

# The Impact of a School-Based Academic Support Program on Students' Psychosocial Impairment

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## Abstract

The skills conveyed in high school are essential for success, and evidence suggests that psychosocial well-being is critical to that process. Advancement via Individual Determination (AVID) is an in-school, academic support program that targets underserved students. The current study explored the impact of an intervention program targeting academic achievement on student perceptions of social support and psychosocial impairment. The study was conducted in an under-resourced, majority Latinx high school and the sample included 75 AVID students and 140 demographically matched controls. Hierarchical linear regression analyses were performed to identify the impact of participation in the AVID program on symptoms of emotional and behavioral distress. After controlling for demographics factors and academic achievement, student perceptions of emotional and teacher support explained 7.2% of the variance in psychosocial distress; participation in the AVID intervention was found to have significantly improved the variance accounted for ( $\Delta R^2=.02$ ,  $5.13$ ,  $p=.025$ ;  $R^2=.11$ ,  $F(9,204)=2.90$ ,  $p=.003$ ). The results of this study indicate that perceived teacher social support and AVID participation were, independently, significantly associated with reduced student psychosocial distress. These findings suggest that interventions targeting the complex mechanisms of school achievement may also have a positive impact on psychosocial impairment beyond student perceptions of social support.

**Keywords:** AVID, high school, perceived teacher support, psychosocial impairment, social support

## 1. Introduction

The ability of students to successfully navigate high school to completion is a critical metric of adolescent success, and the subsequent transition to collegiate education confers a significant increase in the likelihood of lifetime success and overall well-being (U.S. Census Bureau, 2022). School achievement is a multifaceted process, impacted by a range of factors. Succeeding in high school, particularly for those students in under-resourced communities, is not a simple task. Under-resourced schools are typically characterized as having insufficient resources to achieve their academic and social-emotional goals and tend to serve predominately disadvantaged and/or low-income students (NASFAA, 2021). Further, youth are globally reporting significant psychosocial distress, as indicated by a recent report from the U.S. Surgeon General (Office of the Surgeon General, 2021). Significant evidence supports the relationship between academic achievement and symptoms of social-emotional and behavioral wellbeing (Duchesne et al., 2008; Fergusson & Woodward, 2002; Gall et al., 2000; Murphy et al., 1989; Schulte-Körne, 2016; Valdez et al., 2011; van Lier et al., 2012).

A multitude of school-based intervention programs have targeted this diverse range of risk and protective factors in their efforts to support the range of student outcomes that define academic success (e.g., grades, standardized achievement testing, graduation rates, college matriculation and success). Advancement via Individual Determination (AVID), an in-school academic support program, is one such intervention. A key feature of the AVID intervention is a focus on social support through teacher support and a cohort model (AVID Center, 2021). The current study considered the effect of emotional and teacher social support on student distress; further we

sought to explore the impact of participation in AVID, a program focused on academic achievement, on students' symptoms of psychosocial impairment.

### *1.2 School-Based Interventions*

For the prior two decades, a major challenge in education has been to improve the academic achievement of students in the nation's lowest-performing schools (No Child Left Behind Act, 2002; US Department of Education, 2013; US Department of Education, 2015). School achievement, however, is impacted by a number of potential factors, and thus there are a number of school-based intervention programs that have targeted a diverse range of these factors in an effort to foster academic achievement in youth. Such programs include targeting academic skills (Dietrichson et al., 2021; Graham et al., 2018; McBreen & Savage, 2021), executive functioning (Jacob & Parkinson, 2015), physical activity (Centers for Disease Control and Prevention, 2010; Sneek et al., 2019), bullying (Gaffney et al., 2021), social-emotional factors (Corcoran et al., 2018; Durlak et al., 2011; Mahoney et al., 2018) and a range of domains of mental and psychosocial health (Breedvelt et al., 2019; DuPaul et al., 2022; Pandey et al., 2018; Tejada-Gallardo et al., 2020).

#### *1.2.1 Advancement via Individual Determination (AVID)*

The school-based intervention Advancement Via Individual determination (AVID) is a college readiness program designed to encourage and prepare historically underrepresented and economically disadvantaged students for college (Bernhardt, 2013; Swanson et al., 2000). The program was developed, in part, as a response to the inequities associated with curricular tracking and the data supporting a positive relationship between enrollment in advanced-level courses and matriculation to college (Long et al., 2012). Participation inequality in advanced placement (AP) classes is a function of fewer AP offerings at schools serving primarily low-income students of color as well as unequal access to AP for underrepresented students at predominantly White schools (Kolluri, 2018). The purpose of the AVID program, therefore, includes specifically supporting students to take and succeed in advanced and/or college preparatory classes as a mechanism to improve college matriculation (Huerta et al., 2013).

AVID began at the Claremont High School in San Diego, California in 1980 as a targeted effort to facilitate a successful transition to college by providing rigorous academic instruction through a curriculum that focuses on students' academic needs, as well as student support (e.g., tutoring, mentorship) during the middle and high school years (Bernhardt, 2013). Students join the AVID program through teacher and/or parent recommendation for being middle-achieving students with a GPA of 2.0-3.5 and are expected to benefit from additional support to matriculate successfully to college (AVID Center, 2021). Students can join the program at any grade level; however, the evidence suggests that earlier involvement (e.g. middle school or 9<sup>th</sup> grade) provides the greatest impact of the program (Bernhardt, 2013).

AVID students are supported academically as well as socially by a team of AVID-specific teachers who provide cohort based elective classes, help with advanced placement course success, and engage in college readiness tutoring (Huerta et al., 2013; Mendiola et al., 2010). AVID curricula include teaching such practical skills as effective note-taking, studying, and time management. As part of AVID, students are exposed to speakers from a range of professional fields in an effort to expand their career expectations. AVID students are encouraged to, and supported in, understanding the college application, financial aid, and enrollment processes (Bernhardt, 2013). Core to the AVID program is social support, with AVID educators directed to be responsive to students' needs and facilitate an educational environment that builds student success through relationships (AVID Center, 2021).

Mixed findings have resulted in some difficulties in evaluation of the full academic efficacy of the AVID program, and assessment via qualitative methodology can enhance the expectancy bias and make causal claims of success difficult (Gillmore & Sullivan, 2014). Prior research findings suggest that, depending on data source and expectancy effects, different conclusions regarding effectiveness of AVID participation can be drawn (Black et al. 2008). More recent research has found that there may be a mixed impact of AVID participation on student standardized test scores (Morley et al., 2021). However, the majority of prior research has found that AVID students showed greater improvement on standardized tests and higher GPAs than their non-AVID peers (Lozano et al., 2009; Morley et al., 2021; Watt et al., 2003; Watt et al., 2004). Students who participated in AVID and enrolled in universities were also found to be on track to graduate after both their first and second year of college (Huerta & Watt, 2015). Additionally, in their explorations into the impact on Latinx students of AVID participation, Mendiola et al. (2010) found strong college retention rates with 79% of those in the study on track to graduate within 6 years. These results suggest that the AVID program is largely successful in its primary goal of preparing underrepresented groups for successful matriculation to college.

Research on the AVID program has also found some evidence for the impact of AVID participation on non-

cognitive factors such as student academic resilience (Young, 2016), self-efficacy (Pugh & Tschannen-Moran, 2016) and self-esteem and positive attitudes (Eliot et al., 2013; Llamas et al., 2014). However, because several of these studies' results are based upon qualitative rather than quantitative work (Eliot et al., 2013; Llamas et al., 2014), causal claims are difficult. Further, Young's 2016 work defined academic resilience as advanced placement course completion which may confound the construct of resilience with achievement. These positive findings, though not without methodological caveats, suggest that further exploration of the AVID program's impact on students' non-cognitive outcomes is a potentially valuable area of study. Given the explicitly socially supportive role the AVID program takes with students (e.g., AVID-specific teachers who provide academic and social support, a cohort model, tutoring, and mentorship) there is room for further exploration into the potential impact that AVID participation may have on psychosocial factors. Such work has the potential to support a broader understanding of the value that participation in school-based academic programming can have on student outcomes.

### *1.3 Social Support: A Conceptual Model*

There is a previously established framework of social support reinforced by theoretical and empirical literature (Barrera & Bonds 2005; Zimmerman et al., 2005, etc.) that provides a conceptual model by which to explore the AVID program's utilization of social support to facilitate academic achievement. The current study explores the potential significance of the AVID program on student psychosocial impairment because, it is theorized, the broad social support conferred may serve as a buffer against symptoms of distress. One theory of social support, social convoy theory (e.g., Kahn & Antonucci 1980; Levitt et al., 1993; Levitt et al., 2005), suggests that, as individuals progress through life, they are engaged in social networks that involve a range of peers and adults, who provide social support. Research has found that positive parental, teacher, and classmate relationships have been found to support psychosocial functioning and improve academic outcomes generally (e.g., Barile et al., 2012; Quin, 2017; Wang et al., 2020). Studies consistently have found that a youth's perceptions of social support are associated with a range of outcomes including the reduction of emotional and behavioral problems and improvement in academic achievement (Alsubaie et al., 2019; Brumley et al., 2021; Heerde et al., 2018; Rueger et al., 2016) and that the association between social support and well-being increases with age (Chu et al., 2010). Thus, social support theory would suggest that experiences and perceptions of social support are both directly associated with individual well-being and functions indirectly as a buffer against risk factors. Social support theory would suggest that several types of social support proposed by the literature, including instrumental support (i.e., concrete aid), emotional support (i.e., offering care and comfort), informational support (i.e., providing advice or guidance), and esteem/appraisal support (i.e., affirming another person's sense of value and competence) may be provided by the AVID program and contributes to student well-being (Federici & Skaalvik, 2014; Malecki & Demaray 2003; Wong et al., 2018). The current study specifically explores the role of teacher and emotional social support.

#### *1.3.1 Teacher Social Support*

Research has demonstrated a benefit from perceptions of teacher social support on both cognitive and non-cognitive factors (Hamre & Pianta, 2001). The concept of teacher social support is multifaceted, reflecting a range of supportive actions perceived by their students (e.g., encouragement to engage, positive reinforcement, emphasis on strengths, emotion check-ins). Broadly, however, perceived teacher social support and caring can be understood as those teacher attitudes and behaviors which are perceived by students as something positive (Ramberg et al., 2019). Teachers can convey this sense of caring, respect, and appreciation for their students through their behaviors and attitudes in the school or classroom, and this social support has the potential to result in greater student engagement in school (Wang & Eccles, 2012).

The impact of this perception of teacher social support has been found to have a range of positive academic outcomes for students. Students who perceive their teachers to be caring evidenced better school engagement (Engels et al., 2021; Roorda et al., 2011), grades (Tennant et al., 2015, Wong et al., 2018), GPA (Scales et al., 2019), math achievement (Olsen & Huang, 2021), and rates of college matriculation as function of counselor support (Engberg & Gilbert, 2014). Additionally, positive student-teacher relationships are supportive of non-cognitive factors such as mental health, well-being and resilience (Ettedal & Shi, 2020; Lavy & Naama-Ghanayim, 2020; Williams & Bryan, 2013) including a reduced likelihood of suicidality (Pisani et al., 2013). Indeed, studies have found that the decline of perceived teacher social support that occurs during the transition from middle school to high school resulted in increasing psychosocial impairment (Wit et al., 2011). Behaviorally, teacher caring was related to fewer disciplinary referrals (Gallagher et al., 2019) and reduced bullying behaviors (Wang et al., 2015). In sum, social support from teachers has consistently been identified as either a direct or indirect pathway through which youth experience positive outcomes, both academic and psychosocial.

### 1.3.2 Emotional Support

The cohort model of AVID also has the potential to provide a perception of general, rather than teacher specific, emotional support for students that may be protective to their social-emotional functioning. Emotional support can be understood as the receipt of caring and understanding from others, as well as the perception that intimate information is and can be shared with others (Schwarzer & Knoll, 2007). Studies have found that perceived emotional support has a strong impact on a number of dimensions of mental well-being (Beutel et al., 2017). Research has also found that positive emotional support in the form of verbal and non-verbal behaviors related to the communication of empathy, connection, and care protected college students from feelings of academic distress (Aloia & McTigue, 2019). Emotional support has significant impact as a protective factor against the adverse experiences of childhood, particularly on experiences of depression (Brinker & Cheruvu, 2017), social anxiety (Fitzgerald & Gallus, 2020), and a range of aggressive behaviors (Davis et al., 2019; Álvarez-García & Núñez, 2015; Tracy et al., 2018). Emotional support, therefore, can be conceptualized as a critical protective factor for youth as they grapple with academic and psychosocial stressors.

### 1.4 Emotional and Behavioral Problems

A growing literature establishes links between academic success and students' psychosocial functioning. Psychosocial impairment can be broadly defined as the emotional and behavioral problems that cause distress and dysfunction. The current study utilizes the emotional and behavioral categories of internalizing, externalizing, and attentional problems. Internalizing problems can be understood as symptoms of anxiety and depression (e.g. excessive worry, feelings of sadness) because disorders in these domains are highly comorbid (Cummings et al., 2014; Merikangas et al., 2010). Problem behaviors that are disruptive can be labeled as externalizing problems. Externalizing behaviors can occur in various degrees of severity ranging from behavioral dysregulation and acting out, to more dangerous or hostile behaviors (Memmott-Elison et al., 2020; Moffitt, 2007). Attention problems can be understood as inattentive, hyperactive and impulsive behaviors, and when these problems are severe enough to cause distress and/or impairment, individuals displaying these symptoms can be diagnosed as having attention deficit hyperactivity disorder (Faraone et al., 2021). Psychosocial impairment can be evidenced when youth display internalizing problems (e.g., symptoms of anxiety and/or depression), externalizing problems (e.g., dysregulated and/or aggressive behavior), and/or attention problems (e.g., inattention, hyperactivity).

Both internalizing and externalizing behaviors are of significant concern in youth because of the potential for interference in academic learning. Students who evidence such emotional and behavioral problems have been found to be at greater risk for dropping out of school, and are less likely to participate in and complete a postsecondary education (Finn et al., 2008; Homer et al., 2020). This has been captured in the work of Valdez et al. (2011), who found a negative cascade effect whereby early difficulties in domains such as externalizing or internalizing symptoms lead to subsequent impairments in social and academic competence. Additionally, in these studies, children's attention problems were correlated with externalizing and internalizing problems and all three types of problems predicted subsequent issues in academic achievement. Further, the evidence of a negative association between attention and academic achievement has been found longitudinally through the conclusion of high school (Breslau et al., 2009; Zendarski et al., 2021). In middle and high school students, symptoms of internalizing, externalizing and attention problems have been shown to be related to higher rates of school absence, poor grades, repeating a grade in school and/or being less likely to complete school or seek post-secondary education (Duchesne et al., 2008; Fergusson & Woodward, 2002; Gall et al., 2000; Murphy et al., 1989; Schulte-Körne, 2016; van Lier et al., 2012). Thus, the literature suggests that there is consistent evidence for the relationship between psychosocial impairment and academic outcomes, in which psychosocial distress is negatively related to academic achievement. It may be that, in targeting academic outcomes, programs like AVID are also targeting the factors that support resilience to psychosocial impairment.

### 1.5 Impact of Student Demographics Characteristics on Outcomes

Prior research has found distinct differences in psychosocial distress and academic achievement among specific demographic groups. Studies have found that female youth display lower rates of externalizing behaviors but higher rates of internalizing symptoms (Wu & Lee, 2020). High school girls are also generally found to exhibit higher rates of high school graduation and college attainment than their male peers (Murnane, 2013). Older students often report lower perceptions of support (Wit et al., 2011) as well as greater psychosocial distress (Ordaz & Luna, 2012) and, in the current sample, the dropout rate between 9<sup>th</sup> and 12<sup>th</sup> grades suggests a progressively diminishing academic engagement by grade level. Disparities in the United States education system mean that many Latinx adolescents are facing barriers to successfully developing to their full academic potential, with lower grades (Sutton et al., 2018) and greater dropout rates as well as being 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 (National Center for Education Statistics, 2019). Evidence also suggests that the impact of race/ethnicity increases over the course of elementary, middle and high school (White et al., 2016). This achievement gap was exacerbated during the COVID-19 pandemic as the Latinx community continues to face disproportionate detrimental health and economic impacts (U.S. Bureau of Labor Statistics, 2021).

### *1.6 The Current Study*

School-based interventions often focus their programming and base efficacy evaluations on constructs of academic achievement. The current study focused on one such school-based academic success program (AVID). Social support is one of the non-cognitive mechanisms that is built into the AVID program, but it has not been consistently assessed. The theoretical foundation of the proposed model is that general perceptions of emotional and teacher social support, can have an impact on psychosocial distress in an under-resourced school setting. We proposed that the particular social support experienced by students through participation in the AVID program is related to the students' broad self-report of emotional and behavioral problems. While the AVID program is predominately focused on academic outcomes, based upon theories of social support, it is hypothesized here that the whole is greater than the sum of its parts: that being part of AVID is a protective factor for psychosocial impairment. The purpose of the current study is to explore the hypotheses that 1) social support has an impact on student psychosocial impairment in our population and 2) that participation in the academic support program AVID confers additional benefits to its students, as evidenced by reduced psychosocial impairment in AVID students relative to matched control peers. If a program focused upon academic achievement is able to provide social-emotional and behavioral benefit to students, then this suggests there is a global benefit to participation in such programming for youth, particularly those from underserved communities, that can be utilized to promote resilience.

## **2. Methods**

The current study utilized data collected at an urban, under-resourced New Jersey High School. 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. Survey data was collected during the fall (baseline) and spring of the school year and the preferred survey data point for analysis was spring. The school's AVID program is recognized by and conforms to the standards of the national AVID Center ([www.avid.org](http://www.avid.org)). This study was approved by the Rutgers University Institutional Review Board for the Protection of Human Subjects in Research.

### *2.1 Participants*

The district in which this study was conducted had one of the lowest high school graduation rates in the state of New Jersey (under 60%) and reading and math testing scores ranking below the 15<sup>th</sup> percentile. The high school was comprised of 1397 students, grades 9 through 12, the majority of whom were Latinx (83%). The percentage of students receiving free or reduced-price lunch is often used as a proxy measure for the percentage of students living in poverty, although it is not an exact equivalent and should be interpreted with significant caution (Harwell & LeBeau, 2010). The current study found that 1273 (91%) of students at the school received free or reduced lunch. The measures of study were completed by 1096 (78.5%) students.

School staff administering the AVID program identified 114 students, grades 9-12, as participating in the intervention program. Of these AVID students, 75 (66%) completed survey measures to be included in analysis. Demographic differences between AVID students in the analysis sample and those excluded due to missing survey data are presented in Table 1. AVID students in the analysis sample were significantly younger in age ( $t(112)=5.15$ ,  $p<.001$ ) and grade level ( $\chi^2(3)=31.64$ ,  $p<.001$ ). No other significant differences between excluded and analysis sample AVID students were identified.

140 demographically matched controls with completed survey measures were identified post-hoc for inclusion in current study. Identification of matched controls was based on demographic characteristics (gender, grade level, ethnicity, immigration status, home language, age, and free/reduced-price meal status). Additionally, due to the GPA selection criteria used by AVID intervention students, control students were matched to their AVID peers, within a standard deviation, by current year GPA. Endorsement of psychosocial impairment to a degree that identified as "at-risk" on the Pediatric Symptom Checklist at fall baseline, was also utilized as a matching variable for the purpose of the current study. Demographic differences between 140 matched controls and AVID students in the analysis sample are presented in Table 1. AVID and Control groups evidenced no significant difference on demographic variables (gender, grade level, ethnicity, being born in the US or lunch status). Additionally, no significant differences in age or GPA were identified between Control and AVID samples.

Table 1. Sample Characteristics for AVID Students Excluded and Analysis, and Control

	AVID Excluded		AVID Analysis		Control Sample	
	<i>N</i> =39		<i>N</i> =75		<i>N</i> =140	
	<i>N</i> (%)		<i>N</i> (%)		<i>N</i> (%)	
Gender						
Male	17(43.6%)		31(41.3%)		59(42.1%)	
Female	22(56.4%)		44(58.7%)		81(57.9%)	
Grade Level						
9 <sup>th</sup> grade	6(15.4%)		25(33.3%)		46(32.9%)	
10 <sup>th</sup> grade	0(0%)*		22(29.3%)		42(30.0%)	
11 <sup>th</sup> grade	16(41.0%)		22(29.3%)		40(28.6%)	
12 <sup>th</sup> grade	17(43.6%)		6(8.0%)		12(8.6%)	
Ethnicity						
Not Latinx	7(17.9%)		23(30.7%)		35(25%)	
Latinx	32(82.1%)		52(69.3%)		105(75%)	
Birth Origin						
Outside USA	8(20.5%)		11(14.7%)		18(12.9%)	
USA	31(79.5%)		64(85.3%)		121(87%)	
Meal Status						
Full Price	1(2.6%)		8(10.7%)		21(15%)	
Free or Reduced	38(97.4%)		67(89.3%)		119(85%)	
PSC Status at Baseline						
No Risk	--		45(77.6%)		90(84.9%)	
At-Risk	--		13(22.4%)		16(15.1%)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age	17.15***	1.23	15.97	1.13	16.04	1.21
Current Year GPA	2.72	0.53	2.63	0.57	2.47	0.71

Note. \*\*\* $p < .001$ .

## 2.2 Measures

### 2.2.1 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 screener designed to facilitate the recognition of cognitive, emotional, and behavioral problems on three subscales: internalizing, attention and externalizing as well as provide a global rating of overall psychosocial risk based on frequency of symptom endorsement. 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 et al., 2003; Duke et al., 2005; Gall et al., 2000; Gardner et al., 2007; Liu et al., 2020; Murphy et al., 2016). The PSC-17 consists of 17 items that are rated on a 3-point scale, from 0 = never present to 2 = often present. The total score was calculated by summing the 17 items, with greater endorsement of negative symptoms of psychosocial impairment resulting in a higher total score. If four or more items are left blank, the questionnaire is considered invalid. The PSC-17 also yields 3 subscales, Internalizing, Externalizing and Attention Problems. A PSC-17 score of 15 or higher suggests the presence of significant behavioral or emotional problems, while scores of 7 or greater indicate risk on both the attention and externalizing subscales, and scores of 5 or greater indicate risk on the internalizing subscale (Gardner et al., 1999). The current study found the Cronbach's  $\alpha$  for the total score in the analysis sample was .84 suggesting good reliability; while the Cronbach's  $\alpha$  for the Internalizing

Subscale was .78; for the Externalizing Subscale it was .75; and for the Attention Problems Subscale it was .72.

#### 2.2.2 Social Support: Emotional Support (2-Way SSS; Shakespeare-Finch & Obst, 2011)

Students were asked to assess their ability to access emotional support from others using a measure adapted from the 2-Way Social Support Scale (Shakespeare-Finch & Obst, 2011) a measure of functional social support. This measure was also validated in relation to subjective well-being and perceived stress (Obst et al., 2019). The current study utilized five questions from the Receiving Emotional Support factor of this scale. All questions were answered on a 5-point scale, 1 = never to 5 = almost always. Items assessed students' perceived ability to access emotional support (e.g. someone to talk to, trust, lean on, share with). A total score was calculated by summing the 5 items with a higher score equating greater sense of social support. The Cronbach's  $\alpha$  for this measure in the analysis sample was .94, suggesting strong reliability.

#### 2.2.3 Social Support: Teacher Support (CASSS; Malecki, Demaray, Elliott, & Nolten, 1999)

Students' perception of the social support they receive from teachers was assessed using a measure adapted from the Child and Adolescent Social Support Scale (Malecki et al., 1999). This measure was further validated in a primarily Hispanic middle school sample (Malecki & Demaray, 2006). The current study utilized four questions from the Teacher Social Support factor of this scale. All questions were answered on a 5-point scale, 1 = never to 5 = almost always. Items assessed students' perceptions of their teachers' emotional and functional support (e.g. caring, encourages questions, provides help). A total score was calculated by summing the 4 items with a higher score equating greater sense of teacher provided social support. The Cronbach's  $\alpha$  for this measure in the analysis sample was .90 suggesting strong reliability.

#### 2.2.4 Covariates

In order to control for the known effects of demographic information on symptoms of psychosocial impairment, and to distinguish the impact of the intervention on factors potentially associated with psychosocial distress, we included five covariates: gender, age, grade level, whether a student was Latinx, and if they were US born. Data were obtained from official school records. These covariates were included as control variables due to prior research findings indicating distinct differences in psychosocial distress and academic achievement among these groups.

### 2.3 Data Analyses

#### 2.3.1 Missing Data

To reduce the bias from incomplete survey data, students who responded to less than the minimum 14 items required for scoring the PSC and missed more than 1 Social Support item were removed from analysis. Additionally, to preserve the survey sample, the fall survey was substituted if available for a student who had not completed the spring survey datapoint.

#### 2.3.2 Research Design

The current study explored how participation in AVID, an in-school academic intervention program, impacts symptoms of psychosocial impairment (emotional, behavioral and attentional problems) relative to matched control peers. Because previous research suggested that emotional and teacher social support may have a significant impact on psychosocial impairment, and because AVID purports to improve perceptions of social support, we also aimed to describe the role of emotional and teacher social support on psychosocial impairment in our paradigm. First, independent samples *t*-test and Pearson's correlation analyses were conducted to identify any distinctions between the AVID and matched control samples on continuous predictor variables, as well as the within group relationships between continuous variables. Subsequent independent samples *t*-tests and one-way analysis of variance (ANOVA) analyses described the relationship between psychosocial impairment, social support and demographic covariates. To examine the effects of the social support and participation in the AVID intervention on psychosocial impairment, a hierarchical linear-regression model was constructed, controlling for demographic covariates and GPA at the first level, and emotional and teacher social support at the second, with participation in the AVID intervention the third step of the model. The current study hypothesized that, consistent with social support theory, after controlling for demographic variables, social support would have a positive impact on psychosocial distress (reduction in reported symptoms). We additionally assessed the role of the AVID program with the hypothesis that participation in the program might serve as a protective buffer and would result in significantly lower reported symptoms of psychosocial impairment for AVID participating students relative to their matched control.

### 3. Results

#### 3.1 Preliminary Analysis

Analysis data identified 12 (16%) students in the AVID program endorsing enough psychosocial distress to be qualified as “at-risk,” as measured by the PSC (total score of 15 or greater). Exploration of the PSC subscales by risk identified 24 (32%) as “at-risk” for Internalizing problems, with 11 (14.7%) were “at-risk” for Externalizing problems and with 11 (14.7%) “at-risk” for Attention problems based on self-report of symptoms of psychosocial impairment. Of the 140 matched-control students, 33 (23.6%) endorsed enough psychosocial distress to be qualified as “at-risk” on the Total Score of the PSC, and 49 (35%) were identified as “at-risk” for Internalizing problems, while 16 (11.4%) were “at-risk” for Externalizing problems, and 26 (18.6%) endorsed enough symptoms of psychosocial impairment to meet “at-risk” criteria for Attention problems. Pearson Chi-Square analysis found the no significant difference between AVID and matched control students in their “at-risk” status on the PSC Total Score, or any of the three subscales. The degree of “at-risk” status found in the study participant is similar to what has been previously found in underserved populations using the PSC (Murphy et al., 2016).

The mean, standard deviation and range for all continuous predictor variables for the sample are presented in Table 2. Independent samples *t*-test found a significant difference between AVID students and their matched Control peers on the PSC Total Score ( $t(213)=2.03, p=.043$ ). No further significant difference between groups were found. Table 3 presents the bivariate correlations for the Control and AVID group. For both AVID and their matched control peers, overall psychosocial distress was highly positively correlated with the subscales of distress (internalizing, externalizing and attention) suggesting a strong relationship between the subscales and total score. A significant positive relationship between the two measures of social support was also consistently found. Finally, both groups evidenced a significant positive relationship between teacher social support and GPA. For the matched control group, overall psychosocial distress, as well as all three subscales of distress symptomatology, were additionally negatively related to both perceived emotional and teacher social support, a relationship that was not found for the AVID students. The impact of demographic covariates on the study sample is presented in Table 4. Gender evidenced a significant difference on GPA ( $t(213)=-3.12, p=.002$ ), with female students demonstrating higher current year GPA, although the difference was small overall (0.29). Ethnicity, grade level, and immigration status did not appear to have an impact on study variables.

Table 2. Continuous predictor variables by Control & AVID Group ( $N=215$ )

	Control <i>n</i> =140			AVID <i>n</i> =75		
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
1. PSC Total	11.15*	5.57	0-34	9.56	5.31	0-22
2. PSC Internalizing	3.48	2.43	0-10	3.38	2.51	0-10
3. PSC Externalizing	3.16	2.64	0-14	3.18	3.31	0-14
4. PSC Attention Problems	4.51	2.23	0-10	4.04	2.49	0-10
5. Emotional Social Support	19.95	4.71	5-25	19.93	5.42	5-25
6. Teacher Social Support	15.01	3.62	4-20	14.40	3.70	4-20
7. Current Year GPA	2.47	0.71	0.38-3.93	2.63	0.57	1.32-3.88

Note. Shading reflects AVID Sample; \* $p<.05$ .



Table 3. Pearson Correlation for Continous predictor variables by Control &amp; AVID Group (N=215)

	1	2	3	4	5	6	7
1. PSC Total	--	.61***	.51***	.73***	.12	-.09	-.09
2. PSC Internalizing	.75***	--	.51***	.59***	.01	-.08	.04
3. PSC Externalizing	.79***	.37***	--	.51***	-.08	-.09	-.14
4. PSC Attention Problems	.74***	.34***	.40***	--	.17	-.03	-.10
5. Emotional Social Support	-.36***	-.33***	-.28**	-.22*	--	.44**	.19
6. Teacher Social Support	-.38***	-.24**	-.41***	-.21*	.42***	--	.30*
7. Current Year GPA	-.04	.05	-.11	-.02	-.07	.20*	--

Note. Shading reflects AVID Sample; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 4. Impact of covariates on study variables in analysis sample(N=215)

	PSC – Total Score		Perceived Social Support		Emotional Support		Teacher Social GPA	
	M	SD	M	SD	M	SD	M	SD
<b>Gender</b>								
Male	10.20	5.88	19.36	5.45	14.61	3.89	2.36	0.67
Female	10.88	5.26	20.37	4.54	14.94	3.48	2.65**	0.64
<b>Ethnicity</b>								
Not Latinx	10.15	5.64	19.35	5.99	14.66	3.89	2.48	0.62
Latinx	10.76	5.49	20.17	4.51	14.85	3.57	2.54	0.69
<b>Grade Level</b>								
9 <sup>th</sup> grade	11.26	5.74	20.63	4.77	14.79	3.90	2.44	0.76
10 <sup>th</sup> grade	9.98	5.81	19.35	5.26	14.27	3.89	2.52	0.67
11 <sup>th</sup> grade	10.50	5.04	19.45	4.92	15.19	3.23	2.66	0.54
12 <sup>th</sup> grade	10.48	5.39	21.06	4.54	15.39	3.15	2.42	0.68
<b>Birth Origin</b>								
Born Outside the US	10.69	4.58	19.79	4.75	15.522	3.52	2.56	0.69
Born in the US	10.58	5.68	19.99	5.00	14.68	3.68	2.53	0.65

Note. \*\* $p < .01$ .

### 3.2 Hierarchical Linear Regression

To test the impact of AVID on self-reported symptoms of psychosocial distress, a hierarchical liner regression was used. Demographic covariates and GPA were entered as control variables at the first level, with social support (emotional and teacher) at the second, and participation in the AVID intervention the third step of the model. It was hypothesized that, after controlling for demographic variables, a positive impact of social support would be evidenced on symptoms of psychosocial distress, and participation in the AVID program would further result in a reduction in reported emotional and behavioral problems. Table 5 presents the results of these analyses. Step 1 of the model controlled for gender, age, grade level, ethnicity, country of origin, and academic achievement (GPA); Step 2 included perceived emotional and teacher social support; Step 3 assessed the impact of the AVID intervention. Model 2 explained 7.2% of the variance in psychosocial impairment, and adding the AVID intervention in Model 3 significantly improved the amount of variance accounted for in symptoms of psychosocial impairment ( $\Delta R^2 = .02$ ,  $F(9, 204) = 2.90$ ,  $p = .003$ ). In Model 3, perceived teacher social support continued to be associated with a reduction in self-reported psychosocial distress ( $\beta = -.23$ ,  $p = .003$ ), and participation in the AVID intervention was also significant ( $\beta = -.15$ ,  $p = .025$ ).

Table 5. Summary of Hierarchical Linear Regression Evaluating the Impact of Social Support and AVID Intervention on Psychosocial Impairment ( $n = 215$ )

Effect	Model 1					Model 2					Model 3				
	95% CI					95% CI					95% CI				
	Estimate	SE	LL	UP	$p$	Estimate	SE	LL	UP	$p$	Estimate	SE	LL	UP	$p$
Fixed effects															
Intercept	9.08	5.86	-2.46	20.63	.122	15.52	5.90	3.90	27.15	.009	16.37	5.85	4.84	27.90	.006
Gender	.79	.81	-.80	2.39	.328	.94	.79	-.61	2.49	.234	.88	.78	-.65	2.42	.258
Ethnicity	.76	.86	-.94	2.46	.381	.88	.84	-.77	2.54	.294	.74	.83	-.90	2.39	.373
Age	.53	.53	-.51	1.57	.314	.42	.51	-.59	1.43	.415	.40	.51	-.60	1.40	.432
Grade Level	-.67	.64	-1.94	.59	.296	-.51	.63	-1.75	.72	.415	-.50	.62	-1.73	.72	.419
Birth Origin	.14	1.13	-2.09	2.36	.905	-.09	1.10	-2.25	2.08	.938	-.19	1.09	-2.33	1.96	.865
GPA	-.52	.63	-1.76	.72	.407	-.20	.62	-1.42	1.03	.753	-.02	.62	-1.24	1.20	.976
Emotional						-.12	.08	-.29	.05	.153	-.11	.08	-.27	.06	.189
Teacher						-.32	.12	-.55	-.09	.007	-.35	.12	-.58	-.12	.003
AVID											-1.76	.78	-3.28	-.23	.025
$R^2$	.02					.09					.11				
$\Delta R^2$	.02					.07					.02				
$F$ for $\Delta R^2$	.69					.657 8.07					.000 5.13				

Note. CI=Confidence; SE=Standard Error; LL=lower limit; UP=upper limit.

When the regression was run with the subscales for psychosocial impairment (internalizing, externalizing and attention problems), the same impact did not appear to be present at Step 3. This finding suggests that it is overall psychosocial impairment that is most benefited by AVID intervention participation, rather than a specific domain of emotional or behavioral distress. However, perceptions of support continued to be significant in Model 3, with perceived emotional social support associated with a reduction in self-reported psychosocial distress for Internalizing symptoms ( $\beta = -.18, p = .014$ ) and perceived teacher social support associated with a reduction in self-reported psychosocial distress for Externalizing symptoms ( $\beta = -.22, p = .005$ ). Social support did not appear to have an impact on student report of attention symptoms. The regression analyses were also run with interaction terms (AVID intervention x emotional social support and AVID intervention x teacher social support) in Model 3, with the impact of the AVID intervention alone evaluated in Model 4. In those analyses, a significant impact was found for the interaction between the AVID intervention and perceptions of emotional social support in Model 4 ( $\beta = -.75, p = .017$ ). Notably, AVID participation continued to have a significant positive impact on symptoms of overall psychosocial impairment ( $\beta = -.81, p = .015$ ) in the regression model. These results suggest that perceived social support has an impact on student psychosocial impairment. In assessment of overall student self-report of psychosocial impairment, participation in AVID appeared to have a protective impact on students' symptoms of psychosocial impairment relative to their demographically matched peers, even after accounting for perceptions of social support.

#### 4. Discussion

High school students are faced with a myriad of challenges, both academic and social-emotional. School-based interventions such as AVID, often focus on academic achievement outcomes as their metrics of student success. However, social support, one of the non-cognitive mechanisms for change that is built into the AVID program, has not been consistently assessed despite being a core component of the intervention. The current study adds to the existing literature by expanding our understanding of the kinds of successful outcomes possible for students engaged in achievement focused interventions. It was theorized that the social support provided by the AVID program as a whole (e.g., dedicated teachers and cohort model), provides a buffer against symptoms of psychosocial distress beyond what can be directly accounted for in student perceptions of emotional and teacher support. Prior research has consistently found a relationship between social support, academic achievement, and symptoms of psychosocial impairment (e.g., Alsubaie et al., 2019; Barile et al., 2012; Brumley et al., 2021; Heerde

et al., 2018; Quin, 2017; Rueger et al., 2016; Wang et al., 2020). Social support theory would suggest that experiences and perceptions of social support are directly associated with individual well-being and function indirectly as a buffer against risk factors. The present study examined the relationship between students' self-report symptoms of psychosocial impairment, perceptions of social support, and participation in AVID. Our proposed model found that the social support used as a mechanism for academic change in the AVID program, had a positive impact on student psychosocial distress relative to non-AVID peers. This study is unique in that we explored these outcomes in a school-based intervention program aimed predominately at improving student academic achievement and college readiness/attainment.

The AVID intervention was designed to support academic achievement, in part, via mechanisms of social support, particularly teacher support (AVID Center, 2021). The current study utilized a post-hoc demographically matched control group with baseline analyses suggesting the AVID and Control groups evidenced no significant difference on demographic factors or GPA. Additionally, baseline risk status on the PSC was utilized as another match criteria for the control group. Results of the current study suggest that perceived teacher social support has a significant positive impact on students' overall report of psychosocial distress, where greater perceived teacher social support was reflected by fewer reported symptoms. Our data further indicates that students who participate in the AVID program, relative to demographically matched controls, appeared to experience a buffer from emotional and behavioral symptoms of distress. Importantly, regression analyses suggested that this effect is present even after accounting for the benefits of perceived social support when exploring overall symptoms of psychosocial impairment. The current study adds to the existing research indicating that length of exposure to AVID has a positive impact on non-cognitive factors (Pugh & Tschannen-Moran, 2016), to further suggest that simple participation in the AVID program confers a protective factor from symptoms of psychosocial distress. Further, the results of the current study suggest that an intervention program that targets the complex mechanisms of school achievement, including social support, may also demonstrate a positive impact on students' symptoms of psychosocial impairment. These results add to our larger understanding of the benefits of participating in school-based academic interventions, as well as how the social support provided by such programs can buffer against psychosocial impairment.

#### *4.1 Limitations*

This study faced several limitations that must be considered. The sample utilized may impact generalizability as it reflects a relatively small subsample of students from a single school. The school district reflected a particularly high needs sample evidencing low graduation rates (under 60%), and school-level testing scores below the 15<sup>th</sup> percentile in reading and math. Further, the students in the current study reflected largely homogeneous demographic characteristics (e.g., majority Latinx, as well as majority low SES as evidenced by over 80% of students qualifying for free lunch). While these characteristics certainly are not representative of all schools, they do represent a subset of schools, schools toward which AVID programs are particularly directed.

Additionally, the methodology of post-hoc identification of matched controls by demographic characteristics does not confer the same predictive value that a randomized control trial would provide. Prior research has similarly highlighted the difficulty in evaluating the efficacy of the AVID program due to expectancy bias (Black et al., 2008). Unfortunately, the gold standard of double-blind randomization in a school setting is often not possible due to institutions' desire to support all students toward achievement as well as student preferences for or against participation.

Exploration of social-emotional constructs can reflect difficulties of measurement. Historically, evaluation of student psychological functioning has focused on symptoms of distress. However, modern definitions of psychological well-being recognize that although an absence of symptoms is desirable, the presence of positive emotions is optimal and constitutes thriving (Howell et al., 2013; Kloos et al., 2021). The current study also only utilized self-report data from students without any collateral confirmation. Additionally, the construct of teacher social support is multidimensional, and many positive teacher behaviors may not be perceived a social support, and further, student perceptions of teacher attitudes are may not be accurate. Expansion of the current methodology, including the addition of measures of resilience and nuanced understandings of social support, would increase the breadth of support for the results of the study.

#### *4.2 Future Research*

Results of the current study provide additional support to prior findings that, in school-aged youth, perceptions of teacher social support and caring are impactful on well-being (Lavy & Naama-Ghanayim, 2020) and that participation in the AVID program may provide non-cognitive benefits (Llamas et al., 2014; Parker et al., 2013; Pugh & Tschannen-Moran, 2016; Young 2016). Further, the school in which this study was conducted reflects a

“high needs” and underserved population, and therefore any factors that can influence students’ global psychosocial distress present a valuable next step in resilience research. The current findings may also suggest that future research would benefit from exploring the causal pathways of the success demonstrated by students in the AVID program.

The evidence from our sample suggests that, after controlling for demographic factors and GPA, perceptions of teacher social support appeared to have a beneficial impact on student psychosocial impairment, resulting in fewer reported symptoms of emotional and behavioral distress. The impact of a school-based academic achievement intervention also appeared to have a positive effect on symptoms of psychosocial distress, though in the total symptom ratings rather than any specific subscale. Thus, the results of our current study suggest that, in comparison to their demographically similar peers, students who participated in the AVID intervention experienced significantly less psychosocial impairment. These findings contribute to our understanding of psychosocial impairment in underserved youth by offering further evidence for the protective value of perceptions of teacher support, and uniquely, the overall value of participation in a school-based intervention utilizing social support as a mechanism for academic change. If participation in AVID confers psychosocial benefit beyond what is explained by perceptions of social support from teachers, it may represent an additional protective factor that can be enhanced deliberately within the AVID programming. In an era when both student psychosocial impairment and academic achievement are in a state of distress due to global factors beyond individual students’ control, it is important to work towards the understanding and provision of supportive resources to reduce psychosocial impairment and build positive growth. In sum, our study suggests that interventions targeting the complex mechanisms of school achievement may also have a positive impact on psychosocial impairment beyond student perceptions of social support that can be capitalized on in future research and interventions.

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