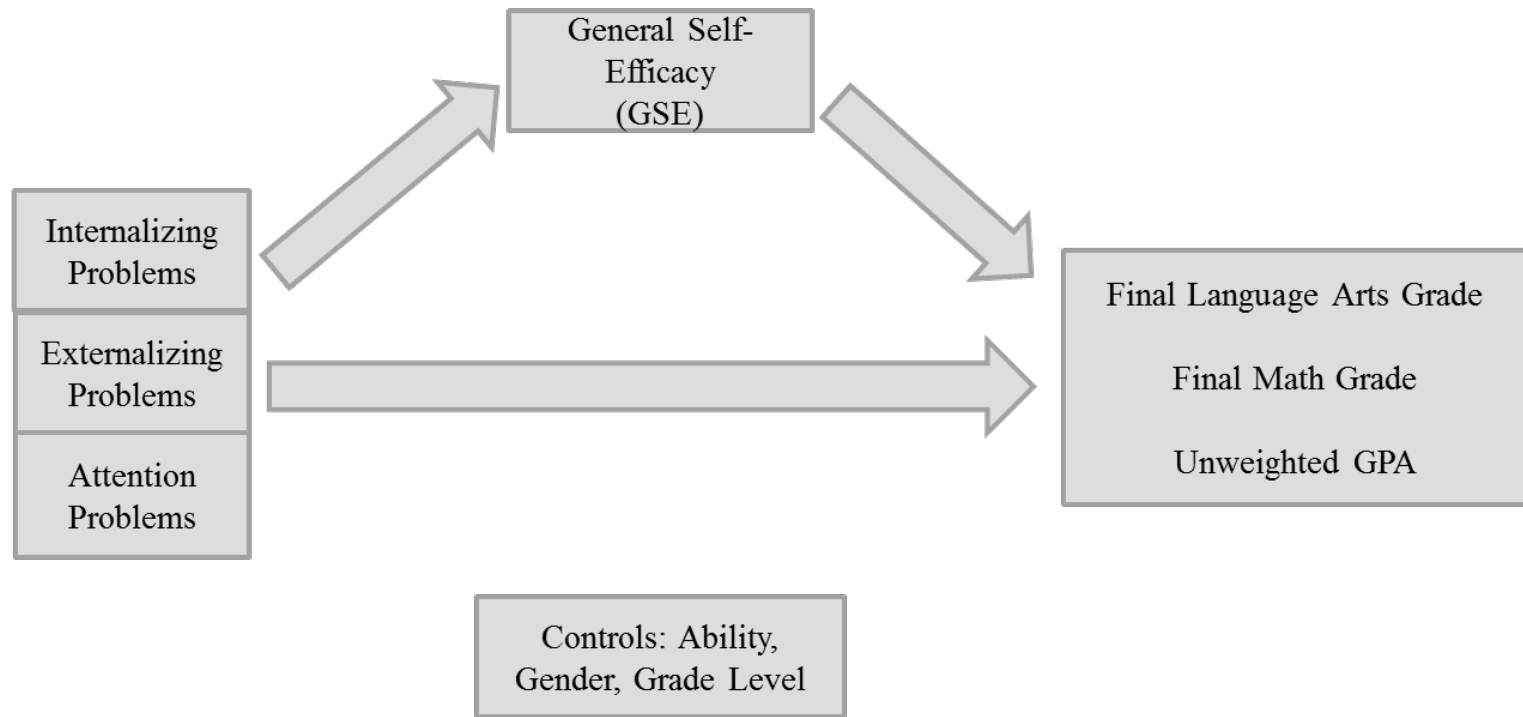


Figure 5. Mediation Model utilizing PROCESS analysis for the impact of general self-efficacy on mental health risk and final Language Arts grade

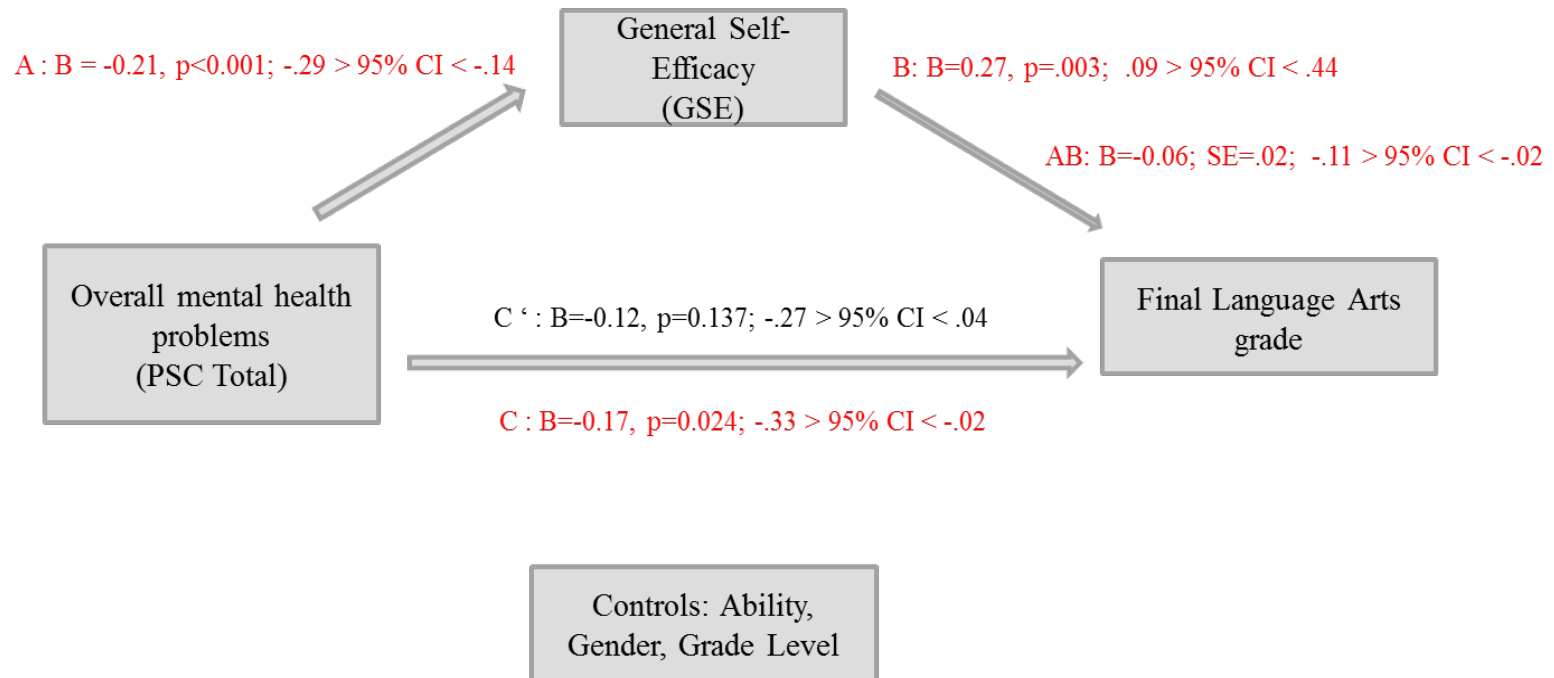


Figure 6. Mediation Model utilizing PROCESS analysis for the impact of general self-efficacy on mental health risk and final Math grade

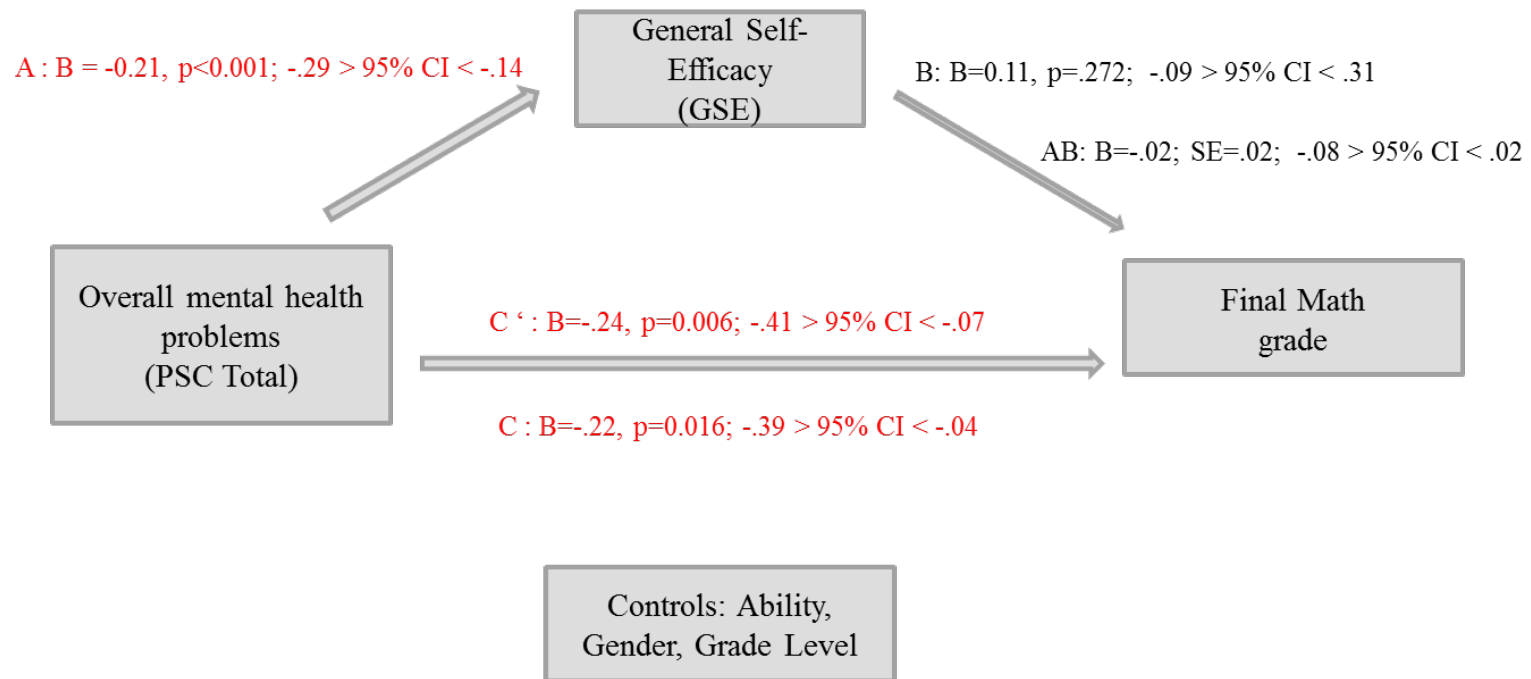


Figure 7. Mediation Model utilizing PROCESS analysis for the impact of general self-efficacy on mental health risk and GPA

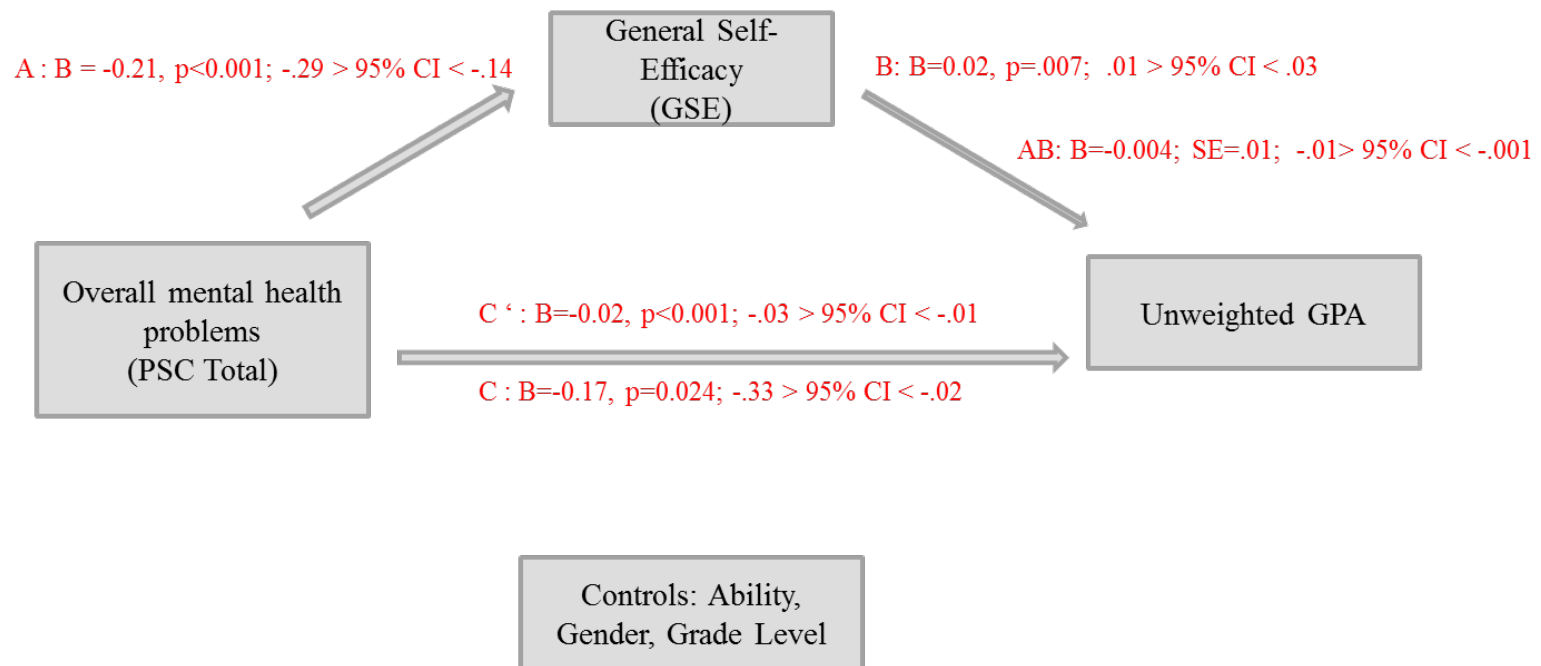


Figure 8. Moderation model testing hypothesis 2 for GPA, Final Language Arts and Math Grade unstandardized path coefficients of structural model

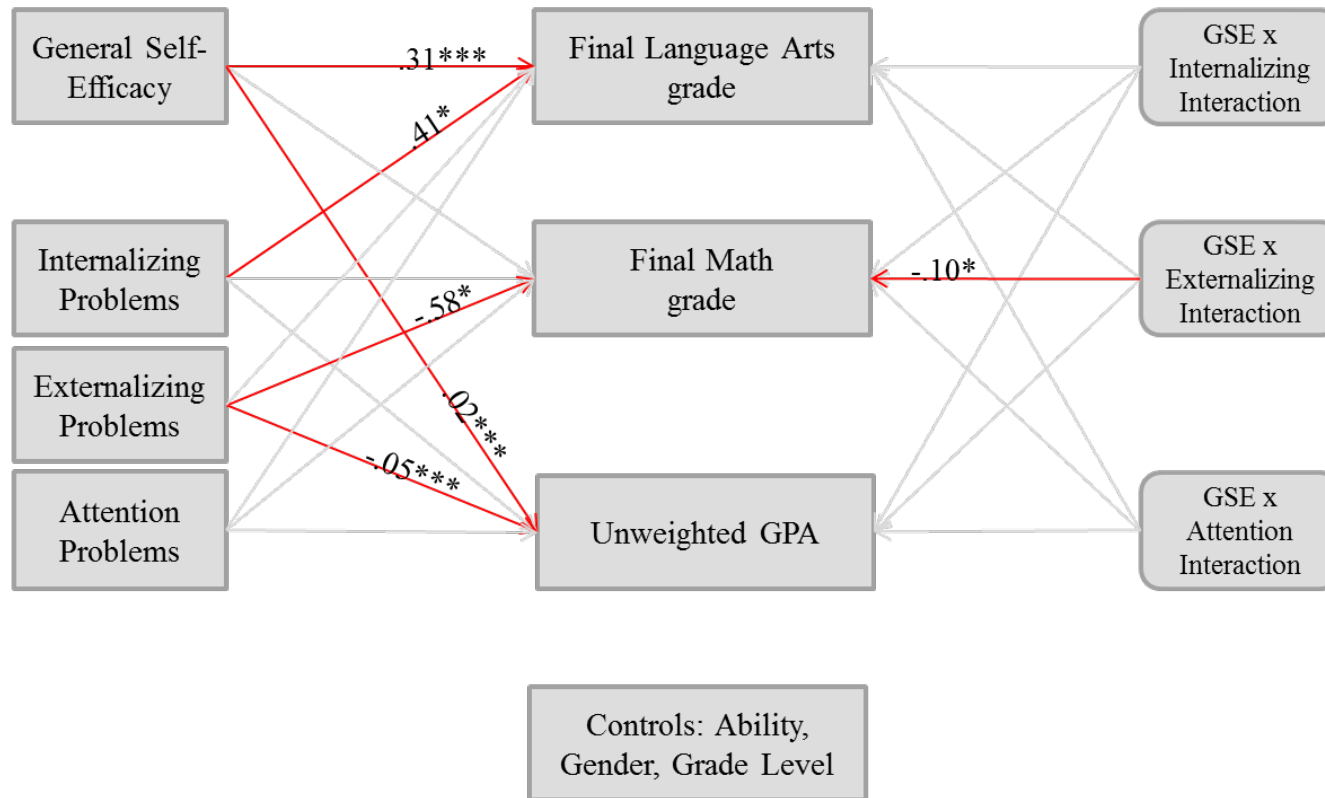


Figure 9. Mediation model testing hypothesis 2 for GPA, Final Language Arts and Math Grade unstandardized path coefficients of structural model

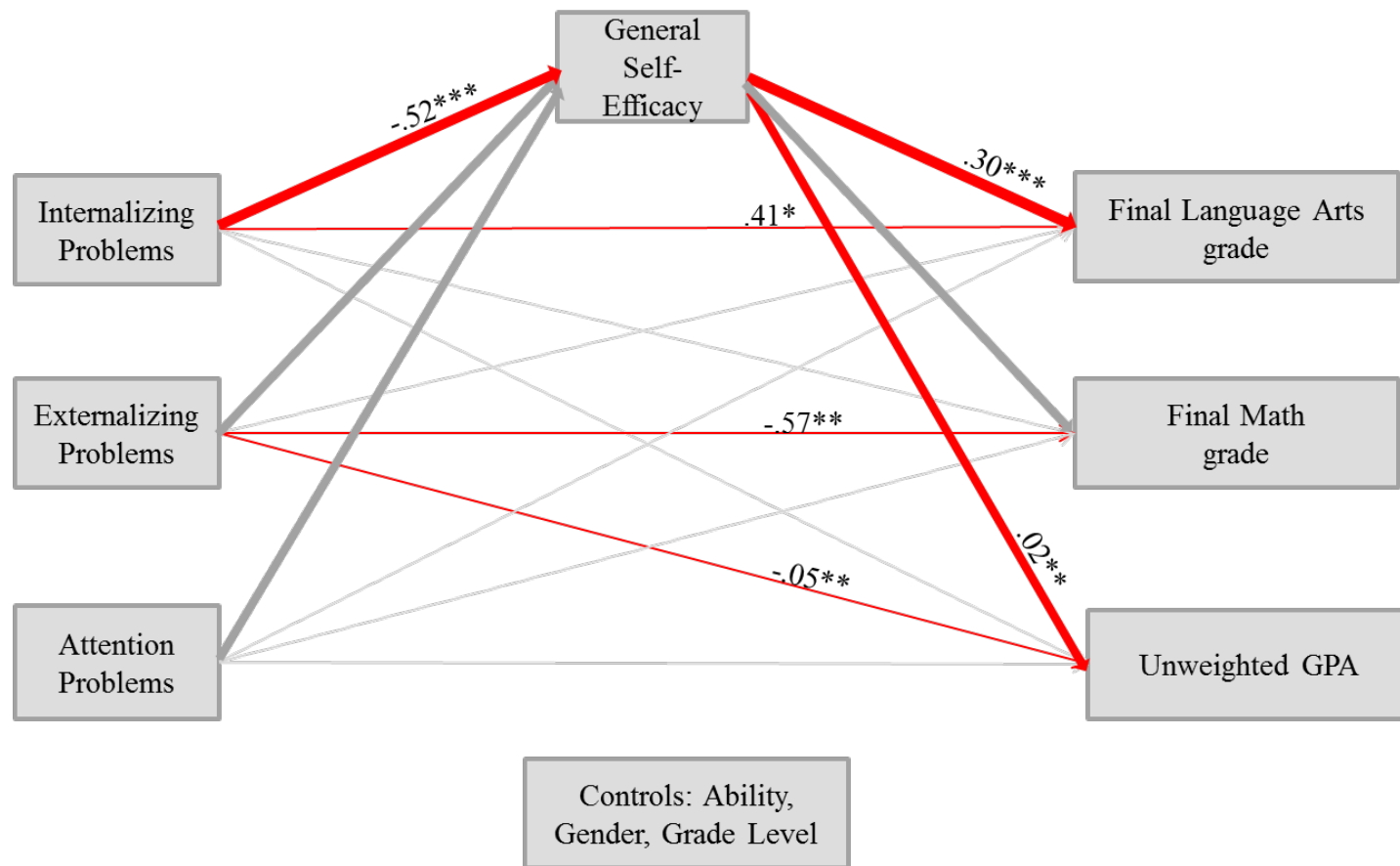
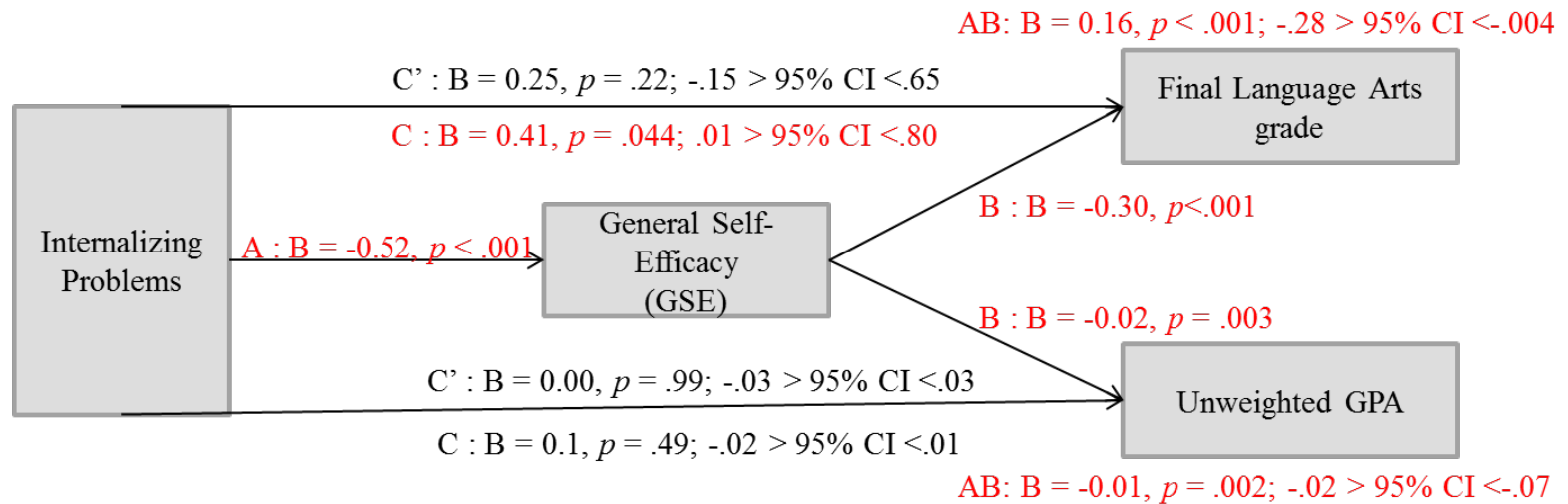


Figure 10. Final mediation model illustrating direct, indirect and total effects of internalizing problems and general self-efficacy on GPA and Final Language Arts grade using bootstrapped unstandardized coefficients



Appendices

Appendix A: Comparison of Type of Grade Data: Total Sample, Survey Sample 1 & Survey Sample 2, and Analysis Sample

	School N=1397		Survey Sample 1 N=810		Survey Sample 2 N=780		Latino Survey Sample N=669		Analysis Sample N=493	
Type of Grade Data	N	%	N	%	N	%	N	%		
No Full Year MATH or LANG Course	75	5.4%	30	3.7%	--	--	--	--	--	--
Full Year MATH Course ONLY	85	6.1%	62	7.7%	62	9.3	62	9.3%	--	--
Full Year LANG Course ONLY	62	4.4%	31	3.8%	31	4.0	22	3.3%	--	--
Full Year MATH and LANG Course	1175	84.1%	687	84.8%	687	84.8%	585	87.4%	493	100%

Appendix B: Comparison of Demographics for Latino Students: Survey & Grade Sample, and Analysis Sample

		Latino Survey & Grade Sample	Analysis Sample
		N=669	N=493
		From High School database	From High School database
		N(%)	N(%)
Country of Origin			
	United States	423(63.2%)	318(64.5%)
	Colombia	1(.1%)	1(.2%)
	Dominican Republic	87(13.0%)	54(11.0%)
	Ecuador	2(.3%)	1(.2%)
	El Salvador	3(.4%)	2(.4%)
	Guatemala	2(.3%)	1(.2%)
	Honduras	41(6.1%)	30(6.1%)
	Mexico	96(14.3%)	78(15.8%)
	Nicaragua	3(.4%)	1(.2%)
	Peru	1(.1%)	6(1.2%)
	Puerto Rico	9(1.3%)	1(.2%)
	Venezuela	1(.1%)	1(.2%)
		From Survey database coversheet	From Survey database coversheet
		N=535	N=397
Student Immigration Status			
	First Generation	246(46.0%)	175(44.1%)
	Second Generation	279(52.1%)	214(53.9%)
	Third Generation	10(1.9%)	8(2.0%)
	-Missing Data -	134(20%)	96(19.5%)

Appendix C: Comparison of Special Education and Learning Support Services: Full School, Survey & Grade Sample, and Analysis Sample within the samples

	School N=1397	Survey Sample N=780	Analysis Sample N=493	
	N (%)	N (%)	N (%)	
Type of Classification				
No Classification	1136(81.3)	655(84.0)	493(100.0)	
Auditorily Impaired	1(.1)	1(.1)	--	
Autism	1(.1)	1(.1)	--	
Cognitively Impaired -Mild	15(1.1)	2(.3)	--	
Cognitively Impaired - Moderate	5(.4)	1(.1)	--	
Communication Impaired	20(1.4)	11(1.4)	--	
Emotionally Disturbed	14(1.0)	6(.8)	--	
Multiply Disabled	9(.6)	3(.4)	--	
Other Health Impaired	20(1.4)	11(1.4)	--	
Specific Learning Disability	170(12.2)	86(11.0)	--	
Traumatic Brain Injury	1(.1)	--	--	
Visually Impaired	1(.1)	1(.1)	--	
Eligible for Speech-Language Services	4(.3)	2(.3)	--	
Time Classification				
No Classification	1135(81.2)	655(84.0)	493(100.0)	
80%+ school day in the presence of regular education students	84(6.0)	41(4.3)	--	
40-79% school day in the presence of regular education students	110(7.9)	64(8.2)	--	
< 40% of the school day in the presence of regular education students	67(4.8)	20(2.6)	--	
Home Instruction	1(.1)	--	--	
504 Plan in Place for Student				
No 504 Plan	1381(98.9)	774(99.2)	488(99.0%)	
Has 504 Plan	16(1.1)	6(.8)	1(1.0%)	
Limited English Proficiency (LEP) in Place for Student				
No LEP	1276(91.3)	706(90.5)	437(88.6%)	
Has LEP	121(8.7)	74(9.5)	56(11.4%)	

Appendix D: General Self-Efficacy Scale

Below are sentences that might or might not describe you. Please indicate how well these sentences describe you by marking the corresponding letter on your response sheet.

	Not True At All	Hardly True	Moderately True	Exactly True
1. I can always manage to solve difficult problems if I try hard enough	1	2	3	4
2. If someone opposes me I can find the means and ways to get what I want	1	2	3	4
3. I am certain I can accomplish my goals	1	2	3	4
4. I am confident that I could deal efficiently with unexpected events	1	2	3	4
5. Thanks to my resourcefulness I can handle unforeseen situations	1	2	3	4
6. I can solve most problems if I invest the necessary effort	1	2	3	4
7. I can remain calm when facing difficulties because I can rely on my coping abilities	1	2	3	4
8. When I am confronted with a problem I can find several solutions	1	2	3	4
9. If I am in trouble I can think of a good solution	1	2	3	4
10. I can handle whatever comes my way	1	2	3	4

Appendix E: Pediatric Symptom Checklist-17 Youth Self-Report

Below are sentences that might or might not describe you. Please mark on your response sheet how often the behaviors described in the following questions occurs for you.

	Never	Sometimes	Often
1. Fidgety, unable to sit still	0	1	2
2. Feel sad, unhappy	0	1	2
3. Daydream too much	0	1	2
4. Refuse to share	0	1	2
5. Do not understand other people's feelings	0	1	2
6. Feel hopeless	0	1	2
7. Have trouble concentrating	0	1	2
8. Fight with other children	0	1	2
9. Down on yourself	0	1	2
10. Blame others for your troubles	0	1	2
11. Seem to be having less fun	0	1	2
12. Do not listen to rules	0	1	2
13. Act as if driven by a motor	0	1	2
14. Tease others	0	1	2
15. Worry a lot	0	1	2
16. Take things that do not belong to you	0	1	2
17. Distract easily	0	1	2

Appendix F: Comparison of Analysis Sample Demographics Subsequent to Removal of Outliers

		Analysis Sample <i>N</i> =493	Analysis Sample – Outliers Removed <i>N</i> =485
		<i>N</i> (%)	<i>N</i> (%)
Gender			
	Male	242 (49.1%)	236(48.7%)
	Female	251(50.9%)	249(51.3%)
Grade Level			
	9 th grade	184(37.3%)	181(37.3%)
	10 th grade	139(28.2%)	136(28.0%)
	11 th grade	97(19.7%)	96(19.8%)
	12 th grade	73(14.8%)	72(14.8%)
Race (according to HS)			
	White	--	--
	Black	--	--
	Hispanic	493(100%)	485(100%)
	Other	--	--
Origin			
	South America	4(.8%)	4(.8%)
	Central America	33(6.7%)	33(6.8%)
	Caribbean	60(12.2%)	59(12.2%)
	Mexico	78(15.8%)	78(16.1%)
	Africa	--	--
	Eurasia	--	--
	USA	318(64.5%)	311(64.1%)
Classification			
	No Classification	493(100%)	485(100%)
	Classification	--	--
Support (504 or LEP)			
	No support status	432(87.6%)	424(87.4%)
	Support status	61(12.4%)	61(12.6%)
Meal Status			
	Full Price	34(6.9%)	34(7.0%)
	Reduced	29(5.9%)	27(5.6%)
	Free Price	430(87.2%)	424(87.4%)
		<i>M</i>	<i>SD</i>
		<i>M</i>	<i>SD</i>
Age		15.68	1.28
Final Grade: LANG		75.33	10.04
Final Grade: MATH		75.63	10.87
GPA (unweighted)		2.34	0.82